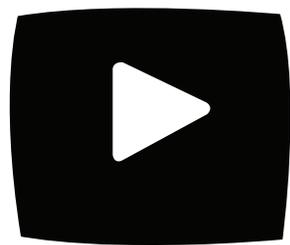


5 August 2010



2015

STRATEGIC PLAN

Evolving Municipal
Video Services &
Public Access

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Acknowledgements

This report has benefitted greatly from the support and input by a wide range of professional contacts and friends.
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General Introduction and Overview

The following document outlines a fully integrated, emergent, strategic plan for the video communication needs of the City of Bloomington (CoB).

The scope of this project is to facilitate the creation of an adaptive strategy to support the evolving video communication needs of the City in the following areas:

- Internal/external communications such as the recording and telecast of committee meetings
- Public access television services, the local PEG and Public Media Ecosystem

The Objectives

The City of Bloomington finds itself in the unique position of both being a stakeholder/participant and major shaping force in the local PEG ecosystem. This creates an opportunity the CoB to lead innovation but also increases the burden of responsibility, necessitating a shared approach. The CoB will not be able to act in isolation to realize many of the potential positive outcomes envisaged in this report.

Combined with the unprecedented, fast-paced evolution of the media landscape and its sustaining/enabling technologies this places the emphasis firmly on agility, cooperation and continuous contextual awareness.

In this situation a conventional static strategy document would risk obsolescence quickly and potentially become an obstacle to progress.

Thus the strategic plan presented is *emergent*.

This report aims to help create positive conditions and structures that will sustain a healthy, diverse and relevant PEG ecosystem through and beyond 2015.

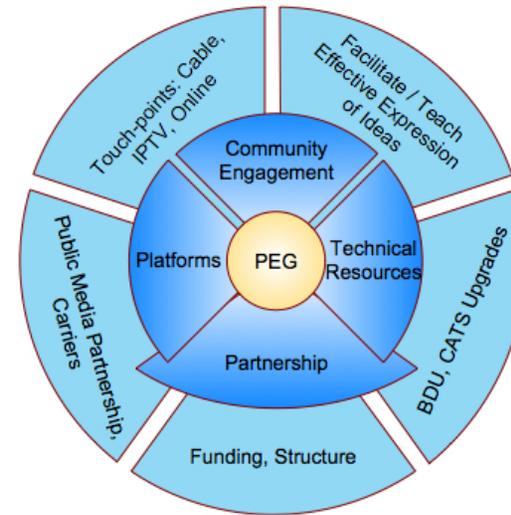


Figure 1 Local PEG Ecosystem

This document seeks to promote a common level of understanding among all stakeholders of the potential issues at hand. The text will cover the likely impact of various options available in a manner that is accessible to decision makers from diverse backgrounds with varying degrees of prior foundation knowledge.

The implicit aim is to ensure that municipal video communications and public access television will remain relevant to the local community against the backdrop of rapid digital innovation.

Part of this process is to enable the City as well as its main supplier of TV production and delivery services, “Community Access Television Services” (CATS), to generate maximum value from the funding at their disposal.

The two terms “value” and “integrated” warrant further definition to contextualize their use in this report.

In the context of public, educational and governmental (PEG) transmissions/communications “value” does not simply capture the amount and quality of program output per dollar spent. Value, for the purposes of this report also comprises intangible benefits to the community such as:

- Enhanced community interactions
- Promotion of cultural diversity
- Skill building of public producers
- Increased transparency of government
- Enhanced participation in the civic process

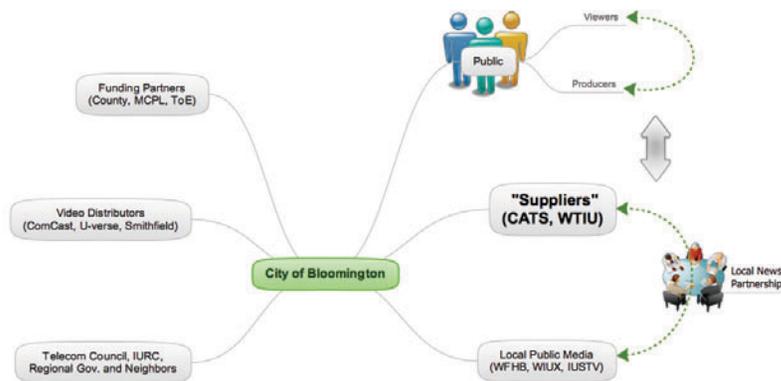


Figure 2 Stakeholders

The term “integrated” is used to describe an approach that will consider stakeholder interactions (see Figure 2) and address stakeholder needs with social, technical, operational and financial strategies where applicable.

This document is broken down into work streams (see Figure 3), which provide the overall context for each of the four sections.

The emergent nature of the overall strategy and the networks of contextual and stakeholder dependencies mean that there is some degree of overlap between the individual work streams. The order of their presentation within this document tries to reflect the interdependence between the streams by building the case and filling in related background information.

A complete sequential reading of this document is thus recommended to avoid misinterpretation of individual points that may otherwise arise from missing/skipped context.



Figure 3 Work Streams

The 4 Work Streams

A brief introduction of the four sections follows:

- **Section 1 – Operations and Finance / Technology** explores options for alternative funding methods and organizational/management structures for the main PEG operator CATS. It explores opportunities for improved brand

building and new ways to leverage the human capital available to CATS.

This section then proceeds with a detailed list of concrete actionable recommendations for both the CoB and its principal supplier of PEG related services, CATS. The recommendations are designed to leverage synergies in the relationship between the two organizations and improve technical and operational practices alike.

Given the pivotal importance of CATS as both the recorder and repository of local government meetings it is in the interest of the CoB to develop this supplier to its fullest potential. This section reflects this premise by devoting specific attention to the interdependences between the capabilities on both sides of this relationship.

- **Section 2 – Audience and Users** presents the results of a self-selecting online survey of PEG users. Due to the lack of random sampling and the resultant coverage issues of this survey it mainly serves as a general indicator of sample behavior and awareness among respondents. Time and financial constraints prevented a statistically representative study. In spite of these limitations the survey managed to unearth important insights, especially in the context of service portfolio awareness among this sample of PEG supporters.

A brief literature review, sampling articles and papers relevant to the PEG and public media context as well as audience behavior, is also included in this section.

- **Section 3 – Partnerships** provides an audit of existing partnerships relevant to the PEG activities of the CoB. This element seeks to provide an overview of the diverse portfolio of relationships, from video service providers to PEG operators and public media outlets, the CoB interacts with and depends on for its video services. The section provides a reference for the current status and presents potential opportunities for future partnership development.

The recognition that people, and the communication and understanding among them, are crucial elements in carrying forward the successful implementing of the ideas in this document sits at the heart of this section. As such it proposes measures to enhance and build stakeholder interactions and communication, starting with a PEG summit hosted by the CoB.

- **Section 4 – New Services** offers a scenario-based approach to future service expansion with a strong focus on online delivery and accessibility of PEG content. It contains educational elements, covering both the opportunities and infrastructure demands associated with future service expansion. These elements are deliberately written to be accessible for less technology-aware stakeholders looking for suggestions on how to increase audience engagement in the new media context.

Section 4 concludes with a description of how technological and interpersonal integration between the PEG and public media community could be leveraged to create an enhanced yet more resource efficient local news service. The latter is considered a key element in driving the evolution of the local PEG ecosystem.

Furthermore, this document seeks to promote the active development of skills among the public for the competent use of media as an effective tool for expression of ideas.

As stated previously, the implicit assumption is that by developing its suppliers, creating new touch-points with citizens and acting as a facilitator to encourage new initiatives the CoB and the local PEG ecosystem will benefit alike.

By providing insights, tools and recommendations from various angles this document seeks to empower interested parties to pursue these goals successfully.

Stages in the Evolution of PEG

Given that a detailed step-by-step linear/static implementation plan spanning the full five years is neither a feasible nor an effective way to develop the local PEG ecosystem, the best way to summarize and expose the interdependencies and prerequisites within the system seems through the definition of different evolutionary stages.

Figure 4 defines these stages through their overarching goals and then lists key strategies to support these goals.

While presented here in a discrete temporal fashion, it should be noted that there will be overlap between the various stages. Some elements and strategies may reach maturity before others and such asynchronous development does not necessarily represent a threat to overall success. Unfortunately an accurate visualization of these characteristics pushes far beyond the limitations imposed by static two-dimensional (print) presentation.

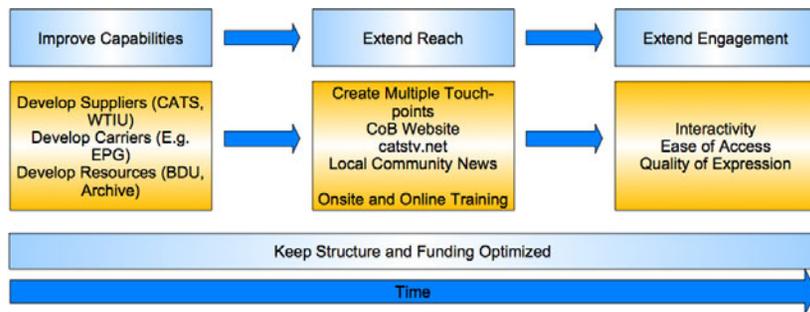


Figure 4 Implementation Phases of Strategic Plan

This plan was developed to help articulate a position and goals for the coming five years but does not define a static end state. Once the PEG ecosystem and the CoB's services have evolved within the overall societal context regular re-assessment, re-evaluation and ultimately new goal setting will be required to maintain the positive momentum.

The slower evolution of the media landscape and affiliated technologies of the past may have favored or tolerated longer, more static, planning

cycles and structures. However, looking forward, increasing competition for audience attention and strained government funding, combined with more direct competition for PEG in the domain of “public expression of free speech” (through online services), all necessitate a more agile stance for survival.

Ultimately it will depend on the initiative of all local actors/stakeholders involved whether the PEG ecosystem in Bloomington reaches its full potential. This plan simply aims to show a possible way to the future and provides a set of ideas and tools to help participants get *there*.

People, Process, Platform – Method Statement

The synergistic integration of these three components to create capabilities forms the foundation of all long-term projects described in this document. Technology, no matter how sophisticated or advanced, remains a dead asset when deployed without a clearly defined process framework. This document is intended to illuminate the processes and context within which any technology recommendations should be framed and deployed.

However, while the terms “framework” and “process” could be deemed to imply otherwise, platforms and processes are always shaped around the needs of the people empowered by them. The recommendations in this document have been compiled with the human being at the center of all reasoning.

Technology and the processes surrounding it are to conform to the people touched by it rather than the other way round.

This report has benefitted from a series of site visits and over 20 meetings with key stakeholders in Bloomington’s PEG operations, public media and local government.

The survey section has greatly benefitted from the expert advice provided by Sara Laughlin, director of MCPL. Additional information about the survey process can be found in section 2.

Contemporary management theory and leadership practice inform the basis of the operational and marketing related recommendations. Please refer to the list of “Further Recommended Reading” at the end of the appendix for additional material on these subjects.

About the Author

Ralf Frieser is currently pursuing his MBA at the Kelley School of Business. He is triple majoring in “Entrepreneurship/Corporate Innovation”, “General Management” and a design major in “Intellectual Property Law for Business”.

He holds a master’s degree in “Human Computer Interaction Design” from Indiana University’s School of Informatics.

Furthermore, the author brings over 15 years of experience in the media and entertainment industry to this report.

He is knowledgeable in technology strategy and systems integration for the broadcast, postproduction and digital intermediate markets as well as IPTV head-end infrastructure.

He has worked for the British Broadcasting Corporation’s in London and later ran his own consulting business with clients in Europe, Asia and the Americas.

Ralf Frieser has worked with CATS before as part of a course project during his master’s degree in informatics.

His current resume is included in the appendix.

About the Appendix, Glossary and Definition of Acronyms

Please note a detailed list of acronyms and their definitions as well as a comprehensive glossary of domain specific terms relevant to this document is provided at the beginning of this appendix.

Readers not fully familiar with the subject domain or technologies involved may find these items particularly useful to make the material presented more accessible.

The rest of the appendix provides a range of reference materials either designed document issues raised in this document or to help support successive planning and implementation work.

A reading list of books relating relevant business, design and technology concepts that have inspired the author’s thinking for this report can be found at the end of the appendix.



Operations, Finance and Technology

Section 1 – Operations, Finance and Technology

This section of the report first reviews the general operational, financial and technological circumstances pertaining video communication processes “touched” by the City of Bloomington (CoB). The report then presents recommendations for optimizing or enhancing capabilities grounded in the aforementioned three domains.

This section places considerable emphasis on “quick wins” and improvements within the existing setup. As such it devotes a substantial amount of its recommendations to Community Access Television Services (CATS) as the main “sub-contractor” for the City of Bloomington’s video services. A main goal of this section is to further enhance the CoB’s video service delivery by helping optimize the capabilities of its principal fulfillment agent. Thus by empowering CATS to further enhance the government meeting documentation process, the City directly improves its ability to facilitate and sustain transparency in the civic process.

CoB – Background

Video content creation at the City of Bloomington may be divided into two distinct domains:

1. Ad-hoc production projects covering diverse subjects ranging from communications by the Mayor’s Office to informational videos created by Parks & Recreation.
2. Regular telecasts of government meetings at the city and county level to facilitate transparency and general public information.

The former ad-hoc content displays varying degrees of time criticality and production values. While video recording and editing capability exists within the City, projects are frequently outsourced in part or their

entirety to third party providers. Delivery of the final output occurs through the City’s website (bloomington.in.gov)

Regular telecasts are handled by Community Access Television Services (CATS) using onsite infrastructure (such as fixed camera and production facilities for the main council chamber) or mobile production kits for smaller meetings (using two Sony Anycast systems available to CATS).

These meetings are telecast on the Public, Educational, Governmental (PEG) channels (CH12 for City, CH14 for County) carried by Comcast in the Bloomington market and are available for streaming from the CATS website.

The CoB ultimately controls all of the community’s PEG channel assets/rights and as such CATS and WTIU are “delegated” to operate these channels for the City. Therefore the City of Bloomington could solicit fresh bids for the operation of any of its PEG channels in the future.

CATS – Background

As the main public access operations center for Bloomington, Community Access Television Services is located on the premises of the Monroe County Public Library (MCPL) on East Kirkwood Avenue. CATS is currently responsible for five out of the six PEG channels in Bloomington.

These channels are Comcast #3, #7, #12, #14, #96. WTIU operates the sixth Bloomington PEG channel on Comcast #17.

CATS provides production services to The City of Bloomington, Monroe County and the Town of Ellettsville (ToE) for the regular telecasts of a range of government meetings. It operates and manages the production facilities available to the public for public access productions. These facilities include camera loan kits, a television studio and nonlinear editing facilities for postproduction. Furthermore

CATS offers educational content for example through productions for MCPL and the re-transmission of the SCOLA channel.

CATS operates the playout facilities for the five PEG channels mentioned above and is responsible for providing an archive of government meetings through online streaming at “catstv.net”.

CATS has maintained a stable operating environment throughout the transition to a statewide cable franchise system by being funded through a partnership between MCPL and local government bodies. This arrangement is unlike the setup for many other PEG operations, which had outsourced the provision of production and playout facilities to the cable operator (an option removed by the state wide franchise agreements). In contrast, CATS leverages MCPL resources and funding derived as a percentage (currently 50%) of franchise revenue earned and passed on by the CoB, Monroe County and the Town of Ellettsville (ToE) through a PEG funding partnership.

CATS has found in the past that different parties have shown varying levels of commitment to this funding process. With MCPL, the CoB and ToE being regular contributors while County contributions have shown a shortfall on occasions in the past. However, at the time of writing this report uncertainty over the 2010 contributions by the ToE was evident.

General Impressions and Asset Review

Please also refer to the appendix for a general listing of key assets currently held by CATS.

General Impressions – CATS

Based on site visits and conversations with relevant staff no glaring shortcomings were discovered that would endanger continuity of operations in the short to mid-term. CATS is able to fulfill its mandate as Bloomington’s PEG operations center as is. However, ongoing investment will be required to maintain this status, improve service to

patrons (public access producers of content) and meet changing audience expectations.

General Impressions – CoB

The City appears to be able to meet its current video communication requirements through a mix of outsourcing and basic internal work. The former pertains mainly to regular coverage of government meetings (provided by CATS) and high value productions (other providers including WTIU). Internal work is mostly limited to simpler content customization (basic editing and segment extraction) for web publishing purposes. While suboptimal, the current infrastructure seems sufficient to achieve these goals. Exceptions pertaining to file format compatibility issues have been reported. On a departmental level some underused assets (mainly cameras) have also been mentioned by staff, however their existence or usage patterns have not been verified due to the time constraints of this project.

Future investment will likely be driven by an increasing desire of departments outside ITS to project a media rich online presence.

A clear opportunity to enhance internal staff skills cost effectively through sharing / joint development of training resources with CATS exists.

As the City seeks to enhance its own online services by including the recordings of government meetings on its site, the ability to do so depends on CATS providing appropriate permanent links to its content repository. Once established other local government entities would also be able to use this service. Thus its value extends to all members of the PEG funding partnership. The resolution of this issue appears a key priority in the short term.

Upcoming Issues and Concerns (High Priority)

CATS is currently burdened by an aging fleet of VCRs, with a number of units aged nine years and older. Some of the most heavily used machine types are in this category and maintenance incident-frequency and cost are increasing. In the future availability of spare parts at a reasonable price may become an issue and eventually availability of replacement units will become restricted.

This would render a substantial part of the CATS archive inaccessible should it not have been digitized by then. CATS has already partially lost “at-will” access to the sections of its archive stored on reel-to-reel tape. Content recorded on these tapes can only be recovered through expensive outsourced transfer services.

Moreover, in pure economic terms the cost per GB of storage for DV/DVcam tape stock vs. the current generation of ultra high capacity hard disk drives (HDD) is higher by a factor of 10. Thus technical and operational cost factors favor a strategy of migrating away from tape-based production towards file-based workflows and HDD storage.

With a likely heavier reliance on information technology across CATS’s entire production process, information security will become of increasing importance for uninterrupted service delivery. Currently the main obstacle to implementing more effective security measures lies in on-site skills shortage and cumbersome configuration management of client systems.

This report includes recommendations to address these high priority issues outlined above.

Other Issues

Proposals for charging a nominal fee for dubbing archive programs requested by the public for home viewing are currently under consideration. On the one hand, there are concerns among some CATS staff that this fee might deter future program retrieval requests. On the other hand, the dubbing process tends to be time consuming

and will be increasingly affected by aging source VCRs. Dubbing currently represents the only means by which the public may request non-governmental archive content.

A future digital archive environment holds the potential for Internet delivery and self-service requests, rendering physical media request (dubbing) the exception, while simplifying the output process for such hardcopies.

CATS (and consequently the City) faces a substantial backlog of yet to be digitized government meetings for the online archive hosted on catstv.net. This has rendered the current implementation of the online government-meeting repository incomplete.

Search behavior for querying the online meeting repository is at times inconsistent and unpredictable reducing the general utility of this service.

CATS has chosen to switch to basic, server-based playout for two of its existing channels, necessitating slightly different content preparation processes compared to its other channels still operating on VCR-based playout. These differences in content preparation have lead to an increase in human errors and additional time spent by staff on error detection and mitigation to ensure operational continuity.

The editing processes currently in place for content produced by the public rely on a fleet of external hard drives to store various client projects. The administration of this fleet of external HDDs is cumbersome and time consuming and negates partially the benefits afforded by non-linear digital workflows.

CATS currently has inconsistent branding across channels and with regards to on-air vs. on-line content presentation, adversely affecting the over-all brand identity.

This report includes recommendations to address these concerns highlighted above.

Accountability

The future CATS in particular will be exposed to a number of implementation projects of varying complexity. Some of these projects may be challenging to complete successfully for the organization given that there are currently limited project management resources within CATS. Past IT-centric projects seem to have achieved suboptimal results for similar reasons.

The following suggestions may help CATS and its partners improve on implementation success criteria such as on-time and on-budget completion:

- Create organizational project management expertise (please refer to more detailed recommendation further below).
- Develop appropriate and realistic project timeline, and then tie internal fund allocation to project milestones.
- Track project progress and budget as part of regular weekly staff meetings (which are already in place) to maintain momentum and uncover unexpected secondary hurdles as early as possible.
- Use meetings to create a collective sense of ownership for project outcomes where applicable. Habitually perform (blame-free) post-mortems of project phases to collectively learn from both successes and failures.
- Deliberately commit to phased release of external project funds with funding partners based on the successful completion of individual project segments.
- Proactively seek help within the organization as well as with funding and operational partners to address issues or skill shortages likely to cause project delays.
- Use public, non-monetary rewards for staff that make *exceptional* contributions to project success to maintain moral and inspire emulation by others. Such rewards could be

developed in conjunction with staff prior to the project to make them even more meaningful.

The seven suggestions above are not a guarantee for universal project success but address current gaps within the structure of CATS. Developing capabilities around these suggestions should make successful project outcomes for CATS more likely and failures less costly or debilitating.

Alternative Funding Models and Structures

It is acknowledged that the issue of alternative funding models may hold a considerable degree of contention among different stakeholder groups. The aim of the following paragraphs is not to prescribe a departure from the current (successful) funding model but briefly evaluate the feasibility of alternatives, should the existing revenue streams (franchise fees) no longer be available due to (for example) significant changes in the regulatory environment. Furthermore, taxation changes, which are stressing all partners including MCPL, are also appearing on the horizon, adding further worth to this task.

The issue of organizational structure is tied to the assessment of funding models in so far as it impacts the degree of flexibility afforded to an organization in pursuing different modes of financing. But structure will also define the degree of resilience with regards to political challenges, which in turn may impact funding. Under the existing arrangement CATS has operated as a department of MCPL and this setup has thus far stood the test of time. However, any discussion of funding and thus structure would be incomplete without questioning the status quo and exploring opportunities for refining the existing model.

This report is not a policy document and therefore its recommendations with regards to structure and financing are intended to stimulate further discussion and inquiry among stakeholders. The outcome of which must lead to a consensual solution by all parties involved to guarantee successful execution. If such discussions result in no change to the existing structure, the vast majority of concrete

technical and operational recommendations contained in this report may still be implemented without adverse effects on their overall viability.

The following scenarios are not intended as an exhaustive list of options but to promote further discussion among stakeholders to create a certain level of preparedness should such changes appear on the horizon and above all ensure the highest feasible degree of operational continuity for CAST.

The financial needs of CATS, which these scenarios are based on, were derived from a 2010 draft budget provided by the organization as well as a list of past and present operational and capital expenditures from the same source.

The CATS 2010 Budget (Background)

According to the draft budget figures provided by CATS, which are the source of data for this section, the contributions both in cash and kind by the City of Bloomington, Monroe County Public Library and Monroe County total \$875,187 for the year 2010.

At the time of writing this report contributions by the City of Ellettsville for the year 2010 were 0. The shortfall was covered by Monroe County. In recent years the contributions by the ToE had ranged from 9,000 to 11,000 dollars approximately, which makes them a comparatively small and thus more symbolic cash inflow compared to the contributions by the other funding partners.

Contributions by the City and County are derived as a percentage of cable franchise revenues collected by these entities. In the case of CoB a 50% share of franchise fees collected during the previous year is passed on to CATS as regular funding. For 2010 this contribution is \$354,000 or 40.4% of the total CATS budget (52.7% of total cash contributions), making the CoB the largest total contributor to the funding of CATS.

Monroe County will contribute \$216,000 or 24.7% to the 2010 budget.

MCPL contributes a significant amount of funding in kind (about 2/3 of its total contribution of \$305,187) providing space and services in the main library building hosting the CATS operations center. For the purposes of determining an “in kind” vs. “in cash” percentage for the MCPL contribution this reports considers all funds used for capital expenditure at CATS, CATS specific personal cost and off-site meetings as well as operational supplies as “in cash”. Space, utilities and office services are considered “in kind”.

Table 1 below provides a breakdown of the amounts and percentage shares of contributions to the CATS 2010 draft budget.

	contribution	of which cash	% of total	% of cash
City of Bloomington	\$354,000	\$354,000	40.4%	52.7%
Monroe County	\$216,000	\$216,000	24.7%	32.2%
Library Funds	\$305,187	\$101,834	34.9%	15.2%
total	\$875,187	\$671,834		

Table 1 Contributions "In Cash" and "In Kind" to the CATS 2010 Draft Budget (Source: CATS)

Figure 5 visualizes a break down of the three sources of funding for CATS for the year 2010.

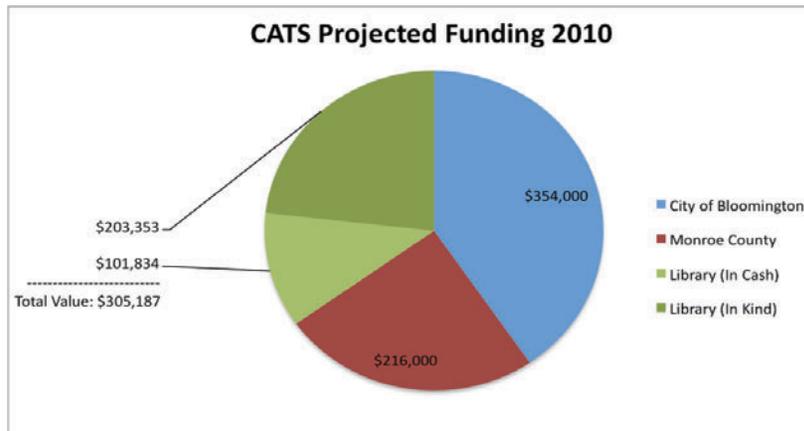


Figure 5 CATS Sources of Funding (Source: CATS)

The largest expense in percentage terms is staffing costs for CATS followed by the in kind contribution of space at the MCPL site. Figure 6 below provides a more detailed break down of the fund allocation in the 2010 draft budget.

The numbers below represent a forecast composed prior to the formulation of this report. In light of the recommendations contained in this report some re-allocations may be necessary. Please refer to the analysis of the likely implications of the recommendations on the CATS operational budget. This analysis provided further below in this report towards the end of section one.

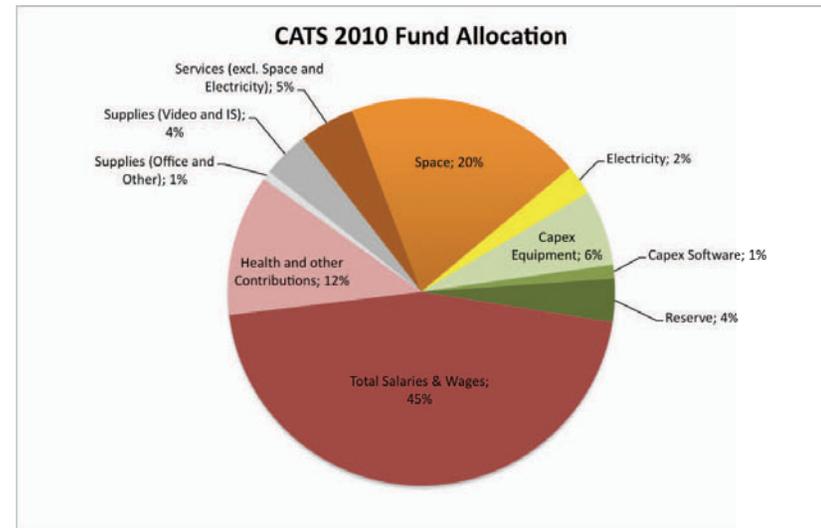


Figure 6 CATS Fund Allocation Based on 2010 Draft Budget (Source: CATS)

Figure 7 below provides a high level summary of the projected actual cash needs (money leaving the system to pay for wages or services) for 2010 to maintain the CATS operations center at current service levels.

The in kind contribution by MCPL, the provision of office space and services is included for comparison.

The capital expenditure number represents the sum of all such items listed in the draft budget but excludes any unallocated funds held in reserve (Approximately \$31,000) which may become relevant as funding sources to pay for some of the one-off infrastructure upgrades recommended in this document.

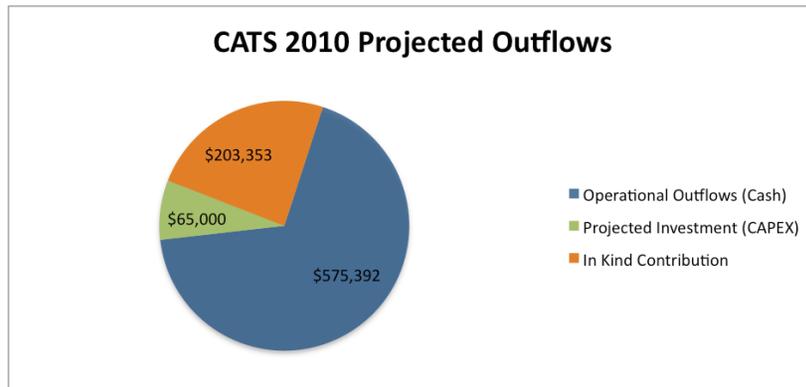


Figure 7 Project Cash Outflows vs. Contributions in Kind (Summary Numbers) (Source: CATS)

Subject to no unforeseen, substantial expenses being incurred during 2010 CATS appears to be adequately funded for this year according to its own budgetary projections.

Credibility of Projections

Historically Monroe County has underfunded CATS compared to the contribution level chosen by the CoB. Since 2009 the County is fully meeting its funding obligations and this is reflected in the projections above.

When taking the long-term average of the funding shortfall by the County compared to the CoB prior to 2009, a hypothetical funding level for the County can be established. Adjusted for historic contributions by the City of Ellettsville the resultant shortfall in the CATS budget would be approximately \$53,000 for 2010 under this hypothetical funding level. This shortfall is very close to the sum of the unallocated funds and non-MCPL funded capital expenditure in the 2010 CATS budget (approximately \$47,500).

This observation seems to support the assumption that the CATS projections for its operating budget are quite accurate and unlikely to

contain significant “padding”. By fully meeting its funding obligations the County has effectively created the financial capacity for CATS to invest in its infrastructure while maintaining current service levels.

Note on Cost Structure and Implications

The largest item in the cost structure of CATS represents staffing and related expenses. Thus any forced cost reductions due to a funding shortfall that goes beyond capital expenditure and smaller operational savings (such as recycling tape stock or a complete cut of conference attendance or off-site meetings) will inevitably impact staffing levels.

Given that payout operation through master control is already relatively lightly staffed some management and production roles would most likely be impacted by a forced cost reduction exercise. This in turn would directly impact the level of support available for public producers but more noticeably so the availability of recording services to government bodies for their respective meetings.

As such there could be a connection between the level of funding and the level of government meetings recorded and thus government transparency. This represents a strength and weakness for CATS at the same time. If the public is well aware and appreciative of CATS’s role in facilitating transparency in the civic process any cut in funding to CATS would be politically much more difficult to justify. On the other hand, the attendance of CATS cameras during contentious government meetings could theoretically result in retaliatory funding reductions by the respective government body if CATS were perceived to be weak and lacking community support.

The involvement of multiple funding partners (CoB, MCPL, Monroe County, ToE), each with their own financial foundation, thus promotes stability and impartiality by blunting the severity and thus political effectiveness of retaliatory action by a single party.

Subscription Service / Carriage Fee for Cost Recovery

If operational funding were to be exclusively derived by Comcast passing on a channel carriage fee for the CATS output to its subscribers the cost would be as follows. The level of funding is based on the contribution figures listed in the 2010 draft budget provided by CATS (see breakdown above). The total thus excludes any contributions by the Town of Ellettsville.

(NOTE: The costing for the 6th Bloomington PEG channel operated by WTIU has been excluded from these calculations below as its operation is independent from the existence or funding levels of the CATS operations center).

The calculations below are based on an estimates subscriber count of approximately 18,500 households for the Bloomington area (number extrapolated from past known Insight subscriber figures, demographic census data and penetration figures by the National Cable Television Association). A bundled carriage fee for 5 channels spread across all subscribers is assumed.

For the 1 channel cost a hypothetical 30% reduction in general operating cost across the board is assumed. This assumption tries to reflect the fact that master control cost only marginally changes with the channel count. The reduced amount of airtime would most likely lead to fewer government meetings being produced allowing for a smaller building and staffing footprint.

Recovery for complete 2010 funding level:

- Cost per household per month for 5 channels (total): \$3.94
- Cost per household per month for 1 channel: \$2.76

Recovery for 2010 funding level **excluding** the MCPL contribution:

- Cost per household per month for 5 channels (total): \$2.57
- Cost per household per month for 1 channel: \$1.80

For comparison, according to the forecasting site “Trefis”, MTV commanded a carriage fee of approximately \$0.30 per subscriber. Entertainment channels may achieve fees in the \$0.70 to \$0.80 range (<http://www.trefis.com/>). The New York Times claims that ESPN used to charge an average of \$3.65 per subscriber in 2008 (http://www.nytimes.com/2008/11/25/sports/ncaafootball/25sandomir.html?_r=1). CNN was able to charge \$0.47 during the same period (http://www.stateofthedia.org/2009/narrative_cabletv_economics.php?cat=2&media=7).

In the most expensive scenario this would put CATS at \$0.79 per channel per subscriber based on a 5-channel bundle. This does not seem entirely uncompetitive pricing but also clearly indicates that operating a larger number of channels based on the current cost structure is key to the CATS value proposition in such a scenario. At \$2.76 for a single channel such a funding model would be much harder to justify.

Commercials

The following calculation assumes four channels (which are directly under the control of CATS in terms of scheduling) and four hours of sellable prime time per channel with 10 minutes of commercials per hour (just below the FCC mandated limits). The remaining daytime advertising would be bundled into any airtime deal for free to entice advertisers due to the comparatively low audience figures. This scenario does not account for the extra cost of a more sophisticated traffic and schedule management system required by CATS to operate the commercial based channels effectively.

Thus: 40 minutes per channel per day, equals 160 minutes of total available airtime for sale per channel per day. This equals 58,400 minutes per year.

Assuming 1 minute slots are adopted for regional content the cost per slot to meet the full contribution level by all 3 partners equals: \$15 per slot or half this amount if 30second slots were sold.

At this price level CATS would need to be able to generate at least 1000 impressions for any given spot to be competitive with other cable advertising or local radio (figures may vary slightly depending on which data source is used for CPM values – example: <http://infoacrs.com/a/averagecmps.html>). Accounting for the included re-runs during the day this would still mean that on average over 5% of viewers of the entire Bloomington cable franchise area would need to be exposed to each spot on a daily basis to justify this price at market rates.

This level of audience reach seems highly unrealistic (although actual reliable audience figures for CATS output are not available). Furthermore, regulatory and other issues might make the sale of spots in between government meetings questionable or difficult. Lastly, it remains doubtful whether the local market could even absorb this volume of advertising at this price point.

Alumni and Extended Bloomington Community

Bloomington is in a privileged position for a town its size by hosting the largest campus of Indiana University (IU). This generates a continuous stream of new residents that will form a connection to this town during their time of study at IU. After graduation this translates into a globally dispersed extended community, far larger than a “conventional” town could hope to generate.

IU claims almost 318,000 living alumni for the Bloomington campus alone (<http://alumni.indiana.edu/about/facts/>). Assuming that CATS is able to capitalize on its potential status as a link back to the Bloomington community by cultivating its anthropological content archive (reaching back to the late 1970s) and/or offering regular local news and information with special event coverage, a fund raising scenario centered around this extended global Bloomington community could be constructed as follows.

For an annual \$5 donation:

- Donors required for full funding: 175,000

- Percentage of alumni population: 55%
- Donors required for non-MCPL portion: 114,000
- Percentage of alumni population: 36%

Given that \$5 donation would effectively constitute an access fee to online content (as few would be able to receive the cablecasts) it seems extremely unlikely that such high adoption figures could be achieved among IU alumni. Even a higher fee at 1 dollar a month would still require unrealistically high adoption rates. Standing alone, this funding option does not seem viable for sustaining full-time operations.

IU alumni donations could potentially provide (a small) contribution to a combination of funding measures based on various concepts presented in this report. At this point CATS would directly compete with WTIU for alumni donations, which may complicate and ultimately reduce the viability of this approach further. (WTIU, as the University’s TV station is responsible for operating one PEG channel at this point).

Membership Model, Corporate Giving and Individual Donations

PBS affiliates such as WTIU may be able to teach valuable lessons as to how an alternative funding model for a non-commercial television provider like CATS might be structured. A mix of membership-style donations, pledge drives and corporate philanthropy as well as government grants has helped sustain a significant portion of WTIU’s operating budget and supported major infrastructure upgrades, such as the transition to HD broadcasting at WTIU.

Based on the publically available audit reports for WTIU for the year 2008 (<http://indianapublicmedia.org/static/pdf/FY-2008-WTIU-audit-report.pdf>) the station was able to raise \$479,174 in individual and \$283,248 in corporate and foundation contributions (Total revenues for 2008 were \$6.15 million).

A further \$268,440 in capital grants by the Department of Commerce and the Corporation for Public Broadcast (CPB) were received for infrastructure upgrades (Operating grants by CPB are ignored for the purposes of this discussion, as this type of grant would be comparable to CATS’s financial support by its current funding partners). These capital grants were contingent upon fund matching by the station from non-federal sources.

In contrast, according to revenue figures provided by MCPL, CATS has struggled with declining external revenues from donations and corporate sponsorship over the years (see Figure 8 below). Some of this may be a result of only moderate fund raising efforts on behalf of CATS. The operator has little incentive to aggressively pursue external donations for fear that any gains in external giving could be offset by funding cuts by the government funding partners.

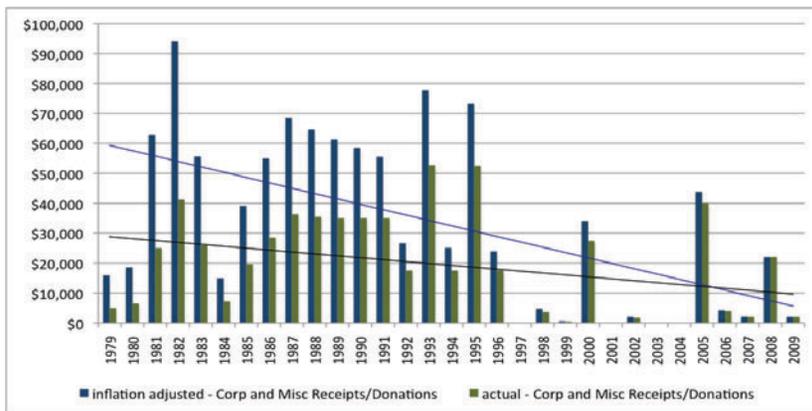


Figure 8 External Financial Contributions to CATS Over the Years (Source: MCPL)

The direct comparison of CATS with WTIU does ignore some important differences that may make an emulation of this funding model as the sole source of revenue for CATS more difficult. WTIU has a substantially larger reach through wider carriage agreements throughout the State and terrestrial broadcasting in the Bloomington area. Furthermore the access to the previously mentioned large alumni

population associated with IU offers more leverage and breadth for fundraising activities than CATS could hope to achieve on its own.

WFHB, a popular community radio station in the Bloomington market managed to reach its target of \$35,000 for its spring fund drive (the first of two annual fund drives) this year despite the difficult economic climate (<http://www.wfhb.org/content/wfhb-listeners-help-station-reach-spring-goal>).

A comparison to such contribution levels seems more appropriate than pitting CATS against the fund raising capacity of WTIU. Even if CATS, as a local cable TV station, is able to raise additional contributions from corporate sponsors, an exclusively pledge drive based funding model does not seem viable for sustaining the operation at present service levels given the size of the station’s target market.

However, combined with an appropriate corporate structure and suitably secure funding agreements with its existing four funding partners (CoB, MCPL, County and ToE) CATS might be able to leverage a mix of subscription based funding and corporate donations to develop and fund additional services. Such external donations could be used to leverage federal or state based grant funding as matching contributions to pay for major infrastructure enhancements above and beyond those feasible under the existing arrangements.

This makes the membership model best suited for top-up funding rather than base line operational funding.

Grant Funding

CATS has thus far relied on its local funding partnership to meet its financial needs (including occasional minor special project grants by the CoB). However, as WTIU has demonstrated, grant funding can provide an effective tool to for example support major capital projects (see page 5 and 6 of audited annual report by WTIU:

<http://indianapublicmedia.org/static/pdf/FY-2008-WTIU-audit-report.pdf>).

In the near term, CATS should consider pursuing grants that involve “fund matching” to leverage the quality of its locally funded infrastructure investments. This approach would effectively neutralize any incentives for local funding cutbacks that could otherwise offset gains from grant income.

In the long run the experience gained from writing such grant proposal will help open up new opportunities to support more ambitious projects. A daily local news operation in partnership with other Bloomington public media organizations or digital over the air broadcast of PEG channels might either benefit from or be enabled by grant funding derived from “outside” public or private sources. Projects of such scale could otherwise remain out of reach, as they most likely exceed the financial capacity of the local funding partnership sustaining CATS today. Like membership dues, but on a much larger scale, grant funding thus represents a plausible and viable supplement to CATS’s existing income.

Please refer to the following resources as a starting point for further inquiry regarding grants and foundations active in supporting media related projects.

- <http://foundationcenter.org/> – General resource on grants and foundations
- <http://www.knightfoundation.org/grants/> – One of the most prominent foundations supporting media related activities
- <http://media.gfem.org/> – A database matching projects with funders

- <http://mediaengage.org/> – National Center for Media Engagement – general resource for local and public media activities
- <http://www.cfbmc.org/> – Community Foundation, provides local matching grants

Summary Funding Options

The table below compares the various funding options across a range of dimensions. Please note the comparison reflects subjective aggregate assessments and is neither quantitative nor absolute in nature. (Key: \$ = small contribution to \$\$\$ = major contribution, ++ = best, o = average, -- = worst)

Funding Method	Assumed Potential Level of Cost Recovery	Operator / Carrier Dependence	Marketing / Brand Dependence	Estimated Contribution % Range if Implemented	Likelihood to Occur	Complexity to Administer	Overall Suitability for Funding OpEx / CapEx
Subscription Service / Carriage Fee (5 Channels)	full	yes	very high	100%	--	very low	+/-
Subscription Service / Carriage Fee (1 Channel)	full	yes	very high	100%	--	very low	-/--
Commercials	\$\$	maybe	high	50%-100%	-	very high	+/o
Alumni and Extended Bloomington Community	\$	no	high	< 10%	o	high	o/+
Membership Model	\$	no	medium	< 10%	+	high	+/--
Individual/ Corporate Donations	\$\$	no	high	< 25%	+	medium	o/+
Grant Funding	\$\$\$	no	low	10% - 50%	++	medium to high	o/++
Share of Franchise Fees	full	yes	none	100%	certain*	low	++/o

Table 2 Summary / Cross-Comparison of Funding Methods Based on Nature and Feasibility

* Subject to regulatory environment

- OpEx = Operational expenditure, day-to-day running costs; CapEx = Capital expenditure, infrastructure/equipment upgrades or purchases
- “Overall Suitability for Funding” only considers the size and relative regularity / flexibility of cash flows generated by the funding method if successfully implemented. It does not reflect the overall likelihood of the specific funding model occurring
- The “Estimated Contribution Range” tries to convey the likely function of a funding method, acting as either full or top-up funding.

CATS as a Self-contained Not-for-Profit Entity

CATS is currently structured as a department of MCPL, although it enjoys great managerial and resource autonomy. The perception is that MCPL has the ability to serve as a buffer for absorbing any direct political pressure that may be put on CATS for either its content or coverage of the political process.

Yet, this arrangement leaves CATS exposed to the risk of interference from within MCPL. Such interference is currently not an issue, but a past library administration has been known to exercise more influence, particularly over budgetary aspects, of CATS's operation.

As the benevolence of the current political climate cannot be taken for granted in the long term, steps could be taken to further strengthen the independence of CATS without depriving it of the benefits of the existing arrangements such as easy access to library resources and services.

While legal advice on the most appropriate future corporate structure for CATS is outside the scope of this report some general concepts and suggested features of such an arrangement are covered in the following paragraphs.

A separate not for profit entity jointly grant funded by the existing funding partnership with additional grant, membership and corporate donation based funding would increase CATS's independence while also offering more creative freedom in terms of raising additional funding for special projects or new services. This approach would put all funding partners on an equal footing and encourage them to act as moderators and joint stewards of CATS.

Such an entity could still receive services as "in kind" contributions from MCPL (much like WTIU does benefit from "in kind" contributions by IU). An official partnership agreement between CATS and MCPL could codify the existing "good will" relationship, helping to preserve a high level of support even during challenging times.

This CATS not-for-profit entity could own all existing assets currently used by CATS (similarly to a holding company) and outsource its staffing needs to MCPL to maintain the relevant employee benefits such as health care coverage, thus leveraging the economies of scale MCPL has to offer in this domain.

The public disclosure obligations for not-for-profits may slightly increase the reporting burden from an accounting and filing perspective but would also serve to further increase and maintain transparency. Both contribution levels by funding partners and the use of funds received would be easily accessible to the public thus helping promote continuity of funding and operational efficiency alike.

However, if CATS were spun out from MCPL to become a self-contained entity new governance issue may arise. Much like a public corporation CATS could benefit from a board. This board would represent the interests of the main funding partners but should also include a representative voice from the general public to help further anchor its interests within the local community.

This proposed board would act both in an oversight and mentoring capacity. CATS management would ultimately be accountable to the board but should also benefit from access to managerial development and outside expertise through board members and their contacts. Furthermore, a strong CATS board could become an asset in promoting and safeguarding the political interests of the PEG operator at the State and even federal level.

Outsourcing of New Services to Not-for-Profit Entity

If the previous concept of turning CATS into its own not-for-profit would be considered too radical a change in the short term, then the following suggestion may provide an opportunity to safely test this concept in the context of service expansion. For example, should CATS decide to venture into digital (low-power) broadcasting for the Bloomington market, emulating WTIU's move in this space, the transmission operation could be outsourced to a separate, dedicated

not-for-profit entity. This entity would own and operate the digital transmitter on behalf of CATS.

The existing funding partners (CoB, MCPL, Monroe County, ToE) may be unable or unwilling to fund an expansion of CATS into (low-power) digital broadcasting. A dedicated not-for-profit transmission provider would be able to solicit membership fees and corporate donations as well as leverage federal grant funding to pay for such an investment. Given that many federal grants require fund matching from non-federal sources such a separate entity would have much stronger incentives to proactively raise funds from residents and corporate sponsors. Such an organization could also enter into a resource sharing agreement for the tower infrastructure with WTIU or WFHB to realize further cost savings.

A similar approach might be taken to operate and fund a significantly upgraded master control for providing HD playout services in the long-term future.

Should CATS itself eventually become its own not-for-profit the existing transmission tower or master control operator could be merged with this new CATS organization if so desired.

Arguably there may be both legal and political intricacies to such proposals that this high-level concept fails to consider. The level of due diligence to decisively recommend or dismiss the above recommendation exceeds the scope of this report and as such it merely represents a suggestion to initiate further discussion.

Long(er)-Term MOU, Codified Funding Ratio and Special Project Micro Funding

The funding partners could consider guaranteeing a certain base level of funding to CATS (within a reasonable range) for periods longer than one year (the current funding cycle). Given that the funding partners also operate on annual budget cycles absolute funding guarantees may be challenging to implement.

Instead a minimum percentage of franchise revenues, with a provision to renegotiate should exceptional expenses be incurred by the funding partners (such as major disaster relief costs), might be a more feasible instrument. This percentage could be guaranteed through contract or local legislative measures.

Under any extended funding agreement CATS should be required to meet specific performance measures in return for the increased financial stability. The nature of such performance measures could be a combination of the following elements for example:

- Pre-determined project milestones for the capital investment schedule of CATS
- New service offerings successfully launched
- Quantity/progress of archive digitization

The goal of such performance measures would be to encourage CATS to engage in more long-term strategic planning with regards to its investment needs and service development.

Such a base funding agreement could then be combined with provisions to specifically exclude any external funds raised for capital projects from any future funding decisions. While such a provision may rely on a certain degree of mutual trust by the parties to be fully effective, it could serve to revitalize external fundraising efforts by CATS. Such efforts could enable a faster execution of projects and infrastructure upgrades, thus positively leveraging the public investment in CATS.

External fundraising efforts could cover programs such as “adopt a VCR” to encourage members of the public to underwrite the maintenance cost for a certain period of time for one of the ailing machines in master control. Or such efforts might involve PayPal enabled online donations on the CATS website to fund the acquisition of a new video server. The online nature of such efforts could also aide transparency of fund use by showing a progress bar towards the

funding target or subsequent stories and pictures documenting the project execution, such as the installation of the new video server.

These measures might help improve local involvement and contributions, as well as further increase a sense of ownership in CATS by the Bloomington community.

Concluding Remarks on Alternative Funding and Corporate Structure

If pursued, the goal of any changes to the current arrangements governing the funding and operation of CATS should be to promote:

- Long-term continuity of service
- Continued editorial independence and impartiality
- Increase accountability of funding partners to meet their commitments
- Incentivize and reward innovation at CATS
- Leverage public and private funds/grants to maintain a relevant service offering

With these parameters in mind the following solution seems most viable in the long-term should the existing arrangement no longer meet the needs of CATS and its funding partners.

- Independent not-for-profit CATS with base-line funding through operational grants by the existing funding partners
- Operational grants are tied to mutually agreed performance metrics
- Operational grants may be cash or in-kind contributions
- Assets owned by CATS but staffing outsourced to MCPL to protect employee benefits

- Establish diverse oversight board for CATS to represent the interests of the main funding partners as well as the general public to the management of CATS
- Board to advocate for the interests of CATS at the State level and act as conduit for mentoring and managerial development of CATS management
- CATS free to pursue additional grant funding for capital projects and raise matching funds from private and corporate contributions

Good governance, a stronger incentive structure, clear performance goals and a supportive environment to help achieve such goals, should create a CATS that is more agile as an organization. This should enable CATS to continue to fulfill its PEG mission while actively engaging new audiences beyond the traditional cable television paradigm.

Such an agile PEG operator with a well-run and relevant service portfolio would be best placed to attract continued long term funding by local government. Furthermore, should future City governments seek new bids for the operation of one or more of its current PEG assets, a strong and dynamic CATS would likely emerge a winner in this process.

Note on Maintaining the Existing Structure

While the preceding items have presented a range of alternative funding options and organizational structures, some more viable as dominant sources of funding for CATS than others, it should be noted that the existing structure is not an obstacle to general innovation at CATS.

In the public eye, it does endow CATS with the notions of impartiality, neutrality and the authority commonly attached to a public library. These benefits are significant but by no means exclusive. A strong CATS brand backed up by a matching operational record of

impartiality could project such values effectively and maintain the public's trust and respect. The favorable perception of PBS seems to support this hypothesis on a national scale (see: http://www.pbs.org/aboutpbs/news/20090213_pbsropersurvey.html).

The one benefit of being part of MCPL that would be most difficult to replicate for an independent CATS is access to experienced council to defend itself against litigation or acts of legal intimidation.

Given its successful record spanning three decades of PEG operation, CATS as a department of MCPL can be considered a proven formula thus far. As the pace of technological innovation continues to accelerate and the media/provider landscape changes alongside, it remains for all stakeholders to regularly assess as to whether the structure of CATS, current at the time, is still the most appropriate one going forward.

CATS and Its Environment

CATS the Visual Brand

As a general observation CATS seems to have focused on technical and operational execution in recent years. CATS has undoubtedly excelled at this by offering uninterrupted quality PEG services since the late 1970s.

Far less attention seems to have been given to promoting public awareness of its operation. As a result the individual channels lack a strong visual identity or consistent style templates for on-air graphics elements and their placement.

The CATS online presence employs rudimentary web design and has esthetic and usability shortcomings in its current form. No discernable connection between the television channels and the website seems to exist other than the common use of the CATS and channel logos. As a result no overall design language exists to create a coherent brand identity across delivery platforms.

In an age of increasing visual sophistication these shortcomings may undermine the overall perception of CATS and its output and dissuade some demographics from even engaging with the channels or website.

Recent years have seen sufficient advances both in postproduction software as well as webhosting technology to easily address these matters without spending vast sums in the process. CATS employs a team of creative and talented professionals that would be easily capable of creating and implementing a common station identity across TV and online services. Some of the recommendations contained in this report aim to create capabilities that will help CATS more easily execute such a cross platform identity.

However, the visual identity of CATS and its output is only one tool for increasing the organization's brand value and general presence within the local community.

Promote Compelling Visual Expression

CATS has the potential to occupy a central place in Bloomington's social fabric by enabling local contributors to express their ideas and thoughts in a compelling way. Public access programming and video sharing site uploads alike (such as to YouTube) showcase the diverse skill levels of their contributors.

Owning a word-processing program and a computer will neither make anyone instantly literate nor automatically transform people into great authors. Equally, having a camera and editing software at one's disposal will not automatically transform one into an engaging and compelling storyteller, capable of tapping into the rich methods of expression the video medium has to offer.

High Touch Training

CATS is in a unique position to have both the human and technical resources available to help public contributors become better at expressing their ideas and ultimately create more engaging, powerful and exciting content. To achieve this goal requires no editorial input by CATS, which would run contrary to the free speech principals

underpinning public access programming, but does require an enhanced support structure leveraging new processes and technology.

CATS could develop the skill base of producers of all experience levels by providing additional online resources for training public contributors, having staff available electronically to answer questions during a shoot, by potentially offering a moderated discussion space for likeminded individuals and actively supporting and monitoring the technical aspects and progress of the editing process.

The technical and operational recommendations of this report would help facilitate such a higher touch approach without increasing the total workload of staff. If public access is about the free expression of ideas CATS should ensure that the impact of such ideas is not blunted by lack of skill or perceived barriers to engagement.

Engage IU Program Makers

While transient in nature, IU harbors a pool of committed and enthusiastic program makers scattered across the various schools such as Journalism and Fine Arts. WTIU does not seem to be able to fully capture the output of this community either due to operational or policy barriers. CATS could fertilize and expand its own contributor base by intermingling both IU students and local producers within its production community. Here for example relatively unbureaucratic access to TV studio infrastructure compared to WTIU represents one of CATS's main advantages in this domain.

Outward Projection of CATS and The PEG mission

The above points mainly relate to audience engagement and the creation of value by CATS for its viewers and contributors. The following elements propose measures that would help CATS create a higher positive profile in the community and political landscape surrounding it. The measures could help maintain CATS's strong foundations and ultimately secure continued access to funds and services against the backdrop of an ever faster evolving and changing social and media landscape.

PEG Content Exchange

Deploy a professional content exchange platform to share programs with other PEG providers and government institutions in the state. This can be a tool to create appreciation for and awareness of the PEG missions among decision makers while facilitating new social and professional connections useful to CATS.

Lobbying Decision Makers

By actively engaging key political decision makers beyond the Bloomington area in a positive way CATS could lead the way among PEG providers to strengthen their cause. Such engagement may require creative methods or even guerilla marketing tactics to create the desired attention and positive mindshare within State Government and some of it may ultimately still be ineffective against financial lobbying practices. Yet to date CATS seems to have failed to effectively exploit opportunities in this space or expand beyond well-established connections. As those parties less sympathetic towards the PEG mission continue to operate assertively in this arena, CATS can ill afford to continue taking a passive observer's position on the sidelines.

Self-Promotion

Surprisingly little self-promotion can be found on CATS's channels and web presence compared to other TV operators. Given the highly valuable contribution it potentially brings to the local community from enabling compelling story telling to facilitating transparency in local government CATS fails to proactively educate its audiences about its mission. Based on the interactions with various constituents during the creation of this report it is evident that there is a section of Bloomington society that is clearly aware of and appreciative of the value CATS adds to their lives. Yet anecdotal evidence, for example from the survey commissioned for this report (see section 2 of this document), also seems to suggest that many average residents are only partially aware of the wide range of functions performed by CATS.

As with the lobbying activities discussed previously, CATS is leaving potentially powerful lines of support untapped and underdeveloped. The very benefit of developing and cultivating such lines of support lies in their strategic value as supports for its independence.

Leading in the PEG Community

Decisive actions to project a positive and strong image of CATS across the state of Indiana could also help develop CATS as a leader of the remaining PEG community in the state. In doing so a positive feedback loop could be created to increase the power and effectiveness of advocacy for causes affecting CATS and the wider PEG community. The clarification of the current regulatory status with regards to the franchise fee obligations and quality of carriage by AT&T for its U-verse service represents such a cause that could benefit from unified action by the PEG community and its supporters.

Emphasize High Value Items in Schedule

Where possible high value items should be promoted and clustered strategically in the CATS schedule during morning and primetime viewing to help grow engagement beyond existing audience demographics. It is acknowledged that such actions should be mindful of the free speech nature of public access programming in particular and thus not lead to discrimination against unpopular topics.

Positively Engage Comcast

Arguably this may be a goal that could prove difficult to achieve. However, once CATS has increased its political network and raised its profile in the local community as well as across the State even further, new avenues of engagement for Comcast and other content platforms could be created. In an increasingly centralized and homogenized environment the value of local content holds the same premium potential as organic farmers' markets do in the food industry. Leveraging this potential to CATS's advantage may represent one of its greatest challenges and opportunities for the coming years.

A Mindset for Success

The vision outlined in the paragraphs above depends on two fundamental components, the tools available to CATS (technical and operational processes) and the people putting them to work.

CATS will, by implementing the recommendations in this report, refine its toolset to such a degree that people will become the only variable in deciding its future path.

CATS has a skilled group of professionals on its staff, many with over a decade of experience in TV production work. This represents a tremendous asset in the quest for achieving a more agile and proactive organization as outlined above. During the research portion for this report staff repeatedly voiced their excitement about evolving both technologically and operationally, demonstrating the openness for change so frequently lacking in other organizations.

However, sustaining and channeling this enthusiasm might prove a more difficult management challenge. Some of the following observations may help define a starting position from which to tackle this challenge.

As increases in cable subscription fees have outpaced inflation in recent years franchise revenue and in turn funding available to CATS has risen proportionately.

At the same time the general position of public access TV as a medium of free speech has slowly been declining from its heyday in the 80s as blogs, video sharing sites and other technologies have encroached upon its territory.

The cable industry has seen massive consolidation, creating a drive for unified national infrastructures built around leveraging commonality and economies of scale. Moreover, this process has also removed decision makers within the cable industry from their local communities. All of which has been less than beneficial for the relationship with and acceptance of PEG providers.

Against this backdrop a slight bunker mentality or introspective stance, focused on preservation rather than expansion, seems to have taken hold within CATS. Managing for continuity and service provision in a less than optimal external environment with funding not implicitly tied to any specific performance metrics may have removed the "sense of

urgency” a market based organization might have felt under similar circumstance.

Combined with a funding shortfall over a number of years this in turn may have dampened the drive to question, innovate, and transform. As increased funding became available much needed infrastructure upgrades were pursued but largely within the established context.

Its privileged position of relative independence within the MCPL departmental structure seems to have also undermined the overall identity of CATS. The effective decoupling of some staff from the MCPL email system does not only represent an inconsistent approach to business communication but may convey, probably unintentionally, a lack of pride in being affiliated with CATS. An alternative approach that conveys independence but strengthens CATS’s identity would be to have everyone use catstv.net email addresses consistently.

As industry and public sector alike compete for audience attention and engagement in an increasingly crowded market space, innovative solutions that leverage traditional strengths and re-frame past conflict are needed for survival.

CATS will need to create and sustain a new sense of urgency and focus within its organization to successfully implement such solutions and maintain a proactive outward looking rather than defensive inward looking stance.

The individualistic departmental autonomy should give way to a more team oriented decision-making process at the management level.

Adopting a formal project definition and management process with individual commitment to and accountability for delivery (within the public forum of the team) would form part of this process. Similarly, once the technical capability exists, a common set of principles from security to methods of contact should be adopted by which all members of staff and management abide. A management culture that strives to confront and resolve issues contrary to those principles and supports the interest of the team needs to be cultivated at all times.

In an ideal scenario the compartmentalized office spaces currently in use should be consolidated into a more collaborative, shared environment (although this may not be possible within the current space constraints). Absent this physical collocation, increased asynchronous collaboration in the virtual domain (online) should be promoted wherever possible.

Project funding and general funding should be tied to milestones and realistic, achievable goals, both for technical and operational transformation, to foster a sense of urgency.

The public relations element driving engagement with audiences, contributors and partners might require the creation of a dedicated position within the organization (See relevant recommendation below). To make this expense worthwhile the role should be integrated on an equal footing with the rest of the core management team.

Underpinning all of this a new degree of organizational self-awareness, more akin to a venture funded start up rather than a government department is needed. Above and beyond the steps suggested here and in other recommendations contained within this report, the funding partners themselves should seek to foster and support this mentality in words and deeds wherever possible. This may be done by promoting transformation, supporting skills transfer/development and creating safe spaces for experimentation and exploration. A strong and healthy CATS will be a key asset in helping grow and support the strong and vibrant communities the funding partners desire and work for.

Statement about HD and 3D

With the adoption of digital broadcasting high definition (HD) TV transmissions have become ubiquitous. Digital cable and satellite providers use the number of HD channels on their platforms as a means of differentiations in their advertising and consumer camcorders are now almost universally HD capable.

WTIU already offers HD content on its own (non PEG) channel platform through digital cable and local digital broadcast in the Bloomington area.

These trends may create subtle pressures on CATS to offer HD content and raise questions about infrastructure upgrades to support its production.

All of CATS's PEG channels are currently carried on Comcast's analogue cable tier and thus limited to standard definition (SD) resolution and susceptible to picture degradation inherent in analogue transmissions. Thus content produced in HD would still only be experienced by viewers in SD resolution, with no discernable difference to conventional SD originated content. Until Comcast discontinues its analogue cable transmissions and/or migrates the PEG channels onto its digital tier, HD transmissions are not accessible to CATS. Based on the FCC requirement for cable operators with analogue customers to effectively continue analogue service provision until 2012 (subject to future FCC review) (see: http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-276576A1.pdf and http://hraunfoss.fcc.gov/edocs_public/attachmatch/FCC-07-170A1.pdf see page 7 of this document) a full digital transition by Comcast is most likely after that date. However, recent marketing communication sent to residential cable customers indicates that Comcast is seeking to become an all-digital provider by the end of 2010.

However, if CATS were to give up its analogue spectrum on the Comcast infrastructure, negotiations should include provisions for HD channels on the new digital tier. This may be justified since CATS would be vacating rather valuable assets. Based on current compression technology the channel bandwidth/spectrum occupied by one analogue TV channel could carry at least 2 HD channels or several digital SD channels. Thus, in its current form CATS occupies enough cable spectrum to digitally transmit up to 10 HD channels or potentially 25 or more digital SD channel. During a digital migration this tradeoff should be reflected in any new arrangement and thus provide access to HD telecast capacity. Given the uncertainty about the future

conditions and legal foundations for a digital migration of cable services a good working relationship with Comcast seems highly desirable.

In the mean time online delivery may eventually provide an easily accessible outlet for PEG HD content, although currently many "so-called" HD streaming services still only provide resolutions comparable to standard definition broadcasts. Slowly, as network infrastructure improves, some services, usually backed by powerful content delivery networks, have started to offer true HD resolution for streamed Internet video. Irrespective of the network bandwidth, such material is also comparatively resource intensive to decode on a PC and thus requires up to date hardware to be truly usable.

Lastly, subject to funding and regulatory issues being resolved, CATS could pursue digital broadcasts in the Bloomington area. However, the nature of the current ATSC digital broadcast standard would push the limits of existing compression technology to accommodate one HD and four SD channels on one transmission channel/multiplex at acceptable quality levels.

Either cable or broadcast based digital HD transmissions would also require significant and expensive investment into the current master control environment to reliably play out HD content.

Against this backdrop of technical limitations an immediate large-scale upgrade to live HD production seems of little value for CATS.

Non real-time content may be progressively and relatively inexpensively switched to HD acquisition over time as existing camcorders are replaced. Most editing software available to CATS already supports HD recordings by such camcorders. Please refer to the relevant recommendation on camcorder acquisition further below for suitable configurations and recording resolutions. With this approach SD version of a program could easily be created as part of the final delivery process and HD versions could be archived for future use in any forthcoming HD service.

Real-time or live content such as government meetings would require more costly infrastructure upgrades covering cameras, vision mixers,

character generators, transmission links, recorders and down converters (for SD broadcast). At current price points such equipment would be hard to justify against the marginal benefit of seeing speakers' faces in higher resolution. The need for better resolution for projected documents during meetings could be addressed more cost effectively by including these document files (for download) with the online streams available through the CATS archive on the catstv.net website.

Furthermore, HD presents entirely new challenges in terms of talent preparation as skin imperfections become clearly visible in the picture. Such drawbacks might actually discourage more image conscious public figures from appearing on live HD telecasts under certain circumstances. While certainly not a key factor, such human aspects also warrant consideration when gauging the pros and cons of transmitting government meetings in HD (especially considering the cost involved in doing so).

3D TV is an emerging domain that is still in its infancy. Beyond selected sporting events and some live performances the broadcast-use of 3D is limited to transmitting feature films specifically produced for this medium. Several TV stations/networks are currently experimenting with this medium, using digital HD transmissions to carry the content and a small but growing number of consumer devices are able to display the material in the home. 3D streaming over the Internet has also been demonstrated successfully. However, editing 3D content is still challenging and inexpensive acquisition devices are not yet readily available.

The viability of 3D content production for CATS is directly tied to its development of HD capabilities and would as such represent the next step beyond HD. Its adoption for mainstream programming does not seem viable within the 5-year timeframe covered by this report.

Explanation: Recommendation vs. Advisory

The following sections contain recommendations and “advisory” notes for both the CoB and CATS. The difference between these two items is as follows.

Recommendations: Generally refer to specific actionable workflow changes, infrastructure investments or services that warrant definite attention.

Advisory items: Are lower priority issues that ought to be considered by management as part of day-to-day operations going forward. These items are often included to prompt a general review of policy or acknowledge and re-iterate known general issues.

Recommendations for the City of Bloomington

The recommendations below cover the current needs of the City in the video production domain. Potential future services are discussed in section 4 of this document. A guide outlining the interdependences between the various recommendations can be found in the appendix.

Install QuickTime Codec Pack / Transcoding – Advisory

Install an extended QuickTime codec pack such as Perian (www.perian.org) on machines using iMovie to increase format import capabilities. A quick survey of various news groups reveals that Perian should always be installed in the “available to all users” mode to ensure maximum compatibility with iMovie.

If the CoB were to up upgrade a QuickTime license to QuickTime 7 Pro (see: <http://www.apple.com/quicktime/extending/> - Cost: \$29.99) as part of its general IT investment activities, enhanced export and transcode capabilities would be gained independently of iMovie or other editing software thanks to the above codec pack.

Another useful application to consider is “Handbrake” (<http://handbrake.fr/>), an efficient transcoding tool, which also offers excellent DVD extraction capabilities for non-encrypted DVD content. Handbrake may be used to repackage files into iMovie friendly container file formats.

The combination of the two measures above should enable reliable Mpeg2 import capabilities in iMovie.

Cost: Free (products are open source or free ware) / \$29.99 for QuickTime 7 Pro license key

Expand Video Production FAQ – Advisory

Extend the current FAQ pages to include advice on how to import file based content with particular reference to the use of Perian enabled workstations and DVD extraction based on Handbrake.

Based on conversations with staff it seems that some users tend to either forget or are unaware of suitable steps to get their content ready for editing, especially when this content is file rather than tape based.

Cost: Internal Labor

Pool (Online) Resources for Video Production Training with CATS

As CATS potentially embarks on a project to provide video related training resources online to their staff and public producers the City could benefit from pooling/merging their online training content with CATS. CATS seems best placed to provide such resources in combination with the practical training exercises (e.g. Showers Control Room operations) already provided to CoB staff.

Content ownership should be on equal perpetual licenses for both parties contributing to the training repository.

The City should also consider formally adding this training and resource development function to its annual funding agreement with CATS to promote consistent quality of service.

Cost: Internal / CATS effort

Advanced Video Editing Software

iMovie, the video editing application primarily used by the City is limited in its capabilities. More complex productions require a disproportionate amount of time and effort to complete within the limitations of this software. This view is also echoed by comments from CATS staff observing public producers working with this application.

Once it is determined that the City has outgrown iMovie a switch to Apple Final Cut Express should be considered. This software is highly similar to Final Cut Pro but significantly cheaper. It lacks the Final Cut Server integration of the “pro” version and has limitations on the

amount of content layers available in the software, but overall should be sufficient for the needs of the City. A key benefit of this switch would be that the City could draw on a large pool of CATS staff capable of providing user support for the software. Such a service could be included as part of future MOUs once needed.

Cost: \$199 per license of Final Cut Express
<http://www.apple.com/finalcutexpress/>

Universal Web-Delivery Standard for Video

Define universal encoding and delivery format specification for all future City video projects. Once a standard has been defined all projects, regardless whether completed internally or by external contractors, should contain a binding requirement to deliver a version of the program in the prescribed file format with the relevant coding specification(s).

Standard City procurement contracts, where applicable, should be updated to reflect this requirement. The standard should also be published as part of the internal online training resources and publicized to those dealing with video as part of City communication efforts.

Options to consider for this standard:

Codec/Container

- Flash Video (Flash licensing, potential codec licensing)
- H.264* (MpegLA licensing)
- Ogg-Theora (Open Source)
- On2 VP8 (Subject to future actions by Google)

*H.264/AVS also Mpeg4-part 10 has been chosen over Mpeg4-part 2 (which is popularly often referred to simply as Mpeg4) due to its greater coding efficiency and HTML5 relevance.

It should be noted that Flash video could act as a container for a range of compression codecs including H.264 and other flavors of the mpeg4 specification. Flash based delivery simply allows easy playback of embedded video files on websites given the almost universal market penetration of the flash player. However, with the advent of HTML5 the need for such an embedded player platform could go away. While HTML5 currently does not prescribe a definite video codec, some unfortunately mutually incompatible, approaches have emerged among browser manufacturers.

- Safari supports HTML5 video in H.264 only
- Opera and Firefox support Ogg-Theora only
- Google Chrome supports both Ogg-Theora and H.264
- Crucially Microsoft* currently does NOT support HTML5 video at all for their browsers without the use of the Google chrome plug-in.

*Microsoft's forthcoming IE9 will support H.264

YouTube is currently demoing a flash free version of YouTube based on h.264 (the same codec used for large quantities of its flash based content).

Apple cites concerns about intellectual property rights claims that might surface in the future as a reason for not implementing Ogg-Theora. <http://infoworld.com/d/developer-world/browser-vendor-squabbles-cause-w3c-scrap-codec-requirement-974>
http://www.theregister.co.uk/2010/04/30/steve_jobs_claims_ogg_the_ora_attack/

Whereas H.264 carries the risk of future licensing costs increases. Currently video content for free web-streaming purposes (internet broadcasting) is license free until the end of 2015

(<http://www.mpegla.com/Lists/MPEG%20LA%20News%20List/Attachments/226/n-10-02-02.pdf>). If the current general licensing approach continues and fees would be imposed after this date, the cost would be based on the audience, based on a relative comparison to free to air broadcast markets.

“...after the first term the royalty shall be no more than the economic equivalent of royalties payable during the same time for free television.”

“For (b) (2) where remuneration is from other sources, in the case of free television (television broadcasting which is sent by an over-the-air, satellite and/or cable Transmission, and which is not paid for by an End User), the licensee (broadcaster which is identified as providing free television AVC video) may pay (beginning January 1, 2006) according to one of two royalty options: (i) a one-time payment of \$2,500 per AVC transmission encoder (applies to each AVC encoder which is used by or on behalf of a Licensee in transmitting AVC video to the End User) or (ii) annual fee per Broadcast Market¹² starting at \$2,500 per calendar year per Broadcast Markets of at least 100,000 but no more than 499,999 television households, \$5,000 per calendar year per Broadcast Market which includes at least 500,000 but no more than 999,999 television households, and \$10,000 per calendar year per Broadcast Market which includes 1,000,000 or more television households.” (Source for both quotes:

(http://www.mpegla.com/main/programs/AVC/Documents/AVC_TermsSummary.pdf)

The uncertainty in this context arises from the method used for market sizing. In the context of Internet based broadcasts the entire planet could be classed as the “potential market”. Alternatively the market size could be taken as analogous to the size of the cable market currently served by CATS. The implications for licensing cost for either classification are significant.

Based on the time frame for establishing a standardized delivery format for CoB online content, H.264 for flash delivery in the short term and HTML5 delivery in the mid-term represent the options compatible with the largest share of the browser market. If suitable user demand manifests, the patent uncertainties surrounding Ogg-Theora are

resolved and/or H.264 becomes costly to license high quality H.264 videos could be transcoded into any new standard accordingly.

Lastly, it remains to be seen how Google decides to use the intellectual property portfolio surrounding On2’s VP8 codec (On2 claims superior compression quality compared to H.264 at a given bitrate. See: <http://www.on2.com/index.php?599>). Google recently completed the acquisition of On2 and its patents. Speculation about the future use of VP8 patents range from closed licensing for TV and IPTV applications to open sourcing the codec as the new universal Internet video standard. At the time of writing this report no official statements had been made by Google on the matter and as such the above scenarios remain purely unsubstantiated speculation.

The city may chose to outsource the hosting and streaming of video content not hosted by CATS to services such as YouTube or GoogleVideo. Note many services (such as Vimeo) have specific clauses that ban any commercial or political content from their sites. Generally the hosting site is granted a perpetual, irrevocable license for the uploaded content.

Hosting with 3rd party services may incur a cost if large amounts or long sequences of content are published on a regular basis. The reliance on a third party for content availability could be partially mitigated by diligently retaining backup copies of all content published.

Each service has recommendations in terms of video resolution and coding for source material. The CoB may draw on these recommendations for their own locally hosted content to match user’s quality expectations, which most likely have been defined through such services.

The following recommendations are based on YouTube. The CoB may offer the different quality levels through in player user choice.

- Video: 320x240 pixels, Flash 7 at 250Kbps target bit rate; Audio: mp3 22.050 KHz, monophonic at 64Kbps

- Mobile Video: 320x240 pixels, H.264 at 400Kbps target bit rate; Audio: mp3 22.050 KHz, monophonic at 64Kbps – Use baseline video profile (BP) up to level 3.0
- Video: 480x360 pixels, H.264 video at 700Kbps target bit rate; Audio: mp3/aac-lc 44.1KHz stereo at 128Kbps – Use baseline profile (BP) up to level 3.0 or with low complexity audio profile for mobile devices
- Video: 1280x720 (720p) pixels, H.264 video at 1024Kbps target bit rate; Audio: mp3/aac 44.1KHz stereo at 232Kbps
- Frame rates should either be 30fps for video content or 24fps for film originated material or HD material shot at this frame rate. Frame rate conversion should be avoided where possible
- Use MP4 file format for mobile devices if possible

NOTE: The video and audio encoding settings suggested for mobile devices assume a recent generation smart phone such as the Apple iPhone 3Gs, Blackberry Bold, or current Windows Mobile or Symbian device (The latter two may require 3rd party player depending on their implementation).

While the mobile specific video file formats 3GPP and 3GPP2 may cover a larger handset range including more basic devices, the historic split between GSM and CDMA based devices, with the latter mainly using 3GPP2 over 3GPP, creates administrative complexities for mobile content provision that the CoB should aim to avoid.

Due to the varying levels of implementation and handset capability, testing of H.264 encoding profiles on the target platforms is essential.

Cost: Free if hosted locally (currently / use existing flash licensing for production), for outsourced hosting with clip length restrictions (10 minutes) by e.g. smugmug.com for \$150 per year;

HTML5 Support for City CMS – Advisory

In the mid-term the CoB web content management system “City CMS” should be adapted to fully support HTML5 features such as the “<video>” tag to allow for easy “player less” hosting of video content.

However, until the codec uncertainties discussed in the recommendation for the “universal web-delivery standard” above have been settled and Microsoft Internet Explorer (a browser that currently still commands between 50 and 60% market share, depending on which data sources are used to calculate this value) supports either of the “<video>” tag implementation options, large-scale deployment seems unwise. (According to latest statements by Microsoft the forthcoming IE9 will only support H.264 for HTML5 video. See: <http://blogs.msdn.com/ie/archive/2010/04/29/html5-video.aspx>).

It seems likely, based on assessing the current industry discussions, that HTML5 will eventually become universally supported. The extra lead-time afforded by the current debate about codecs should be used to test a potential implementation thoroughly. Sites like “YouTube” and “Dailymotion” are running HTML5 versions of their sites in beta mode. The former is based on H.264 and the latter uses an Ogg-Theora implementation of HTML5 video. The city could engage in a small pilot deployment of its own to test and trouble shoot its own implementation in City CMS in the mean time.

Cost: Staff effort

Central Video Project Storage

Establish a central networked repository for CoB video content that is not covered through the arrangements with CATS. Currently the final output of various production efforts by different City departments is stored on a range of media such as DVDs and external hard disk drives, distributed across a range of locations. This makes fast access to this content for repurposing or publication difficult.

The central repository would mainly lower “barriers of access and use” rather than serving a specific operational need, such as for example

better facilities use. The goal would be to facilitate easier access to video material produced by the City in its totality for ad hoc use in various publication efforts.

The repository could be a simple folder structure on a networked file server initially.

Cost: Server storage space / Part of normal IT budget

Metadata Working Group

Determine the City specific metadata requirements for content to be archived through CATS. The value of this exercise lies mainly in enabling better search capability for CoB content in any future archive system.

The process could be simplified by reviewing the CATS metadata specification for the CATS Archive Preservation System, once completed by CATS, and propose any additions as/if needed.

Cost: Staff effort only

MOU for Peg Channel Delegation – Advisory

Develop a standardized MOU for PEG channel delegation that defines the nature and format of content presentation by PEG operators and offers a standardized hand-off procedure for these video feeds to cable and IPTV operators.

In order to make such an MOU effective it will require buy-in and thus input from all relevant stakeholders. As such this MOU could be a starting point to re-initiate negotiations with IPTV providers on the issue. If a common standard can be achieved the potential for infrastructure cost savings through common or shared equipment exist for all operators.

Cost: Staff effort

Recommendations for CATS

The following recommendations for CATS, the CoB's largest PEG provider, cover a range of operational and technical issues and are grouped by subject area where possible. The overarching goals these recommendations aim to support are as follows:

- Improve the completion rate of public access video projects.
- Empower public producers to compellingly tell their stories.
- Cultivate an active community of contributors and consumers that is welcoming, supportive and enabling for new and established public content creators alike.
- Provide value for many diverse constituents.
- Provide “higher touch” service without increasing staff level or burden.
- Free staff to focus on content rather than administration.

A guide outlining the interdependences between the various recommendations can be found in the appendix.

Online Training Resources for Contributors

Build up repository of training materials both for external and internal training. The material would be available upon registration only. This will provide a central point of reference and allow for extended self-paced learning and knowledge refresh by *registered* CATS contributors.

This material may be developed gradually and could probably evolve from the proposed internal general reference WIKI. Access to the content would be password protected using the new content managed CATS website (see relevant recommendations for WCMS).

Cost: Free, internal effort only

Reference WIKI

Provide a WIKI based checklist available on the CATS intra-net to define workflow requirements for getting material ready for transmission, such as file naming conventions, encode settings etc. This is intended as an interactive tool to communicate up-to-date processes effectively.

After speaking to the engineering department it appears that human error accounts for most exceptions or mistakes when preparing material for transmission. Errors such as incorrect file naming or pre-roll are common. The potential for mistakes due to operator confusion is even higher now that some material is broadcast via an MPEG2 playout server and other content is played to air off tape, the latter having a pre-roll requirement.

The WIKI format has been chosen as it allow for feedback and issue tracking within the same environment thus adding an additional level of staff engagement. After the completion of relevant OS X server upgrades these pages could be hosted on the built in free WIKI Server (V.2 for OSX 10.6 Server) as part of the existing hardware/software portfolio at no extra cost.

The advantage over for example laminated cards in all edit suits lies in the simple update process that will maintain the relevance and trustworthiness of the information contained in the online checklist. This is a vital component in maintaining user engagement.

Cost: Free, internal effort only

WIKI Homepage

To maintain maximum mindshare the WIKI holding reference checklists and training material should be set as home page on all browsers within the CATS office network domain. The reference (and potentially future training) WIKI should be actively promoted to all CATS staff through this method. Additionally, this high profile exposure to WIKI content every time a new browser window is opened would further

improve the viability of the WIKI as general bullet board for staff announcements.

Once Open Directory has been deployed (see relevant recommendation for further details) this browser configuration feature can be managed centrally for all machines with little effort.

Cost: Free, internal effort only

Lynda.com Training

Provide access to quality video based online training resources for commonly used software applications within CATS. These training resources would serve to develop the skills base within the workforce and could also be used to offer advanced *on-site* training to interested public contributors.

Lynda.com is a provider of such training resources and offers access to many hours of videos tutorials for products such as Final Cut Pro or OSX 10.6 server. The service is subscription based and accounts are usually tied to a specific user. Multi-user / site licenses are available and we strongly suggest that CATS seek to negotiate a site-specific deal.

The recommendation of Lynda.com is based on personal preference for the service, quality and structure of its tutorials by the author of this report. The author is not affiliated with this provider. Other similar services may exist and CATS may assess them as appropriate.

The benefit of this paid service, over free offers such as you-tube tutorials, lies in the quality-controlled content, easy accessibility and clear course like structure of its tutorials.

Cost: \$250 - \$375 per year per user

Total: \$750 per year (approximately)

Server Hardware Swap

Redeploy server hardware based on expected process load. CATS is in the possession of two recent generation Apple Xserve rack mount servers (See appendix for detailed server specifications). Currently the lower spec machine is used for file serving purposes, whereas the higher spec machine acts as QuickTime streaming server for the CATS website (catstv.net). The latter machine is significantly under-utilized whereas projected software upgrades are likely to increase the workload on the file-server unit.

We propose the swapping out and redeployment of these servers. The 4-core machine should be re-assigned for streaming purposes. The 8-core machine, which is newer and faster (currently used for QuickTime streaming), should be redeployed for general internal fileserver duties.

CATS should seek the amendment of its MOU on streaming services with the CoB to formalize redeployment of the covered 8-core Xserve. The City has already agreed informally to this redeployment as it is felt MOU resources should be used as effectively as possible.

Cost: Free, internal effort only

Server Operating System Software Upgrades

To make use of the latest generation WIKI server software as well as easier administration and higher performance (see: <http://www.apple.com/server/macosx/performance.html>) we suggest to upgrade the operating system of the 8-core Xserve server, re-deployed for internal file serving purposes (see relevant recommendation on hardware swap), to OS X 10.6. This machine will be the likely candidate for hosting Final Cut Server (FCS). Apple confirms compatibility of FCS and OS X 10.6 (see: <http://support.apple.com/kb/HT3840>).

The 4-core Xserve responsible for QuickTime streaming in the future could also optionally be upgraded to OS X 10.6 Server. The main benefits lie in systems communality for administrative purposes and

improved performance. The latter will become relevant once this unit hosts the new content management-based website for CATS.

Thus the upgrade priority is as follows:

- First: 8-core Xserve
- Second: 4-core Xserve

Cost: \$499.00 per machine (excl. taxes) from Apple.com

Total: \$998.00

Server RAM Upgrade (8-core Xserve)

The 8-core machine, to be deployed as internal office file server, would benefit from a significant RAM upgrade. (Current system memory is 2GB). Based on the available memory banks and operating system requirements at least 6GB of additional RAM are recommended, bringing total system memory to at least 8GB.

The 4GB of ram available to the 4-core machine seem adequate for the foreseeable future to support web hosting and streaming. Additional memory is not required for this unit.

Cost: \$100 per 2GB from Apple.com. NOTE: A compatible 6GB kit from crucial.com would cost approximately \$250.

Total: \$300 (for more expensive Apple based case)

Open Directory Implementation and Rollout

Implement full Open Directory based access (ODA) to the CATS network to centrally manage user accounts, system configurations and resource scheduling such as camera check out. Use 8-core Xserve as “master”.

CATS currently relies on local authentication and general purpose accounts on specific workstations. In order to improve network and systems security in an increasingly IT centric production environment, a switch to ODA is highly advisable. Furthermore, all advanced workflow measures such as FCS and WIKI-server participation rely on or benefit from centrally administered user accounts. Without ODA audit trails, review workflows, restricted access to user specific projects are not feasible to implement.

We acknowledge that a transition to ODA will represent a fundamental change as to how people perceive the way they connect to the CATS network and interact with its resources. We strongly advise that the reasons for this transition are clearly communicated to help build user support during the transition period.

Additional training for those administering the current systems would be essential to ensure a smooth transition.

Given the number of mission critical elements in the CATS computing infrastructure, pursuing a phased roll out would be advisable.

1. Public contributor accounts for edit workstations. (This would also allow for selective management of Internet access privileges in these suites).
2. General staff accounts with roaming (network based) home directory feature and role specific access profiles to various systems.
3. Migrate managers to centralized authentication and consider switching them to network based home directories to enable remote access capability.

Cost: Internal effort only

@catstv.net Email Domain

Configure the catstv.net domain to receive email. Issue all staff with a catstv.net email address and have them use this address consistently for all external communication. The catstv.net email service could either be hosted by MCPL or may be outsourced to a third-party operator such Google.

If email accounts are hosted through a third party provider CATS should be disciplined about reclaiming the email addresses of former staff and re-assigning to account as needed to control cost.

Cost: \$30 per year per user for Google hosted catstv.net (includes access to other Google apps. See:

<http://www.google.com/apps/intl/en/nonprofit/index.html>)

Equipment Booking and Tracking via Open Directory

Implement resource listing and scheduling through Open Directory for camcorders and other “loan” equipment.

Operations at CATS expressed a desire for having a better and more universally accessible system to keep track of which pieces of checked out equipment are due for return on a specific day by a public producer. The current system is paper based and perceived to be effective as is. However, it was felt that generating a return schedule for a specific day was still somewhat time-consuming. There had been attempts to introduce an inventory-tracking database in the past but the system was abandoned due to usage complexities and inconsistencies (thus ultimately failing the user acceptance test).

Given this insight and the fact that the equipment loan operation is small enough (and likely to remain at this size for the foreseeable future) to be effectively managed on paper without creating a bottleneck in the operational workflows, a positive cost/benefit argument cannot be made for investing into hard and software for a new, dedicated, barcode-based inventory-tracking system.

However, once implemented, for the purposes described in the section pertaining to Open Directory, the ODA system will allow for storing resource information (for non-IT resources such as rooms for example) as well as user or computer specific information. Commonly corporations use the resource feature to manage and track meeting-room availability. In the case of CATS, equipment checked out by public producers could be treated as a resource. ODA would then provide the means for readily querying the daily availability of specific camera kits. Given the labor only expense for creating and managing this information with standard desktop applications such as iCal this solution seems effective. Operations have expressed a strong interest in pursuing this option should it become available.

Cost: Internal labor only

Final Cut Server (FCS)

Centralize post production workflow using Apple’s Final Cut Server (FCS) software (V1.5 or higher) hosted on 8-core Xserve. Benefits would be realized from centralized management of storage. The administration of a fleet of external drives has become increasingly time-consuming and may occasional represent a resource bottle neck.

Central project management and supervision will enable “higher touch support” for publicly produced projects. This higher touch approach, though making more targeted and personalized support (often preemptively) available, should lead to increased engagement with contributors and raise completion rates of projects above current levels. Production staff mentioned during the research phase for this report that low completion rates are an issue for public projects.

Approval and automated encoding workflows for internal projects should (combined with the Reference WIKI) reduce the number of human errors made when preparing material for telecast as well as help reduce the “turn around time” to bring material to air. Moreover, direct automatic content and metadata integration with a future archiving system will reduce labor overhead, tape consumption and increase archive completeness.

NOTE: There is the potential for a V2.0 release of FCS near IBC2010 (a major tradeshow for the broadcast industry held each September in Amsterdam, The Netherlands) and this should be factored into the purchasing decision. If prerequisites for a FCS deployment have not been met (Xserve hardware swap, ram and OS upgrade) by the end of July it would be advisable to delay purchasing until after IBC to await any announcements by Apple regarding a new version of the product.

NOTE: Hardware requirements necessitate RAM upgrade on hosting Xserve (<http://www.apple.com/finalcutserver/specs/>).

Cost: \$999 from Apple.com. Factor in projected upgrade fee to V2.0 in nearer future (based on historic values upgrade fee estimate: \$299).

Total: \$1298 (incl. upgrade estimate)

Focus on Training - Advisory

Provide training opportunities for staff and public producers. Develop training plan based on self-audit. CATS operations specifically recommended considering a training program for master controllers to develop FCP skills to be able to assist public producers when other suitable help is not available. The measure above would represent a skills diversification and staff development effort to further improve operational flexibility.

Cost: Variable. (See Lynda.com recommendation).

Web Content Management System (WCMS)

Deploy a new “catstv.net” website, based on the “Drupal” web content management system and host this site on the existing 4-core Xserve.

Content updates to the catstv.net website which do not pertain to the streaming of government meetings are currently mostly handled by library IT staff. Given the anticipated trajectory towards a stronger, more content rich online presence, the volume, frequency and time

criticality of website updates are likely to increase sharply. To avoid creating an operational bottle neck based on library IT resources it would be best to enable CATS to directly and actively manage their website. A web content management system will provide easy and flexible template based publishing capabilities to a broad range of CATS’ staff (without the need for significant training) while allowing for editorial approval workflows to maintain quality.

The use of WCMS has become best practice across many industries reliant on complex or highly dynamic web-content.

“Drupal is a free software package that allows an individual or a community of users to easily publish, manage and organize a wide variety of content on a website...” (<http://drupal.org/about>)

Drupal was chosen due to its open source nature, large developer community and advanced integration with proposed back-office systems such as the archive preservation system (APS). With its deployment for high profile sites such as whitehouse.gov or alliancecm.org (the new ACM site), Drupal comes with strong enterprise class credentials. It should be noted that both the Library and CoB have indicated that a certain degree of Drupal expertise is available among their staff. (Furthermore, WFHB, a successful community radio station in Bloomington also uses Drupal for its web presence).

The Drupal deployment should provide the following functionality based on a two-stage deployment:

Phase 1

- Rapid publication of web content with integrated approval workflow
- Direct search, browsing and consumption of APS (Archive Preservation System) content, data tracking for related searches and consumption to power recommendation system (See e.g. Amazon’s recommendation features)

- Themed publishing templates consistent with CATS on-air identity
- RSS feeds for various content areas

Phase 2

- User accounts for public producers to provide access to private training material and discussion forums
- Upload of externally produced content for approval and telecast
- Content exchange area for ACM members
- RSS feeds to support emergency broadcast information (subject to further investigation) – Subject to new FCC standard.

A professional Drupal site could be deployed in approximately one week assuming only minor customizations of a standard publishing theme/template.

This estimate excludes integration work between Drupal and the APS. However, given that off-the shelf code is available for this purpose this work should not consume undue amounts of developer resources.

Cost: \$2500 (estimated) in external labor (note this work could potentially be carried out by MCPL or CoB staff) for phase 1; Phase 2 functionality could largely be realized through internal skill building as site administrators become more familiar with the software and would thus not create additional cost.

Sprinkler Deactivation – Advisory

Meet with MCPL building support to determine actual status of sprinkler system and determine viability of deactivation of the system in sensitive areas such as the tape archive and machine rooms. Carefully execute deactivation as soon as feasible and explore alternatives to maintain compliance with relevant fire code. CATS may consider

soliciting bids for a non-water based fire suppression system for its tape archive room at this point.

Cost: Unknown

Archive and Preservation System (APS)

Provide a media rich digital archive and preservation system to store and manage all past and current media output by CATS. The implementation of this project depends on the successful ratification of the CATS metadata definitions (see relevant recommendation).

The one fundamental difference compared to the current archive management system is the embedded storage of digital media assets (and associated documents where applicable) within the APS system. In contrast, the current archive management system only stores metadata, referencing a specific tape on a shelf in the tape room. With a suitably resilient APS implementation such shelved tapes become unnecessary, enabling considerable savings in tape stock and storage space.

While a range of proprietary archive and preservation systems, capable of digitally storing (media) assets, are well established in the market, their cost can often be prohibitive for a publicly funded organization the size of CATS. Furthermore, such systems may impose future constraints in terms of feature expansion or data migration due to vendor lock-in and/or persistence.

Based on these concerns this report recommends a proven open source solution. Based on ease of integration with Drupal the (WCMS) two primary options present themselves:

- DSpace
- Fedora Commons (not to be mistaken for the RedHat Inc Linux distribution “Fedora”)

NOTE: Both projects are now coordinating their cloud computing efforts under the umbrella organization “DuraSpace”.

Based on initial research, integration between Fedora Commons and Drupal is more mature and better documented. However, links to DSpace also exist, fundamentally making both systems viable options. For the purposes of this document we will assume a Fedora Commons based APS.

Object structure:

Objects in the APS would use the CATS Metadata Model (see relevant recommendation in this document).

Example (high level):

- Video asset at archive resolution (see meta data definitions)
- Video asset at web resolution
- Descriptive metadata such as producer name, synopsis etc
- Associated content such as production documents or documents discussed during Government meetings
- Identifiers to clear associated content items for web publication

The combination of files and metadata described above would form one particular “compound digital object” within the APS.

A digital object may also refer to externally stored content items (<http://www.fedora-commons.org/confluence/display/FCR30/Fedora+Digital+Object+Model>) allowing for a swift migration of the existing archive database to create objects within the APS. As the archive is digitized the external references are replaced with digital video assets stored within the APS.

Implementation overview: Due to the complexity of this project and the varying priority of individual features and specific functionality of the APS a phased implementation is recommended. The aim should be to get the system up and running as soon as possible with its core functionality, described in phase 1a below, available and stable and

then extend and expand over time, implementing the remaining project phases sequentially.

Phase 1a – Basic System Setup and Configuration

- Acquisition of server and storage hardware for MCPL site with suitable storage capacity for six months worth of content and room for further expansion (unpopulated drive slots within the relevant storage enclosure)
 - Hardware fundamentals: Dual processor multi core Linux server with redundant system disks and power supplies. Software Raid 6 volume for Fedora Commons content storage
 - e-Sata-JBOD enclosure or similar for Fedora Commons content storage
 - If hardware based raid controllers are used, these controllers should also be fully redundant
 - Given the access characteristics of the APS content store, i-SCSI attached storage arrays may be suitable. Interfaces, network links and controllers should be redundant in this case
- Use CATS Metadata definitions for repository configuration
- Close out of existing archive system and export data
- Import of historic (closed out) archive system data into Fedora

Phase 1b – Drupal Integration

- Integration of search and content handover to Drupal to allow search and browsing of APS content via the catstv.net website with subsequent streaming content delivery where appropriate

Phase 1c – Integration with Existing Scheduling

- Integration with existing schedule management application to enable the application to refer to content items stored in the APS for scheduling purposes.

Phase 2 – FCS Integration

- Integration of automated content exchange with Final Cut Server

Phase 3 – Integration With Future New Scheduling Application

- Integration with new schedule management system in the event that CATS chose to procure such a system.

Cost: \$5000 (Server, JBOD enclosure, 6 months of Storage)

Phase 1a: Basic system setup and configuration cost (variable depending on level of internal IT involvement) \$0-\$4000 estimated

Phase 1b: Drupal integration cost (variable depending on level of internal IT involvement) \$0-\$2000 estimated

Phase 1c: Integration with existing scheduling application cost (variable depending on level of internal IT involvement) \$0-\$2000 estimated

Phase 2: FCS integration cost (variable depending on level of internal IT involvement) \$0-\$2000 estimated

Phase 3: Software integration with future new scheduling application (variable depending on level of internal IT involvement and complexity/openness of new scheduling system) \$0-\$4000 estimated

Total (range): \$5000-\$19000

NOTE: Due to the mission critical nature of the system server hardware assumes high level of redundancy. Please refer to section on alternative IT service procurement for suggestions for reducing software integration cost for IT projects.

Use *incremental* procurement of storage to utilize declining per GB cost curve of hard disk storage. Procure hard disks for initial setup through a range of re-sellers to try and spread hard disk fleet across different manufacturing batches for increased batch fault resilience.

Metadata Standards – CATS Metadata Definitions

Establish metadata framework for APS. Please refer to the appendix for a proposed sample framework.

This proposed framework builds on the draft metadata framework by the ACM and expands it with some CATS specific classes to enhance the archive functionality and facilitate metadata import/retention from the old archive management system. Where possible these additional classes are directly drawn from the more extensive PB-Core metadata specification used by PBS.

When considering the metadata framework CATS should evaluate it against the needs of key production and transmission workflows within the station. What additional data describing a content item are/should be created that are useful for archiving and that will help later on enable other workflows or services drawing content from the repository?

After review CATS should seek input from the City regarding CoB specific metadata needs. A corresponding item can be found in the relevant section pertaining to recommendations for the CoB in this report.

It is essential that the metadata framework is finalized *prior* to the configuration and deployment of the APS, as it defines central configuration parameters for the APS.

Cost: Staff effort only

UPS Support of Core Systems – Advisory

Check, confirm and test capacity for uninterrupted power supplies to sustain continued operation or orderly shut down of mission critical server hardware.

Specifically:

- APS (hardware to be acquired)
- FCS/Open Directory Server (8-core Xserve) + external storage
- Drupal / QuickTime streaming server (4-core Xserve)
- Transmission and playout systems

Cost: Internal Effort plus necessary upgrades (unknown/TBD)

APS and WCMS Integration

Use “Islandora” plug-in to enable search and browse access for digital assets stored in the APS via CATS based Drupal website.

“Islandora is an open source project underway at the Robertson Library at the University of Prince Edward Island. Islandora combines the Drupal and Fedora software applications to create a robust digital asset management system that can be used for any requirement where collaboration and digital data stewardship, for the short and long term, are critical.” (<http://islandora.ca/collections>)

The integration should allow for permanent links to all content such as recently added government meetings. Furthermore browsing and search of the archive should be available through the catstv.net site.

To simplify the process and increase access speed each Fedora media asset should contain a web-encoded version of the content. Additional, related content stored in the “compound digital object” within the APS such as PDFs of plans discussed during a Planning Commission meeting could also be displayed.

Cost: Accounted for in the APS implementation, Phase 1b (\$0-\$2000)

APS and FCS Integration

Provide automated archiving and retrieval of completed projects on Final Cut Server to and from the APS. Note this integration step is not essential for the proposed infrastructure to function. Subject to manual project archiving from FCS, these items could be checked into the APS by an operator. After manual retrieval from the APS relevant projects could also be manually re-ingested into FCS. This step seeks to automate the process to reduce the risk of human error.

The project covers two parts that require the creation of custom scripts. Given that content will more frequently move from FCS to the APS a partial implementation of the automated process is possible.

FCS – Export

Script to

- Export metadata file for APS
- Export FCS project folder (FCP project file, media and associated documents)
- Encode web resolution file of final project
- Encode broadcast resolution file of final project
- Move package to suitable watch folder on APS

FCS – Import

Script to

- Process and ingest suitable media packages in watch folder and add to approval queue to clear for use within FCS project

APS – Import

Script to

- Process and ingest suitable media packages in watch folder and add to approval queue

APS – Export

Script to

- Export FCS compliant metadata sheet
- Export FCS project folder (FCP project file, media and associated documents)
- Move package to suitable watch folder on FCS

Cost: Accounted for in the APS implementation, Phase 2 (\$0-\$2000)

IP Fiber Link Between CoB and CATS

Light dark fiber between MCPL building on East Kirkwood Ave and CoB machine room at city hall to provide high-speed data connectivity. (The City has indicated it would be prepared to make this service available should CATS be interested and able to use it.)

This link may be used to carry data traffic to synchronize the proposed mirrored CATS APS backup as well as carry future IP based video signals from the showers control room. Moreover, access to the FCS could also be provided from the shower control room to provider advanced production services as necessary.

Cost: TBD for initial hardware (subject to further negotiations between CoB and CATS), operating cost \$0 for use by CATS

Off-Site Backup for APS

Provide a mirror of the CATS APS server off-site, potentially in the CoB machine room. This would represent a significant improvement in

terms of archive protection for the historic video assets currently held in the CATs tape room at the MCPL site. Currently programs generally exist as single tape copies in a room that might be at risk from flooding during heavy precipitation due to backed up storm drains. With content preserved from decaying tapes and increasingly difficult to play tape formats after digitization, additional resilience due to geographic diversification could be achieved relatively inexpensively.

More importantly the status of the sprinkler system within the MCPL building is unclear and both the machine room and the tape room are at risk from water damage due to sprinkler discharge. Upon a site visit it was noted that the machine room is equipped with a Halon fire protection system, however, sprinklers were also visible. CATS engineering confirmed their uncertainty as to whether this part of the sprinkler system was active.

The CoB machine room stands out as a choice for a suitable location, since high-speed data connectivity between the Library and CoB facilities could be established cheaply, quickly and at no cost except for equipment through the use of dark fiber in the Bloomington Digital Underground (BDU).

Cost: Internal labor, server hardware and initial storage \$4000 (NOTE: storage capacity to be increase incrementally as digitization progresses).

Total: \$4000 start-up cost, operating cost \$0

Web Accounts and Forum for Public

Post WCMS implementation enable optional website specific accounts to offer public producers/patrons access to training material and personalized communications. A moderated forum could also be added to facilitate information exchange between like-minded contributors.

Cost: Internal labor only / Admin time

Public Content Uploads / Submission

Provide public producers with the ability to remotely submit content for telecast and streaming. This feature should be subject to the normal approval procedures as applicable to material produced and submitted onsite.

Cost: Internal labor only (Some systems integration charges may apply depending on the level of automation desired for remote content submission)

Emergency Communication Plan - Advisory

Refresh emergency communication plan for CATS as well as backup and data preservation procedures in emergency situations. CATS should ensure that responsibilities and tasks for ensuring operational continuity are clearly assigned and communicated.

Define who is to be contacted/in charge in an emergency. How, where and when is content backed up for recovery and under which circumstances are the relevant emergency protocols active. Standard business continuity procedures should guide this planning.

Cost: N/A

External Storage Expansion for 8-core Xserve

In order to fulfill its roles as central video production repository running Final Cut Server the 8-core Xserve will require an upgrade to its current storage subsystem. This upgrade will need to take into account both storage space requirements (how many TB of data/hrs of footage can be stored) as well as storage agility. Based on current workflows the system may be required to provide low latency concurrent access to approximately 10 video streams at up to 50Mb/s per stream.

The following requirements are relevant to the choice of storage solution:

- Capacity
- Agility
- Resilience

Capacity

The natural server IO capability is limited on the client facing side by the transport capacity of its two 1Gb/s Ethernet network adaptors. In terms of pure system bandwidth the 10-video-stream performance requirement should be easy to meet.

In terms of storage capacity the goal is to provide enough storage space for a fully tapeless production environment covering all storage needs for approximately 2 months worth of work in progress. It should be noted that the proposed system is intended for work in progress *only* and not as a substitute for the proposed APS. The system is intended to be used with regular content archive procedures (purges) of completed projects onto the APS.

Agility

Video editing and playback often rely on highly fragmented data access patterns as different video segments need to be rapidly assembled from different areas of the storage array during playback. The only effective way to address this agility issue is to distribute the access requests across a suitable number of drives and employ a high quality raid controller to smartly handle the request queue.

Furthermore, the lower the latency between the server and the storage subsystem the more favorable over all system performance will be due to the time critical element of video (frame) playback. The latter requirement speaks against IP attached technologies such as iSCSI, which has to contend with the additional overhead of the network protocol stack. Low latency interconnects such as Infiniband or Fibre channel increase both controller and cabling cost and may be outside the cost efficiency requirements of this project. Especially since access

complexity is unlikely to require the multi-headed server arrangements of a SAN (storage area network) in the foreseeable future.

In the event that extra financial means become available Fibre Channel seems the preferable option based on entry-level cost and vendor choice for a deployment of CATS's size. In the context of a distributed work environment to support a local news initiative in collaboration with various Bloomington public media outlets as well as the use of BDU resources (see section 4), Fibre Channel provides more operational flexibility. The encapsulation of Fibre Channel over Ethernet Networks is more mature than Infiniband at this point in time.

This leaves the conventional parallel SCSI interface or eSATA and PCI-Express bus extenders as the only other viable interconnect options between the Xserve server and the proposed storage subsystem.

Resilience

Centralizing work in progress on one system does significantly reduce the administrative overhead of managing individual video assets or projects compared to the current model pursued by CATS, which relies on local on-system and firewire-attached storage. It helps improve suite utilization by decoupling production projects from physical suites thus allowing any available edit system to work on any project or enable easy collaboration across suites on one larger project.

However, the drawback in this centralized approach lies in also centralizing the point of failure for project storage. Failure of this centralize repository will impact all projects and all attached suites with potentially disastrous consequences to station productivity.

For these reasons any storage subsystem under consideration must not only meet performance but also the highest reliability requirements. Any subsystem under consideration should be capable of RAID6 data protection allowing for the failure of 2 disks in the array while maintaining data integrity. The second disk reserve eliminates the risk of data corruption during a rebuild (after a drive failure) should for example the wrong disk be replaced by accident. Additionally, capabilities for hot swapping of drives, a hot-spare drive and automatic

event notification are desirable. Dual (redundant) power supplies are a mandatory requirement, given the high availability environment the system will be deployed in. Dual redundant raid controllers or easy exchange of a single controller board are highly desirable.

Cost: From \$3000 per Enclosure (e.g.: Promise VTrak M310P - this is an example of a configuration based on the SCSI interface, Fibre Channel may double the enclosure cost depending on type and manufacturer)

\$300 Server Sided Controller Card and Cables

\$100 per 1.5T SATA drive – 12 drives

Total: \$4500

Security Audit – Advisory

As CATS moves to an ever more IT centric production infrastructure, availability of systems and network become of increasing concern to ensure uninterrupted program production and delivery. It was noted during conversations with staff that there is a certain degree of awareness of this issue but also a sense of apathy with regards to action. This apathy seems to stem from anxiety to confront this seemingly complex issue as well as the notion that a security breach is ultimately inevitable. While there is most certainly no such thing as perfect security the author of this report strongly feels that this issue warrants more attention and action in the future.

One major concern voiced pertains to the seemingly complex and time-consuming way of administering the security settings on an ever growing fleet of workstations. It is thus strongly recommended that the rollout of Open Directory should be used to unify configuration and rights management for both machines and users. With public producer accounts being most restricted and mandatory virus scans for removable media (such as USB sticks) being introduced at the very least.

The library IT department should be consulted to help optimize on site security policies and potentially help with virus protection licensing and software selection. While most of the infrastructure at CATS is OS X based, this should not be a reason to further avoid this issue as threats to this operating system are likely to grow with its continuing gain in market share. This author would suggest considering a security product that is specifically geared towards the Apple platform such as Intego Virus Barrier or similar.

In the interest of continued service it is suggested that the CoB may also consider offering help and advice on IT security matters to CATS.

NOTE: While out of scope for the purposes of this project, it was noticed that the physical access control system at CATS is no longer operational. The system was based on keypad locks, which are no longer supported by the vendor. Any updates to such a system might be best considered in conjunction with any staff/pass ID card measures carried out by the Library facility.

Cost: Staff effort plus potential virus protection licensing cost. Up to \$750p/a for the site if no bulk licensing agreement can be reached.

Production Related Metadata Capture

Production related meta-data and documents should be captured in electronic form for easier access and archiving and value added features during content delivery. The most salient example for this recommendation is the “program proposal” required to be submitted by public producers to gain access to the CATS production resources. This document is currently submitted on paper/hard copy.

While CATS staff stated that public producers are generally not bound by their initial proposal, an electronic version of the proposal filed with the editing project on FCS could be more easily kept up to date as the scope/nature of the project changes. This electronic version would allow for easy adaptation to provide the synopsis metadata for archiving (and search) as well as delivery to listing services and thus ultimately EPG display.

For this approach to be effective slight adaptations to the current program production workflow at CATS would be required. Please refer to the sample workflow description further blow.

Cost: internal effort / workflow change only

Archive Encoding Standard

Standardize on one encoding standard/file format for all content masters (finished programs ready for telecast) stored in the APS. The main issues to consider when making this decision are as follows:

Assumptions

Content checked into the APS for long term archiving is generally final. This means a project has been completed and further editing is unlikely to occur. The product is suitable for telecast as is. Rushes/ISO tapes not used in the main program will generally not be archived unless in exceptional circumstances where these tapes document valuable historic events. If programs are cut with alternative endings for example, multiple versions may be stored. APS content is generally new, that means genealogical relationships between various program masters are unlikely. This means programs are usually not made from other programs already stored in the archive but comprise new content specifically produced for the program. Once archived, the stored material will generally not be subjected to future extensive video effects, chroma keying or color grading work.

The above assumptions allow for high quality yet efficiently compressed video encoding on final content masters. It should be noted further that in many circumstances, especially in the case of older material, the content master might have been stored on analogue tape. Such an analogue recording process in it self would have degraded the quality of the source material more than any [virtually transparent] compression process could do.

All statements made within this recommendation are based on the current standard definition video content base but may also be transferred with suitable adaptations to any future high definition

content that may be stored at its source resolution and frame rate in the APS.

Long-term Viability/Licensing Issues

Unlike with hardware procurement problems for obsolete tape formats, software playback of video files is unlikely to ever represent a significant problem in the future for as long as the intellectual property rights to the file format and compression codec have not been compromised. For these reasons standards based codecs such as Mpeg 4 (part 2 or 10 [AVC]) or open source codecs with established patent security are preferable over proprietary solutions tied to the “fortunes” of a specific vendor.

Licensing cost for Mpeg formats usually becomes only relevant at the point of distribution (such as in the case of Mpeg4 part 10, see http://www.mpegla.com/main/programs/AVC/Documents/AVC_Terms_Summary.pdf) and thus represents little cost concern from the internal use/archiving perspective.

Quality

While there is inherently a desire to preserve material at the highest quality possible, such goals may have been already subverted by historic compromise, based on analogue tape recording further up in the production chain (as indicated above). Given that material is generally final and will only be retrieved to either be telecast or serve as a source for a derivative/transcoded version for delivery on a different/new platform such as Internet or mobile streaming, the material needs to be of *sufficient* quality to support these needs reliably. Such transcoding processes will inevitably introduce some quality degradation, akin to generation loss on analogue recordings. Thus master content stored in the APS should be of sufficiently high encoding quality to withstand potentially two careful transcoding steps and be still acceptable for telecast.

These requirements can be met sufficiently by carefully compressed group of pictures (GOP) based Mpeg4/AVC encoded material without the need to retain uncompressed material.

File Size

Some file size reduction compared to DV25Mb/s is desirable, with a targeted reduction of approximately 50% in file size. Incremental storage extensions to the APS are recommended to leverage decreasing hard disk cost as the APS storage volume grows over time.

Encoding Complexity

High quality encoding, particularly for AVC content, can be time consuming. CATS is in the fortunate position to own a number of licenses for Apple Compressor through Final Cut Studio and the Qmaster distributed compression tool. This will allow CATS to use its Apple workstation fleet for compression tasks during periods of low system utilization, considerably increasing the station’s encoding capacity.

NOTE: Apple’s switch to 2.2 system gamma may cause issues when exporting content from Final Cut Pro. A starting point for support issues can be found here: <http://support.apple.com/kb/HT3712> and here: http://support.apple.com/kb/HT2912?viewlocale=en_US. An unofficial discussion of the behavior can be found here for example: <http://forums.creativecow.net/thread/8/1027614>

Transcoding Suitability/Compatibility (ACM mpeg2)

Any archive format chosen should be capable of producing (transcoding to) broadcast quality Mpeg2 files according to the encoding requirements specified by the ACM for content interchange between PEG stations.

(See section 1.1.1 through 1.1.15 of the ACM video-file and metadata standard <http://www.alliancecm.org/standards>)

Audio

Until multi channel audio becomes part of the production and delivery capabilities of CATS all audio should be embedded into the video files as uncompressed 16bit PCM audio (preferably at 48kHz sampling frequency) to facilitate the best possible sound reproduction. This will be of particular benefit for concert recordings such as during the Lotus Festival.

NOTE: AVC encoded files support compression for audio based on various codec settings and CATS may chose to drop the PCM audio requirement if acceptable settings are specified based on internal testing.

Recommendation

Archive encoding quality target: AVC/Mpeg 4 part 10, HiP, Level 3, 720x480@29.97/30fps, 10Mb/s; Audio PCM stereo: 44.1 or 48kHz sampling or better, 16bit or better subject container file format support and source material (avoid sample rate conversion or up/down sampling of bit-depth), ~1.5Mb/s or higher; QuickTime Gamma issue: Check and adjust for correct gamma as necessary based on system settings.

Cost: n/a rely on already licensed distributed encoding technology available through Apple Compressor and Qmaster.

Update Contracts to Include Web Distribution – Advisory

Where possible, the rights release section of contributor contracts should be updated to include content distribution rights for other current and future platforms such as Internet and mobile delivery. In some instances contributors may be reluctant or unwilling to grant these rights. In some instances streaming instead of download rights may be acceptable. In other instances time based embargos may be suitable for various platforms, such as for example delaying online deliver by a certain period of time. The most complete rights package and appropriate “fall back” positions should be included in the negotiation process for all future contracts. This section does not constitute legal advice.

Action Point: Update form contracts for contributors (in consultation with MCPL legal council) to reflect rights for new distribution methods.

Cost: Internal legal effort

Track Rights Attached to CATS Content in APS

Specific attention should be given to rights related metadata capture as part of the CATS production and archiving process. The metadata schema implemented in the APS configuration should reflect this fact to maintain active awareness of the rights status of any content in the repository.

The following list contains points of major importance on this matter but is not exhaustive. Additional data may be added as deemed appropriate by CATS.

- Contributor name and age
- Type of work: Work for hire, donation, derivative
- Primary rights holder: (CATS if work for hire)
- Date of first publication
- Date of creation
- Type of license for donated work: Perpetual, transferable, limited, expiration, etc.
- Platforms covered
- Platforms specifically excluded
- Platform specific restrictions: Type of deliver (streaming, progressive download, download), embargo periods, repeat clauses
- Rights schema to accompany exported content for exchange with other PEG channels. (License granted by CATS) – Consistency check against license type and holder may be required.

For historic content some of these fields may remain undefined and CATS may chose to implement specific policy decisions with regards

to the use and/or promotion of undefined content specifically for their online services. This section does not constitute legal advice.

Cost: APS implementation effort

WCMS Request Feature for “Telecast Only” Content

Extend program request process to integrate with online search function. For content that CATS has been explicitly barred from distributing online but holds telecast rights to, the search function on the WCMS based Drupal site querying the APS should return content information without a link to the material. In this instance the option should be provided for a registered user to request this program for on-air play in return for providing her email address.

This address may then be used by CATS to provide the user with a notification of the scheduled transmission time and date for the requested program and instructions on how to configure their Comcast DVR to record the program (subject to CATS attaining access to the Gemstar/Rovi listing service). If feasible a second reminder email on the day of transmission should be sent to the user.

The feature should only be used for programs unavailable for online viewing to keep the request load and administration complexity for CATS at a reasonable level. In this instance, the implementation could be as simple as a basic submission form on the WCMS with a manual background process to handle scheduling and notification.

If desired, this process could however be automated in conjunction with any updates / changes to the traffic management / scheduling software employed by CATS.

Cost: Internal effort only for basic “manual” implementation

FCS-Scripts Part 2 – Automated Content Push to Payout

Automatically encode, name, and FTP content cleared for transmission stored on the FCS to the file based payout servers. Notify relevant staff of completion or failures. This functionality can be easily implemented using the FCS onboard automation functions and should thus not create additional cost for CATS.

If so desired different export profiles could be set up, based on the channel the material is intended for, until full file based payout for all channels is available. In the case of a tape-based channel, material could be combined with pre-roll countdown and moved to a export workstation as needed.

Cost: Internal effort for FCS configuration only

Transcode Old RealPlayer-Based Meeting Archive

RealPlayer has become largely irrelevant as a media delivery platform in recent years. It has been displaced by Flash-video often based on H.264 encoded content.

CATS currently has a significant number of government meetings encoded for “RealVideo”. These videos are served through a largely unsupported “RealMedia” server, which once it fails may render this content inaccessible through the web.

This content covers government meetings during the time period from Jan 24th 2006 until Aug 17th 2009. A suitably equipped workstation with RealPlayer and transcoding software like Handbrake (handbrake.fr) would be able to batch transcode these meetings into H.264 for HTML5, Flash or QuickTime streaming compatibility.

Some questions regarding the associated metadata contained in the links on the current CATS archive page remain. At the time of writing this report the author was unable to ascertain whether the information contained in the link is also encoded into the file name of the source media on the server. Failing this some scripted renaming of transcoded

files using Apple Automator scripts may be required. For examples see: (<http://stream.catstv.net/cats/archived.html>)

Cost: Internal effort only – suitable batch transcoding software available for free.

Traffic / Scheduling Improvements

Adapt the program scheduling process to the new infrastructure centered on the APS as main content repository.

This project contains two phases:

Phase 1

Adapt and extend current internal scheduling software to work with new APS for content scheduling and automated media and metadata export.

After all data from the current legacy content database has been migrated to the APS the scheduling application should be updated to use the APS database for its source data. Additionally, upon completion of a schedule the system should be able to export a suitable playlist file, subject to digital availability of scheduled assets, for any server based playout hardware in use by CATS.

The system should also be able to export the video assets contained in the schedule if these assets are available in the APS. Schedule assets that have not been digitized yet and are thus not available from the APS should be flagged as tape based with the relevant tape location information provided on a separate list. This list should be used for ingest to the APS to fill missing asset gaps. After all assets have been ingested the playlist should be cleared for transmission and exported.

The scheduling system should also be able to initiate a batch transcoding process through the Apple Qmaster/Compressor network to create files suitable for the respective playout servers (if assets cannot be played back in their native form by the servers). The final output location for files transcoded through these Qmaster jobs should

be located in the appropriate location on the playout server's directory structure referred to by the playlist/schedule file generated by the system.

For tape only channels suitable aggregated CMX3600 EDLs or similar for use in FCP should be generated and assets referenced in this EDL should be exported to a suitable project location on the FCS. These EDLs should generate numbered tapes of concatenated content used for playout.

Missing assets not contained in the APS should be flagged for ingest in the same way as for the server process. Once all assets used in a playlist are available in digital form the playlist should be cleared for transmission and exported to the Leightronix playout automation. Tape numbers referred to in this tape based automation playlist should reflect the tape numbers assigned to the aggregated tapes described by the EDLs for their respective projects on the FCS. These EDLs should be conformed with FCP and "printed to tape" for playout.

Given the intermediate step of exporting content from the APS to the FCS and then onto tape for playout by the old Leightronics system, there is some risk of confusions between the aggregate tapes created by FCP and those referenced in the automation playlist. Thus this semi-manual process should only be in place until all channels use server base playout. Ideally such playout should be implemented as soon as financially viable.

Thus this EDL generation feature for assembling playout tapes may be considered optional or in deed unnecessary if the migration to a "server only" playout infrastructure is completed in a timely fashion.

NOTE: The proposed process deliberately forces all content through the APS regardless of the final channel destination. This is to automatically facilitate back catalogue ingest as part of day-to-day operations. After the database migration the APS will contain a significant number of catalogue entries without media files actually stored in the APS. These items are considered incomplete until metadata and content are stored as one compound asset unit on the APS.

Workflows should be adjusted accordingly to allow for the extra time the ingest/encode for the APS will consume. It is estimated that at least one extra day of lead-time should be added.

This approach relies on basic playlists being executed on the relevant server systems and may be sufficient for CATS purposes.

Phase 2 (optional)

Implement new fully featured professional scheduling package including expanded metadata and reporting functionality with *matching* playout server automation to centralize server management and control.

This process would more closely resemble the working practices of network TV stations. The APS would still be the sole source of content under this implementation, thus any records of media assets that have no content stored in the APS will need to have this content encoded and ingested prior to transmission.

Traffic/Scheduling software and server playout automation software of this caliber are generally rather expensive and often incur expensive ongoing maintenance/subscription charges on an annual basis. Moreover, this project would require systems integration work by the software vendor to use the APS database as the main asset source for the scheduling software as well as trigger relevant export and transcoding scripts. Some of which may be repurposed from the phase 1 implementation.

The benefit of such an implementation would lie in the more automated rule based assistance in the scheduling process and the centralized control of all playout server hardware. However, until lower cost options become available phase 2 may not pass a cost benefit test unless CATS switched to largely unattended fully automatic master control operation to offset software cost against an (operator) headcount reduction.

NOTE: After a meeting with the president of Leightonix at NAB2010 (an industry tradeshow) another potential third option has become viable. Leightonix have indicated a willingness to work with CATS to

import an asset list from the APS into their “WinLGX” scheduling software controlling their UltraNexus servers (one of which is currently owned by CATS). This could provide some enhanced scheduling functionality at a relatively low cost (exact amount currently unknown) should CATS be willing to standardize on Leightonix products and should the vendor be willing to follow through on the WinLGX asset import implementation. This assessment is contingent on CATS deciding that the feature set offered by WinLGX meets its needs adequately or better compared to the alternatives recommended in this report.

Cost:

Phase 1: \$10,000 estimated with detailed development work and testing. This cost could be reduced if only one single export and playlist process had to be maintained rather than either tape based and UltraNexus based playout or server and UltraNexus based hybrid solutions. Any solution incorporating tape based playout would most likely represent the most complex, expensive and potentially operator error prone approach.

Phase 2: >\$60,000 for 4 server based channels (likely)

EPG Data Feeds – PVR Restrictions

Provide accurate electronic program guide (EPG) data for Comcast and Tivo subscribers for each PEG channel. This program listing information should enable easy scheduling of Tivo recordings and allow DVR enabled Comcast set top boxes (STB) to record programs carried on any peg channel. Against the backdrop of increasing DVR market penetration and the related decreasing use of real-time viewing it seems vital to provide this feature to keep the DVR consumers engaged in CATS content. If implemented correctly with episode and series information this feature would also allow interested subscribers to follow a specific series of government meetings.

For example: While watching a specific meeting of the Planning Commission the consumer might then instruct the DVR through one

single transaction to record all future Planning Commission meetings, in the same way a consumer might have their DVR record all episodes of their favorite home improvement show.

A correctly populated EPG should also help elevate the brand perception of the PEG channels allowing them to compete for audience attention on the same level neighboring channels, rather than simply confronting the consumer with the rather unhelpful generic description of “local programming”.

EPG data will become even more important in the future as STB user interfaces move away from the classic numbered channel grids as their primary entry point for channel selection. More advanced STB interface designs present content in a menu structure sorted by classification (e.g. entertainment, news, sports, etc) and sub-classifications (e.g. comedy, drama, action, sci-fi, etc) as the primary entry point for channel selection with channel based views used as a secondary decision tool by consumers. Thus having comprehensive EPG data available allows the PEG provider a higher degree of control over where and how their programs are listed based on the algorithms grouping the content for the STB menus. Lack of such EPG data may relegate PEG to obscure locations within the menu tree.

The above goals can be achieved by providing program information such as for example time, date of broadcast, duration, title, episode and synopsis to the listing services used by Tivo and Comcast. CATS would provide this data with some lead-time (commonly one week) to the listing service providers for injection into their databases. From this point forward the information automatically propagates to the DVR devices and STB EPGs.

Comcast uses Gemstar/Rovi, whereas Tivo relies on Tribune Media. For completeness it should be mentioned that a third major listing service FYI Television is also active in the US market. The latter caters predominantly to print media. WTIU for example supplies their listing data to all three services.

From initial observation Tribune Media seems the most approachable of all listing services. After discussions with Rovi Corp there seem to be

no reservations regarding self-service channel listing information updates by CATS. However, this capability needs to be requested by Comcast on behalf of CATS. The charge for this service to Comcast per channel per headend/service ID ranges from \$65-\$98 per month.

At the time of writing this report Comcast has outright refused to request this service on behalf of CATS citing that it was company policy not to support any EPG data for PEG channels across any of their franchise areas. CATS might wish to consider a multipronged approach using consumer driven petitions, political avenues as well as co-coordinated efforts through the ACM reverse this policy decision by Comcast.

NOTE: WTIU’s submissions to Rovi are covered through their PBS relationship.

CATS is willing and keen to provide the listing data to these services.

To somewhat automate the generation of the listing data and thus keep the staff effort at a reasonable level while maintaining a high degree of information detail and accuracy this process must be supported by any future metadata frame work. So that episodic information as well as synoptic or duration related metadata can be automatically extracted during the scheduling process from the APS. The goal of this process must be to eliminate rekeying of data wherever possible.

Cost: \$65-\$98 per channel per headend/service id to Comcast per month – might end up being partially charged back. Some systems integration cost may be applicable for automating future metadata extraction and formatting processes.

Total: \$4704 (worst case) for four channels per year. Data for channel 96 is already updated through SCOLA TV.

Qmaster Encoding Cluster – Advisory

Apple's Qmaster managed distributed compression technology using Apple Compressor should be deployed on all network connected Apple workstations owned by CATS. If necessary this deployment should be supported by relevant Open Directory policies. A Qmaster enabled machine pool should be used for all compression jobs triggered either by FCS or APC ingest processes.

During times of heavy work load machines should be kept powered on 24/7 to accelerate batch-encoding processes. Particularly encoding for the high quality AVC based (archive) video standard proposed in this document, for use in storage of all master assets in the APS, can be very time consuming. To maintain an acceptable ingest speed distributed encoding/compression of material will be essential.

CATS already owns all required software as part of its Final Cut Studio licenses and should configure its hardware accordingly to leverage idle computing cycles in the Apple workstation fleet.

Cost: N/A – software already owned, internal effort only for configuration and setup.

File Based Payout for All Locally Programmed Channels

Switch all four locally programmed PEG channels (3, 7, 12, 14) to file-based/server-based payout and develop capability for local content insertion for channel 96 based on an open and reliable payout server architecture.

CATS has currently switched two channels to a file based payout system based around the Leightronix UltraNexus server. This type of unit is popular in the PEG community and offers some useful functionality such as still-store features with over lay capability for on air announcements and pass through of external sources. The latter feature would lend itself for local content insertion on channel 96.

However, significant problems exist with the unit in term of meeting CATS long-term objectives. The unit currently lacks any external playlist

import capability and has thus effectively broken the link between the in-house scheduling application and server-based channels. Currently playlists are manually rebuilt after relevant content has been imported onto the server. This increases the risk of operator error and is time-consuming, adversely affecting operational scalability of the system.

It should be noted that Leightronix had been prepared to open up their playlist format in the past to facilitate exports from the scheduling application to their tape based automation controllers, so this issue might be overcome.

Unfortunately the current unit only offers composite output with no favorable upgrade offer to SDI out put available. Furthermore this platform is only capable of SD (standard definition payout) with no clear HD upgrade path or road map provided by the supplier at the time of writing this report.

This report thus recommends the repurposing of the UltraNexus system for local content insertion purposes on Channel 96 in the mid term.

Once APS and FCP as well as an updated integrated scheduling application are available, CATS should consider upgrading its operation to a more open system with SD/HD-SDI (serial digital interface) output capability.

Digital outputs will be required to interface with encoding and multiplexing hardware required for delivering digital bit-streams in standard and high definition resolutions to future delivery platforms at the highest possible quality. This option will become particularly important should CATS decide to pursue native inclusion on digital cable tiers (potentially inevitable after full digital cable migration) or (low-power) digital broadcasting.

Any server platform chosen should be able to import playlists based on standard open file-formats which were not created by its built in playlist generation software. The payout server should be able to open such playlists while on air running off another playlist or update its current

playlist with the imported events without interrupting live on-air playback.

Based on the proposed implementation schedule such decisions will be come relevant in 12-18months. While market conditions are difficult to predict, a reasonable per channel cost, based on current vendor offerings, between \$5000-\$7000 per channel max seems plausible.

NOTE: While most network television playout would be designed with spare playout server ports available in case of equipment failure, the existence of the UltraNexus with its manual playback/scheduling option as fall-back as well as the lack of high-stakes advertising revenue might favor (for economic reasons) an emergency still store with a service interruption apology slide over extensive resource over-capacity in the playout server domain for resilience purposes.

NOTE: Given the potential complexities associated with sustaining automated scheduling for server-based playout through UltraNexus as well as tape based playout (depending on the channel served under the current setup) a phased upgrade might be viable. With the two currently tape based channels being migrated to new playout servers first follow by the repurposing of the UltraNexus and an introduction of the new server hardware to these two channels at a later date.

NOTE: See note on Leightronix WinLGX software in the section on “Traffic/Scheduling Improvements” further above, as to why additional Leightronix hardware may be suitable under certain circumstances.

NOTE: Vendors using generic PCs or Apple computers in combination with video playout cards from Matrox or BlackMagic Design are maturing and their offerings are increasingly able to compete with packaged solutions by traditional broadcast server vendors. After surveying the market at

NAB2010 two products in particular would warrant further evaluation by CATS engineering in preference over other similar solutions (based on cost and performance considerations):

- “just:play” – www.toolsonair.com – Apple / Mac OS X based

- “Cinegy Air Express” – www.cinegy.com – Windows based

NOTE: Some server ports should provide bi-directional capability to support direct recording of material as a substitute for tape based back-up recordings of live events like government meetings.

Cost: \$5000-\$7000 per channel

Total: \$20,000-\$28,000

iChat – Internal Use – Internal Server – Advisory

Upon upgrading the Xserve servers implement an internal iChat server to facilitate remote assistance and real-time collaboration through chat rooms. This suggestion is included in this document to highlight this option based on the internal hardware and software infrastructure available to CATS. The iChat setup could be tied in with future centralized account management through Open Directory. The video conferencing and content sharing features might be useful for quick ad hoc virtual meetings. The same might be relevant to providing quick, informal, assistance to public producers working on programs in the edit suites. The iChat setup could be setup for internal use only to avoid staff time being consumed by public producers off site not currently working on a project, thus emphasizing the support role rather than social function of this feature.

Cost: none – configuration effort only

HD Camcorder Upgrades

Any further camcorder upgrades/replacements should consist of solid state based units. At this point tape technology can be considered as out-dated and operationally inefficient. CATS’s workflow will soon be ready for completely tape free operation from production, via transmission, to archive.

Inevitably the current DV-tape based part of the public producer-facing camcorder pool as well as units used for staff productions will wear out and need replacing. At this point the transition can be made incrementally.

NOTE: This transition will require a change in workflow and training for public producers and staff. Any footage shot during a production (day/weekend) must be immediately ingested into the relevant patron project account on the FCS upon return of the unit. Public producers must be made aware that failure to do so will result in their footage being deleted upon the routine formatting during the equipment check-in/return process.

Most solid-state camcorders are geared towards HD production. Where possible, 720p at 30fps based on AVC compression at a min of 20Mb/s should be used as the standard acquisition format while CATS remains an SD channel. This resolution combined with the highest possible bitrate during recording the content should guarantee future proof HD content that can be easily scaled to SD resolution. However, additional training for public producers regarding safe-areas will be required, given the 16:9 HD vs 4:3 SD aspect ratios.

At the time of writing this report a suitable example for a replacement unit is/was the Panasonic AG-HMC40.

Cost: \$2,295 list per unit. Total below assumes 3 replacement units.

Total: \$6,885

Implementation Process / Project Delivery Training

At least two suitable members of CATS staff should be provided with project and IT contract management training to help improve future outcomes of externally staffed IT implementation projects. Such courses are readily available from a range of training providers.

A high level survey conducted by the author of this report indicates that the prices commonly range from \$1500-\$2500 per person. Yet this

report's author does not feel qualified to authoritatively recommend a specific provider. When establishing the price range predominantly course focusing on IT project management were surveyed.

Augmented by self-study online training such courses would represent a good staff development opportunity with both motivational and capability benefits. In the future CATS may have to rely more on external IT specialists to tackle some of the more complex integrations issues (in some instances these contractors may be located in other part of the US or world due to local skill shortages in the area) of its infrastructure. Thus a project management skill base to ensure optimal and timely outcomes would significantly improve the value of future investments and hopefully improve accuracy and speed of project delivery.

Such skills may also be of value when keeping students engaged through partnerships with the School of Informatics to augment the development process.

Cost: Approximately \$1500-\$2500 per person per course

Total: up to \$5000

Alternative IT Service / Coding Procurement – Advisory

Labor for computer programming/coding for website development or more complex IT projects has virtually become an internationally traded commodity. A range of online market places exists that bring together programmers and clients with specific project. The more reputable sites allow or encourage milestone based funding, hold funds in escrow and show publicly available feedback by past clients. Projects may also be procured on a fixed price basis on most of these sites.

These intermediaries make outsourced IT development a lot more affordable and accessible to smaller organizations like CATS.

Given that programming staff is unlikely to work on site in most instances even for conventionally sourced projects, the geographic

separation between programmer and client does not add an extra or unusual complication compared to conventional procurement methods. CATS should liaise with the MCPL IT department in case remote access to any of CATS's systems is required for project delivery to ensure security protocols are followed appropriately.

Below a non-authoritative list of sample providers:

- <http://www.getafreelancer.com/>
- <http://www.elance.com/>
- <http://www.rentacoder.com/>
- <http://www.project4hire.com/>
- <http://pick.im>

NOTE: It is useful to browse the current open bid section of such sites for comparable projects to get a more accurate estimate of what may constitute a reasonable offer/bid for the particular project under consideration for outsourcing.

Cost: N/A – contract dependent

Staggered Funding / Milestone Based Funding – Advisory

To continue to improve the timeliness and speed of delivery for IT integration projects it seems advisable that CATS and in turn CoB, in the context of exceptional or grant based project funding, switch to a milestone-based/staggered funding approach. This approach should apply to both the disbursement of funds by the City to CATS for such key projects and in turn also to the disbursement of funds by CATS to its IT contractors/programmers.

This approach should take into consideration both the actual deliverable work-product as well as the time frame for delivery and may

incorporate contract penalties at the point of the CATS to contractor relationship.

This approach would bring CATS in line with modern industry practice and would allow for more effective project delivery by all three entities involved. Until CATS has built its own in-house IT project management capabilities (through the training programs suggested elsewhere in this document) it would be advisable for the CoB to provide assistance in project planning, mile stone creation and timeline creation to CATS as part of any engagement involving exceptional/grant based funding. The pooling of CoB and CATS expertise in this way should deliver improved results and also provide a valuable opportunity for skills transfer from CoB to CATS thus further creating long term value in this partnership.

Cost: N/A – extra CoB planning effort for project/milestones

Service Requests for Government Meetings – Advisory

Clearly negotiate the number of meetings to be recorded for government bodies as part of the MOU negotiations. Agree a system of prioritization with all funding partners for the event that the demand for resources (meetings to be recorded) outstrips the agreed production capacity available through CATS.

Cost: N/A

Final Cut Pro Configuration / New Public Producer Training Process

Standardize on Apple Final Cut Pro for public producer editing process to realize full benefits of FCS deployment and improve availability of producer support.

Currently public producer editing needs are partly fulfilled by Apple iMovie and Final Cut Express. While novices may accomplish basic editing tasks on iMovie rather quickly, general staff sentiment is that

public producers quickly run into the limitations of the product at which point support issues become complex and time-consuming.

Furthermore a number of public producers have successfully transitioned onto Final Cut Express, which shares the same interface characteristics with Final Cut Pro. iMovie support knowledge is limited among staff, resulting in producers “getting stuck” on projects when no qualified support is available. Final Cut on the other hand has a much wider support based at CATS due to a larger number of staff being conversant with its use.

Production and operational managers agreed during the site visits that Final Cut has initially a steeper learning curve for public producers; yet staff was confident that this aspect could easily be overcome by appropriate training allowing for better support and progress later in the project lifecycle.

In line with the general goal of increasing the CATS brand value within the community and developing brand associations with quality content production and training, the switch to a professional editing package such as Final Cut, vs. the use of the consumer product iMovie, for public producer editing, will help support and project these values, creating intangible image benefits beyond the pure operational advantages.

iMovie is also incompatible with the FCS based workflows that will form the core of CATS’s future production architecture. FCS requires the latest version of FCP to support full integration thus potentially some additional FCP licenses may be required. Final Cut Express is based on an older version of the FCP software and thus does not support full integration. However, these existing licenses could be redeployed for basic ingest processes such as for archive digitization work.

Lastly, to keep the public producer learning curve at an acceptable level, FCP should be configured with only the essential tool bars and well defined user settings in conjunction with FCS. These standard configuration files should be deployed across all patron edit suites.

NOTE: Training procedures and materials currently used for FC Express training are suitable for re-purposing to support FCP training.

Cost: \$299-\$999 per seat. FCP is part of Final Cut Studio and only sold as part of this bundle. The lower price listed reflects upgrade pricing based on ownership of licenses for older versions of the software.

Total: \$1600 assuming a mix of upgrades and new license acquisitions

Software License Audit

CATS should conduct a full software audit of all operationally relevant software owned. This should include licenses for no longer installed products since these licenses may in many instances qualify CATS for upgrade pricing on new replacement products. Track upgrade use of such out-dated licenses to maintain legal compliance with licensing requirements. The final approving party should check upgrade options as part of any procurement decision. In line with the philosophy of centralized information access proposed throughout this document a shared spreadsheet may effectively and inexpensively provide the license tracking functionality.

Cost: Internal staff effort

Schematic Drawings and Drawing Package

Create schematic 2D CAD drawings for engineering purposes of control rooms and other critical facility areas. The CATS operations department mentioned during a site visit that such drawings are currently not available for areas such as the Showers control room but would be beneficial for general engineering maintenance and trouble shooting. Both CATS and the City could benefit from this information being readily available in the event of a technical fault in the area. Furthermore, on-site schematics reflect industry best practice.

Such drawings should be available in plotted form in the respective areas and as PDF documents on the central training/resource wiki for easy access.

To save licensing cost DoubleCAD XT as a powerful yet free 2D drafting package could help meet this need.

<http://www.doublecad.com/>

Cost: Free (DoubleCAD XT) plus staff effort to generate drawings

Contributors' Accountability and Project Completion

Monitor project progress of public producers and facilitate higher completion rates by providing pre-emptive support through centralized progress tracking on FCS. Incorporate a higher touch approach combined with better access to training resources to help those public producers needing mentoring overcome knowledge gaps or inertia and complete their projects.

During site visits lack of project completion by public producers was cited as a potential area in need of improvement. The new centralized production platform based around FCS will allow for un-obtrusive and fast progress monitoring and automated alerts if projects have been dormant for a period of time, prompting staff follow up with public producers. Projects will be clearly linked to a specific producer's project account.

Theoretically a similar support structure could already be put in place now but would require very time-consuming tracking of progress by scanning the external USB drives currently used for project storage. Moreover, currently projects are not readily identifiable by public producer without paper-based tracking. All of which makes such improved support un-economical.

However, it should be noted that from a privacy perspective the capability to oversee a public producer's project already exists and thus centralized progress monitoring does not constitute a change in the overall working environment. Project monitoring is aimed at

facilitating progress and makes no claims to exercising editorial control, in line with the public access framework. The goal is to use technology to support the training and mentoring appropriate to help meet each specific public producer's needs in an economically and operationally effective way.

Cost: Staff effort

PEG Content Exchange

Provide an access protected (private) area on the new Drupal based CATS website for the sharing and exchange of broadcast quality PEG content with other PEG providers and municipalities. Unlike the consumer based web streaming and APS search capability this service is aimed at "professional partners" from the ACM (Association for Community Media) community, IACT (Indiana Association of Cities and Towns) and other interested parties.

This feature of the CATS web presence is initially focused on the local Indiana market but should not deliberately exclude potential out-of-state partners. Similar efforts are underway in other sections/chapters of the ACM but are often closely tied to commercial vendors, these projects should be considered complementary and sources of information to further enhance features and usability of the PEG Content Exchange operated by CATS. In line with best practice program file formats and metadata should be based on the ACM guidelines but the system should have enough inherent flexibility to support transcoding into other formats should this be essential for keeping specific partners engaged.

The goal of this project is to provide a platform that facilitates the exchange of ideas and promotes community as well as raises awareness of the value of local content. As such this project also has a strong promotional component and ties into the over all brand building efforts for CATS and the PEG mission.

Cost: N/A – can be supported by proposed infrastructure and be folded into normal web site development process

CATS as Enabler of Quality Campaign / Brand Building – Advisory

After the successful implementation of the key operational and technical changes proposed in this document CATS should use both its WEB and TV outlets to communicate clearly the benefits available to the community and public producers from its improved operations.

Quality training to facilitate compelling story telling and self-expression by public producers as well as access to professional equipment and personalized support should form part of these communication/promotion efforts. Outreach into schools and also to IU students currently not catered for by WTIU's program policies should be included in this process.

The promotion of the anthropological value of its archive as well as CATS's role as an enabler of transparency in local government should all be highlighted as part of on-air promos and web based communications.

CATS should capitalize on the more diverse communication habits of various demographics and incorporate contact initiation tools as part of its new website to encourage new connections with potential local content producers. This could be a contact request form or potentially even a live chat feature with selected staff. Every element should be geared towards breaking down any potential barriers to involvement and actively seek to recruit new contributors to CATS.

When promoting its output CATS should also be engaging social networking tools such as "Facebook" and "Twitter". Please refer to section 4 of this report for further suggestions.

Lastly, CATS should also consider reaching out to Comcast and actively promote particularly high quality content items for free (branded) conclusion in Comcast's VOD service.

A communication savvy staff member with good networking skills might be best placed to co-ordinate and lead this marketing and brand building effort. Currently such a function does not specifically exist, but its creation (subject to the HR constraints within the MCPL system)

would represent an excellent staff development opportunity and help increase public awareness and appreciation of the PEG mission and the CATS access center, thus helping strengthen its long-term position in the market and community.

NOTE: A stronger CATS with a higher profile in the local community might also be able to leverage this social capital to improve its relationship with Comcast and other content carriers. The current almost adversarial relationship, across most regional US markets, between PEG channels and content delivery platforms seems like an anachronistic left-over from the capital intensive days of fully analogue delivery infrastructures. Increased awareness and leveraging of the value of local content and audience engagement might create long-term benefits for both parties. A strong brand identity and competent marketing (to carriers and audiences alike) by PEG operators would have to form an integral part of this transformation.

Cost: N/A – Could be delegated to existing staff and be offset against workload reductions due to improved operational efficiency

Change Communication Program – Advisory

Clearly communicate the nature, reasons, benefit and timeframe of changes within CATS to all levels of staff and be receptive to feedback and concerns. Set clear goals for everyone involved in the transformation effort and situate their role in the bigger picture.

Based on the recommendations contained in this report CATS may execute a range of technological and operational changes in the coming months. The organization is carried by a number of very motivated and committed individuals and displays a healthy cooperative culture.

To maintain any momentum created by the work presented in this report clear communication and leadership by example on management's part will help build acceptance through the organization. (Kouzes and Posner 2007, CH 4, 9). Examples from the management literature seem to confirm that technology in itself is

merely “an accelerator of change and not a creator”. The motivation and quality of the people enabled/empowered by it, is the key success factor in good transformations (Collings 2001, CH 7, 8).

Cost: N/A

Sample Workflows

Public Access Program (proposal to transmission)

- Public producer initiated contact with CATS through phone call or contact form on CATS website
- Meeting for initial training is scheduled
- Public producer’s first meeting with CATS staff
 - Library card / ID is verified
 - Patron account created with FCS, training wiki and basic network access
 - Program proposal captured electronically and stored as part of FCS project file
 - Basic “hands-on” training with operational staff occurs
- Camera kit is scheduled as resource through Open Directory
- Camera kit is collected at CATS by public producer
- Public producer shoots program. (Telephone support with equipment features provided if/as needed)
- Camera kit is returned
 - All footage shot is ingested from media cards into FCS to patron’s (public producer) account
 - Camera is checked and charged
 - Media cards are formatted
 - Resource booking is cancelled if returned early
- Public producer edits program
 - Support provided face to face or via iChat
 - Staff occasionally monitor progress remotely on FCS
 - FCS flags inactive project
 - Staff initiate follow up call / support to re-engage public producer
- Producers marks program as finished (may export final version for personal use)
- Staff member reviews finished project on FCS (If alterations necessary edit process re-iterated)
- Staff approves and archives project
 - APS basic record created
 - Automatic export to APS (see archive ingest workflow for encoding and review process steps) and playout server as needed (the latter is only relevant for urgent / time critical content)
 - Use program proposal with review to create synopsis
 - Archiving of relevant project files and documents on APS
 - Program become available for scheduling
 - Web-version automatically encoded
 - Program becomes available for search and viewing via catstv.net
- Program is scheduled for transmission
 - APS records updated as needed
 - Export process to video server initiated
- Transmission playlist is consolidated if necessary
- Program played to air

Archive Ingest Workflow

- Retrieve tape from archive shelf
- Use APS to retrieve metadata set transferred from old archive system
- Check tape label against APS records for consistency
- Load tape into VCR at capture station and ingest program using FCP or Final Cut Express (FCE).
 - Adjust APS program length record or content description/synopsis as necessary
 - Trim pre-role as needed
- Export uncompressed file from FCP for FCE and set up compressor encoding job based on pre-defined APS ready encoding profile / Check output filename
- Compressor encodes broadcast resolution version
- Compressor encodes web streaming version

- Finished files are moved into APS watch folder
- APS automatically (based on file name) ingests two compressed files and associates them with existing metadata record
- APS marks program record for review
- Operator reviews ingested copies for quality and correct association
 - If approved, APS record flagged as complete and program is now available for web search and playout scheduling
 - If denied, APS record reverts to recapture queue. At this point operator should perform quick diagnostic and resubmit tweaked compressor job if rejection was due to quality. If file naming was incorrect search watch folder for correct file and manually associate with correct record
- If APS record failed to find any file, job will remain in open capture queue until completed
- After approval APS will delete relevant file from watch folder
- Compressor (clients) configured to clear process files and delete input files automatically one week after job was initially submitted

These following two workflows are derivatives of the two above.

Newly Donated Pre-produced Content

Follows same workflow path as Archive Ingest with the exception that initial APS record is manually created rather than already present (from old archive system migration).

Ingest may include compliance editing and audio processing / adjustments followed by relevant APS updates.

Government Meeting

Follows same workflow path as Public Access Program creation from the point of the editing process forward.

Government meetings may have different metadata requirements compared to public access content. The nature of which will depend on the work by the CATS and CoB Metadata Working Group.

APS record may be created by the time a recording request is scheduled.

Material could be ingested automatically to server (FCP) through a live capture station or via delayed tape ingest as needed.

Schematic Content Flows

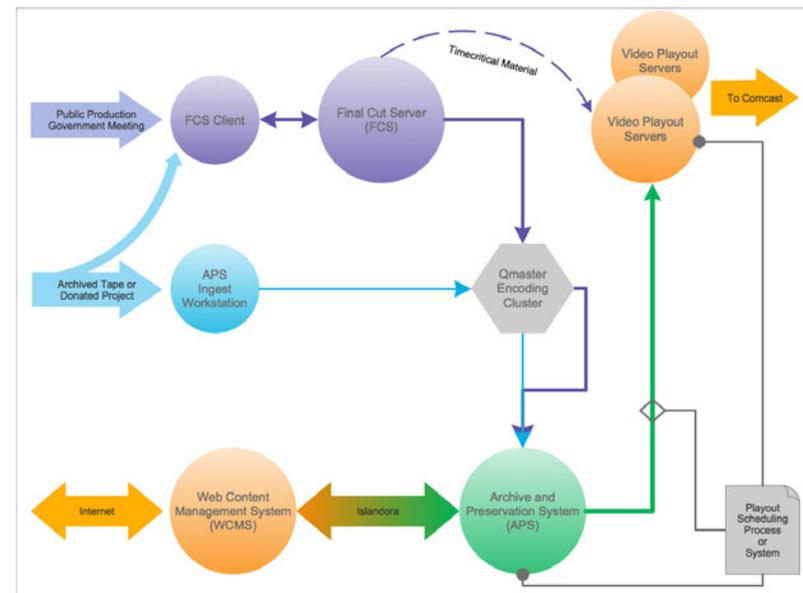


Figure 9 Schematic Content Flows in the Proposed CATS Production Environment

Implications of Investment on General Budget

The following analysis assumes a phased implementation of the recommendations contained within this document. Since all recommendations for the CoB are either without significant cost or may be accommodated by existing processes or resources no specific calculations are included herein. All further analysis pertains to CATS and its operations as defined by its 2010 draft budget.

To contextualize the following calculations please also refer to the overall implementation budget as well as the suggested high-level implementation timeline both presented further below in the appendix of this report.

Assumptions

Cash contributions by funding partners are non-reverting. However, based on the projected short term investment needs and given CATS's status as a department of the library it is assumed that any provisional budget surplus will be spent by the end of each year and will not be accumulated and carried forward across fiscal periods.

All calculations assume that the funding level of CATS and its staffing expenses remain the same over the calculated time frame. This is a simplification of the assumption that increases in funding, through increases in cable revenue, will at least cancel out if not outpace any pay increases for staff.

All calculations assume that the majority of recommendations within this report will be implemented over the coming two years. The one exception to this is the potential implementation of "phase 2" of the automation and scheduling upgrade which would see CATS switch to a fully automated and largely unattended playout operation.

Some items such as the de-activation of the sprinkler system or upgrades to the UPS capacity will potentially carry a cost. The cost could not be reliably predicted or calculated within the constraints of this report. The implementation budget in the appendix carries a note such as TBD against such items. These items have been excluded from the budget calculations herein.

Due to the high level or indicative nature of this budget, line items have not been adjusted for inflation. Neither have any cost savings for commodity hardware been included that may occur as a result of technical innovation. Such calculations should be undertaken in more detail as part of any diligent implementation planning and project definition work undertaken by CATS prior to executing the recommendations of this report.

The main project areas for year 1 encompass:

- FCS
- IT upgrades and standardization
- APS
- WCMS

The main project areas for year 2 encompass:

- Further cross system integration
- Launch of additional online services
- File/server based playout to Comcast
- Incremental storage upgrades

The main project areas for year 3 encompass:

- Network-TV style scheduling and playout
- Incremental storage upgrades

The cost/value of internal labor has been excluded from all calculations and as such most operational changes are assumed to be cost free. A split between operational and capital expenditure has been provided defining the annual cost of training resources and support contracts (where applicable) as operational expenditure.

Implementation Cost by Year

The total cost of all valued recommendations within this report is \$153,081 excluding reoccurring *annual outlays*. (Please refer to appendix for line items)

Based on a phased implementation outlined above the breakdown is as follows:

Year 1

Investment	Annual Outlays	Total
\$39,196	\$6,804	\$46,000
Of which	CapEx	OpEx
	\$34,946	\$11,054

Year 2

Investment	Annual Outlays	Total
\$45,385	\$6,804	\$52,189
Of which	CapEx	OpEx
	\$46,135	\$6,054

Year 3

Investment	Annual Outlays	Total
\$68,500	\$12,804	\$81,304
Of which	CapEx	OpEx
	\$69,250	\$12,054

Funding Proposal

Based on the 2010 draft budget provided by CATS there is currently an un-allocated reserve within the budget of approximately \$31,000.

Furthermore the budget contains provisions for capital expenditure of \$55,000 for equipment and \$10,000 for software.

Assuming that there is a certain degree of overlap between the \$65,000 of budgeted capital investments and the recommendations in this report, outlays in year 1 and 2 two could be funded by requisitioning the un-allocated reserve and then funding the remainder out of the capital expenditure allocations of the existing budget. This may require some small sacrifices or re-prioritization on the part of CATS but over all seems to put the recommendations (for year 1 and 2) within this report firmly within CATS’s reach without the need for significant additional funding.

Lastly, based on the actual expenditure figures provided by CATS for some of its operational outlays presented in Table 3 below additional funds could be mobilized.

	2008	2009
Videotape	\$17,650	\$12,155
Equipment	\$43,948	\$40,408
Video Materials	\$9,791	\$11,175
Software	\$636	\$2,019
Repairs	\$2,906	\$5,276

Table 3 CATS Select Actual Operational Outlays

As an almost tape-less production environment becomes reality, based on the FCS deployment, digital storage through the APS and file based acquisitions through solid-state camcorders, past savings on tape cost could increase further, potentially freeing between \$10,000 and \$15,000 per year.

Cost Benefit Statement

Most recommendations in this report either create capabilities to help CATS maintain its relevance for the local community or deal with technological transitions that necessitate upgrades due to the end-of-life status of existing infrastructure. As such these investments are likely to unlock a host of intangible benefits that cannot be adequately quantified by conventional analysis. In other instances service continuity or access to historical content is at risk and thus forces upgrades upon CATS for operational or social reasons. The latter is particularly true in case of the APS and the need to preserve an anthropologically valuable archive of locally produced content.

In such instances the recommendations in this document aim to solve these issues in the most cost effective way feasible by utilizing commodity hardware, repurposing existing equipment and deploying open source software wherever possible.

However, the “phase 2” of the scheduling and automated playout recommendation cannot claim exemption under any of the above conditions. It also represents potentially the largest capital outlay and a significant increase in annual support/licensing costs for CATS. Improvements in MCR technology through server based playout and adaptation of existing systems should enable CATS to continue operations based on current staffing levels without the need for a systems upgrade such as proposed by “phase 2”.

Thus the only way such an investment could be justified within this context is against reductions in labor cost, i.e. a reduction in the number of staff hours for master control operators. If such a system would allow CATS to operate its playout largely unattended and this would result in a reduction of master control staff by 50% then such an investment might potentially save money after 4 years (see Table 4).

This statement is based on the assumption that a 30% labor cost reduction can be achieved in the year of implementation and then 50% thereafter. These savings decrease by 5% per year due to overall increasing labor cost.

The outlay for the automation system is assumed to occur at the beginning of the first year whereas annual license and support fees are due at the end of every year thereafter.

The discount rate was assumed to be at 5% based on subjective evaluation pitching it against the cost of government borrowing and inflationary pressures.

	current cost				
MCR staffing	54,406				
Discount rate for NPV	5%	Y0	Y1	Y2	Y3
Assumes savings diminish at 5% pa		\$16,322	\$25,843	\$24,551	\$23,323
Automation CapEx and fees		-\$60,000	-\$6,000	-\$6,000	-\$6,000
Staff savings at end of year		\$16,322	\$19,843	\$18,551	\$17,323
	NPV	\$3,819			

Table 4 Scheduling and Automation Project, Phase 2, NPV

Conclusion

CATS should be able to immediately commence implementation of the recommendations contained within this report. With diligent and proactive project management it should be possible to achieve a full implementation from exiting funds without the need for increased outside funding.

The implementation of an advanced scheduling and automated playout environment should be delayed until year three and then scrutinized against potential future price reductions for such software products as well as actual achievable labor savings.

High-level implementation Timeline for Years 1, 2 and 3

A suggested high level implementation timeline can be found in the appendix of this report. Project durations are rough estimates and do not assume full resource utilization. Please consider the timeline as a rough guide for how long it should take to accomplish the implementation of specific key recommendations and projects contained in this report if undertaken during the course of normal operations at CATS.

Please refer to the implementation budget in the appendix listing major project dependencies for a more detailed perspective on interdependencies.

This timeline may not include all future projects. Please refer to the most recent version of this document as necessary.

No specific timeline exists for years 4 and 5, as these years would mainly see CATS leverage its newly created capabilities for the benefit of the community. CATS would also use the WCMS based infrastructure for packaging and promoting content through various online service options outlined in section 4 of this report.



Audience and Users

Section 2 – Audience and Users

This section is dedicated to exploring the expectations and consumption behaviors of potential audiences for the video content produced by the CoB and CATS.

The goal is to document current expectations as well as explore which social trends are like to impact on future media consumption behavior in this space.

This section reviews a selection of relevant academic work and pertinent journalism. It also evaluates audience/user feedback gathered through a dedicated survey administered specifically for this report.

Video Services User Survey

A survey was specifically created for this report in order to gather feedback from local consumers of PEG content. The full survey questionnaire, summary statistics as well as the complete set of unedited responses, including partial responses, are available in the appendix of this document.

Background and Survey Process

The “Video Services User Survey” was created in late February 2010 with input and advice from representatives of the CoB, CATS and MCPL. The survey was administered electronically through www.surveymonkey.com between March 12th and April 5th 2010, using an account provided by the CoB. The survey was also available, upon request, in paper form. However, no paper copies were requested.

The survey contained a combination of 50 multiple choice and open-ended questions including demographic questions.

Limitations of Method

Due to time and budget constraints the survey **did not use a randomized sample** and is therefore statistically not predictive of the over all consumer population for PEG content in the Bloomington area. The survey was self-selecting and mainly promoted through the CoB Website (bloomington.in.gov) as well as the CATS website (catstv.net) and through the PEG channels operated by CATS. This therefore places obvious limitations on the predictive value of the survey results. The survey did not specifically exclude staff members of MCPL, CATS or the CoB.

Thus this survey clearly uses nonprobabilistic sampling and confidence intervals are not specifically calculated for the relevant responses. In the context of a heavily biased sample this might otherwise give the impression of predictive power (of the findings) that cannot be justified.

Nonetheless, it was deemed important to gather feedback from current users of local PEG services to enhance the insights for this report with input from the public.

The results and summary statistics included in the appendix also contain partial/incomplete submissions by respondents that did not finish the survey. Since the goal was to gather as much feedback as possible these responses have been preserved. When results are analyzed against specific demographic characteristics, incomplete submissions are excluded from the analysis, since most demographic questions were mandatory and placed at the end of the survey. Thus some respondent counts for such “cross-tabbed” analysis may vary from those presented in the appendix.

When cross-tabbed analysis is used this will be specifically stated in the text. Charts will generally have the number of responses “n” they are based on indicated as part of their description. For more detailed information on specific results please refer to the relevant survey question in the appendix.

Results and Findings

Out of the 200 respondents that started the survey 158 completed it, resulting in a completion rate of 79%. The following paragraphs present some of the key findings. Please refer to the appendix for the complete set of responses.

Demographics

Out of the 158 participants to complete the survey 58% were female and 42% male.

Ages were relatively evenly distributed within the respondent group as Figure 10 below demonstrates. Note that the range for 20-29 year olds has been broken down into two sub-categories.

Table 5 provides the age distributions within the gender categories. The male portion of the respondent group appears to be biased towards younger age ranges whereas the female respondents are more strongly represented in the 50-64 age bracket.

Your age:	Your gender:		Response Percent	Response Count
	male	female		
0-19	0.0%	2.2%	1.3%	2
20-24	9.1%	9.8%	9.5%	15
25-29	19.7%	12.0%	15.2%	24
30-39	27.3%	21.7%	24.1%	38
40-49	18.2%	22.8%	20.9%	33
50-64	19.7%	28.3%	24.7%	39
65+	6.1%	3.3%	4.4%	7
	66	92	answered question	158
			skipped question	0

Table 5 Age Distribution by Gender

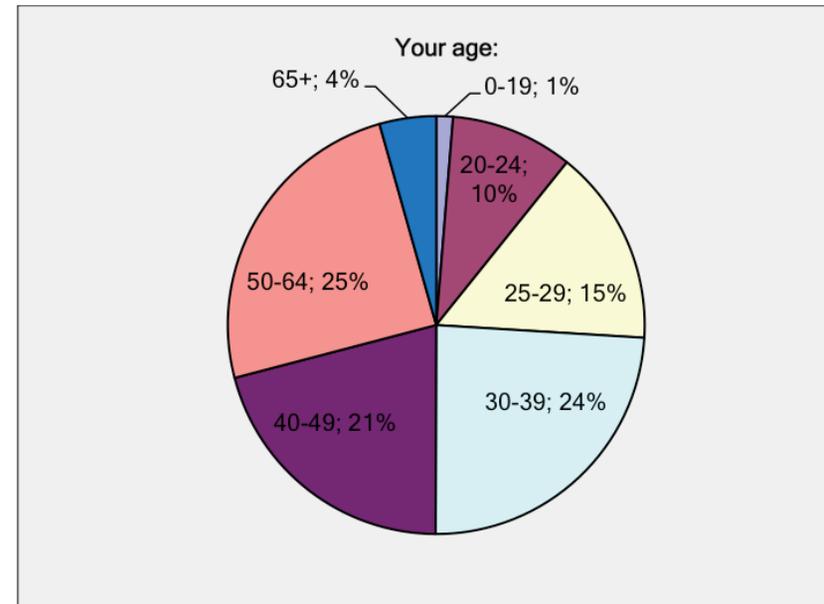


Figure 10 Age Distributions of Survey Respondents (n=158)

76% of all respondents had either a college or graduate degree (35% college, 41% graduate). For reference the “Educational Attainment” data for over 25 year olds (available here from the Census Bureau: <http://www.census.gov/population/www/socdemo/educ-attn.html>) suggests that nationally only 9% of the population hold a master’s degree or doctorate. 19% hold a bachelor’s degree (Based on the “Current Population Survey 2009”). This percentage for undergraduate degrees rises to 30% if associate’s and professional degrees are included.

Only 6.4% of respondents reported “some high school or a high school degree” as the highest level of completed education. 15% reported “some college”. The aforementioned Census Bureau data estimates that 31% of the US population has a high school degree by age 25 as the highest level of educational attainment (if “some high-school” were included this percentage would be even higher).

This appears to indicate that this survey unfortunately failed to reach or elicit a sufficient number of responses from this demographic and as such reflects mostly the input from a rather well educated, technologically savvy section of the community. Given the way the survey was promoted (online and on-air) further outreach activities to the less privileged parts of the Bloomington community by CATS and CoB may be useful with a specific focus on uncovering and addressing any potential “digital divide” issues.

Figure 11 provides the income distribution for the survey takers. The US Census Bureau reports the median household income for the State of Indiana as \$47,898 for 2007/2008.

<http://www.census.gov/hhes/www/income/statemedfaminc08.html>

When “unreported” responses are discarded the up to \$49,999 bracket in this survey accounts for 54% of all responses.

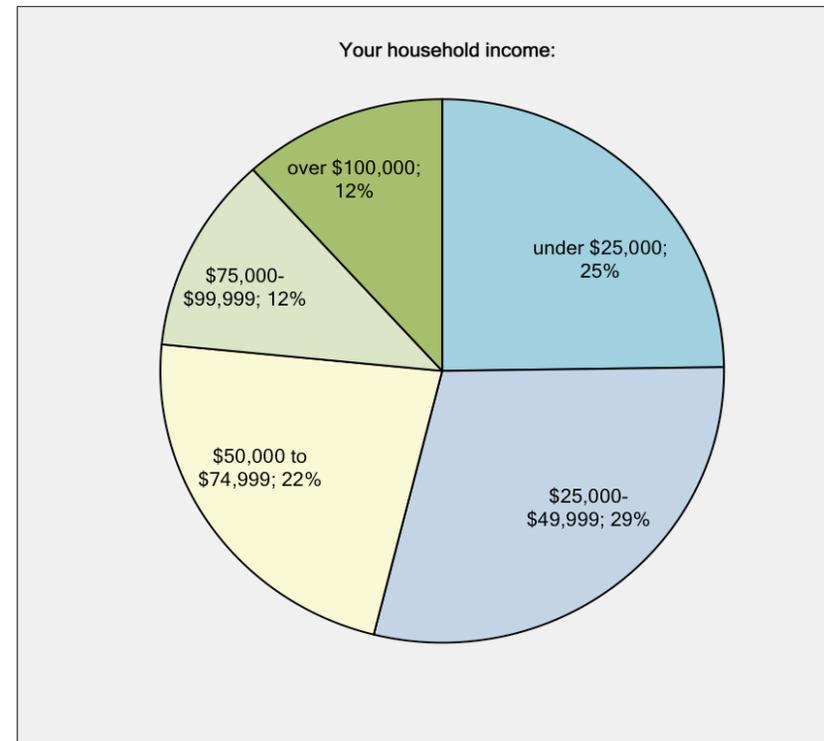


Figure 11 Income Distributions of Survey Respondents Who Reported Their Income Bracket (n=137)

Table 6 generated from national income distribution data (based on the US Census CPS Table HINC-06 for 2008, http://www.census.gov/hhes/www/cpstables/032009/hhinc/new06_00.htm) shows for comparison the respective national income distribution matched to the ranges used by this survey.

under \$25,000	25%
\$25,000-\$49,999	25%
\$50,000 to \$74,999	18%
\$75,000-\$99,999	12%
over \$100,000	20%

Table 6 National Income Distribution Data 2008 (Source: US Census CPS Tables HINC-6, 2008)

This suggests that the respondent population of the “Video Services User Survey” might be more middle-class than the national average but contains fewer high-earning households in the top bracket.

Of those who responded to the question about citizenship 100% (of 155) were American citizens.

All 158 respondents listed English as a language spoken at home with 4.4% also listing Spanish and one listing of Portuguese and Italian accounting for the 1.3% reported under “other”.

78% of respondents reported living in Bloomington, 5% in Ellettsville, 14% in other parts of Monroe county and 3% elsewhere (Brown and Owen County as well as Chicago were reported). 80% reported having lived in Monroe County for 5 years or more.

Their World

Based on all responses most survey participants owned TVs, with 46.5% already owning a high definition capable set (See Figure 12). HD-TV ownership did not appear to be gender dependent across the respondent pool with less than 2% difference between the two groups as Table 7 indicates.

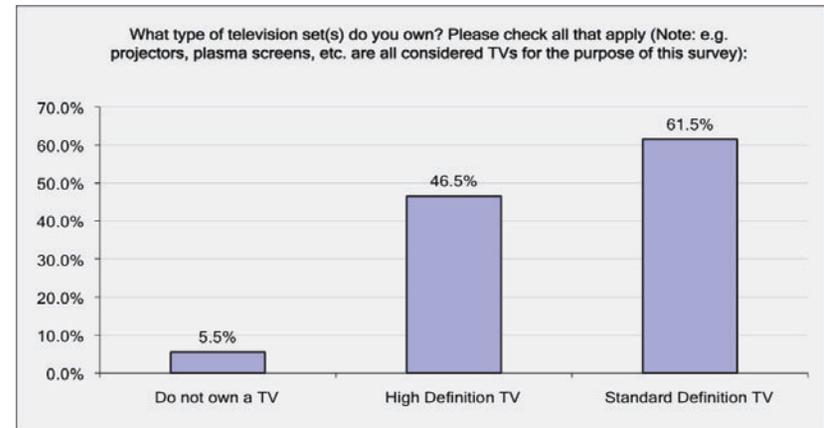


Figure 12 TV Ownership Among Survey Respondents (n=200)

Video Services User Survey		Your gender:		Response Percent	Response Count
What type of television set(s) do you own? Please check all that apply (Note: e.g. projectors, plasma screens, etc. are all considered TVs for the purpose of this survey):		male	female		
Do not own a TV		3.0%	4.3%	3.8%	6
High Definition TV		48.5%	46.7%	47.5%	75
Standard Definition TV		57.6%	66.3%	62.7%	99
				answered question	158
				skipped question	0
answered question		66	92		

Table 7 TV Ownership by Gender

This question, like the following question on computer ownership allowed for non-exclusive choices, which explains why the totals sum up to more than 100%. About 2/3rds of respondents also reported having some form of cable television service, with roughly 1/5th reporting digital video recorder (DVR) ownership.

Only 20% of those who answered the relevant question (194 of 200) were receiving digital TV signals over airwaves. 14% of respondents had direct to home satellite service. 13% had IPTV based television services such as AT&T U-verse.

CATS, the main PEG provider only telecasts its output through the local cable provider Comcast (with some limited carriage on AT&T U-verse), whereas WTIU’s TIU-World has wider availability by also offering digital terrestrial broadcasts in the Bloomington market.

With this in mind, other responses were cross-tabbed against cable tv subscribers. Compared to their peers with cable TV service, non-cable customers were somewhat more attached to their Internet service. Only 15% would give up Internet services over TV services if they had to chose one, compared to 26% of cable customers willing to part with online access. Respondents with no cable TV service were also more likely to consume streamed PEG content online (45% vs. 27% with n=60 vs. n=114 respectively) during the year.

Perhaps not surprisingly for a survey administered online, computer ownership was even higher than TV ownership in absolute numbers with laptops being the most popular type of computer (see Figure 13).

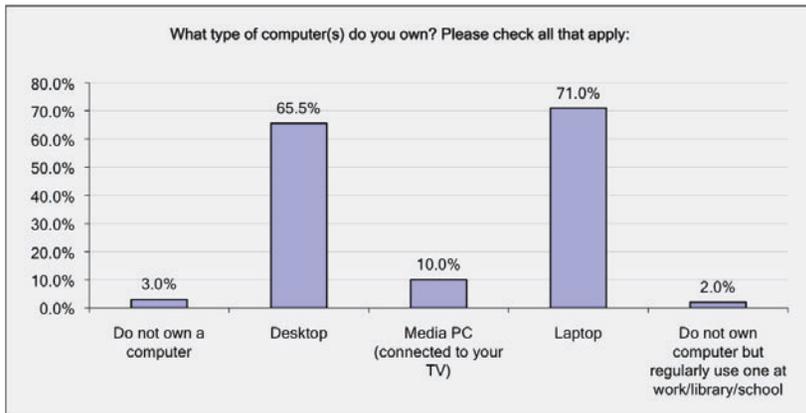


Figure 13 Computer Ownership Among Survey Respondents (n=200)

Gender did not seem to influence the likely hood of laptop or desktop ownership in a significant way, whereas 18.2% of male respondents owned a Media PC vs. only 4.3% of females (see Table 8)

Video Services User Survey
What type of computer(s) do you own? Please check all that apply:

Answer Options	Your gender:		Response Percent	Response Count
	male	female		
Do not own a computer	1.5%	4.3%	3.2%	5
Desktop	69.7%	67.4%	68.4%	108
Media PC (connected to your TV)	18.2%	4.3%	10.1%	16
Laptop	68.2%	67.4%	67.7%	107
Do not own computer but regularly use one at work/library/school	0.0%	3.3%	1.9%	3
			answered question	158
			skipped question	0
answered question		66	92	

Table 8 Computer Ownership by Gender

Roughly a third of respondents had portable video playback device like a smart phone or video capable music player or both (the data implies about 14% own both, the question allowed for multiple choices). Almost half did not own either type of device (see Figure 14).

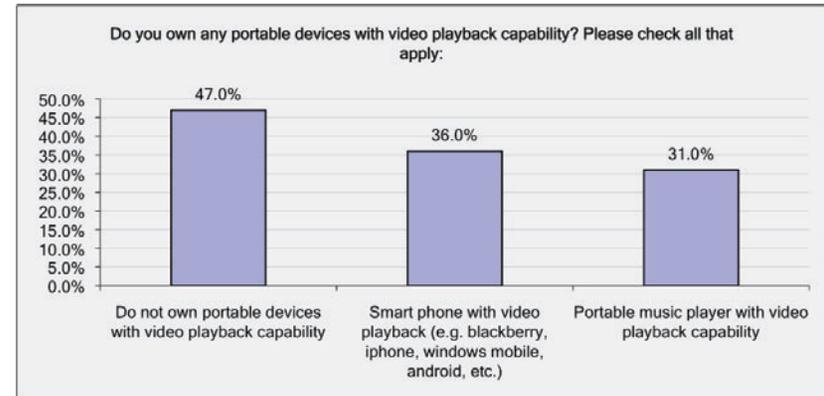


Figure 14 Portable Video Playback Device Ownership (n=200)

Similarly 88.5% percent of respondents reported having broadband Internet access at home vs. 8% with no Internet access. While this

combined with Figure 13 portrays the survey participants as technically well equipped and well connected, it is important to remember that this may not be indicative of consumers of PEG content in general.

Those with broadband access at home were asked to name their provider. Analyzing these responses shows that just over half use Comcast’s cable Internet service and a little over a quarter use AT&T as their provider (mostly ADSL with a small subgroup opting for the faster AT&T U-verse service). The local rural telecom provider Smithville is the third most named provider (roughly 10%). The remaining responses mostly account for independent service providers reselling products of the incumbent carriers and those served through IU in on-campus housing.

In keeping with the earlier observation of a technologically savvy respondent group 80% of those who answered (193 responses) professed to use some type of Internet video service. When asked to further elaborate on the type of services used 152 participants responded while 48 skipped the question.

Among this respondent group streaming services such as “YouTube” were most popular, IPTV offerings like “Hulu” and “Netflix Streaming” came second, whereas “for pay” download services were used by just over half in the respondent group. Figure 15 below provides the percentage breakdowns for the non-exclusive answer choices.

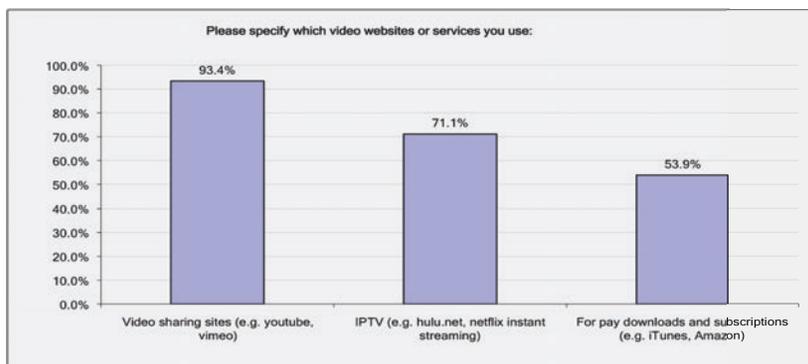


Figure 15 Internet Video Services, Usage by Type (n=152)

189 respondents chose to answer the question “What sources do you use for Bloomington News?”. After allocating the coded responses from the “other” option (where most people mentioned specific websites or services such as Twitter), online sources emerge as the leading news source in the respondent group followed by print media and word of mouth.

Figure 16 provides the percentage breakdown for the answers. Multiple choices were permitted.

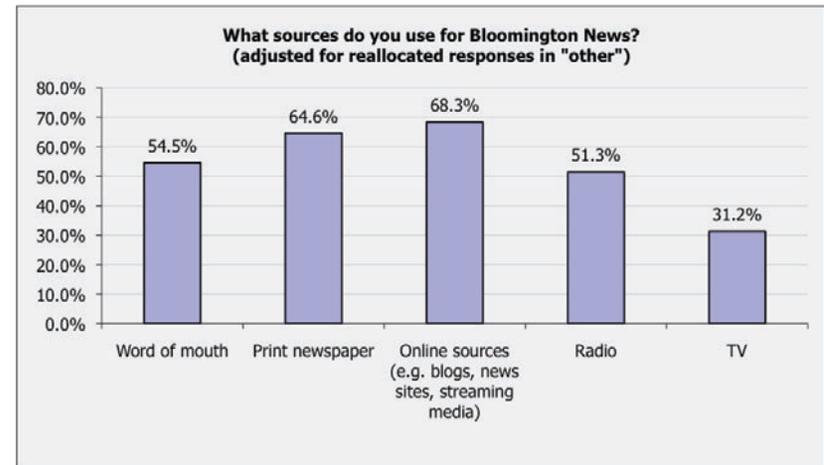


Figure 16 Sources for Bloomington News (n=189)

The line between word of mouth and online may be somewhat blurred, as often social networking sites provide a digital medium for word of mouth type exchanges. The data presentation does not specifically address this ambiguity. Social networking sites listed by respondents in the “other” section were charged to the online rather than word of mouth category for the chart in Figure 16.

PEG Services, Use and Modes of Consumption

The following charts show how respondents reported their PEG consumption behavior as well as what modes of consumption were used (e.g. online vs. cable telecast).

TIU World has the highest regular viewer base among the survey respondents, which may be a result of its wider availability over a range of platforms. The City and Library channels respectively are slightly more popular than the County and general public access channels. Overall the differences in terms of popularity between these four channels are relatively small as Figure 17 indicates. The one channel that was barely watched by the survey respondents (in comparison) was SCOLA International.

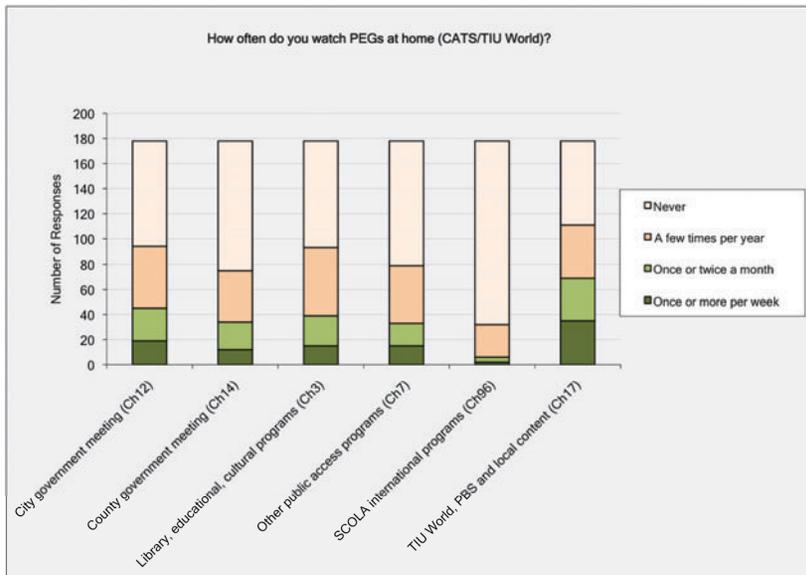


Figure 17 Consumption of PEG Content - Frequency (n=178)

When broken down by gender (see Table 9) there appears to be a slight male bias in viewing preferences for the City and County government channels. Viewing preferences for the Library and educational content of Comcast Channel 3 seem to exhibit a female bias in the respondent population.

The term “viewing preferences” in the context of Table 9 and Table 10 simply describes the aggregate of any reported consumption of a specific channel, be it “a few times a week” or “few times a year”, and

is therefore a relatively coarse measure. A more detailed breakdown of viewing frequencies by gender can be found in the appendix under the section for “Cross Tabs” for the “Video Services User Survey”.

Answer Options	Your gender:		Response Count
	male	female	
City government meeting (Ch12)			
At least a few times per year	63.6%	46.7%	
Never	36.4%	53.3%	
	66	92	158
County government meeting (Ch14)			
At least a few times per year	53.0%	35.9%	
Never	47.0%	64.1%	
	66	92	158
Library, educational, cultural programs (Ch3)			
At least a few times per year	47.0%	56.5%	
Never	53.0%	43.5%	
	66	92	158
Other public access programs (Ch7)			
At least a few times per year	47.0%	46.7%	
Never	53.0%	53.3%	
	66	92	158
SCOLA international programs (Ch96)			
At least a few times per year	24.2%	14.1%	
Never	75.8%	85.9%	
	66	92	158
TIU World, PBS and local content (Ch17)			
At least a few times per year	63.6%	63.0%	
Never	36.4%	37.0%	
	66	92	158
	<i>answered question</i>		158
	<i>skipped question</i>		0

Table 9 PEG Consumption by Gender

The data presented in Table 10 also represents a condensed version of the detailed cross tab data for this survey question included in the appendix. To generate more meaningful sample sizes, “the level of education achieved” has been aggregated into three categories with the data from the comparatively small “other category” discarded.

The bottom of each category contains the actual number of responses recorded. As these questions were not mandatory to complete, Table 12 for example, displays different response counts for each category as some respondents chose to submit incomplete responses.

Please note that as with all other statements made in this survey, the data displayed in these tables is only representative of the self selected

survey population and should not be taken as representative of the wider PEG audience in Bloomington.

Video Services User Survey
How often do you watch PEGs at home (CATS/TIU World)?

Answer Options	What is the highest level of education you have completed?			Response Count (excl. "other edu")
	Some High School, or High School Degree, or Some College	College Degree	Graduate Degree	
City government meeting (Ch12)				
At least a few times per year	63.6%	43.6%	57.8%	
Never	36.4%	56.4%	42.2%	
	33	55	64	152
County government meeting (Ch14)				
At least a few times per year	51.5%	30.9%	50.0%	
Never	48.5%	69.1%	50.0%	
	33	55	64	152
Library, educational, cultural programs (Ch3)				
At least a few times per year	57.6%	43.6%	56.3%	
Never	42.4%	56.4%	43.8%	
	33	55	64	152
Other public access programs (Ch7)				
At least a few times per year	48.5%	45.5%	48.4%	
Never	51.5%	54.5%	51.6%	
	33	55	64	152
SCOLA international programs (Ch96)				
At least a few times per year	12.1%	20.0%	20.3%	
Never	87.9%	80.0%	79.7%	
	33	55	64	152
TIU World, PBS and local content (Ch17)				
At least a few times per year	51.5%	67.3%	64.1%	
Never	48.5%	32.7%	35.9%	
	33	55	64	152
	answered question (including "other edu")			157
	skipped question			0

Table 10 PEG Consumption by Level of Education

Not surprisingly Comcast was the most popular means of consumption for PEG content (see Figure 18). Yet both the Internet streaming service and online meeting archive offered by CATS showed detectable levels of (reported) use despite the relatively low level of publicity these services have received in the past.

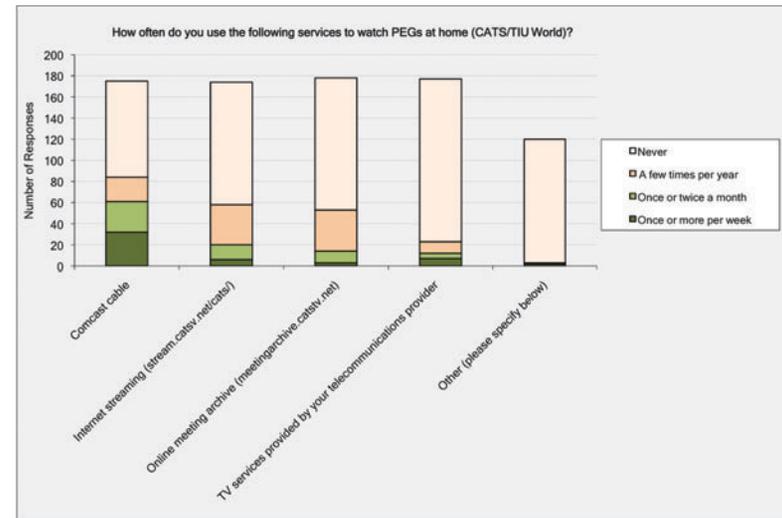


Figure 18 Method of PEG Consumption - Frequency (n=178)

While women represented the larger pool of consumers in absolute numbers (due to the female bias of the respondent population) men seem to be over all more likely to consume PEG content at least a few times a year through the various available methods (cablecast, online, IPTV).

Video Services User Survey
How often do you use the following services to watch PEGs at home (CATS/TIU World)?

Answer Options	Your gender:		Response Count
	male	female	
Comcast cable			
At least a few times per year	54.7%	46.2%	
Never	45.3%	53.8%	
	64	91	155
Internet streaming (stream.catsv.net/cats/)			
At least a few times per year	37.5%	31.1%	
Never	62.5%	68.9%	
	64	90	154
Online meeting archive (meetingarchive.catsv.net)			
At least a few times per year	34.8%	28.3%	
Never	65.2%	71.7%	
	66	92	158
TV services provided by your telecommunications provider (e.g. AT&T U-verse, Smithville S+TV)			
A few times per year	12.1%	12.1%	
Never	87.9%	87.9%	
	66	91	157
	answered question		158
	skipped question		0

Table 11 Method of Consumption by Gender

Video Services User Survey				
How often do you use the following services to watch PEGs at home (CATS/TIU World)?				
Answer Options	What is the highest level of education you have completed?			Response Count (excl. "other edu")
	Some High School, or High School Degree	College Degree	Graduate Degree	
Comcast cable				
At least a few times per year	40.6%	50.9%	53.2%	
Never	59.4%	49.1%	46.8%	
	32	55	62	149
Internet streaming (stream.cats.net/cats/)				
At least a few times per year	31.3%	29.6%	35.5%	
Never	68.8%	70.4%	64.5%	
	32	54	62	148
Online meeting archive (meetingarchive.catstv.net)				
At least a few times per year	24.2%	29.1%	34.4%	
Never	75.8%	70.9%	65.6%	
	33	55	64	152
TV services provided by your telecommunications provider (e.g. AT&T U-verse, Smithville S+TV)				
At least a few times per year	18.8%	9.1%	12.5%	
Never	81.3%	90.9%	87.5%	
	32	55	64	151
	answered question (including "other edu")			157
	skipped question			0

Table 12 Method of Consumption by Level of Education

Based on the self reported data from the survey higher levels of education seem to also increase the likelihood of PEG consumption through most modes, with the notable exception of IPTV.

Figure 19 and Figure 20 display the reported frequency with which the respondents to the survey reported watching specific City and County originated content / meetings.

Due to the non-predictive nature of these responses in statistical terms, the results reported should not be seen as a vote of popularity by the wider PEG user community but merely a reflection of the specific interests represented within the particular respondent group of this survey.

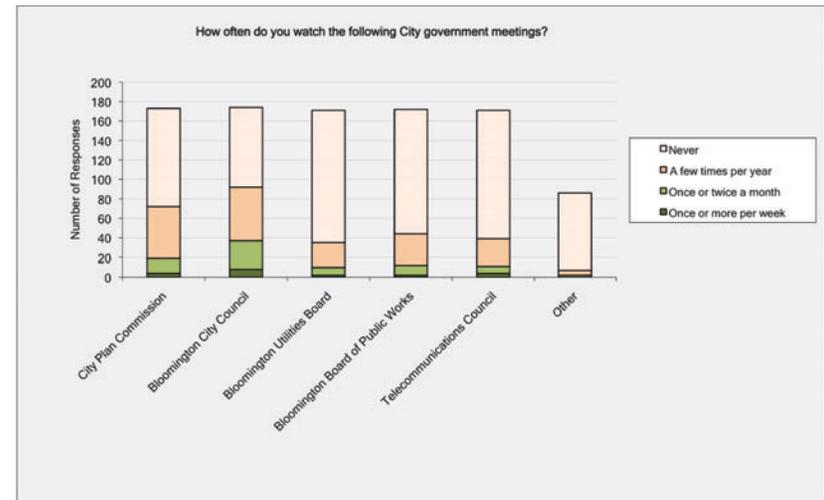


Figure 19 Consumption of City Content - Frequency (n=174)

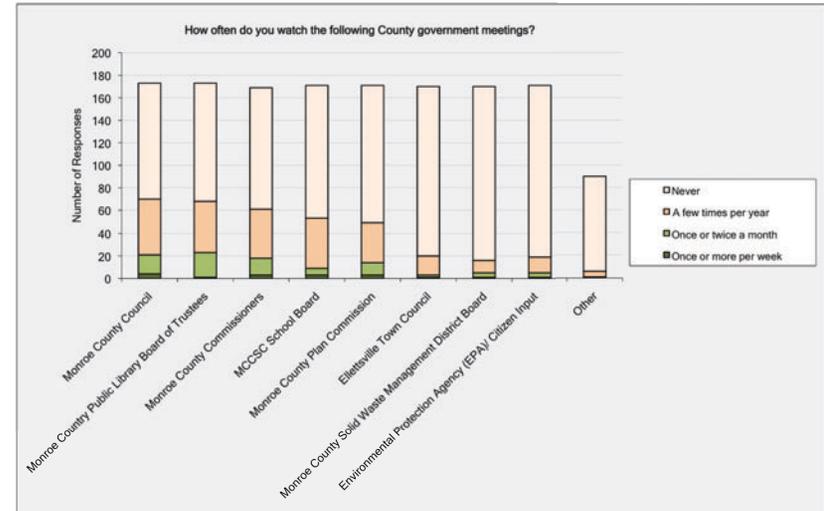


Figure 20 Consumption of County Content - Frequency (n=173)

Figure 21 in conjunction with the expanded feedback received to open-ended questions seems to suggest that at least within the

respondent group of this survey, the Bloomington YouTube channel could benefit from measures that would raise its profile. A number of open-ended responses expressed surprise at its existence.

“I did not know we had a youtube channel! I might start checking that out.” (A survey respondent for question 25)

“More promotion. I didn't know the city even had a youtube page or streaming video on its website. Can't really evaluate it until I've seen it.” (A survey respondent for question 26)

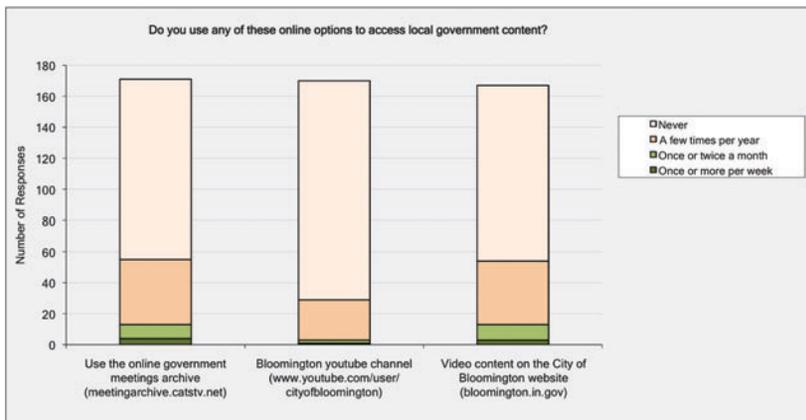


Figure 21 Online PEG Options - Frequency of Use (n=173)

The latter ties into a larger re-occurring theme of an awareness deficit among the respondent population about the full range of services offered as part of the PEG activities in the Bloomington market. This issue will be discussed in more detail further below.

Better Use of Internet Video

Question 26 specifically asked what the CoB could do to take better advantage of Internet video. The responses were coded into the three categories presented in Figure 22. 55% of all respondents felt that awareness-building activities were most important.

“Better advertising -- I did not know about the Bloomington youtube channel.” (A survey respondent for question 26)

“Publicize more.” (A survey respondent for question 26)

“Increase the profile of these services. Didn't know they existed.” (A survey respondent for question 26)

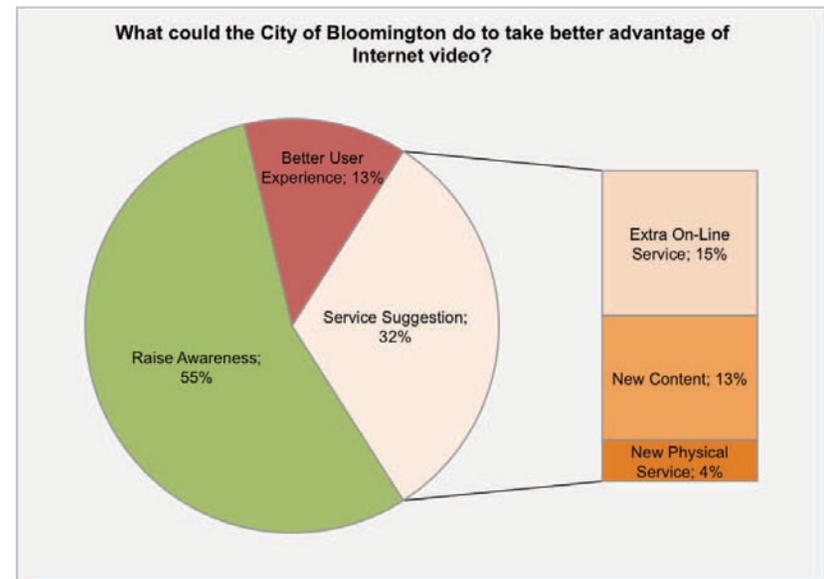


Figure 22 Suggestions for Better Use of Internet Video / Question 26, Coded Responses (n=50)

Other responses focused on usability related issues.

“better interface” (A survey respondent for question 26)

“Provide content that is of interest, allow for indexing so that viewers can find parts of content they want to watch. Higher quality.” (A survey respondent for question 26)

A range of responses was grouped under the category of service suggestions. While some respondents asked for the introduction of physical services such as fiber optic network access most focused on either specific ideas for new content/programs or the expansion of online services offered to facilitate access to PEG resources.

“Multiple topical video podcast series offered through iTunes. Weekly 5-10 minute shows on arts, public works, policy, parks, etc.” (A survey respondent for question 26)

“Twitter feed publishing links to new videos as they are posted. RSS news feeds with videos posted in feeds.” (A survey respondent for question 26)

A lot of the suggestions for extra online services, such as the one in the latter quote displayed above, seemed to lean towards making information about PEG content and its availability accessible in a more convenient way. Combined with the requests for user experience improvements and the general call to raise awareness this seems to indicate that even a technologically savvy respondent group is struggling to fully utilize existing PEG services in the online domain effectively. These findings give additional support to the proposed improvements in terms of promotion and accessibility of online PEG content set forth in sections 1 and 4 of this report.

Attitudes and User Satisfaction

Overall the respondent group expressed high levels of satisfaction with the content on the various PEG channels, with TIU World and Ch12 (City Government Meetings) scoring the highest average rating. SCOLA International scored the lowest. The average scores for each channel derived from a 5-point scale are displayed in Figure 23 below.

When satisfaction ratings are computed as a percentage of those who are either very satisfied or satisfied with the content the differences between the various channels become more pronounced. In this type of analysis often used to gauge sentiment in commercial market research, based on the assumption that only avid supporters are true supporters, SCOLA falls far behind the other channels as Table 13 demonstrates. The table breaks down observations based on

supporters and strong supporters versus those that are very dissatisfied, dissatisfied or indifferent. The top 3 values are highlighted. Notably the number of (very) dissatisfied respondents is generally low for all channels.

	% s vs	% d vd	% d vd i
City Government Meetings (Ch12)	46.5%	3.8%	53.5%
County Government Meeting (Ch14)	36.5%	3.8%	63.5%
Library, educational, cultural programs (Ch3)	40.0%	4.5%	60.0%
Other public access programs (Ch7)	32.5%	3.2%	67.5%
SCOLA International Programs (Ch96)	17.0%	2.0%	83.0%
TIU World (Ch17)	38.9%	1.9%	61.1%
Response Rate	79.5%		

Table 13 Content Satisfaction for PEG Channels by Strength of Support (n=159)

The potentially more controversial content of the general public access channel manages to keep up reasonably well in terms of support levels with the government and library channel, even in this type of analysis.

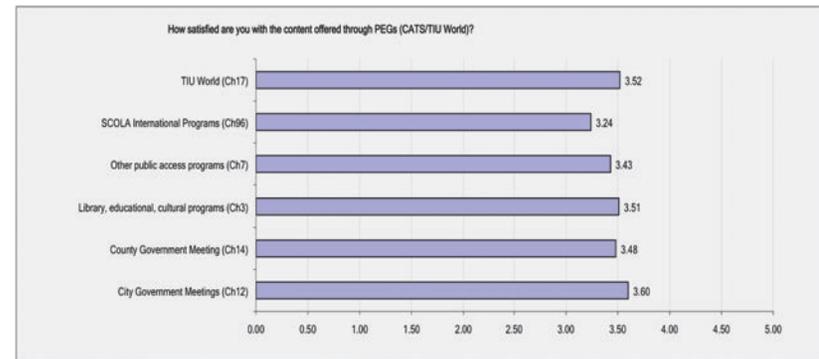


Figure 23 Average User Satisfaction with Content on PEG Channels based on 5-Point Scale (n=159)

These findings seem to align with the earlier observation that this respondent group does not display a particularly high level of consumption of SCOLA content.

However, a direct causal link between satisfaction and level of consumption cannot be established reliably due to the nature of the survey, neither are these findings indicative of viewer sentiment in the Bloomington market as a whole.

As per Figure 24 survey respondents ranked the constitutional protection of free speech on public access TV as highly valuable with an average score of 4.39. This was the highest observed score of any sentiment question using a 5-point scale in this survey. Neutral and comprehensive reporting on government meetings also ranked highly with 4.0. International news ranked lowest with 3.17 in line with earlier observations regarding SCOLA.

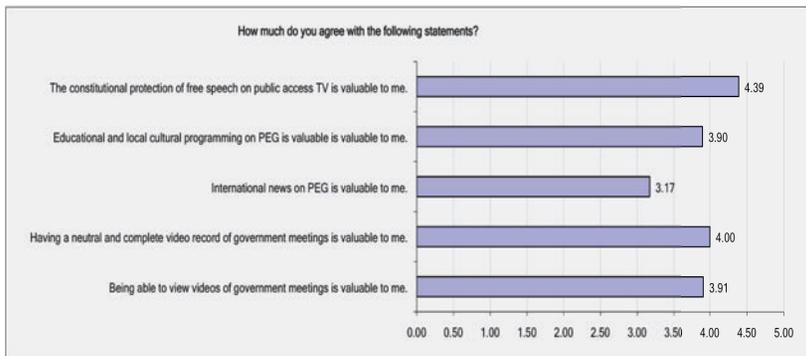


Figure 24 Value of PEG Mission (n=163)

CATS and its importance to the future of the Bloomington community achieved a score of 4.03. However, out of all sentiment questions it had the lowest response rate of only 57.5% (n=115), other 5-point scale questions before and after achieved response counts of 155 to 163 replies.

When asked about their preferred method for receiving PEG content in the future Internet streaming and cable TV ranked highest

with respondents least enthusiastic about mobile/cell phone based delivery. For “on demand” content respondents ranked online access to the historic archive of PEG content reaching back to the 1970s the highest.

When participants were polled about what types of programming should be added to the PEG channel lineup, 28 responses containing 37 suggestions were submitted. Coverage of local events (24%) and local news (22%) were most frequently mentioned followed by arts coverage (16%). The remaining suggestions covered a wide array of topics from religious programming to animal behavior.

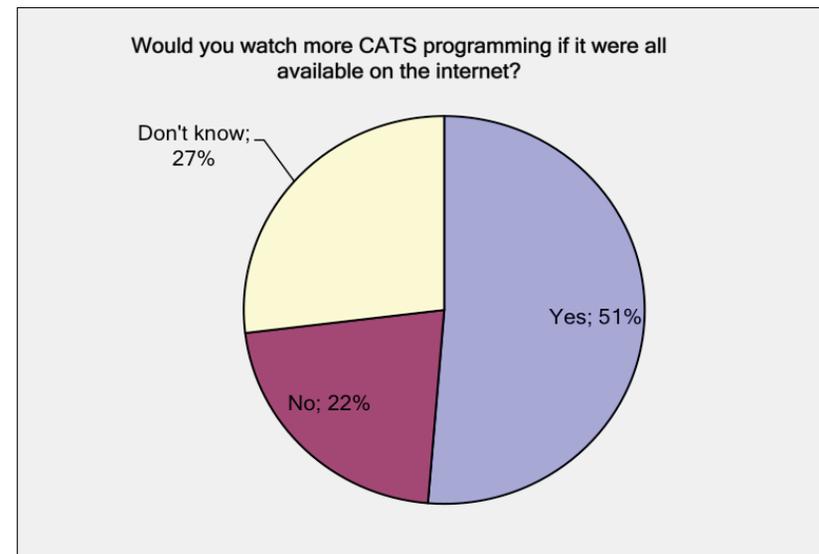


Figure 25 Reason for Potentially Increased Consumption of CATS Content - Availability Online (n=156)

According to Figure 25 just over half of the respondents claimed they would watch more CATS programming if it were all available on the Internet, yet only 15% rated HD (high definition) content as a reason for increasing their PEG consumption (see Figure 26).

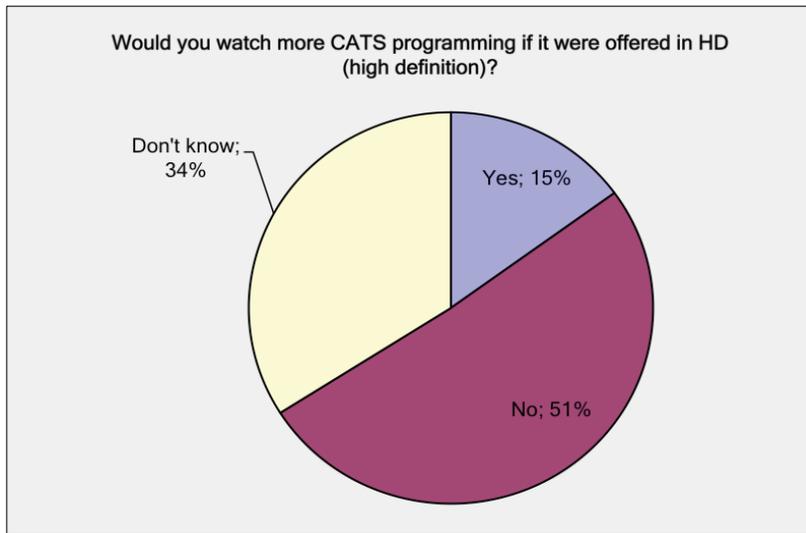


Figure 26 Reason for Potentially Increase Consumption of CATS Content - Availability in High Definition (n=153)

Opposition to a rental fee for a digital converter to receive the output of CATS was very strong with 82% unwilling to pay such a fee (see Figure 27).

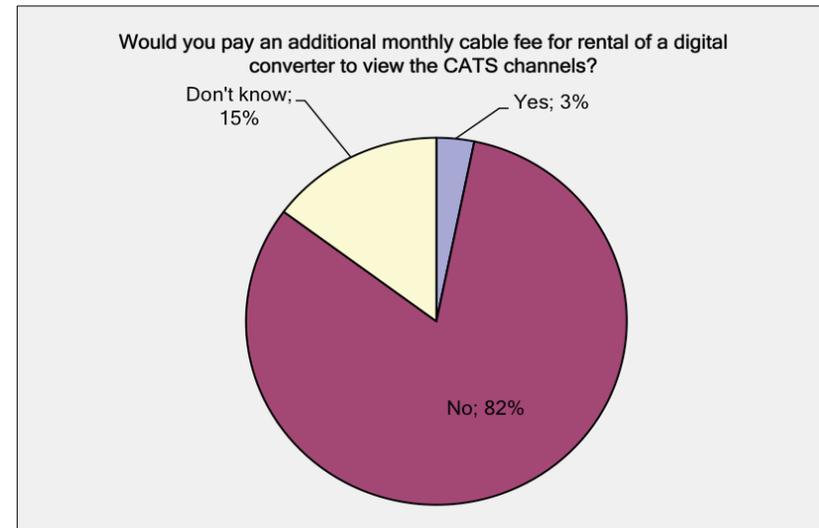


Figure 27 Willingness to Pay Rental Fee for Digital Converter (n=155)

As Table 14 demonstrates this rejection cuts across all income brackets. It might thus be as much an expression of ideological belief as of economical interest. It should be noted that the survey did not specify “how much” the additional rental fee for such a converter would be.

Answer Options	Your household income:					Response Percent	Response Count
	under \$25,000	\$25,000-\$49,999	\$50,000 to \$74,999	\$75,000-\$99,999	over \$100,000		
Yes	5.9%	2.6%	3.4%	6.7%	0.0%	3.8%	5
No	79.4%	86.8%	75.9%	80.0%	81.3%	81.1%	107
Don't know	14.7%	10.5%	20.7%	13.3%	18.8%	15.2%	20
answered question							132
skipped question							5
answered question	34	38	29	15	16		

Table 14 Opposition to Digital Converter Rental by Income Bracket

42 respondents offered further thoughts regarding video services in Bloomington with a large number *praising* or expressing gratitude for the availability of PEG content. Some were concerned about the fact that most PEG content was tied to Comcast Cable and were asking for CATS's channels to be made available on other *delivery platforms* like satellite or digital terrestrial services.

Feedback covered requests to *continue the existing services* and *other* issues such as support for the Google's fiber optic pilot, improved awareness and program ideas. The remaining feedback covered specific *complaints* such as the incomplete carriage of PEG content on AT&T's U-verse service or the lack of electronic program guide information for PEG channels on Comcast.

"I pay PEG fees to ATT and cannot receive Monroe County Programming. I am not happy with this arrangement. I have contacted ATT without any progress." (A survey respondent for question 42)

"I wish that the library would make comcast list the programs on the tv schedule. It would make it easier to record county and city meetings using the comcast dvr." (A survey respondent for question 42)

Figure 28 provides the percentages for each type of feedback provided by respondents to question 42. Off-topic responses and replies such as "none" or "don't know" where discarded from this analysis. The complete list of unedited responses is included with the full survey results in the appendix.

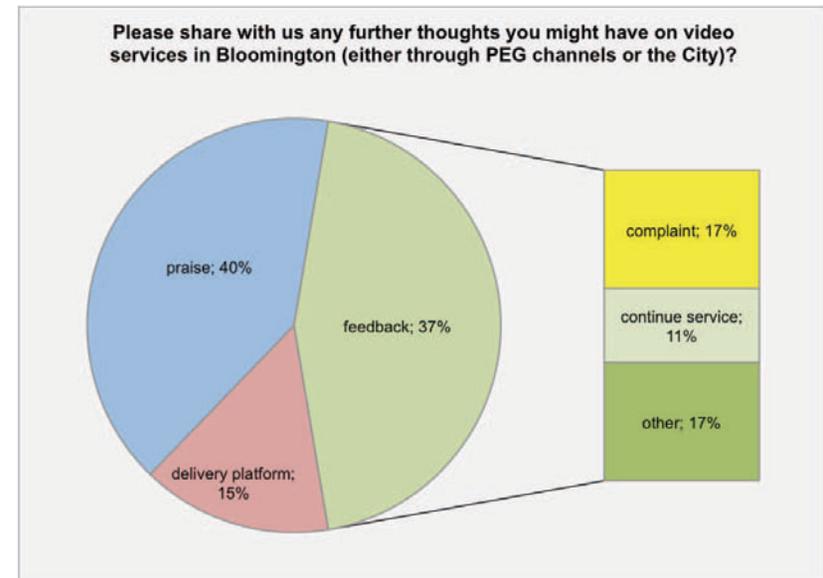


Figure 28 Further Feedback by Type on Video Services in Bloomington (n=47*)

*Some of the 42 respondents raised multiple issues in their responses.

PEG Production

Awareness of the free access to production facilities and relevant training for public TV productions provided by CATS was 63% in the respondent group for this survey (158 responses).

While 50% of respondents had at least produced a home video for themselves or friends only 25% had produced content for the web. 15% had created a public access program at least once (see Figure 29).

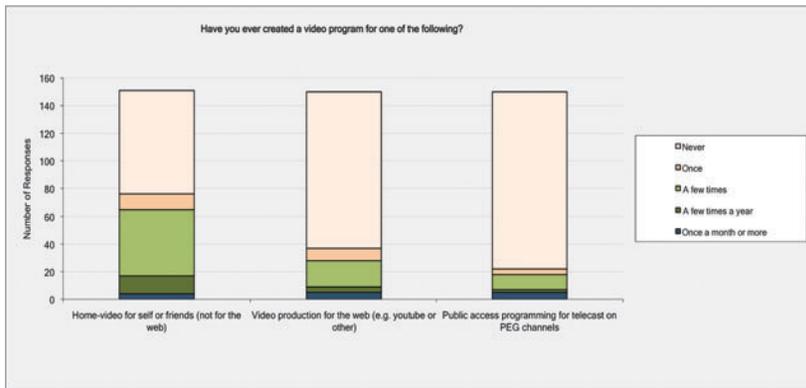


Figure 29 Content Production Habits of Respondents (n=152)

When asked about their future plans 49% said they were either very likely or somewhat likely to produce a home video, 35% expressed this sentiment for online video and 25% for public access programming respectively.

Figure 30, based on survey question 39, thus seems to indicate the existence of some untapped potential in the respondent population. The share of those with some aspirations to be involved in future public access productions exceeds the number of existing (past) producers.

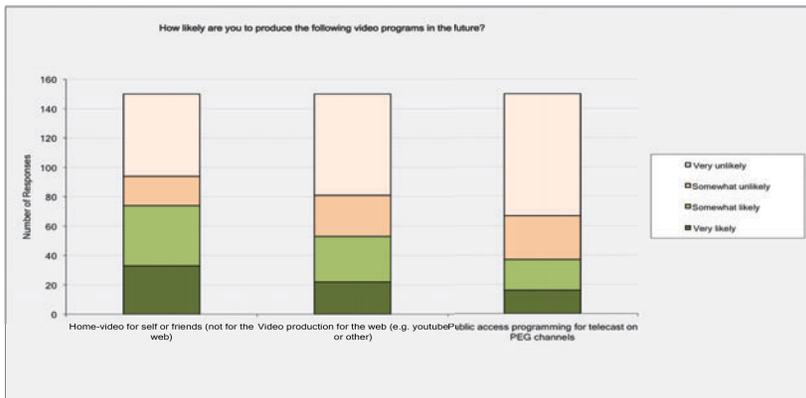


Figure 30 Future Plans to Produce Content (n=150)

When asked to elaborate on their reasons for their answer choice to question 39 (Future video production plans), 1/3 of respondents (n=50) offered an explanation. 50% cited lack of interest (or said they did not know why), 27% blamed lack of time, while 12% offered more or less concrete program ideas they might consider working on.

Further Considerations

It has been pointed out throughout the presentation of this survey that the sample it is based on is not necessarily representative of the actual PEG audience composition in Bloomington.

Thus interpreting these results within the context of this report requires a high degree of caution. However, from a perspective of individual digital capabilities this participant group may well provide a glimpse at the future of the general population. The survey respondents over all were computerized and connected to the Net at broadband speeds.

Despite the relatively low level of promotion for Internet based PEG content there was measurable use / consumption already present within the respondent group. However, if intentions stated in the open ended questions of the survey were truthful, then this online consumption should increase further after this survey, as many participants were previously unaware of the full range of PEG content available online.

As the more Internet-connected generations age, slowly displacing those without deep immersion in the “digital lifestyle”, online access to recordings of government meetings dramatically increases in relevance. The philosophical and empirical arguments for transparency are compelling (see (Holzner and Holzner 2006) for a detailed discussion on the subject) and online access to impartial and complete records of government meetings thus provides a powerful tool to facilitate it. Transparency through access to these sources may yet emerge as one of the most powerful justifications for sustaining a PEG service (See “Video Services User Survey”, questions 28 and 29 or Figure 24 for supporting evidence).

Online access to government content frees this kind of transparency from the confines of a specific media ecosystems tied to particular

providers such as Comcast. It opens up the content to a much broader audience. It also enhances the usability of such content by removing the “by appointment” nature of broadcasts/telecasts and replacing it with on-demand consumption, to suit individual lifestyles. Both factors will reduce the barriers to access and engagement and thus strengthen transparency through broader citizen engagement – theoretically.

The risk of inadvertently creating a new kind of digital divide in the local community is substantial.

If even the well-connected PEG enthusiasts who decided to take part in this survey lack full awareness of the current online services an expansion or shift to a more comprehensive offering in the future may fail to reach and thus exclude sections of Bloomington’s society from this process. Older generations and those at the bottom end of the socio-economical spectrum may both experience the online expansion as an erection of new barriers to access.

Obviously citizen participation cannot be mandated but only encouraged. Thus lack of interest by individual citizens notwithstanding, MCPL, CATS and CoB should co-ordinate their efforts to increase (teach) “digital literacy” among these demographics and promote opportunities for access to online content for those that cannot afford or do not understand the required technology (yet).

As the biased makeup of the self-selected respondent sample for this survey seems to demonstrate, promoting such efforts must go beyond electronic media channels to be effective at reaching these “off-line” demographics. It may require onsite activities at MCPL, mailing campaigns (potentially through City Utility Bills) and the involvement of local schools.

The quantitative analysis of the paragraphs above has inevitably abstracted away some of the qualitative nuances contained in the open ended responses. Interested parties will find the unedited responses, particularly to questions 26, 39, and 42, in the appendix a fascinating collection of opinions well worth reading.

Conclusion

Self-selection, especially when as in the case of this survey no particular incentive/reward for completing the questionnaire is offered, is likely to attract a very polarized group of contributors. Those that are highly in favor or enthusiastic about the service and those that harbor strong resentment or genuine complaints are assumed to be generally more motivated to complete such a survey (for more information on coverage issues in self-selecting surveys see: (Yeong-Hyeon and Fesenmaier 2004), and (Couper 2000)).

The number of complaints voiced in this survey was very low. Most of which were about secondary issues such as availability (or lack thereof) of content or program guide information. The actual content itself however was not attacked. The level of praise expressed for CATS’s work was notable. This suggests that survey participants were largely enthusiastic about PEG activities.

Despite the rising importance of Internet technologies, Cable TV, the medium it owes its existence and funding to, is still the dominant delivery platform for PEG content among the survey participants. Yet the desire for expanding access to PEG content beyond the closed ecosystem of cable television has been a re-occurring concern voiced in many survey responses. Some consider online access as an extension or substitute for cable TV coverage yet most value the customization and more seamless flow of information this non-linear delivery platform affords.

Against this backdrop the awareness issues raised by a substantial group of respondents about online activities weigh even heavier. Enthusiasts commonly would be expected to display higher levels of awareness of the full range of PEG activities, compared to the general public, yet this does not always appear to be the case as the survey results seem to suggest.

When interpreting the suggestions for improvement, it appears that survey participants are struggling to use the current online services effectively. Usability issues, information flow issues, such as automated notification of new content, and simple lack of awareness all play their part.

These wider human factor issues are most suitable for generalization as they are not dependent on the personal interests of the respondent group. A site that is hard to use and does not deliver convenient access to information/updates will experience similar, if not worse, issues when used by the a wider more diverse audience. Thus future improvements in these areas, from better web design to RSS feeds, are most likely to yield tangible benefits.

Delivery to mobile devices did not seem a priority for this respondent group and may relate to the dominant long-form nature of most material available online today such as government meetings. Against the backdrop of this rejection by an enthusiast group the argument for standards compliant websites, as a no-cost extension to mobile delivery, in preference over dedicated purpose built smart phone applications, is strong.

SCOLA International ranked as the least popular and least watched PEG channel among the survey participants. As emphasized previously this may not be a generalizable sentiment for the Bloomington market. For the same reasons new program suggestions such as an increase in local news or event coverage or additional arts programming should not be taken as a general audience vote. What this diversity of requests suggests is that a properly constructed short survey on the subject, using random sampling, might yield valuable insights for developing additional PEG services.

The suggestions provided by the respondent group in this survey seem to reflect the taste of a well-educated middle class constituent. While some bias towards higher levels of education seem plausible in a university town such as Bloomington the divergence from the national average is significant in this case.

Approximately 75% of those that made program suggestions (n=24, arguably a very small sample) and 76% of all respondents (n=157) had a college or graduate degree vs. 37% for the national average based on “Educational Attainment” data for over 25 year olds (see Census Bureau: <http://www.census.gov/population/www/socdemo/educ-attn.html>).

If survey results were mistaken for a representative range of suggestions, this could crowd out alternative content relevant to broader audiences beyond this demographic. During survey development a proposal to include amateur cage fights as alternative content suggestions in the survey caused considerable consternation among parts of the advisory panel. Yet truly local material not covered by commercial media from sporting events such as high school basketball to a demolition derby or county fare all carry opportunity for audience expansion, possibly even syndication. Ultimately only a properly sampled survey will provide guidance on how to allocate production resources for this type of material most effectively.

Of course another way to promote more diversity on PEG channels is by increasing the diversity and amount of direct contributions by the public. The survey suggests that even within its specific sample there is untapped potential. The concerns voiced by some “would be” contributors about lack of time might be addressed through encouraging shorter productions or intensive, group based, weekend workshops.

While the rejection of digital converter rental fees seems to indicate a threat to the PEG audience numbers in the event of a forced migration of PEG channels to a digital tier, this issue might in fact be less threatening than survey responses suggest. Such a migration would most likely occur under a full decommissioning of remaining analogue infrastructure and thus affect all analogue cable channels to an equal extent. The issue thus becomes a customer retention problem for the provider Comcast rather than a viewer retention issue for PEG providers.

PEG providers and the CoB have gained insights into the wishes and hopes of their most enthusiastic supporters, a group that, if tendered to with in reasons, can serve as evangelists for the service to the rest of Bloomington. The survey has also highlighted general human factors and awareness issues that transcend beyond demographic boundaries and warrant future attention.

This survey also offers a rough approximation of future changes in audience composition with regards to digital capabilities and may serve as an additional source of input to general Internet Video strategies.

However the most fundamental insight, one the survey did not overtly poll for, appears to be uncertainty about the level of audience engagement with PEG services beyond the well educated middle class of this community. This raises political and social questions that lie beyond the scope of this report; nevertheless it does create an opportunity for further research by others to benefit this community.

Brief Literature Review

"Public engagement is at the heart of public access, and proponents see it as a place where a local community can gather to learn how to communicate and share ideas"

Mike Rosen-Molina, December 17, 2008,
<http://www.pbs.org/mediashift/2008/12/public-access-tv-fights-for-relevance-in-the-youtube-age352.html>

Introduction

This literature review is adapted to the needs of this consulting report. Its aim is to capture current discourse and introduce further reading pertinent to issues surrounding PEG and public media transformation, audience engagement and management practice.

It seems that much of the cutting edge discourse surrounding PEG and public media practice has migrated into the un-reviewed space of blogs and aggregator sites. Please consider the three examples below as a starting point for further investigation:

- <http://www.pbs.org/mediashift/>
- <http://cmediachange.net/blog/category/publishing/>
- <http://www.newpublicmedia.org/blog>

Thus overall this literature review is a collection of topical articles, papers and books to inspire further thinking and investigation, rather than an exhaustive treatise of prior academic work.

The research for this piece unearthed surprisingly little recent (2008-2010) scholarly work on the interactions between municipalities and their PEG ecosystems. Slightly more work is available documenting the media activities and modes of audience engagement of larger, often national public service broadcasters. Papers published in journals for

the business domain seem to also stay clear of the aforementioned subject area. This review therefore also includes references to business books, some more scholarly than others, with the aim of including some transferable management concepts for the reader's benefit.

The Value and Effect of Local Diversity

A recent article published in the Journal of Industrial Economics demonstrated that diversity in the beer industry had declined inversely to the television penetration during the second half of the 20th century. *"The results indicate that the industrial organization of media markets can affect the structure of markets for local products"* according to the author, Lisa M. George.

The fundamental argument behind this article seems that economies of scale in reaching audiences favor large national brands over local ones serving small local/regional consumer groups. When extrapolated to current trends the author concludes *"The results here suggest that these lower costs will further enable the spread of national over local brands. As internet penetration spreads internationally, it is perhaps likely that large international brands will see new marketing advantages over smaller national ones."* (George 2009)

While the brewing industry may at first glance be far removed from PEG and public media activities, the value of localized media diversity becomes more apparent if "brewing" is replaced with "political discourse" or "cultural identity". The ability of TV to act as a *"gathering place"* illuminates this issue from a different angle. *"Television functions as a social context, providing sensory communion and social congregation; it also functions as a center of meaning, helping a society define "us" and "them," conferring value on persons and objects..."* (Adams 1992) The absence of local TV removes this platform and dissolves local identity in a homogenous national or international context.

Access to local media and places to interact are described as pre-conditions for the concept of *"Communicative Cities"* outlined by Gumpert and Drucker. The authors assert, *"The quality of*

communication within cities makes a significant difference to the overall quality of human life” and “There are numerous perspectives through which the economic, social and manufacturing pulse of the urban landscape can be viewed, but communication transcends and is the primary operational lens through which to understand, analyze and evaluate the city”. The article presents a framework against which to assess the communicative qualities of a city and proposes a set of “fixed” and “semi-fixed” features to “operationalize and facilitate communicative cities” (Gumpert and Drucker 2008).

A well-run multi platform PEG and local public media operation can play an important role in carrying Gumpert and Drucker’s idea as a provider of interaction and communication spaces.

Another paper investigating the impact of international media production activity on Vancouver (BC) reiterates this point in a similar fashion, “...this case study illustrates the contradictions in global media practices and finds that often the most local, and overlooked, community media outlets are best able to reflect the sociocultural specificities of life in the globalizing metropolis” (Tinic 2006).

Evolving Consumption Patterns and Modes

So these three different perspectives all confer unique value upon local (PEG) TV content. It may be that the relatively fragmented cable industry of the past provided a favorable climate to sustain local PEG channels. With the drive for consolidation in an industry, which in the 1970s was considered a problematic business proposition by all but a few, and national IPTV based platforms like U-verse or Hulu.com gaining ground, such local voices may yet again come under (economic) pressure.

For an interesting historic yet almost visionary perspective on the cable industry see “A reexamination of the prophecy of doom for cable television” (Crandall and Fray 1974). The bright future the authors predicted based on rising penetration rates, rising subscriber revenue and take-up of premium services did come true and along with it supported PEG operations throughout many franchise areas.

Today surveys are indicating the first hints of behavioral shifts that may once again give rise to a pessimistic outlook, perhaps more well-founded this time, for the long-term future of the existing cable television model. The consumer electronics site Retrevo published a survey this April, which it states was conducted by an independent panel among 1000 individuals distributed across demographic and geographic ranges. The survey found that already 51% of all individuals consumed “some” TV online and 23% of “under 25s” claimed to watch “most” of their TV online. When asked what it would take to watch “all” TV shows online 20% named HDTV, 19% Premium Shows and 15% Live Sports as the deciding factor (Retrevo.com 2010).

“New” IPTV services with premium network TV content like Hulu.com might be the new catalyst for more widespread behavioral changes like this. On the other hand “old” IPTV, in the classic context of TV services provided over a dedicated private IP network by a telecom provider, such as AT&T U-verse may be facing similar challenges akin to Cable in the future. “Even with the interactive services based upon advanced IP technology, it is not structurally different from conventional television as the medium is organized following the TV model. In addition to competition, a contradiction between the open internet and walled-garden IPTV will pose critical challenges to the medium.” (Kim 2009)

At least for now, based on franchise revenue figures presented elsewhere in this report, the IPTV provider (AT&T) U-verse is still growing its subscriber base in the Bloomington market quite steadily. The wider question remains whether the Retrevo numbers are either indicative of a displacement process ahead or whether the increasing level of overall media consumption will create room for the co-existence of classic TV models and new online platforms.

This theory, that individuals will consume “more of everything” is shared by a “Special Report On Television”, recently published in the Economist. The magazine quotes a recent survey by the Kaiser Family Foundation. “Today, 8-18 year-olds devote an average of 7 hours and 38 minutes (7:38) to using entertainment media across a typical day (more than 53 hours a week). And because they spend so much of that time ‘media multitasking’ (using more than one medium at a time),

they actually manage to pack a total of 10 hours and 45 minutes (10:45) worth of media content into those 7½ hours”(Rideout V. J. 2010).

Two years earlier the same author asserted that new media were “*not displacing*” older media but “*used in concert*” with them. The authors also noted that “*Media exposure is positively related to risk-taking behaviors and is negatively related to personal adjustment and school performance*” (Roberts and Foehr 2008).

The same article in the Economist also asserts, “*When it comes to mobilizing mass audience, nothing can touch television*”. This year’s (2010) 106 million viewer strong Super Bowl audience is named as supporting evidence with the additional note that this audience spent more time watching this one game than the entire nation spent on YouTube for that particular month. See “*Changing the Channel*” (Economist 2010).

The Economist adds another interesting perspective with regards to television consumption, highlighting the distinctive gap between self-reported and actual behavior in front of the TV screen. A Nielson sourced chart from 2008 shows a vast discrepancy between actual TV consumption and self-reported consumption. With the former exceeding the latter by almost 100 minutes per day. The same article also refers to research by Sarah Pearson, which presents similar discrepancies in terms of PVR use vs. live viewing. Person’s work also indicates that TV consumption is still often a communal activity with program choices being a group compromise (Pearson 2009). See “*The lazy medium*” (Economist 2010).

The Transformation(s) of Public Service Broadcasters

So taking into account the notions of increased consumption across media platforms and the potential ongoing viability of linear TV in the mid-term, where does this place public media organizations? “*As we move towards a post-broadcasting environment, it [the public service broadcaster] must think of itself as a full-service public communicator*” (Raboy 2008).

“Digital media online potentially serves two broad purposes for PSBs: extending the scope for production through both supplementary and dedicated online content; and offering new kinds of relationships with the audience” (Debrett 2009). According to this author who surveyed six public service broadcasters (PSBs) in four English speaking countries, PSBs are encountering both new challenges and opportunities as they confront increasingly fragmented audiences in the digital marketplace: “*As they reconfigure themselves as media content companies, public service broadcasters enter new territory with regard to their audience, their content, their relations with producers and their status in the marketplace, invoking more exacting requirements for governance and accountability, and new commercial enemies*” (Debrett 2009).

Debrett observes PSB websites provide depth and diverse background material as opposed to commercial television sites that he describes as having a “*distinctly promotional flavor*”.

While none of the articles surveyed question the validity of online expansion as a means for extending or continuing audience engagement, some question the quality of execution observed so far. Based on European examples Trappel finds the results of “*achieved media output*” disappointing and calls for a formal extension of the public service remit to online media (Trappel 2008). What seems transferable to the local media market in the US is the notion of defining a virtually platform agnostic service mandate. Bardoel et al lament that their subject of study, the Dutch PSB, lacks focus on the “*present and future media use*” of its audience in its digital strategy and seems preoccupied with technological and business issues (Bardoel and d’Haenens 2008). Both articles present examples to learn from and highlight potential pitfalls/mistakes to avoid.

Technology in itself is “*an accelerator, not a creator of momentum*”, when used by the successful companies (Collins 2001, p.144-162). The successful companies Jim Collin’s describes in his book “*From Good To Great*” used “*carefully selected*” technologies to support the long-term objectives of the company. Collins also states (backed up by substantial empirical evidence) “*How a company reacts to technological change is a good indicator of its inner drive for greatness*

versus mediocrity. Great companies respond with thoughtfulness and creativity, driven by a compulsion to turn unrealized potential into results; mediocre companies react and lurch about, motivated by fear of being left behind” (Collins 2001, p.162).

The author of another paper speaks to the opportunities and challenges inherent in online expansion using radio podcasting as her field of study. *“Podcasting ...is particularly appealing to technologically savvy youth audiences whom public-service broadcasters (PSBers) traditionally have difficulty attracting. Yet podcasting simultaneously creates highly fragmented audiences with doubtful brand loyalty”*. She then concludes, *“The future of PSBers’ exciting initial forays into podcasting will thus depend upon how well PSBers can harness and reconcile these divergent participatory and professional media traditions”* (Murray 2009).

Audience Interactions and Contributions

Murray titled her paper *“Servicing ‘self scheduling consumers’”* which implies a much more proactive and engaged audience interacting with content. The step from engaged consumer to active contributor of content can be fluid and Flinn presents an interesting variation on this theme. His paper describes trends in community archives involving content and commentary contribution as well as the community sourced enhancement of collection descriptions. This in part also challenges notions of the *“expert voice”* and professional authority according to Flinn. See (Flinn 2010).

This trend is not confined to archives but also presents part of the perspective on citizen journalism. Which Goode reminds us is *“(1) not an exclusively online phenomenon, (2) not confined to explicitly ‘alternative’ news sources, and (3) includes ‘metajournalism’ as well as the practices of journalism itself”*. He calls for the focus of a future research agenda to encompass *“structure and social capital”, “online editors and moderators”* and *“code”*. The latter is described by the author as *“digital substrate underpinning these developments”*. Goode refers to the impact technologies, usability and presentation aspects can have on the communication process (Goode 2009).

As the local PEG and public media activities evolve, following this debate may prove beneficial to key actors to help maintain positive conditions in this ecosystem. Goode provides a host of explorative examples to start this process in his paper.

Social and Political Platforms and Dimensions

Another paper with instructional value in this regard is Kenix’s work on the perceptions and uses of the Internet by nonprofit organizations. The author describes how organizations frequently only used the medium for *“one-way information dissemination”* and lacked strategy and training. Kenix concludes *“Indeed, nonprofits appear to engage the internet without any vision of a public at all”* and sees a *“self-reflexive mirrored theory of communication”* at work (Kenix 2008). While her work is ethnographic in nature, Kenix provides a body of real world examples that subtly highlight common characteristics of suboptimal solutions in this space.

One common assertion used to support PEG activities is their function as facilitators of transparency and citizen involvement.

However, this notion is not shared by all, at least not with regards to television in general, as the following quote from the abstract of Roderick Hart’s paper *“Easy Citizenship, Television’s Curious Legacy”* shows. *“Television has reduced the burdens of citizenship for the average American and that that reduction is dangerous. Television does all of this by overwhelming viewers with the sights and sounds of governmental life and by supersaturating them with political information. All too often, however, this tumult creates in viewers a sense of activity rather than genuine civic involvement. In addition, television constantly tells the story of specific persons in specific situations, thereby producing a kind of highly individuated, cameo politics that distracts viewers from common problems and public possibilities. Television does this work, and much more, in a highly entertaining fashion and is often genuinely informative. But television also produces an overwhelming passivity in viewers even while making them feel politically involved”* (Hart 1996).

If the author's reasoning has merit today, can the interactivity of electronic media truly overcome this passivity?

Proulx studies grassroots activities in Canada that he sees as a "bottom-up" model of "networks of 'information sharing societies'". He places this view in opposition to the classic notion of a global information society (Proulx 2009). Proulx suggests that "the construction of such a new public space around technology could form part of an empowerment of citizens", yet provides no evidence of this occurring on a larger scale outside domain specific interest groups.

When moving from the not-for-profit sector to government, Scott's study of municipal websites in the US, published in 2006, describes widespread use of sites for service provision and transparency purposes. The author states that the lower cost of providing "information, communication and transaction services" online makes "local government much more accessible and accountable to interested users". Yet it seems the municipalities surveyed had not yet expanded into the domain of facilitation and thus were yet to evolve beyond the realm of transactional exchange with citizens: "However, the study found no applications designed to facilitate networking or offline meetings of interest groups, and only two sites facilitated online policy forums or discussion lists" (Scott 2006).

In contrast a recent study on behalf of the Corporation for Public Broadcasting (CPB) found that "Except for a few, stations neither have extensive digital efforts nor allocate a significant amount of their budgets to digital initiatives". The same study also found that "Direction and guidance in all areas of digital deployment is scarce for most stations, including business models, marketing, and strategy" (Gupta-Consulting 2009).

The expansion into the aforementioned facilitation and direct political exchange with the public might serve as a catalyst for societal transformations that reverse the passivity or spectator status lamented by Roderick Hart. Changes in user behavior and consumption style are essential for the success of any online initiative, even those of a transactional nature. "But the most innovative quality of disintermediation changes is that civil society actors who know their

own situations very well are able to autonomously sift and select what they may receive from government. Disintermediation is essentially accomplished only when citizens or consumers of public services change their behaviors in line with facilitating shifts by government agencies and officials". (Dunleavy et al. 2006)

Behavioral change will be favorably impacted by suitable incentives as Dunleavy et al demonstrate in their analysis of the introduction and adoption of an RFID card based payment system by London Transport.

Very Brief Thoughts on Leading Change

Finding the right incentives in the PEG context to drive stakeholder collaboration and further audience engagement will inevitably require some trial and error. This report, with its four sections, seeks to help create a starting position and enhanced understand from which to embark on this project. As pointed out in the introduction to this document, the CoB is in a position to exercise leadership and drive progress.

Leadership in this context cannot be substituted for simply mandating change. The leader will require a positive vision and a sense of direction and actively engage others to willingly follow. This requires outwardly displayed passion as much as some understanding of the fundamental context (Kouzes and Posner 2008, Ch 2).

This indicates that a specific person or small group may need to drive, and evangelize this process. Collaboration built on mutual trust with openness to new ideas and constituents empowered to solve problems have been shown to outperform micromanaged and rigid implementation frameworks. The authors advocate the importance of providing choices, fostering commitment through accountability, while building latitude into job functions as crucial tools to achieve the desired performance (Kouzes and Posner 2008, Ch 9-10). Many of the leadership concepts presented by Kouzes and Posner are highly transferable to reaching the goals set forth by this report and to effectively implementing its recommendations.

The “HERO – highly empowered resourceful operative” concept described by Bernoff and Schadler in their recent article “Empowered” provides another angle on the issues above. *“For higher-level managers, the key is not just encouragement but visibility. Simply urging people to be more creative doesn’t work. Instead, identify the kinds of solutions you’re looking for—outside as well as inside your company”* (Bernoff 2010). A key component of the concept according to the authors is that *“HEROes agree to innovate within a safe framework”*, bypassing the general structures of an organization would result in “rogue” and dangerous behavior. Bernoff and Schadler see management’s role to *“encourage innovation and manage risk”* and IT is to *“to support and scale up HERO projects”*.

However, while cooperative and empowered team members are important leadership also requires occasional sternness by those in charge to protect the goals and align effort as necessary. Abraham Maslow’s likens this to a father who, based on his superior understanding and maturity, has to say “no” to his children at times. Knowing that being unpopular in the short term is a worthwhile sacrifice for the sake of the overall long-term goals. Maslow demands that one should *“still be able to see the objective requirements of the situation and to respond to them rather than to these interpersonal satisfaction for the moment”* (Maslow 1965, p.132).

Conclusion

Local TV stations with actual local programming such as PEG channels provide an important platform for the expression of the local cultural identity. They form part of a “healthy” communications infrastructure contributing positively to the quality of life and diversity of a community.

In the public broadcasting arena the use of online services is still in its infancy and most stations are looking for guidance and lack coherent strategies. A commonly accepted and proven code of best practice has yet to emerge.

Municipal governments have been more skilled at leveraging this new communication medium and appear further along the experience

curve. However, commonly online presence still lacks facilitated spaces for discussion. While local government has yet to enter this domain as decisively as it has in the transactional and informational context, PEG providers have a heritage in facilitating public discourse that should place them in an advantaged position to leapfrog their government partners in this application. PEG operators and public media organizations can become “multi platform communicators” and facilitators of discourse and the expression of ideas. In this role they can include, engage and educate *majorities* that the self-service nature of conventional video sharing sites fails to reach effectively.

This transformation cannot be achieving alone and will require partnerships across domains and organizations between PEG operators, public media organizations and municipalities to fully realize the potential benefits. Forming alliances and sharing of resources also mean shared risks and a richer more integrated experience for audiences (Adapted from business context, see (Cairncross 2001, p.151)).

Coordinating such cross-functional teams across a number of organizations will pose new management challenges for those tasked with leading the effort. Unclear accountability, political play and “analysis paralysis” are only some of the potential perils ahead. Effective communication, trust building and empowerment, but also decisive action and a clear, passionately pursued vision will be required.

Finally, as the research for this review seems to indicate, learning should not be confined to articles, books and reports. All actors in the PEG ecosystem could benefit from engaging their peers across the Nation both through official bodies like the ACM but also through more informal discussion spaces like relevant blogs (see sample links at the beginning of this review). This exchange with likeminded individuals could inject fresh ideas into local planning that would have otherwise been missed and help everyone learn from each other’s successes and failures.

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BROADCASTING, CHANGING AUDIENCES AND HCI (Reproduced paper from May 2007)

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The following paper is reproduced with the permission of the co-authors and was originally provided to CATS in May 2007 as part of a classroom project for INFO-1561 (Spring Semester 2007, Informatics Human Computer Interaction Design Master's Program). The paper is reproduced in unaltered form since its key points are still valid.

Overview

This document aims to provide a synthesized overview of prevailing scholarly and expert opinion in areas of the broadcast sector. The main focus will be on the technological and sociological evolution of the content creation and distribution paradigms as well as likely future developments of the media consumption habits of current and future audiences.

For this purpose we are drawing on work published through the ACM (Association of Computing Machinery) and other scholarly sources as well as white papers produced by industry leading consultancy firms and key manufacturers. We feel the professional nature of our community partner project (To provide a long range technology strategy for local public access TV) demands an integrated approach to defining the problem space by drawing on a diverse variety of sources. To structure and express prevailing streams of thought is the goal of this document.

Production and Content

While in our professional opinion the introduction of non-linear and collaborative production environments in the broadcast industry has undoubtedly added to the immediacy and fast turnaround cycles of news programming production, cost still remains relatively high. Projects such as the wired tele-journalist "that reports and responds

live to audience wishes" (1) as proposed may provide a solution to this issue for local markets; Already the concept of interactivity emerges.

Public access TV was once considered the birthplace of interactivity and audience participation, often relying on such basic interaction as touch-tone telephone input (2) While the late 90's and early years of the new millennium saw pilots with often complex interactive applications, recent years have seen a downscaling of ambitions and a move towards "discount interactive TV" where evolution rather than revolution seems to be the goal (3).

Jensen also asserts that there is in fact demand for "non-complex, lazy interactivity" by TV consumers adding another angle to the "lean forward/lean backward" debate. While the broadcast sector has so far only seen limited adoption of interactivity, early thoughts about potential video on demand (4) have matured into full-scale IPTV deployments (see e.g. "homechoice", UK) built on standards based technology (5). With the IPTV paradigm new challenges for content creation emerge with the aim to capitalize on the technology's capabilities beyond merely being an instant access video rental facility.

But with great opportunities also comes the risk of getting it really wrong (6). But features aside, content still remains king and this is the area where many offerings today are still lacking due to ineffective content acquisition deals (6).

Platforms

In 1997 (7) we saw great potential for new options for enhanced services enabled by the introduction of digital terrestrial broadcasting (mainly for high definition TV) in the US. Expectations were high and services were expected to be as transformative as the unseating of the "cable moguls by the World Wide Web" and its democratization of interactive content. Years on, in our professional opinion as a consultant for this industry sector this has not yet occurred. We see much rather former enemies cozy up in the name of leveraging platform synergies.

"Convergence has been a telecom and media industry theme for 10 years" but now the competition for the consumer has begun in earnest and recent alliances and acquisitions powerfully underpin this assertion (8).

Moving beyond broadcasting, 3.5G will become a media rich content delivery platform (9), yet there is still not enough understanding of the HCI (Human Computer Interaction) elements involved in delivering content effectively over these networks (10). Some however, see a more diverse ecosystem of converged WIFI and Cellular networks with seamlessly roaming devices (11). This will also continue the trend of cross platform alliances and mergers (internet / telecom and media companies); All of which is driven by the need "to capture and retain the attention of consumers and advertisers" (8) (12).

In other areas of media distribution the identification of the community's cable and cable-related needs and interests is also critical to the franchise renewal process (13).

But as bandwidth and connectivity patterns improve IPTV and web offerings often blend and awareness of both domains can enable low-cost or niche deployments (14) by small providers for specific purposes.

Consumers and Accessibility

Homes are changing. Entertainment is becoming more private (15) and as such personal interaction will benefit from more effective recommendations for program options (16). Yet mundane tasks could be made more enjoyable (15). At the same time technical literacy still shows room for improvement in many areas. Popular education fused with participatory research could address that need (17). The success of social networks has shifted the definition of community from the spatial to the social context (18), yet often at the cost of still excluding large sections of society, such as the growing numbers of elderly, and often less technically literate, citizens (19). It is here where Campbell's methodology stands to potentially have a large impact. Yet social networks also seem to be intertwined with cause and effect of an

increasingly isolationistic culture of "stay at home" individuals that sees users partially immersed in many social circles without providing direct human interaction (18).

Particularly in Europe research and legislative intervention in the field of accessibility has been a concern for all distribution channels from TV, telecom or the Web of the converged world, yet few research has concerned itself with the human centric question of whether new services actually add value to "people with functional restrictions". (20)

Media Consumption Trends

Social

Although it may not be clear how exactly media consumption will end up ten years down the road from now, there is plenty of supporting evidence that the way consumers receive their media, infotainment, etc... is migrating away from the current model of linear television and newspapers (21) (22).

Most studies emphasize the shrinking gap between Internet and television usage rather than a large decrease in television usage alone (23).

This effect is even more prevalent when looking at changing media consumption behavior between generations (22).

Studies from Pew Research Center in 2004 classify consumers into two types of media users: "regulars" and "grazers". Regulars refer to people who use linear TV and traditional ways of receiving information and specified times. "Grazers" refers to people that gather their news and information on demand and at no specific predetermined time of the day. It is interesting to note that the age group from 18 to 30 is predominantly composed of "grazers". This gives insight into what the core audience will be like in ten years (24).

The concept of the grazer empowered by non-linear (and often) on-demand access to media. As such it is an expression of the digital

world of distribution, previously impossible in an economy driven by the scarcity of physical shelf space (25); Freed from the “tyranny of the physical” (25) audiences, no matter how geographically dispersed in the global village they may be, become viable consumers of niche content. This makes producing for non-mainstream applications a viable proposition.

Local community networking complements the global-village paradigm of the Internet. Participants in a community network are far more visible and individuated to one another. Their computer-mediated interactions are tightly coupled with actions and events in their personal lives (26). The purpose of community networking is to facilitate information dissemination, discussion, and joint activity pertaining to municipal government, public schools, civic groups, local events, community issues and concerns, and regional economic development and social services.

The concept of local communities taking control of their own information technology resonates with democratic ideals. These are local infrastructures, so they attract only local resources. They tend to focus on survival and development, not on analysis and evaluation (27).

Context awareness will place users in a new dimension: they are not merely consumers but actors, who interact in a real context maintaining a variety of interrelationships with other users through multiple communication systems and challenging traditional media production modes (28).

Reality-TV programs show another phenomenon this time between producer and audience; how TV opens doors to members of the public who are interested in having a primary role. Democratization is taking place backstage too, as TV develops mechanisms to increase viewer participation and feedback. These trends can be characterized as the evolution of viewers to participants (29).

Educational

In parenting children’s access to the media, television is the most supervised medium, followed by music. Video games and the Internet

are least likely to be supervised (30). The decline in TV viewing and increase in music listening associated with the onset of adolescence is examined in terms of the changing social ecology of adolescents’ daily lives. The partial shift from television to music during adolescence represents a shift from a medium that reinforces parental values to one that reinforces peer values and speaks to adolescent developmental tasks (31).

Technological

This new and younger generation is very familiar with new technologies and in particular “web 2.0” and “social networking” technologies like “blogs”, dating websites, “podcasts”, instant messaging, etc... (32)The new technology is encouraging and allowing users to become the producer and director of her own programs. Unlike traditional linear television, these new technologies allow consumers to communicate, interact and exchange ideas (33).

There is a trend emerging where consumers desire to have as much control over their television as possible with technology like PVRs (Personal Video Recorders) (34) (35) gaining ground in the living room. Studies show that consumers still watch a lot of television, however they have developed a strong enthusiasm and passion for on-demand media (36).

In some instances “linear TV consumption almost stopped” when a PVR was introduced to the household as Brown observed in his 2006 study (37). The same study also demonstrates that households, where Internet based video downloads almost completely replace TV consumption, are already a reality.

The users of the new technologies are involved in a growing niche market that commonly holds the desire for TV and/or media everywhere (38).

As mentioned above IPTV technology holds the promise of unlocking the power of the aforementioned long-tail and offers cost-effective distribution of content to niche audiences even in the relative short term as Deloitte (39) suggest in their 2007 report. Even traditional broadcasters are beginning to embrace niche content for local

audiences as the investment into such Internet driven on-demand content in the UK demonstrates (40).

The Backend

Content Management (CM) is the key to cost effective deployment or repurposing of media assets over a range of delivery platforms (41) and as such is continuing to gain importance; Be it to power front-end features like personalized media alerts to mobile consumers (42) or a more personalized IPTV experience (43).

The effective cataloging and retrieval of large amounts of media assets is business critical (44). The significance of this technology can be gauged by the wide variety of contenders in the CM market from Apple to Incentra to graphics vendor nVidia. As the Global Society for Asset management notes, aided by SMPTE efforts, the industry is increasingly moving "towards standard platforms and protocols" (19)helping interoperability.

The academic sector in the mean time has been researching into suitable models of abstraction to refine the management and description of digital repositories (45) such as the 5S model (Streams, structures, spaces, scenarios, and societies) as well as explored new ways of visualizing the intrinsically complex data structures (46) embodied in such repositories.

Government and Politics

Amidst this option for rich personalized content, consumer expectations will also change towards government. The new connectedness can empower greater information about ballots and proposals as well as open up new avenues for dialogue between the electorate (47) and its leaders. This new connectedness has also given rise to new types of intellectuals some say (48), providing a public outlet for opinions often in opposition to the political establishment. This builds upon the role that public access TV has often carried during the late 70's and 80's (49).

Citizens participate in politics because they have the resources to participate, because they are engaged in the political process, and because they are mobilized to participate. If changes in the flow of political information increase citizens' resources available for participating, engagement in the political process, or mobilization of others to participate, then we would expect participation to increase as a result of the Internet.

From broadcast to netcast, information and Communications Technologies (ICT) offer vital opportunities for bringing about a fundamental change to the workings of traditional democratic systems. By enabling and facilitating new forms of interaction within parliaments, and via citizen engagement in the political process, ICTs can help meet the challenge of creating more representative and efficient democratic systems (50).

While open discourse in virtual communities is often seen as beneficial, an exercise in democratic principles, there is a risk of self-reinforcing debating enclaves forming with views drifting to more extreme positions (51).

Conclusion

The future seems to lie with multi-platform repurposing of video assets, paired with varying degrees of interactivity tailored to the platform specific constraints and user expectations. The ability to integrate one asset into combined offerings on multiple platforms will be powered by increasingly sophisticated and standards based Media Asset Management (MAM) solutions. Government and private sector alike will leverage these powers for their own ends, with all efforts geared towards maximizing the attention share with the increasingly media and technology savvy consumers and co-contributors. Yet amidst all this frenzied content exchange basic usability and accessibility aspects seem still somewhat neglected.

Competency in this field seems an opportunity for differentiation as media consumption preferences and patterns are changing, within generations and across generation boundaries. To adjust and respond

to such trends in a crowded market space is in of the key challenges facing CATS.

While the “Long Tail” (25) may have become a much-overused marketing phrase in “technotopian” circles, the evidence does seem to suggest that there is a considerable value in providing access to a rich (back) catalogue of content to satisfy the desires of previously unknown and often highly dispersed niche audiences. At the same time traditional linear broadcast channels are increasingly transitioning into becoming feeder pipes for PVR driven, often faster than real-time (37) content consumption; To be visible to PVR users and thus to feature in the collaborative filtering algorithms of PVRs like TIVO (52) is essential.

We feel that Public access TV may be losing some of its power as a platform for medial self expression to sites like YouTube (53) but it has the opportunity to gain new relevance as an aggregator of quality (independent) local content feeding both PVR and Internet based (niche) audiences.

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Partnerships

Section 3 – Partnerships

This section provides a review of key partnerships the City of Bloomington has fostered as part of its video communication activities. The following paragraphs also touch on opportunities to expand or redefine such partnerships where appropriated within the context and goals of this report.

Brief Partnership Audit

The following key partners of the CoB are reviewed in alphabetical order.

AT&T

<http://www.att.com/gen/investor-relations?pid=5711>

This incumbent telephone operator offers IPTV services through its fixed line infrastructure under the U-verse brand in the Bloomington market. The company thus pays franchise fees to the City of Bloomington and therefore financially supports local PEG activities.

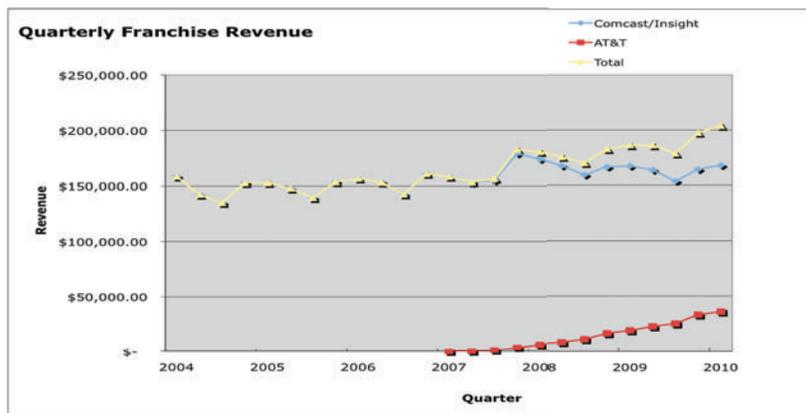


Figure 31 Quarterly Revenue from Video Franchise Fees, City of Bloomington

As Figure 31 indicates, contributions have increased steadily since the launch of the U-verse service. This stable increase in franchise income derived from U-verse will position AT&T as a more important PEG partner over time.

The cost allocation for equipment and equipment location fees has been a contentious issue in the past. However, recent outreach activities by the company's VP for external affairs seem to indicate a greater willingness to absorb cost on the hardware side, subject to the CoB entering into a written agreement with AT&T on this matter. This development improves the potential viability for CATS to provide high quality feeds of all its PEG channels to the local U-verse ingest center.

The original proposal by AT&T would have seen encoding equipment placed in rack space at the PEG operator. CATS objected to this approach saying it had neither the space, nor funds to cover power, cooling or UPS adaptations for such a solution. It also felt unable to meet any potential engineering support implications that might arise from such an arrangement (See appendix for response to AT&T).

Image quality and channel placement have been the other main issues associated with PEG delivery on AT&T. The current PEG portfolio on U-verse is presented in a separate area, outside the main electronic program guide (EPG) and at significantly reduced bandwidth compared to other video services on the platform.

According to feedback from AT&T, PEG services have had their bandwidth allocation increased recently but are still not on par with commercial TV services on the platform.

The style of presentation, through the separate PEG application on channel 99 of the U-verse TV service tends to isolate PEG channels from the general content portfolio and inhibits effective display of EPG information. The decision to carry channels this way may stem from the very fact that Comcast has been highly uncooperative with regards to allowing PEG stations in its service area to supply EPG data to its platforms. Thus hardly any instances of program guide information feeds exist for PEG channels. AT&T's style of presentation masks this shortcoming to some extent and is promoted as a feature by the

company, since all regional PEG content (from most providers in Indiana) is conveniently accessible in one location. Thus the “channel 99” solution may have well been born in part out of necessity and usability concerns.

Yet, this approach only perpetuates and replicates the status quo of most PEG services on cable, where viewers are left un-informed and wondering about which program they are currently watching and what shows are coming up next, due to the lack of guide data. As a relic from the days of analogue distribution PEG is information poor and less accessible than other services on the consumer’s set-top box.

The CoB orchestrated a joint letter submission to the IURC (Indiana Utilities Regulatory Commission) in 2007 outlining CoB, Telecom Council, CATS and WTU’s objections to AT&T’s connection proposal and platform. The documents, in particular the CoB’s submission, outline the common objections to AT&T’s U-verse platform. These documents are included in the appendix.

Furthermore, CATS, through MCPL, formally expressed in writing in February 2009 its objection to the IURC with regards to the general PEG channel placement, reduced image quality compared to commercial channels and ongoing lack of carriage of its channels on U-verse (See appendix for MCPL resolution and related letters).

After statewide franchise laws were introduced the IURC was tasked with overseeing video service providers and handling consumer complaints (for consumer complaints regarding the above or other PEG carriage related issues please use: http://www.in.gov/iurc/consumer/complaint_form.html).

Neither Comcast nor AT&T has addressed the implicit shift in user expectation towards having working EPG data on all available channels. Given that both operators are in direct competition and easily accessible local content can actually provide effective differentiation as well as build good will, an opportunity for cooperation between AT&T and the CoB’s PEG services exists.

If PEG content in the Bloomington market were provisioned with full guide information as part of the normal U-verse EPG then AT&T could actually market itself as the “community friendly” provider.

Even if AT&T chose to provide these channels at higher compression rates compared to the commercial services, the more functional EPG placement would present a significant improvement over both the current situation on U-verse and increase usability of PEG content compared to Comcast Cable. It is likely that interactions between operator and customer will ultimately regulate the picture quality minimums over time. At least this is what past behavior of other operators seems to suggest based on the author’s experience.

CATS and the CoB should aim to utilize the new, more cooperative stance of AT&T to try and develop this solution. AT&T stands to gain fully provisioned free local content including free guide data. While comparatively small in size, Bloomington could serve as a test market for the service and provide a demonstrable (marketable) example for AT&T’s positive engagement with local communities.

Despite the opportunities for future cooperation, it should also be noted that telecommunication lobby groups have been pushing for legislative changes at the State level that would negatively impact the local PEG communities throughout Indiana. A recent failed attempt sought passage of a law prohibiting the operation or establishment of local telecommunication boards.

The aim of this measure was to diminish the capacity of local government units to articulate a position, and thus hold a presence in the debate, with regards to consumer issues in the telecommunication space. By seeking to remove consumer complaints procedures from local Indiana communities and centralizing them at a statewide level through the IURC, this measure would have effectively silenced any unfavorable local civic discourse about operators.

Thus while not all parts of AT&T can be considered allies or supporters of the PEG mission, constructive collaboration between AT&T and the CoB/CATS holds the potential to innovate the PEG user experience and create value and differentiation opportunities for individual AT&T

business units. A pragmatic approach to this relationship appears in the interest of all parties involved.

BTV

<http://btv.ucoz.com/>

This award winning documentary production program run by Bachelor Middle School in Bloomington currently has no direct ties to CoB video activities. The consistently outstanding quality of work that originates from this program would make it a perfect candidate for expanded cooperation with CATS, particularly with regards to expanded future online activities.

CATS

<http://catstv.net/>

The relationship between CATS and the City of Bloomington has been described and analyzed in great detail throughout this report. Therefore this section will only provide a very brief summary of key points.

CATS, as the main PEG operator in Bloomington, provides high quality services for a subset of local government video content. Its main objective in this regard is that of a transparent recorder of meetings without specific editorial intervention. This places CATS in a unique position of trust and neutrality.

CATS has been a strong advocate for the PEG mission and supported the City in lobbying activities by articulating the history and ethos of community access television. This included filing a complaint before the IURC, through MCPL, in Feb 2009 regarding the lack of carriage of its PEG channels on AT&T's U-verse service. The complaint also included an objection to the high level of compression applied to PEG content on U-verse as well as the placement of PEG channels outside the normal EPG. See appendix for MCPL resolution and related letters.

This part of the appendix also includes the main joint letter submission to the IURC (Indiana Utilities Regulatory Commission) orchestrated by the CoB in 2007 outlining CoB, Telecom Council, CATS and WTIU's objections to AT&T's connection proposal and platform. The documents, in particular the CoB's submission, outline the common objections to AT&T's U-verse platform. (Please refer to AT&T partnership further above in this section for additional background information).

However, CATS has been less active with regards to technical support and infrastructure advice.

Beyond the day-to-day activities covering the recording and telecasting of government meetings CATS and the CoB have also engaged in a number of special projects. CATS took on the Real Media streaming server, used for on-demand access to parts of the government meeting archive over the Internet, after the demise of "HoosierNet".

The CoB also provided a special grant to initiate a major archive digitization project at CATS. At the time it was hoped that this would get CATS to a stage of operational readiness, which would warrant ongoing funding of this activity. Unfortunately the implementation of this first attempt was neither swift nor particularly successful. At this point no solid archive digitization process is operational. A shortcoming, which the recommendations of this report outlined in section 1 seek to address.

As identified elsewhere in this reports, CATS currently lacks a solid foundation for technical ICT project management and delivery and the CoB has expressed willingness to assist in developing these skills (subject to time and resource constraints within the CoB ITS department itself).

Given CATS's core function as a video services provider, it is understandable that ICT related project management of the scale and complexity anticipated for its future has so far been outside its set of competences. Going forward this issue should be addressed with targeted training of CATS staff and additional support by its technology partners within MCPL and the CoB. However, such support needs

Careful management to enable an actual skills transfer and buildup at CATS rather than serve as a temporary substitute for structural deficiencies within CATS in this area.

Ideally the above process should empower relevant staff with ITS project management skills and also lead to the creation of a position for a dedicated new media specialist/developer (see section 4). It is acknowledged that funding constraints may ultimately delay such recruitment in the short term.

The City of Bloomington has expressed a keenness for greater technical collaboration in the future. Based on the analysis of this report CATS would be particularly well placed to help develop domain specific (TV production) training resources for both organizations. In return WTIU might be a good partner for CATS for skills development/transfer in the technical domain. Such collaboration should also encourage more active engagement on infrastructure decisions jointly with WTIU and the CoB.

The City of Bloomington is committed to continuing the positive relationship with CATS by jointly reviewing and evaluating the applicable goals set forth in this document. The CoB will collaborate with CATS to develop a practical and successful approach for executing relevant recommendations and to further strengthening the position of PEG in the Bloomington community.

Comcast

<http://www.comcast.com/corporate/about/pressroom/corporateoverview/corporateoverview.html>

Despite the transition to a statewide video franchise system Comcast continues to provide an unaltered PEG service for the Bloomington market. PEG channels are offered with standard channel placement on the analogue part of the cable distribution system without bandwidth limitations.

However, electronic program guide (EPG) data is not available for CATS originated PEG channels. Comcast thus far has been unwilling to allow CATS to provide this data to the listing service used by Comcast to source this data for its EPG.

This is despite both the listing service provider (Rovi Corporation) and Comcast having the technical capability to accommodate such data feeds for local stations. (The PBS affiliated W-TIU stations carries full EPG data for the Bloomington market).

Given that there is some minor cost associated for Comcast in allowing CATS to provide guide data to its listing service provider, a proposal for cost sharing should be considered by CATS and the CoB to encourage Comcast to change its position. The benefit to PEG audiences would be significant in terms of improved accessibility and usability of PEG content on their cable set-top boxes.

Currently Comcast still provides local emergency over-ride capability for the Bloomington market. Questions remain about how future changes to the Comcast infrastructure and the evolution of the emergency broadcast/alert system at the federal and state level might impact this service.

At this point the relationship between Comcast and the CoB seems relatively stale. The loss of a local cable operator presence after consolidation and statewide franchising has created a significant barrier to engagement. Political lobbying at the state level may be required to resolve pending issues in the short-term.

If managed carefully, continuous constructive engagement (attempts) combined with stronger competitive pressures on Comcast, through a strengthening AT&T presence in the local market, may help improve the cable provider's responsiveness to CoB needs/concerns.

Ellettsville

<http://www.ellettsville.in.us/>

For the purposes of video services, the partnership between the CoB and the Town of Ellettsville (ToE) covers the joint funding of CATS, the main PEG operator for the Bloomington Market.

The ToE has been a consistent funding partner in the past and contributed half of its franchise revenues (earned in the preceding year) to the operations of CATS. Due to significant financial problems this year the ToE was able to meet its funding obligations and Monroe County (another member of the CATS funding partnership) agreed to cover the resultant shortfall. Please refer to section 1 of this report for a more detailed breakdown of the funding arrangement for CATS.

Due to its geographic location the provision of live video links to cover government meetings has been hampered in the past. Smithville Digital might be a suitable partner to negotiate better connectivity to allow future coverage in real-time of ToE related meetings, should the demand arise.

It is hoped that the ToE will overcome its current financial difficulties and resume its funding activities for CATS in the future.

IU-UIITS (University Information Technology Services)

<http://uits.iu.edu/page/ltxt>

The interactions between Indiana University and its host communities are multi faceted and diverse. Two particular elements stand out for the purposes of this report. One with the University's television operator WTIU, which is also responsible for the operation of one of Bloomington's PEG channels (TIU-World), the other with the Information Technology Services department (UIITS) covering a range of technical and communications related aspects.

Empowering People (EP): Indiana University's Strategic Plan for IT (<http://ep.iu.edu>) speaks to engagement beyond the university and

UIITS has a long history of community involvement in cities with IU campuses.

For example the CoB and UIITS were recently able to arrange for fiber optic data connectivity to one of the fire stations on campus after completion of relevant background work. Furthermore, the BDU (Bloomington Digital Underground) advisory committee also counts two IU representatives as its members.

The engagement on technology matters between the CoB and UIITS tends to be collaborative and happens regularly at a high level within the organizations on telecommunication matters. This is often driven by good informal interpersonal connections between the parties rather than formally codified agreements. The interactions tend to be of a responsive and supportive nature with regards to ad hoc expertise exchange on a diverse range of topics from enterprise resource planning to messaging systems.

UIITS's leading competence in advanced network management (such as through its GlobalNOC serving the Internet2 project, see: <http://noc.net.internet2.edu/>) as well as its award winning network monitoring tool "Worldview" (see: <http://uitsnews.iu.edu/2010/04/23/ius-worldview-receives-internet2-idea-award/>) may become increasingly valuable as CATS and the CoB expand into media rich online delivery of PEG content.

The CoB values the positive relationship with UIITS, particularly in light of the unequal size and vastly different scale of access to resources of the two parties. Going forward the City of Bloomington would like to continue this relationship and is ready to actively maintain engagement in the spirit of EP for the mutual benefit of the local community and its University.

MCPL (Monroe County Public Library)

<http://www.monroe.lib.in.us/>

Monroe County Public Library hosts the facilities for CATS the main PEG operator and is part of the funding partnership to sustain the local PEG services. A more detailed description of MCPL's role and contributions can be found in section 1 of this report.

The partnership between the CoB and MCPL with regards to CATS has suffered on occasions in the past due to lack of financial transparency. The current library administration however maintains a much more positive working relationship and has responded well to requests for increased financial transparency with regards to the operation of CATS. Thus at this point past issues regarding finance can be considered resolved.

The current MCPL board is supportive of CATS and its mission. Yet looking forward and drawing on past experience, the fact that CATS currently operates as a department of the library and is physically located in the MCPL building leaves it vulnerable to direct interference at will by its host/parent organization.

The current positive working environment cannot be taken for granted and going forward additional measures to protect free speech on PEG and enshrine the independence of CATS should be explored. Such measures are not about reducing the prominence of MCPL's involvement but much rather about codifying and securing its support.

For example the generous in-kind support provided by MCPL in terms of space and property services to house and sustain CATS should be clearly quantified and codified. Ideally such a lease and service contract would run for periods longer than a year to effectively isolate and protect these contributions from any future turbulence within MCPL.

Given the ongoing financial constraints associated with the bleak macroeconomic climate the creation of a suitable entity for CATS may also serve to open new additional ways of revenue generation for the PEG operator. Such benefits may become more pertinent as MCPL

faces new budget constraints due to changes to its own revenue structure in the coming years.

A more detailed discussion on the topic of a suitable alternative structure for CATS can be found in section 1 of this report.

MCPL remains indispensable and a key partner to the CoB in enabling the operation of CATS by hosting its facilities and supporting it financially and in kind. To further protect the most valuable elements of this arrangement without creating undue burdens for MCPL in the difficult years ahead, creativity and flexibility may be required from all parties involved as well as early and comprehensive planning.

Monroe County

<http://www.co.monroe.in.us/>

The partnership between Monroe County and the CoB covers two areas.

- The joint funding of CATS
- The provision of the Monroe County PEG channel (Comcast channel 14)

Unlike the Town of Ellettsville and the City of Bloomington, Monroe County used to apply a different funding formula to its contributions towards the operation of CATS. As a result the County used to contribute less than half of its video franchise income (earned the preceding year) towards PEG operations.

This situation changed last year, when funding levels were increased to match the funding formula of the CoB and ToE. This year the County has also covered the shortfall of funding created by the financial crisis affecting the ToE, yet it is keen to see the ToE to eventually make a long-term commitment to funding PEG services.

The increase of funding by the County is a welcome and appreciated change. Its adoption of the CoB funding model, which allocates 50%

of the franchise revenue earned during the previous financial period to PEG funding in the current period, has significantly improved the financial flexibility of CATS in the near term. These funds should enable CATS to implement most, if not all, of the recommendations contained in section 1 of this report without the need for major additional grants.

The County has indicated that it is committed to the “50% funding formula” unless changes in law would necessitate a departure from the model. Furthermore, the County has also indicated a willingness to periodically assist CATS with investment in equipment.

Please refer to section 1 of this report for a more detailed breakdown of the funding arrangement for CATS.

Channel 14 on Comcast Cable is allocated to County originated PEG content and also carries meetings covering the Ellettsville Town Council. This channel was originally allocated to the City of Bloomington but has been dedicated to predominantly County based programming by CATS through informal agreement with the CoB. This has enabled the creation of a dedicated outlet for government content related to County activities.

The County has expressed a desire to increase the coverage of public meetings further and is contemplating the installation of permanent equipment in the Courthouse meeting room in 2011. Such an expansion could include increased coverage of Ellettsville and RBB School Corporation activities but also cover other public entities such as the Plan Commission or Parks Board. Furthermore, the development of specialized program formats such as roundtable discussions is currently under consideration by the County.

The County did not negotiate any PEG channel allocations of its own prior to the transition to a statewide franchise system (which removed these provisions in franchise law but grandfathered in existing PEG channels) and thus does not own or run any dedicated PEG operations. All service needs are met through the channel provided by the CoB and the County’s participation in the CATS funding partnership.

The existing arrangements for funding and use of PEG infrastructure seem mutually beneficial to all parties involved. The CoB is able to leverage its own funding capacity and put its PEG channel assets to good use in the name of transparency and civic engagement, while the County gains access to an efficient PEG service provider without the need to actively manage or develop any TV production expertise of its own.

The County has expressed its appreciation of the services provided by CATS and is taking an active interest in developing its video services. This includes the desire to use links to content on the CATS government meetings archive from County webpages (once this feature becomes available) to make recordings more widely available on the web.

The County aspires to eventually expand coverage to all video service providers and satellite. To this end, the lack of carriage on both AT&T U-verse and Smithville S+TV of PEG content has been met with strong disappointment by the County.

Based on the analogous nature of the County’s and CoB’s use of video services, potential additional benefits may be realized by the two entities further coordinating their activities and service development. The County has indicated an interest in more regular meetings with the City to support such a process, starting with a drive to increase PEG service coverage.

Smithville

<http://www.smithville.net/about>

This rural telecom provider, the largest independent telecommunications operator in Indiana, currently does not pay franchise fees to the City of Bloomington. This indicates that the company is currently not operating applicable video services within the city boundaries.

The provider is in the process of rolling out an IPTV service platform (S+TV) to its customers. The service is conceptually similar to AT&T's U-verse offering but is based on a different technology platform. Smithville and the CoB had been in negotiations for PEG carriage on this platform until recently. After seeking legal council on the issue Smithville decided, while in principal agreement to be supportive of PEG carriage, it did not want to formally codify by contract any arrangements with the CoB on this matter.

This move as temporarily stalled efforts to bring the comprehensive PEG portfolio created by CATS and the CoB to S+TV customers. At the time of writing this report negotiations were not considered final and the will for resolving this issue remained strong with the CoB. The CoB should ensure that any agreement with S+TV includes full EPG support for all PEG channels.

Beyond the engagement on IPTV matters the Smithville Digital division of the company represents a potential partner for supplying enhanced IP connectivity to local location hosting web video services. Please refer to section 4 of this report for a more detailed discussion on how such services could be implemented.

As a company deeply rooted in the local community of southern Indiana, Smithville potentially shares a lot of common ground with the CoB from which to develop the relationship further. The CoB and Smithville have been successful in reaching agreement on projects in the past. It seems likely that a positive working relationship will persist going forward, despite the recent setbacks on the PEG carriage issue mentioned above.

WFHB

<https://www.wfhb.org/>

The CoB is collaborating with this community radio stations on grant funding for its digitization project and has provided seed funding for its antenna replacement project.

The Mayor's Office has provided funding to help with service area expansion in the past. Additional funding is derived through the Corporation for Public Broadcasting and member contributions.

Despite this positive engagement the support from the City for WFHB is not as robust as for CATS. This is in part explained by the different domains the two organizations (CATS and WFHB) operate in as well as the fact that CATS is a direct service provider to the CoB through its meeting recording services.

The City is encouraging of a potential expanded partnership between CATS, WFHB and other local providers centered around enhanced news services and content sharing such as video recordings of interviews and events. As two organizations dedicated to free speech and community access to media further partnership development seems a natural fit.

WFHB possess access to, and is seeking to grow further, expertise in web content management based around "Drupal", the same platform proposed for the new online presence of CATS. As optimizing the administration and usability of "Drupal" does require specialist knowledge, a sharing of staff or volunteers to configure the respective "Drupal" implementations represents an opportunity to generate visible results quickly.

As part of producing its daily local radio newscasts and weekly local TV news program "CATS Week", WFHB generates synoptic descriptions of key points in a large number of weekly government meetings. This information should be urgently collected and integrated into a revised metadata tagging process for local government meetings hosted online by CATS. Capturing this textual data, subject to review/vetting, could significantly enhance the search functional of the online meeting repository. The CoB should promote this issue as a matter of self-interest to enhance the accessibility of its record of the civic process.

The CoB is intent on continuing to develop this relationship and be supportive of WFHB.

WTIU

<http://indianapublicmedia.org/about/#program-wtiu>

WTIU operates one of the Bloomington PEG channels on behalf of the CoB. The channel is Comcast #17 (TIU-World). As the television operator of Indiana University (IU) this also represents one of the many touch points between IU and the CoB.

The partnership between WTIU and the CoB covers two distinct domains.

- TIU-World
- Technical Expertise

Since the award of the channel, WTIU has changed its content, moving away from its initial focus on educators towards a broader mix of mostly PBS originated material. At this point it is not entirely clear what value WTIU derives from this arrangement since most of this content could be distributed through other means including its over the air broadcasts, triggering “must carry” provisions on cable systems. (For further information see:

http://edocket.access.gpo.gov/cfr_2007/octqtr/pdf/47cfr76.56.pdf
and <http://www.fcc.gov/mb/facts/cblbdcst.html>)

It seems surprising that WTIU and IU do not leverage the student body of the Department of Telecommunications and the School of Journalism more heavily to encourage and incorporate student productions more frequently into TIU-World’s schedule. Viewed from an outsider’s perspective, WTIU’s impressive studio and production infrastructure seems underutilized and could benefit from livelier student driven experimentation. It seems a questionable use of PEG resources when the on campus 24hour student channel IUSTV needs to use timeslots on CATS’s channel 7 to broadcast its programs while TIU-World simply relays PBS content already available through other means.

TIU-World is the only PEG channel with working electronic program guide (EPG) data on Comcast cable, allowing it to be recorded easily

with PVRs and offering easy access to its schedule through the set-top box interface. Unlike CATS, WTIU is not actively prevented by Comcast from submitting its guide data to Rovi, the EPG data provider for the cable operator.

Whether this is due to a better relationship between WTIU and Comcast in general or a byproduct of WTIU’s PBS affiliation remains open to question (Data submission uses PBS agreements). Comcast has in the past cited technical and policy reasons as to why PEG channels are not allowed to provide guide data, however the TIU-World example clearly seems to disprove these statements by the cable operator.

While not statistically predictive of the wider Bloomington audience, TIU-World proved to be the most widely consumed of all PEG channels in the local market (see Figure 17). Overall, thanks to the higher production values of PBS content and the more advanced delivery infrastructure available to WTIU, TIU-World’s “on-air” visual presence is the closest to network television standards out of all PEG channels.

The second partnership domain covers technical expertise on matters of television engineering.

The active engagement on technology matters with WTIU has helped the CoB to successfully leverage the station’s high level of expertise for projects such as the PEG hub. This work has established WTIU as the principal resource for television equipment expertise to the CoB, adding considerable value to the partnership.

WTIU has expressed interest in providing local news services in the past in return for financial support by the City. Entering into any exclusive arrangement for such services with a local provider would inevitably result in replication of effort and poor value for money. This statement is not limited to WTIU but seems particularly poignant given the privileged access to resources this station enjoys. The City should instead use its relationship with WTIU to encourage it to join co-operative efforts of other local providers to establish a sustainable local

news pool. For further information on this idea please refer to the end of section 4.

Furthermore the CoB should, in its capacity as the to controller of local PEG channels, engage WTIU to step up its efforts to provide true local content alongside its established PBS output on TIU-World. The highly successful, interpersonal cooperation on technical matters between the CoB and WTIU staff could serve as a stepping stone and model to improve the representation of locally produced material on its PEG channel TIU-World.

The current arrangement, while highly beneficial in terms of technology advice, remains suboptimal in terms of effective use of PEG resources and leaves other campus originated content assets underdeveloped. While WTIU ultimately has little influence over activities of other IU departments, such as for example the School of Journalism, it could serve in a leadership role to initiate much needed change towards an integrated approach to media creation and operation on campus.

Successes

Undoubtedly the greatest success is the fact that PEG services have been in continuous operation and expanded in Bloomington since the 1970s. The fact that PEG operations have survived both the consolidation of the cable industry and the transition to a statewide franchise model without interruption is testimony to the skill and dedication of CATS staff, MCPL and the special funding partnership that sustain it.

As methods of mass communication and content consumption habits change more rapidly than ever before all parties involved, funding and operating partners alike, will need to work flexibly, creatively and with fresh determination to continue this success story for decades to come.

Opportunities for Improvement

It has been mentioned before that CATS's ability to execute on some well-intentioned technical initiatives has not been as good as it ought to be. However, blame, for an essentially failed project like the first attempt at archive digitization or the very slow implementation of the web interface to the government archive, cannot be placed exclusively on CATS itself.

In hindsight, the CoB ought to also take a share of the responsibility in the outcome. By overestimating CATS's ability to effectively delivery complex long(er) ranging projects involving unfamiliar technology, it missed the opportunity to provide guidance and "create structure" through the grant funding agreement. Rather than providing one large lump sum, opting to disburse funds incrementally, tied to smaller milestones, might have helped encourage better project execution on CATS's part.

Going forward the main lesson from this experience is that the CoB, CATS and the wider funding partnership may need to take a more "directed" (milestone based) approach to funding and project development.

While slightly more labor intensive for both sides, as CATS would be expected to develop the initial milestones for review by the funding partners, this approach would help create conditions favorable to successful project delivery and early problem detection and resolution.

As a technologically more advanced environment demands more complex solutions, these actions should accelerate CATS's adaptation and skills development. The slightly higher upfront commitment in time and effort by the funding partners to review proposed milestones and develop a staged disbursement plan, is likely to pay off in the long run through less troublesome implementation and better use of funds.

Thoughts on Select Regulatory Trends

The following paragraphs do not aim to provide a comprehensive review of the regulatory environment, as this would significantly exceed the space and resources afforded by this report. Instead some noteworthy developments in this space are briefly introduced and links to further resources provided.

The “American Recovery and Reinvestment Act of 2009” provides \$7.2 billion to “to expand broadband access and adoption in communities across the U.S” (see: <http://www.broadbandusa.gov/>). These funds in part also underpin the long-range agenda formulated by the FCC in the “National Broadband Plan” (see: <http://www.broadband.gov/>). The latter touches on issues beyond digital infrastructure and includes a chapter specifically dedicated to civic engagement in the digital age (see: <http://www.broadband.gov/plan/15-civic-engagement/#r15>).

The plan’s call for facilitating transparency in government through means of electronic access, but remains relatively vague in its support for PEG. Recommendation 15.6 proposes a scheme to use resource and infrastructure sharing based on the efficiencies of “over-the-air” digital TV transmissions to free up spectrum (voluntarily) for auction. The proceeds from this auction should then be to fund digital delivery of public media content (see: <http://www.broadband.gov/plan/15-civic-engagement/#r15-6>). The “soft” wording and voluntary nature of the scheme seem to ignore commercial realities and thus undermine the strength of the commitment.

The aforementioned section 15 of the National Broadband Plan seems to be slanted towards national public media outlets over all, but it does provide some encouraging wording with regards to supporting access to local news. Another FCC project presents a more focused line of inquiry into the issues surrounding community centric news and information services (see: Future of Media & Information Needs of Communities in a Digital Age, <http://reboot.fcc.gov/futureofmedia/>). An FCC workshop held recently on “Public and Other Noncommercial Media in the Digital Era” (For detailed workshop materials see: <http://reboot.fcc.gov/futureofmedia/public-and-other-noncommercial-media-in-the-digital-era>) specifically listed “the possibilities for greater

collaboration among noncommercial media entities such as public broadcasters, PEG channels, noncommercial web-based outlets, and other new media entities” as one of its key issues.

This does provide at least some high-level endorsement for potential activities in this space in the Bloomington area. Please refer to the end of section 4 of this report for further suggestions.

The tacit appreciation of the value of such initiatives at the federal level may also provide at least some counter balance towards the argument for abolishing video franchise fees, which would remove one potential source of funding for such projects.

Yet, in the end the effectiveness of such support against the lobbying power of large telecommunications providers remains doubtful. As broadband access becomes increasingly pervasive, aided in part by infrastructure investment from “stimulus” funds, the ability of non-franchise fee paying IP video providers such as hulu.com to provide a truly national service will increase. Combined with the argument in support of “net neutrality” (for an explanation of the term please refer to: http://en.wikipedia.org/wiki/Network_neutrality as a potential starting point) last mile providers may argue that this puts their own IPTV offerings at a disadvantage to such “infrastructure light” providers.

This and other arguments may at best lead to a restructuring of franchise fees to either become universal (to include internet service providers) or see a rebalancing of the fee collection based on mode of delivery (wired vs. wireless). In a worst-case scenario the outcome could be a complete removal or severe reduction of franchise revenue for local government in the long run. Thus ongoing consideration for ways to protect and back up funding for PEG seems prudent regardless of the present short-term circumstances.

There are however occasional encouraging developments such as the “Community Access Preservation Act” (see: HR3745 CAP Act - <http://www.govtrack.us/congress/bill.xpd?bill=h111-3745>), which aim to protect the PEG community interests at the federal level. The act has only entered the committee stage so far but has drawn the active support by the Alliance for Community Media (ACM), the main national

body representing PEG interests (see: <http://www.alliancecm.org/cap>). If successfully passed the CAP Act would resolve issues such as the unfavorable channel placement of PEG content on services like U-verse for example. It seems that

The introduction of the act has already drawn opposition by the NCTA (<http://www.ncta.com/>), the operators' industry body. The aforementioned link on the ACM website provides a detailed breakdown of the factually incorrect elements of the NCTA's response to the act.

With the potential to clarify and simplify the interactions between PEG operators and all types of wire-based video service providers, this act might increasingly attract the support of local government keen to develop or maintain PEG as a pillar for local accountability, civic engagement and transparency.

Conclusion - Opportunity for Innovation

Large sections of this report deal with detailed operational and technical recommendations to improve PEG service production and delivery in the Bloomington market. Yet, without healthy and productive interpersonal relationships between the key stakeholders across the various organizations the breadth and quality of video services are unlikely to reach their full potential.

Unlike technology upgrades or even organizational change, relationship building in general is potentially the most accessible and inexpensive first step to carry forward and implement the recommendations of this report. The following areas present opportunities for the CoB to leverage relationships for the benefit of its PEG activities.

PEG Summit

Use public local news as a vehicle to accelerate innovation in the PEG sector. With the existing cooperation between CATS and WFHB the foundations for such a service are already under development. The City could further accelerate the process by hosting a PEG Summit this fall to get key decision makers from CATS, WFHB, WIUX, IUSTV, The IDS

News Paper as well as WTIU and other interested parties to discuss modes of co-operation and agree on first steps for developing this project further. The CoB can offer a suitable neutral venue and use its own influence to encourage those parties otherwise hesitant to engage to attend this event.

Bloomington Public Press Club

Even if the PEG Summit only results in a slight expansion of the existing cooperation between CATS and WFHB to pull in additional IU involvement, the CoB should help support the creation of a regular social meeting event backed by a virtual collaboration space open to all stakeholders, even those currently not willing or able to participate in a local news project. The goal should be to establish a regular forum for members of all local media organizations to exchange and develop ideas and contacts. Such a venue should equally be open to interested parties from funding partners and organizations interested in constructive and open dialogue.

Eventually such a group could exchange ideas and forge connections beyond the local region to involve public media organizations in other parts of Indiana, the ACM or public bodies like the Indiana Association of Cities and Towns (IACT). The goal would be to build and strengthen an informal network of individuals supportive of and passionate about PEG activities that can function as a resources and driver of innovation.

Implementation Team

After this document has been delivered key stakeholders and beneficiaries of its recommendations should engage in a series of joint meetings with the CoB and other supportive funding partners to agree on the type, speed and level of implementation desired. The plan should be broken down into strands of projects assigned to a specific individual with overall implementation and reporting responsibility.

Supplier Relations

Network with suppliers to form relationships with decision makers in the supplier's organization than can positively impact PEG delivery on their platform. Seek an understanding for the obstacles to problem solving on PEG issues, such as EPG data, in the supplier's organization and promote a co-operative pragmatic approach to resolving such issues. Specifically incremental changes such as trading of EPG placement for compression rate on U-verse and neutralizing cost concerns through cost sharing proposals may increase the likelihood of positive outcomes. Try to co-ordinate the official policy towards the supplier on PEG issues between all funding partners such as MCPL, ToE, CoB and Monroe County. Promote active information exchange between the funding partners on supplier issues. The CoB as one of the most active supporters may be best suited to evangelize these ideas to its peers in the funding partnership.

Develop Involvement with the Kelley School of Business and the School for Public and Environmental Affairs

Both schools jointly offer the "Certificate in Social Entrepreneurship" (see:

<http://kelley.iu.edu/mba/academics/socialEntrepreneurshipCertificate.cfm>), which could provide a valuable source for future student and faculty advice on management and business issues pertaining PEG and not-for-profit organizations in general. IU's "Johnson Center for Entrepreneurship and Innovation" at the Kelley School of Business would represent a good starting point to develop this relationship if so desired.

Self Promote

Given its exemplary track record in supporting transparency and civic engagement through its PEG operation, the City of Bloomington should not miss the opportunity to more actively promote these facts through its various communications channels, including its website.



New Projects

Section 4 – New Projects

This section covers projects that either significantly extend core offerings currently provided by CATS or introduce entirely new services. The projects in this section are contingent on the successful implementation of the main recommendations offered further above in section 1 of this report.

Most of the projects introduced below represent suggestions as to how CATS could engage new audiences by growing beyond the traditional cable television model.

CATS has very successfully provided high quality PEG content on Comcast Cable since the mid 1970s and ultimately owes its existence and funding (through a share of local cable franchise revenue) to the cable industry. This report does not suggest that CATS abandon this core area of its operation. However, with the increasingly Internet centric nature of modern society CATS is in the unique position to reach a broader audience effectively and thus create additional value for the local community.

The City of Bloomington has been a strong supporter of its principal PEG operator for decades and has created an exemplary track record in terms of transparency in government. Few communities can boast a television services that offers for local government (both at the City and County level) what C-SPAN provides at the Federal level.

As high-speed Internet access becomes increasingly common in the Bloomington area and Monroe County the mandate for repurposing this existing government content for online distribution becomes ever stronger. Some CATS produced government content is available today in an incomplete (there is a back log in digitizing recorded meetings) and basic fashion (the existing catstv.net website lacks usability).

After the successful implementation and launch of the new CATS web portal proposed in section 1 of this report the basic building blocks for expanding online services will be in place.

Where appropriate or feasible suggestions regarding the likely cost of the various measures are included. However, in many circumstances the variability of cost makes predictions all but impossible without actually testing demand. The long-range nature of most suggestion further diminishes the value of detailed breakdowns at this stage as bandwidth and data volume cost continue to decline.

Given the mandate for effective use of public funds, speculative investment in potentially costly content delivery infrastructure may be impractical and irresponsible without proven demand. At the same time, low bandwidth or slow response times, may actually moderate the demand for a specific service. Thus transparency, proactive exploration and the management of user expectations will be essential for long-term success in a space where “build it and they will come” is no longer economically viable.

Background – Internet Video Delivery

Baseline Online Service – What Section 1 Would Deliver

After successful implementation of section 1 of this report CATS should provide access to an expanding portion of its historic library of publicly produced content through a functional, well designed website.

Government content encompassing recordings of all meetings currently telecast/recorded by CATS, as well as important documents being discussed during such meetings, should be available through the same aforementioned website.

Users should be able to search for programs, browse and play video and download associated documents through an intuitive and capable web interface.

The CoB should be able to include videos and documents hosted by CATS directly in pages published through the “City CMS” content management system. To the user these videos may appear as part of the City’s web pages. Monroe County and MCPL may elect to use the CATS repository in a similar way to embed video content on their

respective websites. To drive traffic to the CATS website in general and encourage exploration of the online content repository offered by this PEG operator, video material hosted by CATS and included on the City's, County's and MCPL's sites should be credited as "powered by CATS" or similar with a clickable link back to the CATS site.

On the government content side the backlog of un-digitized meetings not available online should decrease steadily as CATS meets agreed performance targets. Simultaneously, more and more material from the public video production archive should become available online.

The two existing streaming services for City and County channels would be retained and prominently displayed along with an explanation why other channels are currently not available through streaming (i.e. due to rights issues and infrastructure cost). Rather than treating this matter as a regrettable shortcoming, CATS should use it as an opportunity to further drive traffic to the online archive. One way to do so would be by pointing out that many programs on the CATS schedule are available from its archive for on demand viewing.

The schedules for all PEG channels should be presented intuitively and accurately on the website. This should also enable the grouping of content presentation by channel, so that each channel has dedicated branded pages on the site. Upcoming schedules for channels as well as other text-based content on the CATS site should be fully searchable through an appropriate web-search facility. Subject to reaching agreement with Comcast on this matter the web schedule should "mirror in content" the information presented through the subscribers' cable guide provided by the cable set-top box.

The Effects of Section 1

Overall, a range of measures should increase the interest and consequently use by the public of the CATS online repository and general catstv.net website. To recap, this use would include:

- Consumption of normal WebPages
- Queries of the repository (archive of public and government content)
- Downloading of documents (associated with government content)
- Viewing of on-demand video streams/progressive downloads, either from search results or by request received through video items embedded in other partner sites such as bloomington.in.gov
- Viewing of live video streams for City and County channels

It is likely that peak loads on the infrastructure proposed in section 1 of this report will increase as a result of this envisaged expansion of service. Greater accessibility, larger diversity of material, and more exposure points for this material should increase consumption.

What is impossible to predict reliably at this point is by how much consumption will increase and how access patterns to content will be distributed.

- Will user consumption cluster/peak around certain hours of the day and/or specific items of content, potentially leaving the infrastructure near idle the rest of the time?
- Or will the increase be more uniform, increasing the average base-line load on the systems as more users consume more material throughout the day?

Most likely a mix of both phenomena might be observed. Under peak-loads content searches may become slower, downloads could slow down below real-time performance, resulting in buffering/interruptions of playback. Live streams, depending on the encoding and streaming technology used, would either drop video segments or audio or suffer image degradation. Under extreme loads connections to services may drop completely or time out, giving the user the impression that the service is unavailable.

The severity of peaks and troughs and the resultant strain on the hardware and network bandwidth, while currently beyond reliable prediction, are not entirely beyond the (at least relative) control of CATS. The projects further below will provide some examples as to how this control can be exercised.

The Ideal System

It may be tempting to dismiss the challenges posed by demand peaks and troughs as merely an investment issue that is best solved by buying a few more servers and a faster “internet link”. Taking a speculative approach to spending public funds in the hope that service quality will either be sufficient to meet demand, or, if over provisioned, that once “you build it they (the user) will eventually come and use it”, seems unsophisticated and frivolous given the economic circumstances.

Assuming that capital will always be a constrained resource an ideal system would scale cheaply, instantly and incrementally (in single user increments) both in terms of content capacity (amount of content stored) and bandwidth (number of users that can concurrently access this content). When scaling characteristics of a specific service are discussed, this model of the ideal system will serve as a reference point for comparison.

The Myth of Free

While most non-technical decision makers can readily appreciate the associated costs of scaling hardware or the speed with which this hardware is connected to the Internet far fewer appreciate the cost of data transferred over this connection.

The availability of “un-metered” broadband connections in the consumer space may have enforced the perception that there is a cost “for the size of the hole in the bucket” but no real cost to the “amount of water that flows through this hole”. Unfortunately this is not the case. While bandwidth and data-volume cost continue to decline for

commercial customers, the Internet is far from free when used as a mass distribution medium for bandwidth and data volume hungry content such as online video.

The problem is further exacerbated by the nature of much of CATS’s content. Unlike YouTube’s clips, which is usually only a few minutes in length, CATS carries long-form programs such as government meetings often lasting two hours or more. So CATS and by extension much of the CoB content delivery is much more comparable to the feature film delivery of “Netflix Streaming” than to the short clip delivery of popular video sharing sites.

While a speculative assumption, it is likely that a viewer dedicated enough to follow a specific committee meeting online is also likely to consume significant portions of this item, resulting in comparatively large data volumes transferred by each user. This in turn will generate a steeper rise in data volume / traffic from the site, compared to short form centric sites, as popularity increases.

Service Expansions and Their Implications

The following paragraphs consider the direct and indirect impact of introducing various new services to the CATS and CoB portfolios of Internet video services.

The direct impact of a service on the infrastructure of CATS and the CoB describes a change in demand for resources associated with the provision of the service and associated features.

The indirect impact of a service explores likely changes in user behavior as a result of the introduction/use of the service and their effect on the resources deployed by CATS and the CoB. It also describes methods to steer user behavior.

Twitter

twitter.com

“Twitter lets you write and read messages of up to 140 characters, or the very length of this sentence, including all punctuation and spaces. The messages are public and you decide what sort of messages you want to receive—Twitter being a recipient driven information network. In addition, you can send and receive Twitter messages, or tweets, equally well from your desktop or your mobile phone.”

(Source: <http://business.twitter.com/twitter101/>)

Description of Service and Features

The micro blogging site (for those unfamiliar with its nature please follow the URL provided above) could be used to publicize specific content items once they become available for online consumption.

Due to the inherent encoding delays and occasional logistics conflicts, such as two meetings occurring at the same time and being covered by different CATS crews, government content is not necessarily instantly available online. It may be subject to delays of up to a few days before appearing on the new CATS content portal and subsequently (through links) on the relevant committee webpage hosted by the CoB.

A range of notification mechanisms such as RSS feeds and Twitter will enable subscription based self-service notification for interested parties. Furthermore, Twitter could prove a useful tool for providing notification when frequently requested material is due to appear on a specific PEG television channel.

In turn the “@username” feature would also allow followers to respond/react to content tweeted by CATS. This essentially turns Twitter into a text based broadcast medium with “back-channel” capability.

Lastly it may serve as a tool to engage audience segments by providing updates on projects and general day-to-day activities at the

PEG providers or by disseminating promotional clips for upcoming programs.

Summary of applications suggested:

- Notification of online availability of specific content items
- Notification of impending telecast of high value programs
- Share stories, thoughts and images concerning day-to-day operation or specific projects at CATS
- Share preview video clips of upcoming programs (applicable to both online and cable TV based delivery)
- Generate feedback on all of the above from followers

For further inspiration on possible applications of Twitter in a business context please refer to the site’s case study section. (e.g.: http://business.twitter.com/twitter101/case_bestbuy)

All these services should be delivered **through a company account specifically set up for CATS or the CoB** respectively and NOT through an individual employee’s account. This is both a matter of identity / brand development as well as service continuity against the backdrop of staff turnover.

Direct Impact

The need for bandwidth to deliver Twitter feeds is minimal as each message is limited to 140 characters in length. While it is possible to use 3rd party providers to share images through Twitter (for an overview see: <http://mashable.com/2009/05/19/twitter-share-images/>) the bandwidth demands would still be relatively low compared to online video distribution.

Twitter, again through the help of 3rd party providers, could also be used to distribute video clips (as mentioned above) (for an overview see: <http://mashable.com/2009/05/23/video-for-twitter/>) to followers of CATS or the CoB. Bandwidth needs, even in this scenario, are relatively low as the 3rd party services place both length and/or file size

restrictions on the video tweets. Thus a tweet containing for example a promotional preview of an upcoming program would constitute one single upload with all the heavy lifting for the onward distribution to interested users done by the service providers' infrastructure.

Indirect Impact

Online content promoted through Twitter may generate artificial demand peaks shortly after a tweet has been sent out. With suitable bandwidth monitoring and demand modeling CATS could also use tweets to selectively generate demand during periods of otherwise low activity, thus utilizing its infrastructure more effectively.

Similarly by delaying the availability or announcement of such for a predictably popular item, until system demand generated from other popular items has tailed off, CATS could use Twitter as a tool to manage user engagement.

Cost and Requirements

The Twitter account is free.

However, an organization using Twitter should establish clear internal policies on who may use the account and how it is to be used. What type of content is suitable / permissible and how user interactions should be managed. Without such policies a plethora of risks to the organization covering the gamut from breach of confidentiality to libel may arise from undirected use of the company account.

If CATS is aiming to use Twitter to boost demand for selective items or delay announcements to avoid clashes of demand peaks for competing popular items, then real-time information, preferably enhanced by predictive modeling (based on historical data), about system utilization (of online services) should be available to those intending to use Twitter for this purpose.

Finally, if the "corporate" Twitter account for CATS evolves into a popular feedback tool, additional software to manage the incoming information flow and evaluate the impact/effectiveness of outbound communication should be considered. Various free applications are available. (Consider these lists starting points:

<http://www.toprankblog.com/2010/02/twitter-management-tools/> and <http://hyder.me/social-media/14-tools-of-highly-effective-twitter-users/> and <http://www.bookmarket.com/twitter-trends.htm>)

Facebook

www.facebook.com

"Facebook's mission is to give people the power to share and make the world more open and connected.

Millions of people use Facebook everyday to keep up with friends, upload an unlimited number of photos, share links and videos, and learn more about the people they meet."

(Source:

<http://www.facebook.com/facebook?ref=pf#!/facebook?v=info&ref=pf>)

Description of Service and Features

The actual functional components of a Facebook-based service are much the same as those proposed for Twitter. Facebook provides a staging area for information dissemination and sharing with back channel capability. In fact, Facebook feeds, which provide real-time updates about activities of users to their friends, can also incorporate Twitter posts. The main difference between Twitter and Facebook is the increased level of asynchronous interaction. While Twitter seems to thrive on the immediacy of its exchanges, Facebook as an aggregating contextualizing quality and implicitly encourages user driven content curation. Furthermore, the Facebook application model encourages user and third party interactions that can transcend the boundaries of the social networking site itself.

Translating this abstract characterization of Facebook into concrete services provided by the PEG operators a number of options present themselves:

- Notify of online availability of particular content

- Notify of impending telecast of high value programs, preview upcoming highlights
- Share stories, thoughts and images concerning day-to-day operation or specific projects at CATS
- Share preview video clips of upcoming programs (applicable to both online and cable TV based delivery)
- Generate feedback on all of the above from followers/friends and evaluate user engagement
- Affiliate with other organizations on Facebook by becoming “friends” with their pages. CATS and MCPL could link up in such a way to demonstrate their mutual support.
- Develop Facebook applications that provide added value or interactivity to users (e.g. voting, program requesting, educational gaming, etc.)

Connecting with users through Facebook is not an alternative but a complementary vector of engagement to Twitter and a service expansion into this space should be considered as an integrated rather than compartmentalized strategy.

Direct Impact

The direct impact is very similar to Twitter as the volume of data generated by updates to the social networking site is comparatively small. The heavy lifting for end-user distribution is provided by the infrastructure of the social network operator and thus offloads bandwidth consumption from the local PEG operator’s infrastructure.

Facebook nominally does not place any overt restrictions on the length of video clips posted to and thus served by its platform. However, it is likely that a fair use policy would prevent CATS from off-loading the majority of its video delivery onto Facebook. Using the site for previews of specific programs seems more advisable and better aligned with the combined objective of a Facebook and Twitter online presence to promote, engage and inform PEG audiences.

Indirect Impact

Compared to Twitter demand spikes are less likely to occur in very close proximity to an announcement made on a Facebook page. Facebook offers a broader range of interaction types all competing for the user’s attention. This is likely to demote the prominence of updates and posts on the CATS Facebook page as it competes with “Framville” (and other games), status updates by friends, pokes, event invites etc for the user’s attention. Twitter by comparisons seems almost focused with its devotion to the expression and relay of opinions.

Currently interactions may still be dispersed throughout the day and be non-continuous, but the increasing integration of Facebook with mobile devices is likely raise the level of immediacy over time.

With stronger competition for the user’s attention on the platform, the effectiveness and thus strength of demand amplification will be largely based on the consistency with which updates are made and on how engaging the over all content offered through the page turns out to be. Thus exact predictions about the long-term significance of the impact of such a page cannot be reliably made.

Yet, CATS must not neglect other methods of engagement at the expense of an overly zealous focus on Facebook. While quite pervasive Facebook is by no means universally used. If too much content is posted exclusively through Facebook, then would create an implicit requirement for PEG users to join this social network. The policy implications of this may be undesirable at best, or outright contravene open access principles at worst. Facebook should thus present merely one out of many potential ways to engage with PEG online, but must never be the dominant option.

Cost and Requirements

The Facebook account is free, as is setting up a group page. For further information on how to create a page for a business please refer to the following information:

<http://www.facebook.com/advertising/?pages> and
<http://www.facebook.com/help/?page=175>

Facebook groups tend to function as gathering places for people with common causes whereas business pages serve a stronger brand building function. They essentially provide an online identity to the business/organization in the same way a personal Facebook profile provides an online identity to an individual.

Furthermore, Facebook pages for businesses include a suite of free analytical tools to provide feedback about user engagement with the page; a feature that is lacking from groups. With these considerations in mind CATS might be best served by a page rather than a group, owing to the greater flexibility (and ability to create a richer more engaging experience for users) afforded by this choice.

As with Twitter, an organization using Facebook should establish clear internal policies on who may use the account and how it is to be used. What type of content is suitable / permissible and how user interactions should be managed. Without such policies a plethora of risks to the organization covering the gamut from breach of confidentiality to libel may arise from undirected use of the company's Facebook account.

Atom or RSS Feeds and Podcasts

The Atom and RSS standards provide a mechanism to automatically propagate frequently updated/published content such as news pages or audio and video podcasts. The latter terms describes content feeds that include or are based on audio or video material. A user or another website may then subscribe to these feeds using software to aggregate a number of these feeds into a personalized content portfolio. The aggregator software will poll the publisher of the content on a regular basis for updates and download them when they become available.

Please consult the relevant Wikipedia articles as a starting point for further information on the technologies involved.

<http://en.wikipedia.org/wiki/RSS>

[http://en.wikipedia.org/wiki/Atom_\(standard\)](http://en.wikipedia.org/wiki/Atom_(standard))

“Podcast” has become somewhat of a generic term for downloaded media rich content feeds using RSS or Atom technology. The term derives its name from Apple’s iTunes/iPod software and hardware combination that helped accelerate the adoption of syndicated audio/video content for download from a publisher to the users local device. Podcasts thus implicitly support offline consumption as opposed to webcasts, which require online access to consume streamed material.

The iTunes platform (consisting of the store hosted by Apple and the iTunes client application installed on the user’s machine) still provides a convenient way to publish podcasts to a large user based by allowing content publishers free access to the iTunes ecosystem. Once published this way (subject to review by iTunes staff) a podcast becomes discoverable by searches on iTunes clients. However, it is important to understand that Apple does not host the actual media files. The iTunes platform merely serves as a directory of available/submitted content feeds. The podcast is still downloaded from the publisher’s servers once a user has subscribed to it via the iTunes client software.

While a convenient way to reach a large user population, the iTunes platform is not a prerequisite for distributing “podcast-style” content.

Podcasts and RSS / Atom feeds in general are often perceived as push technologies from a user’s perspective, since new content automatically appears on their devices. Technically this view is not correct since the client software polls and then downloads (automatically) any new content. This has some positive and negative implications for network infrastructure demand as will be discussed further below.

Description of Service and Features

Different content feeds or episodic podcasts could be created based on topic or genre. For example all episodes of the CATS produced series “Pets without Partners” (which is a program already available as video podcast by CATS today) or all meetings of a specific City

Government committee could be grouped in such a feed. Subscribers would then automatically find the most recent edition / episode of this program in their “reader” application.

Such feeds present a valuable alternative to users that do not wish to rely on/or join Facebook or Twitter to stay up-to-date with PEG content.

While “iTunes delivered” podcasts would be commonly based on audio or video content, more elaborate feeds based on RSS or Atom technology could also include accompanying material such as notes discussed at the meeting, thus essentially replicating a dedicated news web page for the specific program. The provision of such feeds would be significantly simplified by the successful implementation of the web content management system (WCMS) proposed for CATS.

The WCMS could automatically generate the RSS/Atom feed and also host podcast files as necessary. These feeds in turn could be presented both for consumption or subscription through other sites such as the CoB website. In doing so a wider range of potential touch-points with interested consumers can be created, hopefully resulting in significant subscriber numbers and thus increased content consumption.

As digitization backlogs on the government and public content side decrease CATS should be vocal about this achievement to its audiences.

CATS should publicize both facts through an “about CATS” or “CATS news” type RSS feeds. On the government side users should be alerted once missing programs from a specific meeting category for a particular year become available (or the old real-media versions are re-released in the new site’s streaming format).

For public content a promotional service might include a regularly updated RSS feed of curated collections based on themes (e.g. shows involving pets) or programs (for example the 1984 season of a specific local show) as they become available through the archive digitization process, creating incentives for continued engagement with audiences.

By leveraging its vast archive along newly produced content CATS has a range of options available to update its site with fresh material and provide incentives for frequent return visits by its audiences.

Direct Impact

Compared to conventional live web-casts, which require real-time delivery, the benefit of this type of syndicated content lies in its “for download” nature. Podcasts are downloaded to the playback device or application and thus cope well with slower connections. Alternatively RSS/Atom feeds with embedded media content may present this material either as progressive download or as a conventional link for down.

Either method allows media delivery over bandwidth constraint connections that would not support real-time streamed video at acceptable quality levels. Podcast inherently keep the download process a background task, which allows for even slower media delivery compared to progressive download type applications from a user experience perspective.

Based on the number of subscriptions any new feed published would generate a more spread out demand peak (as not all feed reader applications are likely to be active and polling for content at the same time). For podcasts these peaks can be bandwidth managed, as real-time delivery is not critical in this case.

This may potentially allow a provider to serve a greater number of users with a specific item of content over time as would otherwise be possible in bandwidth constraint situations. The availability of server-logs indicating the number of past requests for a specific item of content within a feed will also allow estimates of feed subscriber numbers and provide aggregate data useful for capacity planning of the over-all system.

The most significant drawback of the automated delivery compared to user initiated content pulls (based on visits to the website) lies in the quantity of data consumed, particularly where podcasts are concerned; Each subscriber to a specific podcast will have her “podcast catcher” application automatically download for example the

entire 2½ hours of video for a specific meeting, even if she is only interested in a 10-minute segment.

Progressive downloads, if configured appropriately, or conventional “on-demand”, streamed content allows for user interaction with the content while it is still stored on the server of the provider. The aforementioned user for example could skip through the video file to the 10-minute segment she is interested in and then close the connection. This behavior results in a significantly lower quantity of outbound data delivered from the provider’s servers and may be economically more viable.

A compromise that allows for a “best of both worlds” approach might be to embed progressive downloads or links to streamed content in conventional RSS or Atom content feeds (subject to adequate bandwidth at the provider’s end).

Indirect Impact

If subscriber numbers for each feed are modeled on an ongoing basis the release schedules of various feeds can be used to smooth demand peaks and provide higher over all resource utilization. For example one popular feed is released and once demand tails off (as most subscribers have downloaded the feed), two less popular feeds can be released simultaneously generating an aggregate demand on the infrastructure similar to the one popular feed.

Thus with diligent resource monitoring, content syndication can provide a valuable tool to steer user demand and deliver media over bandwidth constraint connections without sacrificing resource utilization.

Cost and Requirements

WCMS implementations generally include the capability to generate syndication feeds based on either RSS or Atom technology. The iTunes platform does employ a review mechanisms for podcasts published through it. This service is free to content providers but may impose delays in launching new feeds or prove unreliable when some politically sensitive issues are covered.

Archive Streaming and Progressive Downloads vs. “Conventional” Downloads

If the recommendations outlines in section 1 of this document are implemented by CATS, the main PEG provider in the Bloomington market, a vast archive of publicly produced content will become available for online consumption over the coming years.

As indicated elsewhere in this report, this archive reaches back to the late 1970s and at this point comprise significantly more content than the rapidly expanding collection of government meetings.

Unlike government meetings, which tend to decay in relevance as time progresses, and thus are less likely to generate late access requests, this public (access) archive represents a much wider spread of material with largely unpredictable access patterns.

When implementing a method for presenting the material for online consumption, CATS will be required to make trade-offs between speed of service and the number of serviceable requests. These trade-offs will largely be based on the delivery method chosen.

Description of Service and Features

The following options present themselves as suitable solutions for serving content to users from the archive of publicly produced content based on user browsing or searching activity. These considerations are independent of any other tools, such as for example Facebook or Twitter, which CATS may consider using to promote specific items of content.

- **On-Demand Streaming:** Subject to a suitable streaming server being available this provides instant access to content including skip and pause functionality. Service quality is highly dependent on the available system bandwidth to serve users. Bandwidth degradation directly and immediately degrades the user experience. As user graze through segments of material only one video stream per user is generally active at any given time resulting in moderate amounts of data being consumed by the user.

- **HTTP Segmented Streaming:** This solution allows for bandwidth adaptive video delivery over networks with variable bandwidth characteristics such as cellular data connections (The technology naturally also works with desktop clients). The client requests short snippets of content based on the connection quality and assembles them during playback. The technology works with conventional web servers without the need for specialist streaming servers/protocols. It traverses firewalls and network address translation without problems, unlike some streaming protocols. The segmented HTTP streaming approach allows for dynamic switching between different quality levels during playback based on network quality. However, media needs to be encoded (in multiple version), segmented and packaged correctly for this technology to work. Furthermore, the playback client needs to support the technology. There are currently three competing and mutually incompatible implementations available:
 - Adobe HTTP Dynamic Streaming (requires Flashplayer 10.1, thus excludes iOS devices but likely to work with Android and Symbian mobile devices as announced player ports become available):
<http://www.adobe.com/products/httpdynamicstreaming/>
 - Apple Live Streaming (currently limited to iOS devices and OSX with QuicktimeX):
<http://developer.apple.com/iphone/library/documentation/networkinginternet/conceptual/streamingmediaguide/introduction/introduction.html>
 - Microsoft Smooth Streaming (requires Silverlight plugin on client machine and Microsoft IIS web servers to host, can emulate Apple Live Stream server sided for iOS clients):
<http://www.iis.net/download/SmoothStreaming>
- **Progressive Downloads (HTTP based):** Search results are displayed through an embedded player application similar

to for example “YouTube.com”. This allows for a reasonable user experience over variable bandwidth connections, with paused playback and consumption delays as the most significant impact. User expectation may be more accustomed to this behavior based on the variable service quality available from larger video (sharing) sites like “Youtube.com”. The tendency by users to pre-cache content by opening multiple windows in their browser does exist but is likely to be more prevalent for multiple short content items (further research would be required to verify this). Skip and pause functionality is generally available and leads to a renewed download from the new playback point in a file (if the destination point had not yet been downloaded), thus reducing the overall quantity of data transferred. Can be delivered through standard web server.

- **“Conventional” Downloads:** Search or browse results may contain a brief preview clip served through either method above, but the actual main program would be downloaded as a whole by the user. This allows for delayed but high quality servicing of user needs even over severely congested connections, as delivery speed can be significantly slower than real-time (user tolerance provided). As anecdotal evidence from download and file sharing services seem to suggest this may encourage a hoarding behavior on part of the user where large quantities of content are downloaded “just in case” without actually ever being consumed. This method of delivery is likely to result in the greatest quantity of data being consumed per user. Skipping and pausing on the local machine has no impact on the quantity of data required for serving the user as the whole program is always downloaded regardless of how much of it is actually consumed.

Advanced Service Options

With HTTP streaming services in particular CATS could deploy new service concepts such as content adaptive or personalized streaming channels with skip forward functionality. These concepts have been pioneered in the music domain by services like “Pandora” and “SlackerRadio”. The user is presented with a dynamic playlist of clips based on genre or her own preferences and thus gets the impression

of a continuous, streamed channel. If the user does not like a particular program she can skip forward to the next program. The server can then take into account user preferences as the playlist is extended.

There are a number of variations on this concept and CATS could use such services to exploit the depth of its archive and create prolonged engagement with its users by facilitating such “assisted” content discovery. The latter would require good metadata to classify archive content suitably well to allow for preference-based suggestions. Additional data to improve playlist customization could be drawn from recommendation systems based on analysis of related searches and consumption patterns by other users. Due to the underlying analytical complexity to drive such a service it has been placed in this section (section 4) rather than section 1.

Direct Impact

If analytical tools are in place, streaming and progressive downloads offer a rich source of data about user behavior and content preferences. For an organization like CATS, which does not depend on selling online advertising linked to popular content, such data may be less relevant than for a commercial provider.

Each method described above has the potential to generate demand peaks based on unexpected popularity of a specific item. On-demand streaming is most susceptible to the self-limiting implications of instant user experience degradation (dropped streams, frames or poor image/audio quality) caused by an overloaded delivery platform. Progressive downloads will degrade less perceptibly, especially shorter clips, as a brief wait before playback may be less noticeable to users. Conventional downloads would suffer the least as consumption is delayed to a later time regardless. Popular downloaded files are also more likely to be passed on among a community of followers through other channels (such as file sharing), which may not necessarily impact CATS’s infrastructure.

As over-all popularity of the archive increases progressive downloads are more likely to accommodate “grazing” users exploring a diverse selection of content while still maintaining an acceptable quality of service (user experience) as the technology smoothes over temporary

congestion. In terms of limiting the quantity of data consumed by the user population this service is also likely to significantly outperform conventional downloads and perform almost as well as the most efficient option of on-demand streaming.

Indirect Impact

Each of the four solutions presented offers different potential for actively influencing user behavior to maintain overall service levels and mitigate some of the inherent shortcomings of each technology. A non-exhaustive list of suggestions follows.

On-demand streaming, subject to appropriate management, could be configured to serve a lower resolution version of popular material during peak times, thus allowing a greater number of users to be served this way. For very long items resetting a user’s connection after a certain time interval may be effective during times of high demand. This process forces the user to reconnect and skip to the last position (prior to the reset/disconnection) in the clip. It thereby eliminates streams that have lost the user’s attention.

Progressive downloads and segmented streaming generally don’t offer active server sided image quality management, however the number (and speed) of connections allowed to a specific client can be limited to reduce the amount of pre-caching through multiple open browser windows. In the case of segmented streaming this also provides an indirect means for controlling/limiting the maximum image quality of a stream.

Conventional downloads allow for similar interventions as available for progressive downloads. Namely, the number and speed of connections/downloads available to each user can be managed/limited quite easily to curb excessive consumption by a minority in favor of providing service to a greater number of users.

Quality of service for all types of delivery may also be prioritized based on past consumption patterns associated with a specific IP address or IP location. Connections from within Bloomington or by frequent or infrequent users may be prioritized. The latter requires tracking of individual machines by means of IP address or cookies. Each

approach has drawbacks and inaccuracies and thus such measures may be considered controversial and should probably be avoided in favor of an infrastructure upgrade.

Cost and Requirements

The actual cost of implementing the service would be captured as part of the WCMS deployment. Streaming server licenses may add some extra cost (up to several thousand dollars depending on the platform) compared the HTTP/FTP based solutions (i.e. progressive downloads, segmented streaming, conventional downloads). Segmented streaming currently is still the most complex to implement and operate (due to specific content packaging requirements).

Depending on how the billing for connectivity is structured. On-demand streaming and progressive downloads would be more influenced by the cost of connection speed whereas conventional downloads would impact data volume (quantity) charges more severely.

From the scalability perspective, if the archive service were to become surprisingly popular, conventional downloads place the lowest burden on the hardware infrastructure (servers) and provide the highest degree of influence over managing user bandwidth and indirectly also the quantity of data consumed (if downloads were actively slowed down). However, in an environment where instant availability of media is increasingly expected the very limitations of a download service could hamper widespread user adoption.

Live Streaming of Channels

CATS currently offers live streaming of its output for Comcast channels 12 and 14 (City and County Government respectively) through its website. The service is based on Apple's QuickTime streaming and was available under the following URL at the time of writing this report: <http://stream.catstv.net/cats/>

Description of Service and Features

After transferring CATS's web presence to the web content management system (WCMS) proposed in section 1 of this document the live web-streaming of channels 12 and 14 should continue.

The streaming technology may eventually change or bandwidth and encoding settings may be altered compared to the existing setup to accommodate more users or better picture quality within the infrastructure constraints.

The user survey conducted for section 2, although statistically not representative, surfaced a desire by participants to increase the number of CATS channels available through live streaming. While technologically possible, rights issues may prevent this from happening in the near term.

Comcast channels 3 and 7 may eventually offer some or all of their content for streaming. However, this would require an adjustment to the rights negotiated for events covered, particularly for local musical performances. In the likely event that rights clearance cannot be achieved universally, live streaming of these channels would have to be temporarily disabled during programs not licensed for online distribution. A suitable noticed should be displayed during such breaks.

For as long as Comcast channel 96 remains allocated to re-broadcasting SCOLA International, any webcasts of its content seem unlikely to happen due to rights issues. SCOLA maintains its own subscription based online strategy and offers selected items for free online.

The type of intermittent live streaming, as applicable to Comcast channels 3 and 7, would require more sophisticated rights management than currently supported by CATS's processes and systems. Furthermore, a reliable mechanism for rights based linking of broadcast and webcast operations would be required, which may prove expensive to implement.

The proposition of online access frequently substitutes as a “catch up” service for those with access to a cable subscription but may occasionally provide value in live coverage to those without. However, given the limited extra benefit compared to an on-demand streaming solution (with accelerated turn-around / availability of relevant programs), the cost and complexity involved in implementing live streaming for channels 3 and 7 seem hard to justify.

Public expectation on this matter needs to be managed with a clear explanation available online as to why channels, other than those for City and County, are not available for streaming.

Direct Impact

Assuming that for the reasons outlined above live streaming will remain limited to the two existing channels, only moderate infrastructure upgrades may be required. The existing service seems to be relatively lightly used although this may be in part due to lack of promotion of CATS’s online activities. Since an increasing number of City meetings are available for on-demand streaming, the value proposition of the live service is reduced within the use context of online delivery as a “catch-up” service.

However, it is possible that increasing traffic to a searchable archive of all content, covering political and public access material alike, may negatively impact the live streams in the future. Further monitoring of user behavior will be required to establish reliable metrics for capacity planning.

Depending on the hosting options chosen by CATS, streams may still originate from the local infrastructure. Alternatively relaying via a third party provider may be an option to either increase service capacity temporarily, during very popular events, or permanently. In either scenario CATS would just provide one single (protected) live stream to the relay provider, which would then service streaming requests by users from this 3rd party infrastructure.

Another cheaper option might be providing an additional lower bandwidth audio only stream as a fall back option during times of high demand.

Multicast delivery is often cited as another bandwidth efficient delivery method for live streams. In this approach only one stream is passed between Internet routers until the stream reaches a branch point to which multiple users requesting to view the stream are connected. While elegant and resource efficient in theory this technology never gained widespread adoption outside closed private networks, as all routers between the client and streaming source need to support the protocol.

Occasionally there are attempts to resurrect the concepts behind this type of delivery but at this point such projects are largely experimental, much like peer to peer streaming, and thus seem not (yet) suitable for CATS’s needs.

Indirect Impact

Live services may lead to less engaged / passive consumption compared to the more focused mode of interaction common with on-demand clip browsing. A live stream might be “left on” to run in the background, long after the user has lost interest. This results in hours of bandwidth and data consumption by a software client and does not necessarily equate to actual content consumption by a human (user).

To manage the cost implications of this behavior it may be advisable to periodically reset the connection of a user to force a disconnect and reconnect. This procedure would help to automatically eliminate such background / disengaged content streams from the streaming server’s connection list. One or two hour intervals may be suitable to strike a balance between user experience and resource conservation.

Peak use is likely to mirror the cable TV channels for popular PEG content and network monitoring should help establish online “prime-time” periods. Such knowledge may in turn influence demand management on other services, depending on what level of priority live streaming is given in CATS’s online strategy.

Cost and Requirements

Streaming server licensing fees are frequently based on the number of clients supported. However, this number may not correlate to the actual number of connections supported by the infrastructure. CATS

should perform diligent capacity planning prior to any new license acquisitions and aim to re-use existing licenses for QuickTime (and possibly Real) streaming.

Due to the moderate user pool permanent relaying may not be cost effective at this point.

Linking Schedule to Archive

The weekly or daily schedule displayed on the website may include direct links to programs stored in the archive for on-demand consumption. This option provides an effective substitute for live webcasting of channels with mixed content usage rights and can be managed through manual processes if necessary.

Description of Service and Features

Based on the workflow changes suggested in section 1 of this report all content being telecast on cable TV should have already passed through an archive digitization process prior to playout. Thus all material that has been “aired” (cablecast) would automatically be available for online consumption. This excludes live content or content relayed from other external feeds.

CATS could chose to make this material available to users in a convenient way by providing direct links to these programs (stored in the on-demand archive) from the schedule pages on its website.

CATS may then chose to control availability based on when the program is aired or when the schedule has been finalized. The latter would essentially provide prioritized content availability for online consumption over telecast viewing.

Suitable live material, such as government meetings, could link to the live streaming services. Public access material that is produced live using the studio at CATS could either be offered as live webcast for the specific event or be ingested in into the archive and made available shortly after airing.

Direct Impact

The service may increase traffic to / use of the online archive service and live streaming service by providing an additional and convenient means of interaction. Demand peaks are likely to occur within hours or days of airing a specific item. Depending on what online release policy is chosen, control over those peaks is limited and driven by the playout schedule of the actual cable channels.

Indirect Impact

By serving as an entry point to the online content archive this service may have promotional qualities that may increase over all use of the archive.

Users that in the past would have simply looked up a channel’s schedule online may be enticed to explore the archive further for other recently telecast programs.

Cost and Requirements

Providing this service should not incur any significant additional cost beyond the infrastructure upgrades already discussed in section 1 of this document. Some minor programming work may be required to automate the schedule publishing and linking process as well as define the rules for availability / online release of content. Other than that this service fully utilizes existing resources from the recommendations above and merely represents a usability improvement for content access.

Seeding “Peer to Peer” Networks

Per to Peer networks (P2P) provide an effective way for content delivery to large groups of users without the need of an extensive hosting infrastructure by the content provider. This fact has been heavily exploited by various file-sharing services, which in turn has given P2P a reputation for enabling large-scale music and video piracy. This negative image of P2P somewhat detracts from its legitimate use as a low cost distribution platform for organizations without the financial means to support the large and well connected download platform.

But also large players in the media industry like the British Broadcasting Corporation (BBC) have used P2P technology in the past to deliver content. The first version of the BBC iPlayer service used P2P technology. iPlayer is billed as a “catch up service”, which makes all of the BBC’s content broadcast on its seven radio and five television networks available online in the UK for 7 days after the date of broadcast.

P2P allows a client to download parts of a file from a number of sources simultaneously and then make this file available again as a source to other clients on the P2P network. The more widely a file is downloaded by clients the more widely it becomes available as a source on the P2P network. This adds to over-all system capacity and accelerates downloads of this file. The entire infrastructure of the P2P network is distributed across all clients, i.e. the users’ computers connected to broadband connections. No central data-center or server infrastructure is required. In certain implementations search functionality may be centralized.

No significant data volume related charges are incurred by content providers as all data is transferred between users and thus is only “applicable” to their broadband connections.

Please refer to <http://www.bittorrent.com/dna?csrc=splash> for additional information on the concept. BitTorrent is one of the more popular P2P solutions remaining in this space.

The features outlined above would make P2P, theoretically, the perfect distribution platform for CATS’s content.

However, there are a number of issues with this approach. For the purposes of this report it is assumed that any content that CATS would inject into a P2P network would be rights cleared for online use and that CATS would not have any interest in actively controlling, monitoring or restricting the re-distribution of such content.

But even with rights issues cleared, P2P networks tend to only be effective at delivering performance improvements for content that is repeatedly requested, ideally within a clearly defined window of

popularity, by a large number of users. Orphan or rare content may only be available on potentially one single machine and another user requesting this clip for download would be limited by the slow uplink provided by the other (hosting) user’s broadband connection. The resultant download speed might be so slow that it would take weeks to receive the clip. (Furthermore most users will restrict the upload speed of their P2P connection even further through bandwidth management). If the hosting user decides to stop sharing the clip or deletes it from her machine this download request would then never be completed.

These issues can be circumvented if the content provider (CATS in this case) maintains a permanent injection point for seeding the P2P network. Effectively CATS would appear as another client to the P2P network, one that never disconnects or deletes its content and is connected to the network at reasonable speeds. In the previous example, the download of this rare clip would then be only limited by the bandwidth available at the CATS injection point. The experience to the user might be similar to that of downloading directly from the CATS site.

Given the large archive and the comparatively small user population this scenario is likely to occur frequently. P2P would only accelerate the downloads of the most popular items in the CATS archive during their demand peaks.

However, this raises another issue. In order to enable P2P delivery users would have to download a specific application (the P2P client) to access CATS. The installation of a specific application to access CATS content might effectively erect a new barrier to access. Some user may not be willing or able to install the application or simply not have permission to do so (due to restrictions placed on company or college computers). Non standard or mobile platforms would also be excluded from this delivery method if no suitable P2P client is available.

Lastly, since P2P networks tend to saturate ISP’s last mile infrastructure (the most precious commodity in terms of bandwidth), many have taken to restricting or even blocking P2P traffic on their networks, although this practice may not be readily acknowledged and both severity and services targeted do vary. Comcast in particular

fought for and for now has won the right to use this practice (see appeals court ruling: <http://pacer.cadc.uscourts.gov/common/opinions/201004/08-1291-1238302.pdf>). While primarily geared at targeting consumer file sharing activities associated with copyright infringement, legitimate content delivery traffic could still be negatively affected by such practices.

Description of Service and Features

CATS would act as a seeding client offering its archive content for download through a selected P2P network/technology, such as for example “BitTorrent”. Users would download a suitable client application and would then be able to download CATS content through the P2P network.

BitTorrent offers technology (BitTorrent DNA) that opportunistically uses its distribution technology, if installed/present on the user’s machine, but will transparently allow access to content through conventional methods in case it is not.

Direct Impact

Reduced bandwidth needs and data volume consumption at CATS for popular content items during demand peaks. Depending on the type of P2P network used, CATS content may reach a wider audience beyond the Bloomington market as CATS clips appear in user’s searches on the network. BitTorrent in particular would allow CATS to maintain a closed/private user community if so desired.

Under certain circumstances P2P networks may also encounter problems traversing local firewalls or gateway devices in the user’s home or place of work. This may result in support questions being directed at CATS, which may not possess the technical expertise or resources to handle them effectively

Indirect Impact

Variable user experience (download speeds) and the potential need to install a P2P client on the user’s machine may act as barriers to access and slow down local adoption of online consumption for CATS content.

Cost and Requirements

Depending on the P2P platform used actual licensing costs may be nil. BitTorrent for example provides its “BitTorrent DNA” technology free of charge to commercial customers and offers some analytics features through its free basic commercial accounts. (See official demonstration of the service: <http://www.bittorrent.com/dna?csrc=splash>)

System integration work to automate/adapt the content distribution at CATS to work with the P2P technology will be required.

Content Delivery to Mobile Devices

While various means exist to deliver content to specific mobile platforms in a rather tightly integrated way such custom development seems un-economical for CATS. Please refer to the “Note on Software Development and Niche Services” further below. Such tight integration can deliver a seamless user experience on the consumer device but is often contingent on participating in a closed platform or “walled garden” owned by the device manufacture or cellular network operator.

Apple’s AppStore for it’s iOS devices and Verizon’s VCast service both represent example of this approach. With the ever-growing market share of smartphones equipped with reasonably competent on-board web browsers the need for such custom development is fading away. A standards compliant webpage has the potential to reach most smart phone users without the need for any custom development. Although some limitations, such as the lack of flash video support by iOS devices, remain.

Description of Service and Features

The CATS web content management system (WCMS) could be configured to automatically detect browser requesting its pages from mobile devices. The WCMS could then reformat the web page requested accordingly to make it more user friendly in this “small screen” environment. Both textual and schedule information could be delivered this way as well as video content (subject to the limitations mentioned above).

CATS could also provide SMS (commonly referred to as text messaging) notification services that would alert users when relevant content has been updated on the site or a program of interest is scheduled to be aired on one of the PEG channels.

Direct Impact

Internet access through mobile devices is set for explosive growth and is likely to overtake desktop based Internet access by 2014, according to the latest prediction by Marry Meeker, managing director of Morgan Stanley's global technology research team (Please refer to slide 8 of the company's most recent "Internet Trends 2010" report available here:

http://www.morganstanley.com/institutional/techresearch/pdfs/Internet_Trends_041210.pdf, the more comprehensive "Mobile Internet Report" the aforementioned presentation is based on can be found here:

http://www.morganstanley.com/institutional/techresearch/mobile_internet_report122009.html)

Regardless of how accurate the forecast by Meeker's team will turn out to be, mobile Internet access will eventually become the dominant mode of access in the future. CATS and the CoB should be able to service mobile devices with only minor adaptations to their web content management systems by providing small screen friendly formatting templates for their textual content. The support for video content may remain slightly more challenging in the short term, as the support for various video codecs and playback solutions tends to be platform specific. For now, HTML5 and H.264 or VP8 seem set to be the dominant technologies in the medium term.

The CoB could use live audio streams (and video streams at a later date, as the infrastructure for cellular data networks in the US catches up to international standards) of government meetings to allow interested parties to keep in touch with proceedings while "on the go". Such a service naturally has some potential to generate demand peaks during important meetings of public interest. Yet these comparatively low bandwidth audio streams, ideal for mobile delivery under current circumstances, would also be more serviceable by CATS's early infrastructure.

Indirect Impact

Mobile devices may actually soften general demand peaks as the window of access to suitable hardware for content consumption is significantly expanded (beyond the time spent with a laptop or desktop computer).

By giving the opportunity to easily fill gaps of idle time with media rich content, mobile devices invite consumption of shorter clips. Content recommendations for mobile devices should reflect this fact. This also provides room for more metadata-based innovation for long-form government content, such as tagging of sections base on agenda items or speakers in clips covering longer proceedings.

The field is still emerging and lessons learned in other cultures (such as Japan or Korea) may only partially apply to the US. Predictions with regards to the CATS audience thus remain speculative. (For an interesting perspective on the related domain of mobile television see: The Economist, Special Report on Television, "*The Emergency Screen, mobile television is unlikely to take off*", London, April 29th 2010, http://www.economist.com/node/15980809?story_id=15980809).

Once core online services are stable and well understood by CATS, delivery to mobile devices represents a potential area for experimentation and rapid innovation. Based on the preconditions in terms of expertise and infrastructure that CATS will have to meet before being able to competently engage in any kind of more customized mobile projects, it is most likely that such work will become relevant only towards the end of the timeframe covered by this report.

Cost and Requirements

Other than some additional configuration and template design work, if reformatting for smaller screens is desired, this service could be implemented as a cost free extension to the WCMS.

Summary

The table below compares the various service options across a range of dimensions. Please note the comparison reflects subjective aggregate measures and is neither quantitative nor absolute in nature. (Key: \$ = inexpensive to \$\$\$ = very expensive, ++ = best, o = average, -- = worst)

Service Type	Direct Impact on Bandwidth to Run Service	Direct Impact on Data Volume to Run Service	Demand Peak Generation (stronger peaks are negative)	Ability to Steer/Influence User Behavior (poor ability to steer behavior is negative)	Cost to Create Service	Cost to Operate Service	Scalability: Small / Large Scale
Twitter	very small	very small	--	++	free	free	++/++
Facebook	very small	small	-	+	free	free	++/+
Atom or RSS Feeds	medium	medium	o	++	free	\$	++/++
Podcasts	medium	high	+	+	free	\$\$	++/+
Archive Streaming	high	high	+	o	\$	\$	+/-
Segmented Streaming	high	high	+	o	free/\$	\$\$	o/+
Progressive Download	high	high	+	o	free	\$	++/++
“Conventional” Download	medium	very high	++	--	free	\$\$	+/o
Live Streaming of Channels	very high	very high	o	-	\$\$	\$\$\$	o/--
Linking Schedule to Archive	very small	medium	+	+	free/\$	\$	++/++
“Peer to Peer” Networks	medium	medium	++	--	free/\$	\$	--/++
Content Delivery to Mobile Devices	high	medium	++	o	free	\$	+/o

Table 15 Comparison of Online Services in Terms of Resource Consumption, User Behavior, Cost and Scalability

NOTE:

- The cost to create the service tries to reflect any potential extraordinary development effort required as well as software licensing cost
- The cost to operate the service tries to reflect ongoing licensing cost and associated bandwidth and data volume/quantity charges
- Scalability reflects both effectiveness and administrative efforts associated with scaling the service

Technology Solutions – Scenarios

As the following paragraphs will demonstrate, some of the characteristics of the “ideal system” described in the introduction of this section can be achieved. Low cost, incremental scaling of bandwidth (for both system and network) and incremental scaling of storage capacity are each available through various technical solutions.

However, one or sometimes two of these three characteristics usually have to be traded off against each other. Which types of trade-offs may be acceptable will depend on the environment and even the phase of growth the customer finds itself in. The following paragraphs will present various scenarios, consider their trade-offs and analyze their appropriateness for confronting the likely challenges faced by CATS and the CoB in the online video space over the coming years.

No Additional Investment

This option assumes that no additional investments in bandwidth or hardware are made. The existing infrastructure would be repurposed for the new site.

Based on the limitations of the existing arrangements the availability of services may suffer during peak demand resulting in reduced user satisfaction. Initial enthusiasm for new services may give way to apathy and discontent and ultimately defection. In the long run this may result in a self-regulating system and “right size” the user population to one the limited infrastructure can support.

Assuming that there is a latent need for some services such as the CoB meeting archive, the user population could stabilize at either current levels or slightly above (within the constraints imposed by the infrastructure). The current user population does not seem to place any notable strain on the existing infrastructure, leaving some room for growth.

The benefit of such an approach lies in the minimal impact on the operational budget. Connectivity is shared with MCPL and there is

always the possibility that any surge in traffic might result in network upgrades being paid for by the Library.

CATS and the CoB would both be able to claim the public relations benefit of an expansion of their online service portfolio without major additional investments. As services gain popularity the actual user satisfaction would be reduced below existing levels as users frequently experience service outages and delays during demand peaks. This may result in a loss of good will towards CATS and potentially also the CoB by a section of the community.

Overall, sustained inaction on investment related to service provision would seriously undermine any attempts to increase the reach and accessibility of PEG content and sit contrary to the spirit of this report.

However, selective short-term resource starvation may allow for more targeted and effective investment and avoid over provisioning. This method can be effectively employed in conjunction with a soft launch (no active promotion or closed user groups) of a new service, followed by detailed monitoring and analysis of user behavior, concluded with swift adaptation of the infrastructure. This methodology, if used competently can help improve capacity decisions and lead to more efficient investment.

The creation of infrastructure adaptation plans should form part of the service development process so that once needed swift action can be taken. Swift action, even if it employs temporary solutions, within this context would be measures in days rather than weeks or even months. Agility and transparency about addressing demand constraints is vital to maintain the good will of the user base.

Onsite Hosting

This solution entails the largest degree of control over the actual architecture of the infrastructure deployed by CATS but also requires a certain degree of expertise to maintain it securely and reliably.

Under this proposal CATS would purchase, operate and own its entire server infrastructure and procure bandwidth to connect it to the Internet from local providers. The relatively modest size of CATS's operation makes it less able to capitalize on the economies of scale offered by some of the larger managed infrastructure solutions. Furthermore it would allow more room for experimentation and customization of potential new services.

Particular with regards to CATS's digital archive, which is expansive and deep, managed/hosted services are comparatively poor value at present. Most managed hosting is generally geared towards a limited but highly popular content portfolio whereas CATS's archive may be considered a classic "long-tail" application catering to highly fragmented niche audiences with a huge content portfolio. Since storage volume/size is often a key factor in pricing outside offerings this would penalize CATS significantly and thus push up expenditure on a "per user" basis, given the potentially modest size of its target audience.

Keeping the archive system in house would allow CATS to take full advantage of plummeting local storage prices well before this trend/price point manifests in external offerings. However, as time progresses and external cost structures change the balance may tip and moving the user facing part of the infrastructure onto a hosted platform could become more cost effective.

The major drawback of an in-house/on-site arrangement is the access to bandwidth and expert knowledge to maintain the infrastructure. Smithville Digital could be a good local partner to address the connectivity issues in a cost-effective way. The expertise shortfall within CATS however is of some concern. Keeping an infrastructure exposed to the Internet secure and available requires expertise that is not part of the current skill set available through internal staff. CATS may at times be able to rely on help by the CoB or the MCPL IT department but either party may be unable to service more extensive needs associated with an increasingly popular online service.

Contracting for an outside maintenance service or restructuring the internal staff pool to include a higher level of server and network

technology expertise are not just options, but essential conditions for making an on-site hosting scenario work.

Local Peering / Local Presence

While listed here under a separate category, this essentially represents an extension to the on-site hosting model. It thus entails the same requirements in expertise for successful implementation and operation. The difference in this model lies in how bandwidth is procured and network traffic is routed. Unfortunately the structure of the American telecommunications market makes such an arrangement highly unlikely to occur since infrastructure unbundling and thus access to telephone exchanges at reasonable rates has not been realized.

This approach would provide excellent quality of service to local Bloomington users and actually limit the burden on the backhaul network infrastructure of the local last-mile providers.

In peering arrangements a number of providers will exchange network traffic between their networks free of charge and share the operational cost of the peering point. The Bloomington telecom hotel could potentially one day evolve into such a location for CATS originated traffic if suitable interest manifests from local operators.

The local presence scenario is similar but would involve at cost pricing to allow a content provider to directly inject their traffic into the local infrastructure of a last mile provider. Thus if a number of AT&T DSL subscribers were requesting CATS content, a suitable arrangement would allow CATS to directly inject its traffic into the local Digital Subscriber Line Access Multiplexer (DSLAM) serving the copper lines of these subscribers at the AT&T exchange. This would occur without putting any burden on the backhaul network serving the exchange. Ultimately the ease of implementation depends on the architecture choices made by the last mile provider and the associated management structures. For now the high degree of centralization pursued by most last-mile providers makes receptiveness on this matter unlikely.

The value of such a solution directly depends on the level of local network traffic generated by CATS and at current levels would not justify the investment by either party. However, despite the likely challenges, exploratory talks might yield different insights and should not be dismissed a priori.

Smithville

This is the only provider that may be willing and able to accommodate such a solution. If CATS were to engage Smithville as its primary local connectivity provider (building on the existing MCPL/Smithville agreement) the company would effectively be implementing the above proposition in some form for its own broadband subscribers anyway. This holds the potential for the highest service levels to be experienced by Smithville broadband subscribers with regards to CATS online content.

AT&T

Free of charge peering with AT&T is only available to large national network operators (see: <http://www.corp.att.com/peering/>). Exchange level traffic injection to provide better service to DSL customers is not a common feature in this market. For U-verse customer's local central offices (exchanges) would still represent a suitable injection point into the fiber network underpinning parts of this service.

Security and physical connectivity concerns may further impede adoption. CATS would need to generate traffic levels that would place a significant strain on the backhaul infrastructure connecting the local exchanges. For this to happen CATS would need to operate a sizable server infrastructure and generate matching user demand.

Local traffic injection would deliver enhanced quality of service to AT&T broadband customers but seems difficult to realize based on the likely scale of demand required to prompt responsiveness by the operator.

Comcast

For as long as the former "Insight" cable head-end is still operational in the Bloomington market this would provide a perfect opportunity for local traffic injection. Without knowledge of the long-term infrastructure

plans by Comcast it remains difficult predict whether this physical location for traffic handover would remain accessible in the long-term.

In principal all the same opportunities and limitations apply to Comcast as do for AT&T. However, as the following quote by the vice present for IT and CIO of Indiana University demonstrates, Comcast has refused to cooperate on peering with local organizations orders of magnitude larger than CATS.

"Indiana University remains gravely disappointed that Comcast adamantly refuses -- as recently as June 2010 -- to provide the simplest of network peering connections for the Bloomington community. We have tried for seven years to achieve with Comcast and its predecessors the same arrangement that Smithville and other major Internet providers agreed to 5+ years ago. This literally no-cost intransigence undermines the quality of Internet services for the thousands of IU faculty, staff, and students who call Bloomington home."

Dr. Brad Wheeler, IU Vice President for IT & CIO, Dean, and Professor, Indiana University <http://ovpit.iu.edu>

Virtual Private Server

This would give CATS its own server (or servers) hosted by a provider in a (distant) datacenter. While these machines would appear to CATS as if they were physical entities they would be only "simulated". These virtual machines share the physical resources of an actual machine with other virtual servers but provide the benefit of having full operating system level control over the virtual machine. Thus applications can be run or tested without the restrictions of a shared hosting environment (where different websites share and are limited to the capabilities of one web server).

This approach allows the service provider to more fully utilize the underlying hardware by sharing the processing capacity between a number of server entities. This arrangement may be cost effective and

viable for a general web presence by CATS but would be inadequate and uneconomical for the vast storage needs of its digital archive.

Managed and unmanaged options are usually available, with the latter placing the responsibility for system security and integrity firmly upon the customer.

Furthermore under certain circumstances spikes in resource demand by other entities hosted on the same hardware may negatively impact the performance of a virtual server. Thus a certain degree of variability in terms of performance can exist for certain implementations. Virtual servers tend to be more appropriate for non-media rich hosting applications at this point.

Datacenter Collocation

This approach would see CATS place hardware owned by it in an actual server rack located inside the datacenter of a service provider. This would give CATS's hardware the environmental protection such a location affords (redundant and protected power and cooling as well as diverse high bandwidth network connectivity). The drawback is that management, and thus responsibility for the hardware's integrity would remain with CATS.

Physical access to hardware collocated inside a secure and potentially remote data center can be difficult and costly. The major benefit would be savings on storage cost compared to most other managed/hosted services described in this section. This statement is only applicable to the very large CATS archive.

Cloud Computing Services

These services represent the next step in the evolution of virtual private servers by scaling processing capacity for specific tasks or services on demand. For example, if a website were to increase abruptly in popularity additional web servers could be added automatically to the "virtual" machine pool and share the load of requests. This process

would be almost instantaneous and would require no administrative action by the site owner (subject to service type).

Cloud storage may present itself as one infinite "bucket" that grows with the data written to it and provides high performance throughput even as the number of read and write request to the storage increases. The customer does not need to worry about partitioning storage arrays, managing disk or replicating data.

Infrastructure cloud services, like Amazon's "Elastic Compute Cloud (EC2)", provide entire virtual server images on demand, whereas cloud application providers, like Google's "App Engine" allow the scaling of specific applications only.

The cloud service provider dynamically and transparently spreads the workload across its vast infrastructure and generally guarantees certain levels of performance throughout.

The permutations and charging models for cloud computing solutions are vast and continue to grow, but most pricing models generally incorporate a "pay as you use" component allowing for the scaling of resources (and thus operating cost) with demand. This virtually eliminates idle computing resources from the client's cost structure.

The major drawback at this stage is the cost of cloud storage. At the time of writing this report 500GB of Amazon's S3 cloud storage cost approximately \$900 per year excluding any in or outbound (data) traffic (see: <http://calculator.s3.amazonaws.com/calc5.html>). The exact size of the CATS archive is not known but estimated to be at least several terabytes (1000s of GB) even in its compressed form. Under certain circumstances (namely assuming high levels of traffic to the repository) cloud storage can potentially already be cost competitive with local storage, as the very simplified assumptions of Table 16 below seem to suggest.

Discount Rate	5%					
Drop in Hard Drive Cost		33% pa				
Local Storage:						
Enclosure	\$4,500		power requirement	500W		
Cost per kW/h	\$0.10					
Drive Initial cost	\$150	for 1 TB drive	Number of drives required reflects bandwidth and storage space reqs.			
			Service becomes more popular 2nd enclosure needed			
Year	0	1	2	3	4	5
Enclosure	\$4,500			\$4,500		
Number of drives	5	7	9	18	22	24
Cost of Additional Drives	\$750	\$201	\$135	\$406	\$121	\$41
Operating Cost / Power		\$438	\$438	\$876	\$876	\$876
Sub	\$5,250	\$639	\$573	\$5,782	\$997	\$917
NPV		\$7,661				
Total	\$12,911					
Amazon:						
50GB	\$90	increment	50			
Assumes Upfront Payment		Price Decline for Cloud Storage	15%			
Storage Need in GB	400	1000	1500	2000	2500	3000
Storage Cost	\$720	\$1,530	\$1,951	\$2,211	\$2,349	\$2,396
Bandwidth Charges	\$150	\$250	\$300	\$350	\$400	\$450
Sub	\$870	\$1,780	\$2,251	\$2,561	\$2,749	\$2,846
NPV		\$10,440				
Total	\$11,310.4					

Table 16 Cloud Storage vs. Local Storage, Simplified Case

What Table 16 does not take into account is that CATS would require storage for the TV resolution (high quality) versions of all video files regardless. Initially the same storage could be used to host the comparatively small online (highly compressed) versions of the clips. This fact tips the case back in favor of local infrastructure.

Traffic charges are generally more affordable, for example if only 250GB of material (the equivalent of approximately 3 1/2 government meetings per day at 200MB per file) is requested throughout the year, this would add a total of approximately \$36 to the annual cost.

Specialized video storage / streaming providers such as Brightcove are also not cost competitive for deep archives due to storage cost. The aforementioned company offered a \$99/pcm starter package at the time of writing this report, which allowed users to store 50 videos on their system and offered 40GB of bandwidth per month (see: <http://www.brightcove.com/en/video-platform/editions-and-pricing>)

Leightronix, the vendor used by CATS for part of its current playout infrastructure offers a managed content streaming service, paired with automated encoding and upload from its playout servers, starting at

\$249/pcm for 500hrs of storage (see: http://www.leightronix.com/pdf/PressReleases/LEIGHTRONIX_Press_Release_PEGcentral.pdf). While the service offers useful functionality such as template driven branded publishing and index points within a video, the volume of content produced by CATS makes this service uneconomical compared to locally hosted alternatives. The very strong vendor lock in of this service exposes financial risks and may also inhibit the development future innovative online service by CATS.

Given the substantial storage space requirements even for the online portion (clips encoded at web-resolutions) of a well-developed CATS archive, cloud storage is a rather expensive, although high performance and elegant alternative to local on-site infrastructure.

CDN – Content Delivery Networks

Since the early days of the “dotcom” bubble, about 10 to 15 years ago, specialized content delivery networks have been developed. These networks represent a part of the Internet infrastructure that is geared towards accelerating the delivery of (media rich) web content to the end-user. This is often achieved by moving the content, or multiple copies of it, dynamically and intelligently closer to the user(s) requesting it. This process is often described as moving or pushing the content to the edge of the network. Intelligent caching algorithms on the CDN provider’s servers retain popular content elements close to user populations requesting them and delete them once they are no longer needed. For the customer engaging the services of a CDN provider this process is virtually transparent.

CDNs allow customers to effectively outsource the investment in a large bandwidth rich server infrastructure. A CDN would be able to accelerate access to CATS’s most popular archive items or also provide relaying capacity for its live video streams. CDNs are most effective from a pricing perspective for smaller yet highly popular content sets. It would be unrealistic and economically unviable to place the entire CATS archive in the hands of a CDN at this point.

It also remains doubtful whether CATS would, at least in the short term, generate enough demand with strong enough demand peaks for specific content items to warrant an investment in a CDN.

The same access patterns that make P2P based content delivery effective, i.e. a small number of items requested by many users within a specific time window, define the ideal deployment scenario for CDNs. Some free options are available, many of which rely on adapted P2P technology. Should CATS grow to generate suitable access patterns that would warrant a CDN deployment for part of its online services such options should be revisited. At this point however the focus should be on creating the basic systems outlined in section 1 of this document to enable effective access to online material and create a robust platform to experiment with, test and develop new innovative online offerings.

Please refer to the following two links as a starting point to learn more about CDNs and for a list of current providers and technology platforms:

- http://en.wikipedia.org/wiki/Content_delivery_network
- <http://www.mytestbox.com/miscellaneous/content-delivery-networks-cdn-list/>

Outsourced IT vs. Managed Security and Network Services

As an organization CATS currently lacks the level of IT expertise desirable to allow it to effectively leverage modern Internet and communication technologies. It will thus face technical challenges and organizational barriers to launching and operating innovative new online services in a secure and reliable manner. Moreover, the perceived risk and cost of seeking external development expertise to create and support such services may stifle innovation and perpetuate a risk-averse attitude towards an online expansion.

Against this background the required expertise may be created through a mix of skills transfer and employee development or

restructuring. A basic level of competence created this way could be further enhanced by project specific sub-contracting using modern online market places for IT-contractors (see section 1).

Alternatively a complete outsourcing of IT services including desktop operation and maintenance might appear attractive. Given that CATS is primarily a media production and dissemination operation, desktop support could be considered a non-core function of the business and should thus be outsourced. However, outsourcing deals tend to work best for organizations larger in size than CATS and with a relatively generic office IT infrastructure. The very nature of media production necessitates a host of specialized applications and workflows that conventional outsourcing providers are ill equipped to deal with.

Based on the existing operation, with some help and knowledge transfer by the MCPL and CoB IT teams, CATS should be able to transform its internal desktop and production infrastructure into a secure and well-managed environment.

However, the operation of Internet facing servers, the web content management system in particular, as well as the monitoring of the main archive server and database will require more expertise than can be reasonably expected to be developed internally by non-domain experts. CATS should seek a service and support contract to keep these systems operational and secure, either by negotiating a dedicated “for pay” service level agreement with MCPL, CoB ITS or another third party provider specializing in these areas.

Lastly as part of such a support contract network management and monitoring services and responsibility should also be delegated. The goal should be to provide creative staff and managerial staff with easily understandable real-time report functions that detail system and network loads, popularity of content items across time and user groups and other relevant information. The presentation/availability of such information should support decisions about when to release specific content items, give insights on how successful individual services are in reaching audiences and help with timing infrastructure upgrade decisions.

Summary

The table below compares the various technology solutions across a range of dimensions. Please note the comparison reflects subjective aggregate measures and is neither quantitative nor absolute in nature. (Key: \$ = inexpensive to \$\$\$\$ = very expensive, ++ = best, o = average, -- = worst)

Technology Solution Type	Expertise Required to Deploy	Expertise Required to Operate	Speed to Deploy	Maturity of Market/Solutions	Cost to Deploy	Cost to Operate	Scalability: Small / Large Scale
No Investment	n/a	n/a	n/a	n/a	n/a	n/a	x/x
Onsite Hosting	high	high	-	++	\$\$	\$\$	++/+
Local Peering / Local Presence	very high	high	--	--	\$\$	free	-/++
Virtual Private Server Managed	medium	medium	+	+	\$	\$	+/-
Virtual Private Server Unmanaged	high	high	o	+	\$	\$	+/-
Datacenter Collocation	high	high	-	++	\$\$\$	\$\$	+/+
Cloud Computing Services	low	medium	++	+/o	\$	\$ to \$\$\$	++/++
CDN	medium	low	+	+	free to \$\$\$	\$\$\$	--/++
Outsourced IT	medium	medium	o	++	\$\$ to \$\$\$	\$\$ tp \$\$\$	--/++
Managed Security and Network Services	low	low	++	+	n/a	\$\$	o/+

Table 17 Technology Comparison based on Expertise Requirements, Deployment Speed, Cost and Scalability

NOTE:

- Cost to operate cloud computing services usually varies with amount of resources (storage, processors) consumed
- Scalability tries to consider appropriateness of technology for small/large scale deployments

Note on Google Fiber

Like many other communities around the country, Bloomington has submitted its bid to become one of the testing grounds for Google's "advanced fiber to the home" infrastructure trials.

For further information on the nature of the project please follow this link: <http://googleblog.blogspot.com/2010/02/think-big-with-gig-our-experimental.html>

At the time of writing this report Google had given no indication which communities might be chosen as test sites. Should Bloomington be chosen as one of them, the implications for PEG operations could be significant but also costly.

All PEG content could be simulcast on cable and the fiber network at normal SD or HD resolutions depending on the resolution of the source content (and subject to rights issues). All archive material could also be made available at full native resolution for video-on-demand delivery. A host of additional interactive applications could be built on top of these services.

However, to deliver these services, which are likely to generate higher demand than under normal circumstance (by virtue of the novelty value of this project and connection speeds on offer), would require significant investment in server infrastructure. Alternatively considerable development effort may be required to port such services onto Google's cloud computing platform if preferential access to this resource were available as part of the trials.

NOTE: Currently "Google Cloud Storage" and "Google App Engine" do not fully address the needs of media rich content delivery of the kind described above. However, these limitations and potential cost barriers may disappear by the time the fiber network is deployed.

Either scenario could generate cost and skills gaps that may not be readily address through the funds available in the ordinary operating budget for CATS. If Bloomington were to be chosen as one of the test sites appropriate provisions to address these matters should be negotiated early by CATS with the CoB.

BDU – Bloomington Digital Underground

The BDU fiber optic network is only covered in this report with regards to its relevance as a piece of "enabling" infrastructure to enhance video service production and delivery in the Bloomington community. It is acknowledged that the BDU network has a range of other potential uses beyond the domain of video services. However, their discussion falls outside the remit of this report.

When viewed from a video services perspective three distinctive uses present themselves for the network:

1. **Improved access to locations for live coverage of events** – By connecting cultural and sports venues to the BDU live telecasts from these locations can be achieved reliably and inexpensively. Conventional live TV transmission from such venues would require mobile microwave based linking equipment and vehicles, which are financially out of reach for many local providers (Cellular technology may provide a viable substitute for certain low bandwidth applications but quickly reaches its limits in the full-resolution video domain). The list of venues and the order of priority with which they are connected to the BDU should be derived through joint discussions with all local public media outlets.
2. **Enable collaboration and exchange of media rich content between different local public media organizations** – By connecting all sites housing public media providers, such as for example CATS, IUSTV, WFHB, WIUX and WTIU, to the BDU at speeds of preferably 10GB/s or more, new forms of collaboration between the providers can be enabled. Subject to appropriate network security arrangements, this allows for the seamless sharing of production and postproduction resources by all parties as if all were collocated in the same building.

For example, WFHB or IUSTV editors could connect into CATS's Final Cut Server infrastructure (see section 1) to jointly edit a project. At the same time CATS staff might review a finished program at full resolution in real-time with their

coproduction partners at WTIU, backed up by a high resolution multi party video conference over Apple iChat. While these activities are in progress, volunteers at IUSTV and WFHB may directly digitize material from their local workstations into the CATS archive as a manager at CATS reviews their work in real-time. Simultaneously WIUX staff may add metadata to archive content and work on updates for the various local public media sites.

The BDU has the potential to single handedly make physical location of assets and people irrelevant, remove duplication of effort and thus enable new levels of technological and human collaboration between local PEG and public media organizations.

3. **Provide tighter integration of content delivery between the CoB and its PEG providers** – Subject to relevant agreements and network planning, CoB and CATS servers hosting content for online delivery could eventually serve as mutual backups or load-balance request for streaming media between their outside connections. Furthermore, the option to enter into a peering agreement with IU could be pursued to provide high-speed access to content for students on campus and in campus housing.

The BDU is a unique asset in the development of tighter cooperation between local PEG providers and public media outlets by providing an advanced platform for state of the art collaboration.

The CoB, as one of the most technically competent partners in this domain, may need to serve as an evangelist about the potential benefits of the BDU. Cooperation agreements, if formalized, may benefit from clauses including a commitment to BDU connectivity as well as concrete commitments on how and when to fund local access equipment to light the fibers provided. Lastly, as a neutral party responsible for the physical assets of the BDU, the CoB may also be the natural choice for the role of actual “network operator”, managing the day-to-day operation for this kind of BDU use.

Note on Software Development and Niche Services

As CATS and the CoB expand further into online video delivery and services the temptation to cater to vocal proponents of niche platforms may rise. Until CATS has achieved all the goals outlined in this document and is operating stable, usable and reliable online services such endeavors may not be an effective use of public funds.

Moreover, most niche platforms can be served through more generic means effectively without tying up scarce internal development resources. A well laid out HTML5 web video implementation would be equally accessible to iPhones as it would be to conventional desktop PCs without the need for custom development (subject to platform specific video codec support).

Ultimately CATS should be as widely available as possible and not prioritize niche platforms at the expense of more universal services. With this in mind, nothing must detract from the core mission of the PEG operator to produce and deliver content.

However, CATS is in a unique position to sidestep some of the issues outlined above by providing open standards based access to its content that allows interested third parties to develop custom applications for niche platforms. The provision of RSS/Atom feeds, persistent links to video content, good metadata and synoptic data should all help enable such activities.

From iPhone applications to content access via Box-e or Google-TV, development should be encouraged and supported by providing the right “hooks” into the CATS system.

The aforementioned examples provide a solid foundation for this purpose but may need to be expanded as technology evolves. If such adaptations or applications for niche platforms flourish thanks to third party developers, CATS always retains the option to promote or endorse this work and thus still benefit without committing vast resources to the task.

TV-PROJECTS

This section has mainly focused on projects for leveraging CATS's online presence to generate new advanced services. Yet opportunities exist to further improve the traditional TV production and delivery infrastructure beyond the recommendations captured in by section 1 of this report. The following paragraphs discuss relevant projects and seek to highlight the potential challenges and benefits associated with them.

Like the proposed online expansion these projects are not strictly necessary for the continued operation of CATS but represent opportunities to further enhance the PEG experience for local audiences.

Mobile Live Production Capability in HD

Section 1 provides a detailed discussion about the issues and limited benefits associated with introducing HD services in the nearer future. The main argument to justify such an investment is building a HD archive for public and events based content, which may be exploited by future HD services on digital cable (most likely after 2012 when the FCC analogue cable delivery mandate expires, subject to future FCC review – see:

http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-276576A1.pdf and

http://hraunfoss.fcc.gov/edocs_public/attachmatch/FCC-07-170A1.pdf see page 7 of this document) or be used for online distribution through an advanced delivery infrastructure yet to be developed by CATS. Recent marketing communication sent to residential cable customers indicates that Comcast is seeking to become an all-digital provider by the end of 2010.

To make this transition in the most cost effective way possible the first step would online involve the acquisition of HD camcorders for public productions. As section 1 of this report describes in the relevant recommendation on this matter, such a transition is almost inevitable for public content production since any new camcorders are likely to

be HD capable by default. As also mentioned in section 1 the editing software available at CATS is already HD capable.

The next step in such a transition process would be to create a modest HD live production capability, useful for event coverage on location. This capability would be an upgrade to the existing Sony Anycast production system.

Such upgrades should only be pursued as part of the natural end-of-life replacement for the existing Anycast System, unless viable HD delivery conduits become available to CATS before this date.

The following two systems currently represent potential options for such a replacement.

- Sony Anycast HD (AWS-G500HD, retail price varies between \$15,000 and \$19,000 depending on options)
- Newtek Tricaster HD (TCXD300, list price between \$15,000 and \$18,000 depending on options)

While comparable in price. The Newtek product is by far the more capable and versatile solution. The Sony product also suffers from internal resolution constraints for video processing making it not truly HD capable. Either product would require video sources with analogue HD or preferably HD-SDI connectivity.

This may be accomplished inexpensively by converting the HDMI (monitor) output of e.g. the Panasonic AG-HMC40 HD camcorder, recommended in section 1, to HD-SDI with suitable converters (e.g. AJA HA5, retail price from \$490).

Inherently such a solutions has limitations in terms of picture quality and general mechanical robustness compared to a full HD outside broadcast/location setup. But it delivers almost comparable functionality at a fraction of the cost and should be able to readily meet the needs of CATS for political and special events coverage.

HD/SD Upgrades Showers Control Room

The benefits of upgrading the Shower's Control Room to full HD capability are limited given the relatively static nature of the content and lack of HD delivery conduits at this point.

Immediate benefits could be gained by recalibrating the standard definition cameras currently mounted in the council chamber. See sample images in the appendix under "Current examples of CATS content". The color balance of these cameras seems to be mismatched with the florescent lighting in the chamber.

When upgrades are pursued as part of normal end-of-life replacements a potential solutions could deploy the HD capable Newtek Tricaster live production system. This system would be able to interoperate with the existing cameras and allow for a staged replacement of individual camera units by being able to match different input resolutions in the production workflow.

The commonality across the rest of CATS's live production infrastructure would yield further operational and maintenance benefits (see previous item above).

Sample Cost:

- Newtek Tricaster HD (TCXD300, list price between \$15,000 and \$18,000 depending on options)
- Integrated HD capable remote pan and tilt heads between \$4500 and \$6500 per unit. Sony, Panasonic and others provide a range of suitable units with HD-SDI outputs
- Depending on the vendor and system chosen, camera control units (including positioning control) run from \$1500 to \$5000 per unit

Thus the total equipment cost for a HD upgrade has an estimated entry-level price of approximately \$35,000.

General Enhancements to Output Chain

As CATS transitions to fully server-based playout of its cable channels, upgrades to its final output chain become viable. Most upgrades of this nature should be covered under general day-to-day TV infrastructure maintenance and tend to follow established industry practices centered around the use of the SMTE SDI or HD-SDI interfaces.

Thus this simply serves as a reminder to consider the inclusion of signal processing equipment in the final output path that will legalize and adjust any deviations of CATS's signal in real-time to conform with technical and network television standards. CATS may consider audio and video processing and delay such investments until Comcast has transitioned onto a fully digital infrastructure.

In doing so CATS could use one single signal path to offer digital feeds of its channels to Comcast, U-verse, S+TV and other potential future providers at a central location such as the Bloomington Telecom Hotel. This single feed could be specially pre-processed and optimized (by CATS's signal processing equipment) for digital compression rather than traditional composite NTSC coding.

By offering such an optimized feed the image quality experienced by subscribers should improve on all digital services. CATS may also consider soliciting feedback on this issue from the service providers to optimize its investment and use the opportunity to network with contacts on the provider's side.

Low-Power Broadcast TV License

At the time of writing this report the FCC had postponed the opening of a license application filing window for digital low power (LP) television stations until further notice (see FCC public notice: http://hraunfoss.fcc.gov/edocs_public/attachmatch/DA-10-1168A1.pdf). There exists an open filing window for digital LP television services in rural areas created by an earlier public notice (see FCC public notice: http://hraunfoss.fcc.gov/edocs_public/attachmatch/DA-09-1487A1.pdf). CATS will not be able to use this provision, as

Bloomington, due to its location within a 75 mile radius from Indianapolis, is not classed as rural by the FCC.

More detailed analysis of the legal background and procedures governing the licensing of low power or full power broadcast TV stations by the FCC falls outside the remit of report. As do any recommendations with regards to the type of license that might be appropriate to pursue for CATS should a future broadcast service be desired.

Please refer to the following links as a starting point for further inquiry:

<http://www.fcc.gov/mb/video/lptv.html> and
<http://www.fcc.gov/cgb/consumerfacts/lptv.html>

Digital technology allows for the delivery of one HD and two to three SD TV channel or alternatively up to six SD only channels within the channel bandwidth usually occupied by one analogue TV broadcast channel. Such a bundle of channels is referred to as a digital multiplex.

The 5 existing SD channels played out to cable by CATS would thus fit into one digital multiplex requiring the channel bandwidth equivalent of one analogue broadcast TV channel. The technology required for encoding and managing the data stream for such as a multiplex, as well as the subsequent over the air broadcast using the ATSC transmission standard, tends to be still relatively expensive at this point.

The potential cost, even for a basic low power UHF system rated at 1kW output at the transmitter (effective radiated power (ERP) will be a multiple of this depending on antenna gain), is likely to exceed \$170,000 for a 5-channel SD multiplex. (**Note:** This is a very optimistic cost estimate and may vary upwards considerably depending on the vendor and system integration services used. The aforementioned figure was derived by adapting pricing and configuration information provided online at <http://www.fmamtv.com/products/TV/HDRack%20Sys.html>. It reflects a 5-channel SD-TV setup). This number **excludes** the cost of a

transmission tower, which can be substantially greater than the aforementioned amount depending on the tower's height.

WTIU has pursued this delivery option, operating a full power digital transmitter in Bloomington and may be able to provide additional budgetary and technical advice. Furthermore, given the cost of tower construction, tower sharing with WTIU should be considered.

The National Telecommunications and Information Administration provides a "conservative" equipment cost estimate for sample configuration as used by a full power PBS TV station (see: http://www.ntia.doc.gov/ptfp/application/equipcost_tv.html).

Furthermore this Canadian study on digital conversion of existing analogue TV stations provides additional guidance on the range of applicable expenditures for such projects (see: <http://www.crtc.gc.ca/eng/publications/reports/dtv0903.htm#a6.3>)

Based on current regulations, low power TV stations are not eligible for must carry privileges on local cable systems.

Given the cost involved such a project would almost certainly require further cost benefit analysis and be dependent on substantial external grant funding to succeed.

Local Sports

CATS has covered local high school sporting events in the past. According to CATS the licensing conditions imposed by the IHSAA triggered a license payment of approximately \$200 each time an event was played on one of CATS's channels. CATS was also prohibited from providing tape copies of the events, triggering complaints from disappointed parents.

Given the proven ability of sports to build audiences CATS with assistance from MCPL and the CoB should consider renegotiating a suitable deal with IHSAA. Future deals should focus on extending coverage for events not already recorded by the IHSAA and seek to

include online distribution rights and free repeats for TV playout. Video footage can also serve as a valuable training tool for coaches, a benefit that may currently not be fully exploited.

IHSAA's own television strategy seems to be centered around championship coverage rather than deep local coverage (see: <http://www.ihsaa.org/dnn/Media/MediaReleases/IHSAANewsRelease31210/tabid/792/Default.aspx>). A new partnership with CATS could be complementary to this project and generate additional audiences for high school sports in Monroe County. Other local team sporting events including some IU intramurals would add extra opportunities for extended sports coverage on CATS.

For example, ESPN today commands the highest carriage fees out of any cable channel and impressively demonstrates the value sports coverage can bring to an operator (see: http://www.nytimes.com/2008/11/25/sports/ncaafootball/25sandomir.html?_r=1). By focusing on local events that would commonly be ignored by commercial providers CATS may be able to leverage some of this “pulling power” associated with sports while providing extra value to the local community.

For an interesting perspective on the ability of sports coverage to generate audiences please refer to: The Economist, Special Report on Television, “*The killer app. Television needs sport almost as much as sport needs television*”, London, April 29th 2010, <http://www.economist.com/node/15980873>

Growth Strategies – Policies

The following paragraphs re-iterate and collate policy recommendations made elsewhere in this report to conserve and manage financial and infrastructure resources intelligently without compromising service delivery.

Incremental Hard Disk Purchases

Storage enclosures used for any storage subsystem associated with the CATS server infrastructure should only be populated to the extent required to either maintain the minimum systems performance or accommodate storage 3 months into the future. Hard disk prices are continuously dropping and since the proposed RAID enclosures would require the same type of drive for each slot, incremental purchases will reduce the overall cost of storage.

The fact that CATS's archive digitization project will be the main consumer of storage over time, with content being gradually added to the system, further encourages this cost saving strategy.

Incremental Bandwidth Upgrades

The temptation to build out a vastly over-provisioned network infrastructure in the hope that users will eventually come and saturate the service should be sternly resisted. Given the uncertainty over which type of usage patterns may emerge and what types of online content and services might be popular, bandwidth needs are almost impossible to predict reliably at this stage. CATS currently has no accurate baseline data about user behavior and bandwidth needs of its existing online services, which further complicates capacity planning.

Over provisioning would result in a highly ineffective use of public funds and open up CATS to unnecessary external criticism. Instead CATS should, depending on what type of hosting strategy is chosen (see discussion further above), make arrangements for accurate bandwidth and usage monitoring of its new services. This approach should then be backed up with provisions (contractually and technologically) to quickly upgrade bandwidth in small increments with the relevant connectivity provider.

With such a facilities in place CATS should be able to grow and possibly also shrink the bandwidth of its Internet connectivity at short notice while maintaining acceptable service levels.

Managing Resources by Managing Users-Demand

Certain spikes in demand are unavoidable (e.g. people watching live streams of a School Board Meeting during a budget crisis) and sensible compromises between quality of service and level of infrastructure investment will need to be made. Throughout CATS and those who repurpose its content (e.g. bloomington.in.gov) will be able to actively manage the public's expectations in terms of service quality.

So when congestion occurs repeatedly, then proactively communicating the reasons and anticipated remedies will be as helpful as the remedies themselves in maintaining public support. Internet audiences are likely to expect a higher degree of information sharing in return for good will and loyalty.

Beyond simply increasing the bandwidth and server capacity the options below present themselves for managing user behavior and service quality. The mix of measures to be actually used is ultimately a policy decision and may warrant further discussion between CATS and the CoB.

Resource and User Management

The goal of all the measures presented below should be to improve the overall experience of CATS and CoB online content for the majority of users and discourage disruptive or excessive resource use by the few.

- Temporarily degrade live streams during periods of high demand. Reduce image resolution and/or frame rate. Provide audio only feeds (with explanation for reason why this measure was taken) once demand exceeds video streaming capacity. Offer notification to interested parties once high quality video version of the event is available via the archive at a later date
- Periodically reset user connections to live streams to eliminate dormant, orphan streams
- Use IP address geo-location data to prioritize local traffic

- Implement network and resource tracking/dashboard that allows non technical staff to judge system use and time the release of new assets accordingly
- Track popularity of assets and events and coordinate RSS, Twitter and Facebook updates accordingly. For example avoid releasing new material near the time two important government meetings are also expected to be streamed
- Track user's consumption levels, prioritize or degrade service levels for heavy or light users as per policy when resources become temporarily stretched
- Limit the number of connections / downloads allowed per client
- Continuously evaluate cost/benefit of new/alternative delivery technologies for online content to improve service quality within budgetary constraints

It should be noted that measures based on IP address or client connection counts could be circumvented by the very dedicated. Never the less, it is likely that such methods will at least curb unintentional bad habits in the user population. Ideally user testing should be considered before deploying any new control measures to gauge acceptance.

Create New Media Manager / Webmaster Position

To account for the increasing importance of the Internet and advanced online delivery in the service portfolio of CATS, this should be reflected by adding a permanent new media / webmaster position to the staff roster of the organization.

This person would be responsible for managing and monitoring the flow of information and content to the various online services from Twitter to Internet streaming and be technically skilled enough to

handle the day-to-day administration of these services. The responsibilities would include the CATS web content management system and related products. HTML5/CSS, JavaScript and other development skills as well as general web design and usability skills would be essential for this position.

A certain level of creative marketing skills appropriate for the domain would also be highly desirable to help initiate new product development in conjunction with CATS creative and production staff. The role would most likely be placed at management level with mutual reporting lines to both engineering and production.

The timing of a hire for such a new position may be partly driven by budget constraints. But it warrants consideration that the outlays associated with such a position could be offset against projected development costs (for future services) by keeping those projects “in house” rather than paying an external contractor.

Final Thoughts – In Pursuit of Innovation

Put Operation of Individual PEG Channels Periodically Out for Tender

Another way to promote innovation in the local PEG community might be to periodically solicit bids for new operating proposals for one or more of the existing channels.

Considering the human and technical resources required today for operating a channel full-time, it might be difficult to find a new entrant soon. Dropping technology cost may address some of these issues over time; alternatively a time-shared channel model could also be evaluated.

This might be combined with measures that award operation of such a “floating” channel for a limited number of years and would then require periodic re-assessment as to whether the channel asset has been used effectively for the benefit of the local community.

Whether such assessment would be through direct public vote or by appointed commission is a policy decision that lies outside the remit of this report. However, simple popularity-based evaluation would almost certainly be inappropriate and undermine the free speech principals underpinning the PEG mission.

Currently four out of the six PEG channels operating in the Bloomington market serve very distinctive purposes and clients. They either provide a venue for public productions or carry educational and governmental programming linked to the respective funding partners of CATS (CoB, ToE, MCPL and Monroe County).

The fifth channel, TIU-World, could provide a broader outlet for local content originating from the IU campus in addition to its popular PBS content. This leaves the sixth channel, Comcast channel 96, as the carrier for SCOLA programming the least locally grounded outlet at present.

Thus the City should take the aforementioned circumstances into consideration when evaluating whether to pursue a floating PEG channel and which channel asset could be used for this purpose.

Online User Generated Content

The public access component of the PEG operation in Bloomington represents a strong instance of user-generated content. This mode of public expression predates any online activities presently grouped under the label of user-generated content.

However, with a more diverse portfolio of online services, PEG providers could introduce new ways of facilitating user generated content production. A hybrid between fully-fledged public TV production and mere passive consumption would be possible. Any such activity/service must never be a substitute for a public production service but should serve as a complementary path to increase user engagement and possibly even act as a conduit to transition online contributors into the main TV production environment.

For example, such a service could offer selected rights-free clips, such as government meetings, for re-edit and re-dubbing with basic online tools. Any submissions through this process may require moderation by administrators or the user community, but over all such a service could provide another outlet for local creativity. An example for this type of user-generated content can be found on the NFL website (see: <http://redzone-re-cutter.nfl.com/Default.aspx>).

This and other applications, such as “citizen reporting” using cell phone cameras to record videos and ad hoc interviews, are all potential future options to further increase audience interactions with the PEG provider. However, in the near term the priority must lie on implementing the basic digital infrastructure and services recommended in section 1 of this report to create a solid foundation for sustainable online expansion.

Public News Partnership

This proposal would see an expansion of the existing cooperation between WFHB and CATS to provide a local tri-media content pool for daily local news. Such an operation would provide daily and weekly news items for radio, TV and online consumption.

The existing partnership between WFHB (<http://www.wfhb.org/>) and CATS (<http://catstv.net/>) already delivers on some key elements of this idea. WFHB provides daily local radio news and produces a weekly TV news program (“Catsweek”, also available as podcast from <http://catstv.net/podcasts.html>) with the assistance of CATS.

An expansion of this partnership to include IUSTV and WIUX (see: <http://www.iustv.com/> and <http://www.wiux.org> respectively), the student run TV and radio stations at IU, would hold considerable potential to reduce effort duplication and broaden content even further. It is also hoped that the participation of the student stations might encourage WTIU (<http://www.indiana.edu/~radiotv/wtiu/index.shtml>) and the IDS (the IU campus student news paper: <http://www.idsnews.com>) to engage or join such a partnership.

The goal would be to initially provide a communal “wire service” which all parties may draw on and contribute to for their own news production efforts. This service should eventually be augmented by a dedicated online news platform that provides one central point of access to the public for all material originated from this partnership.

To make such a partnership succeed the following groundwork should be considered:

- **Formation of a development group of interested parties irrespective of their organizational affiliation** – This project should be *open to* all local public media outlets and should be *promoted to* all of them. The “PEG Summit” suggested in section 3 of this document could serve as the clearly defined starting point for this process. This suggestion is included as a reminder that individuals rather than abstract organizations ultimately carry ideas. The goal should be to

bring together and empower a group of individuals passionate about the idea of a local public news service.

- **Common clearly defined and documented minimum technical production standards** – Audio, video and eventually web content should adhere to a set of common technical standards and specifications such as program audio levels, video black levels, file formats, metadata and file naming conventions etc. The agreed upon standards should be publicly available in one central point of reference. Local compliance duty should be delegated to a senior producer within each organization. This group should then be able to refer to one network producer for arbitration if necessary.

These standards are technical in nature and completely independent from any potential editorial policies the group may agree upon.

To avoid replication of effort and leverage common resources these standards should be backed up by shared training material developed by the group. These training materials should teach volunteers why these standards matter and how to achieve them in a production.

- **Contribution to the pool should be the default for new material produced in member organizations but exclusivity time windows and appropriate attribution for use must be respected** – Thus a system for signaling potential embargo periods on exclusive items or breaking stories and policies on how/when to invoke those measures need to be agreed upon and documented by the group.
- **Leverage technology for collaboration** – As indicated further above the BDU could evolve into a vital enabling technology to help member organizations collaborate as if collocated in one building. The group should aim to negotiate a definitive implementation timeline with the CoB for BDU connectivity. As a condition for such service support by the CoB member organizations should develop and execute

internal readiness programs to adapt processes and technology to fully leverage the benefits of one common high-speed network.

This work may benefit from regular workshops and a joint steering group set up to encompass representatives from all member organizations.

- **Capture fringe benefits within member organizations** – for example, WFHB generates potentially valuable descriptive metadata for CoB meetings recorded by CATS as part of its review work for “CATS Week”. This data should be captured by CATS and used to enhance the functionality of the government meeting archive.
- **Work towards a cross-trained, common volunteer based where possible** – Some membership organizations are demonstrably better at leveraging their volunteer base than others, either by nature of experience or their operating environment. In the long run the group should develop a system to jointly administer and train volunteers interested in working across platforms and organizations. This pool may prove highly valuable for addressing staffing bottlenecks at short notice and aid smoother overall operation.
- **Seek and jointly pursue relevant grant funding for the project** – The existing funding capacity from within the organizations as well as the CoB or other funding partners may be insufficient to fully implement such a local public news organization. Thus external funding from foundations and relevant government grants should be pursued vigorously.
- **Develop simple common planning tools to help coordinate journalistic and technical resources when covering events** – the goal is to remove duplicate effort as much as feasible from within the system and help organizations better plan their own resource commitment.

Whatever system and process is chosen must be so simple and intuitive that membership organizations use it habitually for all their event coverage planning. Failure to achieve this will inevitably lead to effort duplication as schedules are maintained both in an internal and shared system. This is likely to result in inconsistencies, wasted administrative effort and eventual abandonment and failure of any shared system. Like the common technical standards mentioned above, such a system must be agreed upon and implemented by the group. A joint steering group with full decision authority may be the most viable way to achieve this.

Alternatively a shared newsroom production system could be considered in the long run. However, based on general usability standards most commercial newsroom production systems on the market today may hold challenges for volunteer training in a high turnover environment.

- **Coordinate infrastructure investment to develop individual organizational specialization** – Eventually, if successful, a local public news organization may lead to more coordinated equipment and training investment decisions by its members. It is plausible that over time certain members will develop areas of specialization such as for example sports or government reporting and thus adjust their technical capabilities accordingly.

If executed correctly this should further increase efficiency savings while improving the production values and journalistic quality of the individual stories and thus of the overall output of the partnership.

As in cooperation or merger scenarios in a business context the right balance between common systems and processes vs. enough (federated) autonomy to maintain organizational agility will need to be found. This balancing and coordinating of interests and goals will never reach a stable “end state” but much rather represents an ongoing activity, the success of which first and foremost will depend on effective and open communication between all partners in this venture.

Once successful and stable, such a partnership could even be expanded to include “for profit” entities as affiliates, subject to such organizations’ willingness to embrace the principals behind a content sharing operation. Through attribution and active promotion in return for participation, such commercial organizations may be able to help further increase the “audience reach” of a public media partnership.

If all is executed successfully to create a sustainable, tri-media, daily local news service, this would put Bloomington and its community on the forefront of local media innovation in the United States and create a lasting legacy for all involved.



Appendix

Appendix

Appendix items appear generally in the order they are referenced in the text. Items are included for documentation and reference purposes only.

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Acronyms and Glossary

Please note, in some instances the definitions provided below are only applicable within the context of this report.

Acronyms

The following acronyms are used extensively throughout this report. Please use this list of definitions below as a reference.

- ACM – Alliance for Community Media
- APS – Archive and Preservation System
- AVC – Advanced Video Coding (MPEG4 Part 10 or H.264 standard)
- CATS – Community Access Television Services
- CoB – City of Bloomington
- CPB – Corporation for Public Broadcasting
- CPM – Cost per Mille – cost per 1000 impressions
- DoC – Department of Commerce
- DV, miniDV, DVcam – tape format for compressed digital standard definition video content
- DVR – Digital Video Recorder. Video recording functionality either built into cable set-top box or external device (for example TiVo) commonly using a built in computer hard drive to store the video content.
- EPG – Electronic Program Guide
- FCP – Final Cut Pro (Part of the Final Cut Studio program suite by Apple for video post production)
- FCS – Final Cut Server
- HD – High definition (refers to TV image resolutions such as 720x1024 and above)
- HDD – Hard Disk Drive a.k.a. computer hard disk
- ICT – Information and Communication Technology
- IP – Internet Protocol, this term is often used as shorthand for services provided over computer networks or the Internet (see IPTV)
- IPTV – Internet Protocol Television refers to TV programs either streamed or offered for on-demand viewing on a computer or set-top box device
- IT – Information Technology
- ITS – Information and Telecommunication Services department of the CoB
- IU – Indiana University
- IURC – Indiana Utility Regulatory Commission
- JBOD – “Just a Bunch of Disks”, term used for basic multi drive hard disk enclosures without built in storage controller
- MCPL – Monroe County Public Libraries
- MOU – Memorandum of Understanding
- MPEG – Motion Picture Expert Group (specifies a range of compressions systems. MPEG2, MPEG4 part 2 and 10). Generally the higher the number after the acronym the more advanced and efficient the compression system

- NVOD – Near Video on Demand
- ODA – Open Directory (based) Access
- P2P – Peer to Peer (File Sharing)
- PBS – Public Broadcasting Service
- PEG – Public, Educational, Governmental, refers to the three branches of the public access requirement.
- RSS – Real Simple Syndication (A means of alerting “subscribers” to the availability of new content on a specific information feed)
- SAN – Storage Area Network (A technology to share one storage array between multiple servers)
- SD – Standard definition (refers to TV image resolutions derived from the old analogue broadcast standard NTSC at 480x575)
- SDI – Serial Digital Interface, used to transmit uncompressed digital video and embedded audio over a single cable over point to point connections
- SMS – Short messaging service used between cellular telephones, commonly referred to as text messaging service
- STB – Set Top Box
- TBA – To Be Announced
- TBD – To Be Discussed
- ToE – The Town of Ellettsville
- UPS – Uninterrupted power supply
- VCR – Video Cassette Recorder
- VOD – Video on Demand
- WCMS – Web content management system

Glossary

This glossary provides a list of short explanations for various domain-specific terms used throughout this document.

- Backhaul Network – The part of the network infrastructure that provides connectivity from the telephone exchange, cellular base station or cable head-end (all aggregation points for local subscribers) to the world.
- Dubbing – Refers to the process of copying or transferring a program from one recording medium to another. The term may also be used for audio postproduction processes involving the insertion of additional audio tracks such as voice-overs.
- Funding Partners – This report uses this term to describe the partnership between the City of Bloomington, Monroe County Public Library, Monroe County and the Town of Ellettsville that form the foundation for funding Community Access Television Services (CATS) in the Bloomington and Monroe County area.
- HD/SD TV, common resolutions – The following resolutions commonly considered as HD-TV: 1920w by 1080h with both interlaced and progressive formats. 1280w by x 720h progressive only. Digital transmissions of SD content either use 640w by 480h for 4:3 or 720w by 480h for wide screen material with progressive display. Analogue NTSC uses 486 visible scan lines and is interlaced. In practice broadcasters have been known to down-sample (reduce) the image width even on HD transmissions to for example 1440w x 1080h.
- Interlaced video – The process of “interlacing” splits a frame into two fields each carrying alternating lines of the frame thus trading some special resolution for increased temporal resolution. When displayed (with poor) conversion on progressive only displays comb like artifacts appear in motion rich sections of in the image as the two fields are combined.
- Last-mile Provider – The operator that connects subscribers to a central local distribution point. The cables between a telecom exchange and the consumer’s home represent the “last mile” of a wider network infrastructure. Backhaul networks (see above) connect such central local distribution points (like an exchange) to the wider internet.
- Metadata – For the purposes of this report refers to descriptive data that classifies or categorizes a video or audio file further. For example, metadata will describe the content of the video or audio file (who produced it, synopsis) or how the media file may be used (rights, embargos, age classification). Metadata plays a vital function in search, use and repurposing of media content.
- Near Video on Demand – A method used by cable and satellite providers to offer access to an item of video content with staggered start times using a number of channels. For example a viewer will be able to opt into viewing certain movie with start times for this movie available every 15 minutes. Generally superseded by VOD where available.
- Patron – Member of the public who produces a program for transmission on the public access channel operated by CATS (also referred to as “public contributor” or “public producer” in this document).
- Playout – The process of playing back or transmitting live programs for telecast on the Comcast cable system.
- Progressive Download – An Internet media delivery method that downloads content to the local machine of a user and commences playback once a sufficient buffer of material is available, before the download is completed. Commonly used for shorter clips often through the means of embedded players within a webpage (e.g. Adobe Flash Player).
- Safe-area – area of a video frame that story relevant subjects, titles and other onscreen elements should be framed in to be

preserved when a 16:9 wide-screen frame is cropped to 4:3 aspect ratio.

- Set-top box – Self contained cable, satellite or other receiver device to display television content delivered by the provider to a TV set. Set-top boxes are used whenever the TV set is unable to simply display the content using its built in tuner.
- Solid-State Video Recording – Video recording process that records file based content on flash memory rather than videotape. This process is most common in the current generation of consumer and entry-level professional video cameras.
- Video on Demand – Video content that is available from a provider at the viewer’s request. This feature often includes the ability to pause or fast-forward through the program similar to locally recorded material on for example a DVR.
- WIKI – Is the term used for user for a collaborative website that allows (authorized) users to directly edit the content on its WebPages using a browser based editor. WKI websites commonly also provide an audit trail that shows who made what changes when and allows users to revert to earlier versions of the page content. WIKI sites are generally most suited for collaborative content creation or maintenance projects.
- This report uses the term “broadcast” interchangeably with the more precise terms “cablecast” or “telecast” when real-time transmission of video content over several delivery paths is implied.

CATS – List of main assets

For reference purposes only. Please use as planning aid in conjunction with “Dependencies and Implementation Budget Line Items” further below.

Manufacturer	Model	Description	Quantity
Apple	Quad-Core	Apple Quad-Core Computer	6
Apple	MacBook Pro	Apple Mac Book Pro	2
Apple	MacBook	Apple Mac Book	4
Apple	Final Cut Pro	Final Cut Pro License	7
Apple	iMac	Apple iMac	2
Apple	Final Cut Express	Final Cut Express License	3
Apple	Dual-Core	Apple Dual-Core Computer	1
AJA	IO	10 bit breakout box	1
Allen & Heath	MixWizard	16 Channel Audio Mixer	1
AKG	C-3000	condenser cardioid microphone	2
AKG	C-1000	condenser cardioid microphone	6
AKG	C-535EB	condenser cardioid microphone	12
Azden	System III	portable VHF wireless microphone	2
Beyerdynamic		shotgun microphone	1
Bogen	3066 head	tripod	5
Bogen	525 MV	tripod	3
Calzone		shotgun microphone	1

Manufacturer	Model	Description	Quantity
Canon	ZSD-15M	servo units	4
Canon	ZSD-300M	servo units	4
Conquest		20 input audio snake	1
Delvcam	DELV-2LCD7	modular LCD monitor system	1
DX Antenna	DSM-180	frequency agile modulator	2
Echolab	MVS-3	Y/C switcher	1
Electro Voice	635a	dynamic omni microphone	20
Electro Voice	Dynacord	12 channel audio mixer	2
ETA	PD10	surge protector	1
Hitachi	V-598	oscilloscope	1
Hitachi	V-089,V-099	vectorscope/waveform	1
Jib		tripod jib crane	1
Keywest	Logostar	field character generator	1
Kramer	VM-36	distribution amplifier	2
Kramer	VM-5AD	audio distribution amplifier	1
Lectrosionics	UCR201	UHF wireless transmitter/receiver	2
Lowell		1 piece light kit	1
Lowell		3 piece light kit	1
Mackie	1402-VLZ	14 channel audio mixer	1
Mackie	1202	12 channel audio mixer	1

Manufacturer	Model	Description	Quantity
Mackie	1604-VLZ	16 Channel Audio Mixer	1
Mackie	DFX-12	14 channel audio mixer	1
Magni	MM-410	vectorscope/waveform	2
Neumann	KM183	condenser audio microphone	2
NRG	12055	AC/DC converter	2
NRG	12050	12 volt power supply	3
Olympus	Camedia	digital still camera	1
Panasonic	BT-S901Y	9" monitor	2
Panasonic	AG-B640	power supply	2
Panasonic		3 count 5" monitors	1
Panasonic	AG-DVX100	mini-dv Video recorder	3
Panasonic	BT-S90TV	television/monitor	1
Panasonic	WJ-MX12	Y/C switcher	1
Panasonic	AW-SW350P	5 input Y/C switcher	1
Panasonic	DS-850	S-VHS record deck	1
Panasonic	BT-702N	9" field monitor	2
Panasonic	AG-7350	S-VHS record deck	1
Portacom		communications system	3
Powerwerks		power conditioner	1
ProCo		12 input audio snake	1

Manufacturer	Model	Description	Quantity
Rane	AVA 22D	audio distribution amplifier	1
Realistic	16-229	television	1
Roadmaster		12 input audio snake	1
SKB		10 rack unit medium road case	1
SKB		portable microphone case	2
SKB		pop-up mixer case	1
SKB		16 rack unit big road case	1
SKB		pop-up mixer case	1
Sony	Anycast	Live Content Producer	2
Sony	BRC-H700	Remote HDV camera for use with Anycast	3
Sony	BRC-300	Remote camera for use with Anycast	4
Sony			
Sony	DSR-50	DVCAM portable deck	1
Sony	DSR-45	DVCAM deck	1
Sony	PVQ-4044	4 count 4" monitors	1
Sony	ST-92 TV	tuner	1
Sony	DSR-40	DVCAM deck	1
Sony	DSR-11	DVCAM deck	4
Sony	BP-L40	batteries	8
Sony	NP-730 H	batteries	2

Manufacturer	Model	Description	Quantity
Sony	VX-1000	mini-dv camcorder	1
Sony	PVM-8041Q	9" portable monitor	1
Sony	327	S-VHS dockable	1
Soundcraft	MCX-187Z	8 channel audio board	1
Sony	BC-L50	battery charger	4
Sony	NP-950	batteries	7
Sony	DXF-40a	camera viewfinder	1
Sony	Mavica	digital still camera	1
Sony	DXF-41	camera viewfinder	4
Sony	DSR-30	DVCAM deck	6
Sony	DSR-60	DVCAM play deck	3
Sony	DSR-80	DVCAM record deck	2
Sony	DSR-200	DVCAM camcorder	1
Sony	DSR-300	DVCAM camcorder	4
Sony	PVM-14M2U	13" production monitor	2
Sony	LC424 CP	DSR 300 hardshell case	4
Sony	TVM 550 IIS	Television modulator	1
Starcase		Switcher road case	2
Yamaha	MG206	16 channel audio board	1

Xserve Specifications Prior to Software Upgrades

OS X Server Version 10.4.11 Processor Name: Dual-Core Intel Xeon Processor Speed: 3 GHz Number Of Processors: 2 Total Number Of Cores: 4 L2 Cache (per processor): 4 MB Memory: 4 GB Bus Speed: 1.33 GHz

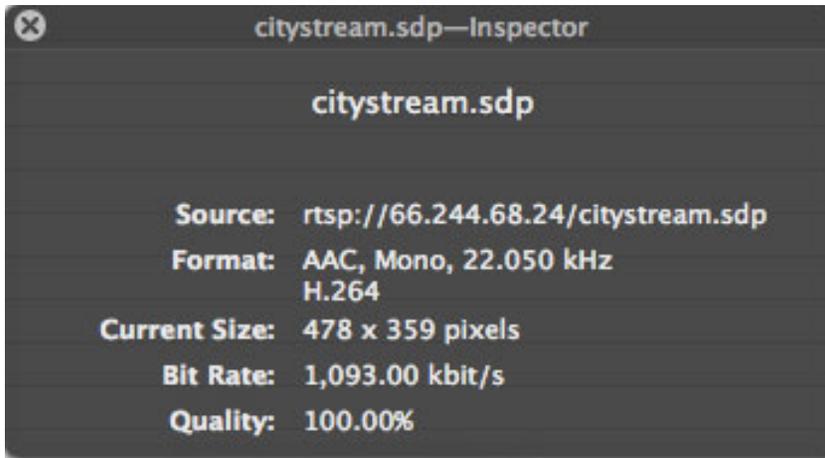
The Specs are: OS: OS X Server Version 10.5.8 Processor Name: Quad-Core Intel Xeon Processor Speed: 3 GHz Number Of Processors: 2 Total Number Of Cores: 8 L2 Cache (per processor): 12 MB Memory: 2 GB Bus Speed: 1.6 GHz

Example of Current CATS Content on (Online) Streaming Service

Observed (note both real video streams found to be not working)

City Stream – Main Chamber 18 Jan 2010, approx 1800hrs – colors off – too cold.

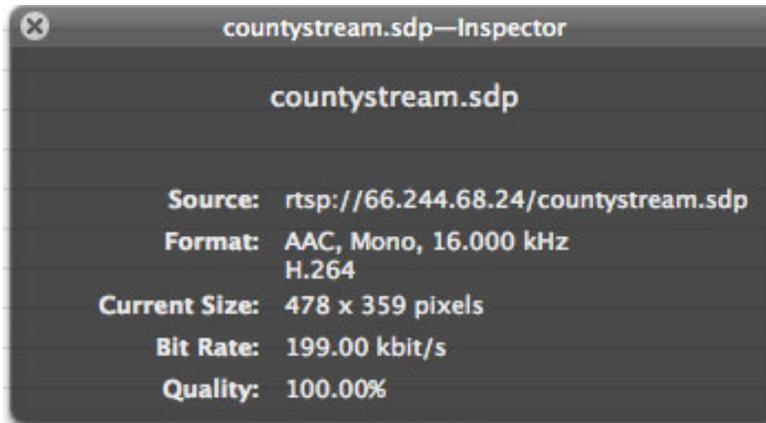




Cold wide shot:



County Stream (appears to be VBR) Peaked observed at approx 400kbit/s – mostly hovers around 210kbit/s color balance ok. See blow



CATS Metadata Frame Work, ACM Metadata Definitions

The following metadata fields are suggested as a provisional CATS metadata standard. CATS may wish to examine and modify this template as necessary in order to accommodate its own needs or those of its government clients.

The foundation for this template is the ACM draft metadata standard (numbering scheme retained), which is unfortunately at this point still rather unsophisticated. Thus this template extends the standard by PB-Core (numbering scheme retained) compliant fields and then adds additional CATS specific fields (no numbering scheme defined) where necessary.

Some of the fields described may be populated automatically or may not be required. These are policy decisions to be taken by CATS. In the case of the ACM media-type definitions, these are superseded by CATS's own higher quality archive format. ACM compliant media files will be transcoded from APS content on demand when actual content exchange with other entities occurs based on the ACM standard.

For historic content some of these fields may remain undefined and CATS may chose to implement specific policy decisions with regards to the use and/or promotion of undefined content specifically for their online services. This section does not constitute legal advice.

The ACM Standard:

From: <http://www.alliancecm.org/standards>

-----Only relevant for exports / on-demand transcodes, CATS uses AVC NOT Mpeg 2-----

1.1.1 DVD Compliant MPEG-2 Program Stream

1.1.2 Main Profile, Main Level (MP@ML)

1.1.3 Video Codec: MPEG-2 Video

1.1.4 Audio Codec: MPEG-1 Layer II

1.1.5 NTSC Standard (720x480 Resolution at 29.97 fps with 4:2:0 sampling)

1.1.6 Multiplex Rate shall be no higher than 10.08 Mbps

1.1.7 5-10Mbps VBR and CBR

1.1.8 2 B-frames Every P-frame

1.1.9 Sequence Header required before each GOP

1.1.10 GOP Structure: IBBPBBPBBPBBPBB (15-frame)

1.1.11 2 Channel, Stereo Audio

1.1.12 Supported Audio Bit Rate of 192, 224, 256, and 384 Kbps

1.1.13 Audio Sampling Rate of 44.1 and 48 KHz

1.1.14 Aspect Ratio 4:3

1.1.15 Encode Progressive and Interlaced

Us instead:

Video:

Codec: AVC/Mpeg 4 part 10,

Profile: HiP, Level 3,

NTSC standard: 720x480@29.97/30fps,

Bitrate: 10Mb/s;

File Gamma

Audio:

PCM stereo

Sample rate: 44.1 or 48kHz sampling or better,

Bit depth: 16bit or better subject container file format support and source material (avoid sample rate conversion or up/down sampling of bit-depth),

Bitrate: ~1.5Mb/s or higher;

----- ACM standard continued -----

The metadata standards as listed below shall be regarded as “Preliminary Only” until such time as the SSWG and the participating vendors are sufficiently satisfied to designate them final.

1.1.16 Title (individual program title)

1.1.17 Title Type (like a series identifier)

1.1.18 Description

1.1.19 Genre

1.1.20 Subject

1.1.21 Identifier (unique title number)

1.1.22 Identifier Source (or Presenting Access Organization/Site of Origin)

1.1.23 Creator (or Producer)

1.1.24 Format Time Start (in cue point for start)

1.1.25 Format Digital (particular version of program)

1.1.26 Format Duration (Length/Total Run Time/out cue point)

1.1.27 Format Generation (particular use-audio, image, backup master, etc)

1.1.28 Format Physical (non-digital version of program)

1.1.29 Audience Rating (or Content Labels – flags – for violence, language, etc.)

1.1.30 Rights Summary (Creative Commons Licensing)

1.1.31 Format Identifier (for file format, e.g. MP2, MP4, etc.)

1.1.32 Format Identifier Source (for program contact name, presenter or uploader)

1.1.33 Format Bit Depth

1.1.34 Format Frame Rate

1.1.35 Date Created (distribution/production date or date made available)

1.1.36 Format Location (actual address for media item-building, shelf, virtual)

Additional non-PBCore metadata shall be included:

1.1.37 Thumbnail or Low-Quality Preview File

1.1.38 Indemnification

1.1.39 User Supplied Tags/Free Tags (for possible open input area)

1.1.40 Producers Name

1.1.41 Producers Address (address 1, address 2,, city, state, zip)

1.1.42 Producers Email

PB-Core Derived Fields:

<http://www.pbcore.org/PBCore/UserGuide.html>

08.00 pbcoreAudienceLevel

08.01 audienceLevel

09.00 pbcoreAudienceRating

09.01 audienceRating

25.24 pbcoreDateAvailable

25.24.1 dateAvailableStart

25.24.2 dateAvailableEnd

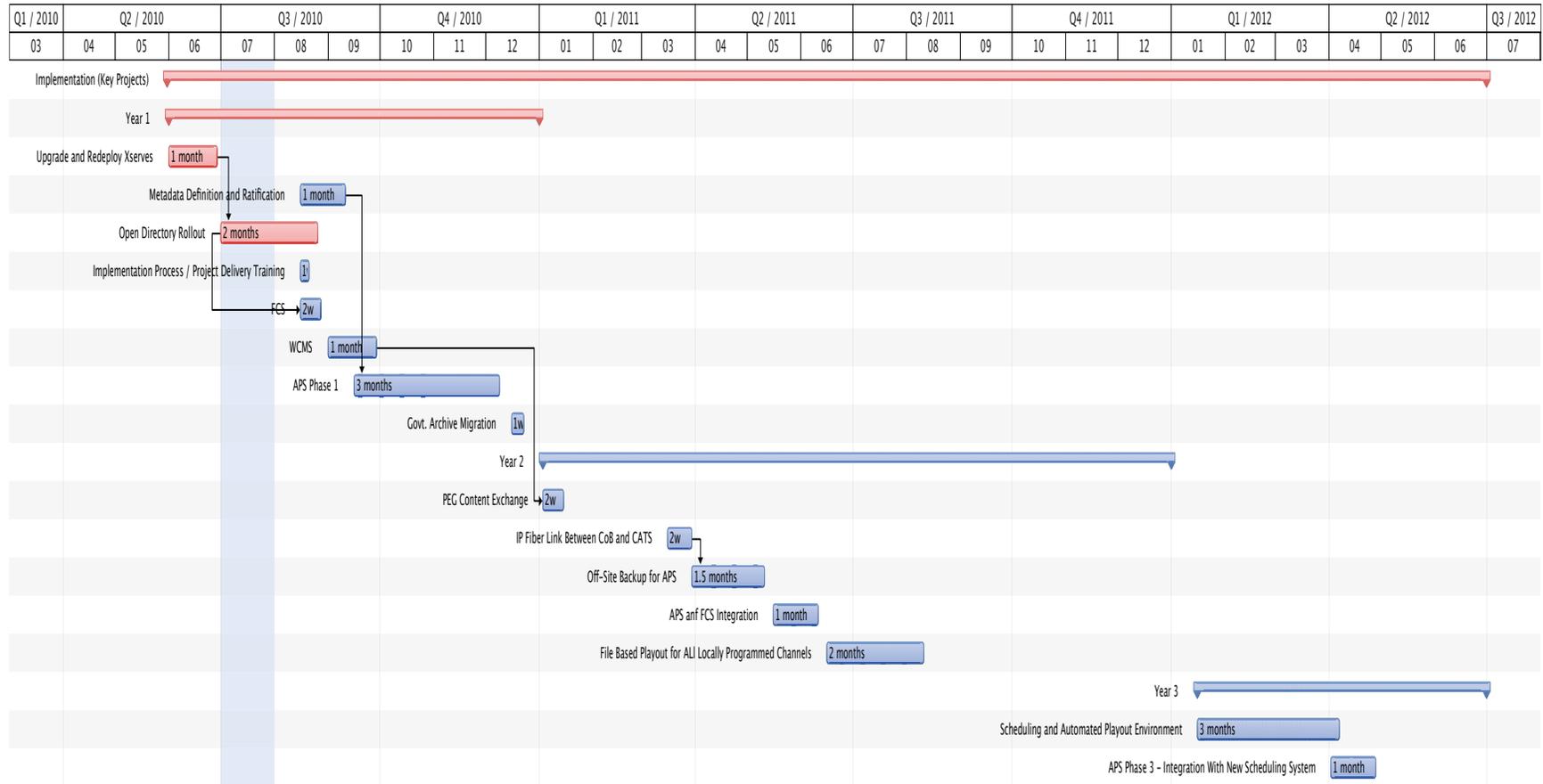
25.26 pbcoreAnnotation

25.26.1 annotation

CATS Specific Extensions:

- **Date item was last aired**
- **Channel item is designated for (3,7,12,14)**
- Platforms specifically excluded from use (e.g. Internet)
- Platform specific restrictions: Type of deliver (streaming, progressive download, download), embargo periods, repeat clauses
- Associated Objects (e.g. PDF files, Final Cut project files etc.)
- Associated Objects description (e.g. Construction Plan)
- Associated Objects rights
- Advanced Object Classifications for recommendation systems (e.g. mood, geography, sub genre, etc.)

High-level implementation Timeline for Years 1, 2 and 3, CATS



Dependencies and Implementation Budget Line Items

Year 1	color coding				
Year 2	implementation timing				
Year 3	of relevant items				
Index	Task	Cost	Quick Win	Labor Type	Depends on
					all excl. taxes
1	Online Training Resources for Contributors	0		internal	2
2	Reference WIKI	0	Y	internal	4,6
3	Wiki Homepage	0	Y	internal	2,16
4	Server Hardware Swap	0	Y	internal	
5	Server Operating System Software Upgrades (OSX 10.6) 4-Core Xserve	499		internal	4,50
p6	Server Operating System Software Upgrades (OSX 10.6) 8-Core Xserve	499	Y	internal	4,50
7	Server RAM Upgrade (8-core Xserve) 6GB	300		internal	
8	Final Cut Server	999		internal	4,6,7
9	Final Cut Server upgrade provision	299		internal	8
10	Lynda.com Training (2 licenses annual cost)	750	Y	N/A	
11	Off-Site Backup for APS	4000		mixed	12,20
12	IP Fiber Link Between CoB and CATS	TBD		mixed	
13	Sprinkler Deactivation – Advisory (Tape and Machine Room)	unknown		MCPL	
14	Focus on Training - Advisory	N/A		internal	
15	Equipment Booking and Tracking via Open Directory	0		internal	16
16	Open Directory Implementation and Rollout	0			4,6
17	Web Accounts and Forum for Public	0		internal	18
18	Web Content Management System (WCMS)	2500		mixed	4,5,22
19	Public Content Uploads / Submission	0			18
20	Archive and Preservation System (APS) - Main Hardware	5000			57
21	APS Phase 1a – Basic System Setup and Configuration (worst case)	4000			20, 42
22	APS Phase 1b - Drupal Integration (worst case)	2000			20,21,42
23	APS Phase 1c - Integration with existing scheduling ap (worst case)	2000			20,21,42
24	APS Phase 2 - FCS integration (worst case)	2000			20,21,42
25	APS Phase 3 - Integration with new scheduling ap (estimate) (item 47)	4000			20,21,42,47
26	UPS Support of Core Systems – Advisory	TBD			
27	APS and WCMS Integration / Islandora	N/A		counted in 22	22
28	APS and FCS Integration	N/A		counted in 24	
29	External Storage Expansion for 8-core Xserve	4500		internal	4,8
30	Security Audit – Advisory (incl. annual cost for virus protection)	750	pa		
31	Production Related Metadata Capture	0			8

32	Transcode Old RealPlayer-Based Meeting Archive	0		internal	
33	Archive Encoding Standard	0			38
34	Update Contracts to Include Web Distribution – Advisory	N/A		legal council	
35	Track Rights Attached to CATS Content in APS	N/A			20,57
36	WCMS Request Feature for “Telecast Only” Content	0		internal	20, 21a, 21b, 27
37	FCS-Scripts Part 2 – Automated Content Push to Playout	0		internal	8
38	Qmaster Encoding Cluster – Advisory	0			8,16
39	EPG Data Feeds – PVR Restrictions (Gemstar, Tribune, FYI)	4704	pa (max)		manual or 20,21
40	iChat – Internal Use – Internal Server – Advisory	0		internal	6
41	Implementation Process / Project Delivery Training	5000			
42	Alternative IT Service / Coding Procurement – Advisory	N/A			
43	Service Requests for Government Meetings – Advisory	N/A			
44	Staggered Funding / Milestone Based Funding – Advisory	N/A			
45	File Based Playout for All Locally Programmed Channels	28000			8,20,21,23,37,46
46	Traffic / Scheduling Improvements Phase 1 adapt current solution	10000			23, 8
47	Traffic / Scheduling Improvements Phase 2 (optional) pro software	60000			25,45
48	HD Camcorder Upgrades (e.g. Panasonic AG-HMC40)	6885			8
49	Final Cut Pro Configuration / New Public Producer Training Process	1600			8,50
50	Software License Audit	N/A		internal	
51	Schematic Drawings and Drawing Package	0		internal	
52	Contributors’ Accountability and Project Completion	N/A		internal	8,49
53	PEG Content Exchange	0		internal	18
54	CATS as Enabler of Quality Campaign / Brand Building – Advisory	from 0		internal	
55	Change Communication Program – Advisory	0		internal	
56	Emergency Communication Plan - Advisory	N/A			
57	Metadata Standards – CATS Metadata Definitions	N/A		internal	
58	Year 2 hard disk investment	4500			
59	Subscription and Maintenance Fee for TS Phase 2 - 10% annually	6000	pa		
60	Year 3 hard disk investment	4500			
61	Switich staff to catstv.net email	600	pa assuming 20 accounts hosted by Google		
	total excluding annual fees	\$153,081		Annual Fees	Grand Total
	Year 1	\$39,196		\$6,804	\$46,000
	Year 2	\$45,385		\$6,804	\$52,189
	Year 3	\$68,500		\$12,804	\$81,304

CoB	Task	Cost	Quick Win	Labor Type	Depends on
500	Install QuickTime Codec Pack / Transcoding – Advisory	0	Y	internal	
500a	QuickTime 7 Pro License Key	\$29.99	Y		
501	Pool (Online) Resources for Video Production Training with CATS	0	Y	internal	1,2
502	Expand Video Production FAQ – Advisory	0	Y	internal	
503	Universal Web-Delivery Standard for Video	0		N/A	
504	HTML5 Support for City CMS – Advisory	N/A		N/A	
505	Central Video Project Storage	N/A		N/A	
506	Metadata Working Group	N/A		internal	
507	PEG Delegation MOU	N/A		internal	
508	Final Cut Express	\$199			
N/A	DVR enabled Meetings (see cats)				39
N/A	Rich Media Meeting Streaming (see cats)				18,20,22,27

Space Calculations for Fedora Commons - Preliminary

Assumption - weeks per year		50		salvage factor		60%	
Mpeg Coding Calculations							
	Bit Rates in Mb/s	hrs per week		Existing items	avg length	items	
		gov	patrons				
mp2	10	20	20	0.75		20,000	
mp2	5						
avc	3				number of ingest desks	3	
web	0.8	hrs of total content		hrs of total content		15000	
		1000	1000	9000			
				years to digitize		speed p/a in h	
				5		1800	
						per week	
						36	
Final cut archives							activity per de
bitrate	25					12	
		GB of new content per year		GB of new content per year			
mp2	10	4395	4395	7910			
mp2	5	2197	2197	3955			
avc	3	1318	1318	2373			
web	0.8	352	352	633			
Final cut archives							
bitrate	25	10986	10986	spares	Assumed drive	Unit cost	Raid 6 overhea
	Total GB per y	Disk cost in y1		1	1800	\$210	
Scenario 1	24627	\$3,780		Units needed	14		0.85714286
Scenario 2	17332	\$2,940		Units needed	10		0.8
					raid spares		3
				Total Sc 1	18	raid spares	3
				Total Sc 2	14		

Video Services User Survey

The following three subsections contain:

- The original survey questionnaire, which as administered electronically through www.surveymonkey.com
- Summary answer statistics for all multiple-choice questions
- Detailed answer statistics and the full unedited submissions by all respondents to open ended questions

Video Services User Survey – Questionnaire

Video Services User Survey**1. Your Life and Technology - about 8 minutes to go until you are ...**

Thank you for your interest in this survey about your use, satisfaction and priorities for the future regarding the Public, Educational and Governmental (PEG) video programming in Bloomington, Ellettsville and the greater Monroe County area.

Your local PEG providers are:

Community Access Television Services (CATS) operates from the premises of the Monroe County Public Library. CATS is responsible for Comcast channels: #3, #7, #12, #14, #96.

TIU World is operated by WTIU of Indiana University and responsible for Comcast channel: #17.
Please note, if you receive PEG channels through an operator other than Comcast, the channel numbers may be different.

This survey will take about 8 minutes to complete.

From time to time we will display feedback on your progress through the survey. This feedback will you how long the remainder of the survey might take to complete.

*** 1. What type of television set(s) do you own? Please check all that apply (Note: e.g. projectors, plasma screens, etc. are all considered TVs for the purpose of this survey):**

- Do not own a TV
- High Definition TV
- Standard Definition TV

Page 1

Video Services User Survey

*** 2. What type of computer(s) do you own? Please check all that apply:**

- Do not own a computer
- Desktop
- Media PC (connected to your TV)
- Laptop
- Do not own computer but regularly use one at work/library/school

*** 3. Do you have Internet access at home? Please check all that apply:**

- Do not have Internet access at home
- Dial up
- Mobile data provided by cellphone carrier
- High-speed (e.g. dsl: high-speed over phone line or high-speed through cable, satellite, etc.). Please specify type and provider:

*** 4. Do you own any portable devices with video playback capability? Please check all that apply:**

- Do not own portable devices with video playback capability
- Smart phone with video playback (e.g. blackberry, iphone, windows mobile, android, etc.)
- Portable music player with video playback capability

Video Services User Survey

*** 5. Do you have a cable television service?**

Yes

No

Video Services User Survey

2. Cable Services

*** 1. Which cable services do you subscribe to?**

- Comcast Basic Cable
- Comcast Expanded Basic Cable
- Comcast Digital Cable
- Comcast DVR (Digital Video Recorder built into Comcast cable box)
- Other (please specify)

Video Services User Survey

3. Digital Broadcast TV - about 7 minutes to go until you are done

1. Do you receive television service over the airwaves/an aerial? (Using a converter box or TVs with digital receivers)

Yes

No

2. Do you have/use TiVo?

Yes

No

*** 3. Do you use direct to home satellite (e.g. DirectTV/DishNetwork)**

Yes

No

Video Services User Survey

4. Satellite Services

*** 1. Which satellite services do you use?**

- DishNetwork (any package)
- DishNetwork DVR (Digital Video Recorder built into DishNetwork receiver)
- DirectTV (any package)
- DirectTV DVR (Digital Video Recorder built into DirectTV receiver)
- Other (please specify)

Video Services User Survey

5. TV Services Provided by Your Telecommunications Provider

*** 1. Do you use television services provided by a telecommunications provider other than Comcast? (e.g. AT&T U-verse or Smithville S+TV)**

Yes

No

Video Services User Survey

6. Telecoms provider based TV services

*** 1. Which television service delivered to you by a telecommunications provider do you subscribe to?**

- AT&T U-verse
- Smithville S+TV
- Other not listed (please specify)

Video Services User Survey

7. Internet Video Services - about 6 minutes to go until you are done

*** 1. Do you use an Internet video service (such as youtube, iTunes or hulu)?**

Yes

No

Video Services User Survey

8. Internet Video Services

*** 1. Please specify which video websites or services you use:**

Video sharing sites (e.g. youtube, vimeo)

IPTV (e.g. hulu.net, netflix instant streaming)

For pay downloads and subscriptions (e.g. iTunes, Amazon)

Video Services User Survey

9. Choices and Sources

1. If you had to give up either your Internet access or your television services which one would it be?

- Would give up Internet access
- Would give up TV services

2. What sources do you use for Bloomington News?

- Word of mouth
- Print newspaper
- Online sources (e.g. blogs, news sites, streaming media)
- Radio
- TV
- Other (please specify)

Video Services User Survey

10. You and Public, Education, Government (PEG) Cable Channels - about 5 minute...

Your local Public, Educational and Governmental (PEG) video providers are:

Community Access Television Services (CATS) operates from the premises of the Monroe County Public Library. CATS is responsible for Comcast channels: #3, #7, #12, #14, #96.

TIU World is operated by WTIU of Indiana University and responsible for Comcast channel: #17.
Please note, if you receive PEG channels through an operator other than Comcast, the channel numbers may be different.

* 1. How often do you watch PEGs at home (CATS/TIU World)?

	Once or more per week	Once or twice a month	A few times per year	Never
City government meeting (Ch12)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
County government meeting (Ch14)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Library, educational, cultural programs (Ch3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other public access programs (Ch7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
SCOLA international programs (Ch96)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
TIU World, PBS and local content (Ch17)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

2. When you watch PEG (CATS/WTIU) programs do you usually plan to watch (select one)

- The entire program?
- A few minutes while "channel surfing"?
- The part of the program dealing with an issue or topic of interest to you?
- Other (please specify)

Video Services User Survey

*** 3. How often do you use the following services to watch PEGs at home (CATS/TIU World)?**

	Once or more per week	Once or twice a month	A few times per year	Never
Comcast cable	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Internet streaming (stream.catsv.net/cats/)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Online meeting archive (meetingarchive.catsv.net)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
TV services provided by your telecommunications provider (e.g. AT&T U-verse, Smithville S+TV)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other (please specify below)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

If you selected "other" above, please tell us which other service you use to watch PEGs

4. How would you prefer to receive program listing information for PEGs (CATS TV/TIU World) programs?

	Least Prefer	Indifferent	Most Prefer
Online (e.g. TVguide.com)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Newspaper (e.g. Herald Times)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
On-air promotion	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Electronic program guide on cable box	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Station website	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Receive schedules via email	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Video Services User Survey

5. Do you record PEG programs?

- Do not record PEG programs
- Yes, using a VCR
- Yes, using Cable DVR (Digital video recorder built into your cable box)
- Yes, using TiVo
- Yes, using other (please specify):

6. If you use a DVR or TiVo, what percentage of time do you watch programs pre-recorded as opposed to watching live television?

- Almost never use my DVR/TiVo to record programs
- 25% or less of my viewing time is spent on DVR recordings
- 50% or less of my viewing time is spent on DVR recordings
- 75% or less of my viewing time is spent on DVR recordings
- More than 75% of my viewing time is spent on DVR recordings

Video Services User Survey

11. Open Government - about 4 minutes to go until you are done

1. How often do you watch the following City government meetings?

	Once or more per week	Once or twice a month	A few times per year	Never
City Plan Commission	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Bloomington City Council	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Bloomington Utilities Board	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Bloomington Board of Public Works	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Telecommunications Council	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

If you selected "other" above, please tell us which other government meetings you watch:

2. How often do you watch the following County government meetings?

	Once or more per week	Once or twice a month	A few times per year	Never
Monroe County Council	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Monroe Country Public Library Board of Trustees	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Monroe County Commissioners	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
MCCSC School Board	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Monroe County Plan Commission	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ellettsville Town Council	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Monroe County Solid Waste Management District Board	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Environmental Protection Agency (EPA)/ Citizen Input Committee (CIC)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

If you selected "other" above, please tell us which other government meetings you watch:

Video Services User Survey

3. Do you use any of these online options to access local government content?

	Once or more per week	Once or twice a month	A few times per year	Never
Use the online government meetings archive (meetingarchive.catstv.net)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Bloomington youtube channel (www.youtube.com/user/cityofbloomington)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Video content on the City of Bloomington website (bloomington.in.gov)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

What video content on these sites would you like to see more of? Or is there other content you would like to see on these sites that is currently not featured?

4. What could the City of Bloomington do to take better advantage of Internet video?

Video Services User Survey

12. Your Satisfaction with PEG

1. How satisfied are you with the content offered through PEGs (CATS/TIU World)?

	Very Dissatisfied		Indifferent		Very Satisfied
City Government Meetings (Ch12)	<input type="radio"/>				
County Government Meeting (Ch14)	<input type="radio"/>				
Library, educational, cultural programs (Ch3)	<input type="radio"/>				
Other public access programs (Ch7)	<input type="radio"/>				
SCOLA International Programs (Ch96)	<input type="radio"/>				
TIU World (Ch17)	<input type="radio"/>				

2. How much do you agree with the following statements?

	Strongly Disagree		Indifferent		Strongly Agree
Being able to view videos of government meetings is valuable to me.	<input type="radio"/>				
Having a neutral and complete video record of government meetings is valuable to me.	<input type="radio"/>				
International news on PEG is valuable to me.	<input type="radio"/>				
Educational and local cultural programming on PEG is valuable to me.	<input type="radio"/>				
The constitutional protection of free speech on public access TV is valuable to me.	<input type="radio"/>				

Video Services User Survey

13. Looking Ahead - about 3 minutes to go until you are done

1. Overall, how important would you rate PEGs (CATS/TIU World) to the future of the Bloomington community?

Please indicate how important:

Extremely unimportant	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Extremely important
-----------------------	-----------------------	-----------------------	-----------------------	-----------------------	---------------------

2. How would you prefer to receive PEGs (CATS/TIU World) in the future? For Telecasts:

	Least Preferred	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Most Preferred
Comcast cable		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
AT&T U-verse/Smithville S+TV		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
Over the air/aerial - digital broadcast		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
Mobile delivery to cell phones		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
The Internet (e.g. live video streaming)		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	

3. How would you prefer to receive PEGs (CATS/TIU World) in the future? For On Demand Content:

	Least preferred	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Most preferred
Be able to record any PEG program with my cable DVR (digital video recorder built into your cable box)		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
Video on Demand delivered by telecommunications provider (e.g. Comcast, AT&T U-verse, Smithville S+TV, etc)		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
Internet access to archive of video productions by CATS and the public (from 1970s to now) and government meetings		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
Downloads/Video podcast		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	

4. What kinds of programming would you suggest adding to the PEG channel lineup?

Video Services User Survey

14. Four Short Questions Specifically About CATS

The following section only applies to channels operated by Community Access Television Services (CATS):

City Government Meetings (Ch12)
County Government Meeting (Ch14)
Library, educational, cultural programs (Ch3)
Other public access programs (Ch7)
SCOLA International Programs (Ch96)

1. Each CATS channel has a distinct identity.

How much do you agree or disagree with this statement?

Strongly disagree Indifferent Strongly agree

2. Would you watch more CATS programming if it were all available on the internet?

- Yes
- No
- Don't know

3. Would you watch more CATS programming if it were offered in HD (high definition)?

- Yes
- No
- Don't know

Video Services User Survey

4. Would you pay an additional monthly cable fee for rental of a digital converter to view the CATS channels?

- Yes
- No
- Don't know

Video Services User Survey

15. Video Productions by You - about 2 minutes to go until you are done

*** 1. Did you know that CATS provides free access to its video production facilities for use by the public and offers equipment specific training as part of this process?**

- Yes
 No

2. Have you ever created a video program for one of the following?

	Never	Once	A few times	A few times a year	Once a month or more
Home-video for self or friends (not for the web)	<input type="radio"/>				
Video production for the web (e.g. youtube or other)	<input type="radio"/>				
Public access programming for telecast on PEG channels	<input type="radio"/>				

3. How likely are you to produce the following video programs in the future?

	Very likely	Somewhat likely	Somewhat unlikely	Very unlikely
Home-video for self or friends (not for the web)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Video production for the web (e.g. youtube or other)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Public access programming for telecast on PEG channels	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Tell us why? (optional)

Video Services User Survey

4. To produce your program, would you use any of the following resources?

	Yes	No	Don't know
Training at the station	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Training online through CATS website	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Loan cameras: High Definition Video or Standard Definition Video	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Television studio	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Sound recording equipment	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My own camera	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Post production equipment (editing software) at CATS	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My own editing software at home (please specify below):	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

If you do, please let us know what type of video editing software you use at home:

5. Is there any other equipment or service not mentioned above that CATS could provide to help you create a video program for PEG telecast:

Video Services User Survey

16. Any Last Comments? - about 1 minute to go until you are done

1. Please share with us any further thoughts you might have on video services in Bloomington (either through PEG channels or the City)?

Video Services User Survey

17. About You - 1/2 a minute to go until you are done

Please note, this survey is completely anonymous. However, in order to better understand what groups of our community use video services and how to serve them best in the future some general information about your background would be greatly appreciated.

*** 1. Your gender:**

- male
 female

*** 2. Your age:**

- 0-19
 20-24
 25-29
 30-39
 40-49
 50-64
 65+

Video Services User Survey

3. What is the highest level of education you have completed?

- Some High School, or High School Degree
- Some College
- College Degree
- Graduate Degree
- Other (please specify)

4. Are you:

- American Citizen
- Permanent Resident (Green Card Holder)
- Temporary US Resident (e.g. international student, overseas visitor, etc)
- Other (please specify)

*** 5. Languages spoken at home:**

- English
- Spanish
- Korean
- Other (please specify)

Video Services User Survey

6. Your household income:

- not provided
- under \$25,000
- \$25,000-\$49,999
- \$50,000 to \$74,999
- \$75,000-\$99,999
- over \$100,000

* 7. Where do you live?

- Bloomington
- Ellettsville
- Monroe County other
- Other (e.g. other county or state, please specify)

8. Number of years lived in Monroe County:

- Less than 5 years
- 5 years or more

Thank you for taking the time to take this survey. Your contribution will help shape the future of public access television in our community.

Video Services User Survey – Summary Statistics

Video Services User Survey

1. What type of television set(s) do you own? Please check all that apply (Note: e.g. projectors, plasma screens, etc. are all considered TVs for the purpose of this survey):

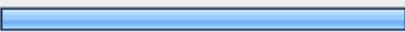
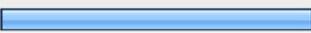
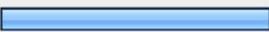
	Response Percent	Response Count
Do not own a TV <input type="checkbox"/>	5.5%	11
High Definition TV <input type="checkbox"/>	46.5%	93
Standard Definition TV <input type="checkbox"/>	61.5%	123
<i>answered question</i>		200
<i>skipped question</i>		0

2. What type of computer(s) do you own? Please check all that apply:

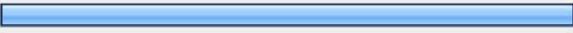
	Response Percent	Response Count
Do not own a computer <input type="checkbox"/>	3.0%	6
Desktop <input type="checkbox"/>	65.5%	131
Media PC (connected to your TV) <input type="checkbox"/>	10.0%	20
Laptop <input type="checkbox"/>	71.0%	142
Do not own computer but regularly use one at work/library/school <input type="checkbox"/>	2.0%	4
<i>answered question</i>		200
<i>skipped question</i>		0

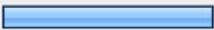
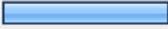
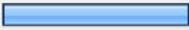
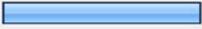
3. Do you have Internet access at home? Please check all that apply:				
			Response Percent	Response Count
Do not have Internet access at home	<input type="checkbox"/>		8.0%	16
Dial up	<input type="checkbox"/>		2.5%	5
Mobile data provided by cellphone carrier	<input type="checkbox"/>		7.0%	14
High-speed (e.g. dsl: high-speed over phone line or high-speed through cable, satellite, etc.). Please specify type and provider:	<input type="checkbox"/>		88.5%	177
<i>answered question</i>				200
<i>skipped question</i>				0

4. Do you own any portable devices with video playback capability? Please check all that apply:

		Response Percent	Response Count
Do not own portable devices with video playback capability		47.0%	94
Smart phone with video playback (e.g. blackberry, iphone, windows mobile, android, etc.)		36.0%	72
Portable music player with video playback capability		31.0%	62
<i>answered question</i>			200
<i>skipped question</i>			0

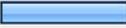
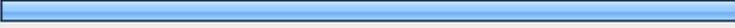
5. Do you have a cable television service?

		Response Percent	Response Count
Yes		66.5%	133
No		33.5%	67
<i>answered question</i>			200
<i>skipped question</i>			0

6. Which cable services do you subscribe to?				
			Response Percent	Response Count
Comcast Basic Cable			24.2%	32
Comcast Expanded Basic Cable			18.9%	25
Comcast Digital Cable			23.5%	31
Comcast DVR (Digital Video Recorder built into Comcast cable box)			21.2%	28
Other (please specify)			22.7%	30
			<i>answered question</i>	132
			<i>skipped question</i>	68

7. Do you receive television service over the airwaves/an aerial? (Using a converter box or TVs with digital receivers)				
			Response Percent	Response Count
Yes			20.1%	39
No			79.9%	155
			<i>answered question</i>	194
			<i>skipped question</i>	6

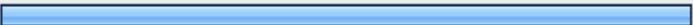
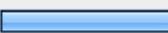
8. Do you have/use TiVo?		
		Response Percent Response Count
Yes		11.5% 22
No		88.5% 170
		answered question 192
		skipped question 8

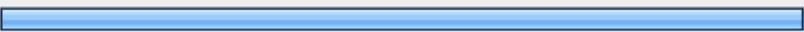
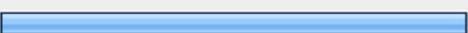
9. Do you use direct to home satellite (e.g. DirectTV/DishNetwork)		
		Response Percent Response Count
Yes		14.4% 28
No		85.6% 166
		answered question 194
		skipped question 6

10. Which satellite services do you use?				
			Response Percent	Response Count
DishNetwork (any package)			10.7%	3
DishNetwork DVR (Digital Video Recorder built into DishNetwork receiver)			14.3%	4
DirectTV (any package)			28.6%	8
DirectTV DVR (Digital Video Recorder built into DirectTV receiver)			42.9%	12
Other (please specify)			3.6%	1
<i>answered question</i>				28
<i>skipped question</i>				172

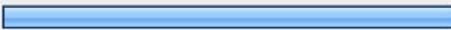
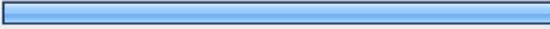
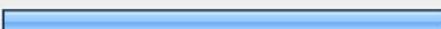
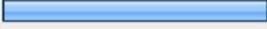
11. Do you use television services provided by a telecommunications provider other than Comcast? (e.g. AT&T U-verse or Smithville S+TV)				
			Response Percent	Response Count
Yes			15.5%	30
No			84.5%	164
<i>answered question</i>				194
<i>skipped question</i>				6

12. Which television service delivered to you by a telecommunications provider do you subscribe to?		
		Response Percent Response Count
AT&T U-verse		62.1% 18
Smithville S+TV		13.8% 4
Other not listed (please specify)		27.6% 8
		answered question 29
		skipped question 171

13. Do you use an Internet video service (such as youtube, iTunes or hulu)?		
		Response Percent Response Count
Yes		80.3% 155
No		19.7% 38
		answered question 193
		skipped question 7

14. Please specify which video websites or services you use:			
		Response Percent	Response Count
Video sharing sites (e.g. youtube, vimeo)		93.4%	142
IPTV (e.g. hulu.net, netflix instant streaming)		71.1%	108
For pay downloads and subscriptions (e.g. iTunes, Amazon)		53.9%	82
<i>answered question</i>			152
<i>skipped question</i>			48

15. If you had to give up either your Internet access or your television services which one would it be?			
		Response Percent	Response Count
Would give up Internet access		22.3%	41
Would give up TV services		77.7%	143
<i>answered question</i>			184
<i>skipped question</i>			16

16. What sources do you use for Bloomington News?			
		Response Percent	Response Count
Word of mouth		52.4%	99
Print newspaper		64.0%	121
Online sources (e.g. blogs, news sites, streaming media)		64.0%	121
Radio		51.3%	97
TV		30.7%	58
Other (please specify)		7.9%	15
		<i>answered question</i>	189
		<i>skipped question</i>	11

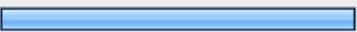
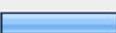
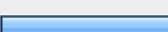
17. How often do you watch PEGs at home (CATS/TIU World)?					
	Once or more per week	Once or twice a month	A few times per year	Never	Response Count
City government meeting (Ch12)	10.7% (19)	14.6% (26)	27.5% (49)	47.2% (84)	178
County government meeting (Ch14)	6.7% (12)	12.4% (22)	23.0% (41)	57.9% (103)	178
Library, educational, cultural programs (Ch3)	8.4% (15)	13.5% (24)	30.3% (54)	47.8% (85)	178
Other public access programs (Ch7)	8.4% (15)	10.1% (18)	25.8% (46)	55.6% (99)	178
SCOLA international programs (Ch96)	1.1% (2)	2.2% (4)	14.6% (26)	82.0% (146)	178
TIU World, PBS and local content (Ch17)	19.7% (35)	19.1% (34)	23.6% (42)	37.6% (67)	178
	<i>answered question</i>				178
	<i>skipped question</i>				22

18. When you watch PEG (CATS/WTIU) programs do you usually plan to watch (select one)			
		Response Percent	Response Count
The entire program?		24.1%	34
A few minutes while "channel surfing"?		25.5%	36
The part of the program dealing with an issue or topic of interest to you?		43.3%	61
Other (please specify)		7.1%	10
<i>answered question</i>			141
<i>skipped question</i>			59

19. How often do you use the following services to watch PEGs at home (CATS/TIU World)?					
	Once or more per week	Once or twice a month	A few times per year	Never	Response Count
Comcast cable	18.3% (32)	16.6% (29)	13.1% (23)	52.0% (91)	175
Internet streaming (stream.catsv.net/cats/)	3.4% (6)	8.0% (14)	21.8% (38)	66.7% (116)	174
Online meeting archive (meetingarchive.catstv.net)	1.7% (3)	6.2% (11)	21.9% (39)	70.2% (125)	178
TV services provided by your telecommunications provider (e.g. AT&T U-verse, Smithville S+TV)	4.0% (7)	2.8% (5)	6.2% (11)	87.0% (154)	177
Other (please specify below)	1.7% (2)	0.0% (0)	0.8% (1)	97.5% (117)	120
If you selected "other" above, please tell us which other service you use to watch PEGs					4
					answered question
					skipped question
					178
					22

20. How would you prefer to receive program listing information for PEGs (CATS TV/TIU World) programs?								
	Least Prefer		Indifferent		Most Prefer	Rating Average	Response Count	
Online (e.g. TVguide.com)	5.7% (9)	3.2% (5)	29.7% (47)	24.1% (38)	37.3% (59)	3.84	158	
Newspaper (e.g. Herald Times)	17.5% (28)	2.5% (4)	40.6% (65)	20.6% (33)	18.8% (30)	3.21	160	
On-air promotion	12.9% (19)	8.2% (12)	50.3% (74)	20.4% (30)	8.2% (12)	3.03	147	
Electronic program guide on cable box	18.6% (29)	5.1% (8)	32.7% (51)	17.9% (28)	25.6% (40)	3.27	156	
Station website	9.0% (14)	7.7% (12)	29.7% (46)	28.4% (44)	25.2% (39)	3.53	155	
Receive schedules via email	26.5% (41)	11.6% (18)	32.3% (50)	18.7% (29)	11.0% (17)	2.76	155	
	<i>answered question</i>							173
	<i>skipped question</i>							27

21. Do you record PEG programs?		
		Response Percent Response Count
Do not record PEG programs		86.5% 148
Yes, using a VCR		2.9% 5
Yes, using Cable DVR (Digital video recorder built into your cable box)		7.0% 12
Yes, using TiVo		0.0% 0
Yes, using other (please specify):		4.1% 7
		answered question 171
		skipped question 29

22. If you use a DVR or TiVo, what percentage of time do you watch programs pre-recorded as opposed to watching live television?			Response Percent	Response Count
Almost never use my DVR/TiVo to record programs			41.0%	43
25% or less of my viewing time is spent on DVR recordings			19.0%	20
50% or less of my viewing time is spent on DVR recordings			13.3%	14
75% or less of my viewing time is spent on DVR recordings			6.7%	7
More than 75% of my viewing time is spent on DVR recordings			20.0%	21
			<i>answered question</i>	105
			<i>skipped question</i>	95

23. How often do you watch the following City government meetings?					
	Once or more per week	Once or twice a month	A few times per year	Never	Response Count
City Plan Commission	2.3% (4)	8.7% (15)	30.6% (53)	58.4% (101)	173
Bloomington City Council	4.6% (8)	16.7% (29)	31.6% (55)	47.1% (82)	174
Bloomington Utilities Board	1.2% (2)	4.7% (8)	14.6% (25)	79.5% (136)	171
Bloomington Board of Public Works	1.2% (2)	5.8% (10)	18.6% (32)	74.4% (128)	172
Telecommunications Council	2.3% (4)	4.1% (7)	16.4% (28)	77.2% (132)	171
Other	0.0% (0)	2.3% (2)	5.8% (5)	91.9% (79)	86
If you selected "other" above, please tell us which other government meetings you watch:					8
					answered question
					174
					skipped question
					26

24. How often do you watch the following County government meetings?					
	Once or more per week	Once or twice a month	A few times per year	Never	Response Count
Monroe County Council	2.3% (4)	9.8% (17)	28.3% (49)	59.5% (103)	173
Monroe County Public Library Board of Trustees	0.6% (1)	12.7% (22)	26.0% (45)	60.7% (105)	173
Monroe County Commissioners	1.8% (3)	8.9% (15)	25.4% (43)	63.9% (108)	169
MCCSC School Board	1.8% (3)	3.5% (6)	25.7% (44)	69.0% (118)	171
Monroe County Plan Commission	1.8% (3)	6.4% (11)	20.5% (35)	71.3% (122)	171
Ellettsville Town Council	0.6% (1)	1.2% (2)	10.0% (17)	88.2% (150)	170
Monroe County Solid Waste Management District Board	0.6% (1)	2.4% (4)	6.5% (11)	90.6% (154)	170
Environmental Protection Agency (EPA)/ Citizen Input Committee (CIC)	0.6% (1)	2.3% (4)	8.2% (14)	88.9% (152)	171
Other	1.1% (1)	0.0% (0)	5.6% (5)	93.3% (84)	90
If you selected "other" above, please tell us which other government meetings you watch:					6
					answered question
					173
					skipped question
					27

25. Do you use any of these online options to access local government content?						
	Once or more per week	Once or twice a month	A few times per year	Never	Response Count	
Use the online government meetings archive (meetingarchive.catstv.net)	2.3% (4)	5.3% (9)	24.6% (42)	67.8% (116)	171	
Bloomington youtube channel (www.youtube.com/user/cityofbloomington)	0.6% (1)	1.2% (2)	15.3% (26)	82.9% (141)	170	
Video content on the City of Bloomington website (bloomington.in.gov)	1.8% (3)	6.0% (10)	24.6% (41)	67.7% (113)	167	
What video content on these sites would you like to see more of? Or is there other content you would like to see on these sites that is currently not featured?					12	
					answered question	173
					skipped question	27

26. What could the City of Bloomington do to take better advantage of Internet video?		Response Count
		50
		answered question
		skipped question
		150

27. How satisfied are you with the content offered through PEGs (CATS/TIU World)?							
	Very Dissatisfied		Indifferent		Very Satisfied	Rating Average	Response Count
City Government Meetings (Ch12)	2.5% (4)	1.3% (2)	49.7% (79)	26.4% (42)	20.1% (32)	3.60	159
County Government Meeting (Ch14)	2.5% (4)	1.3% (2)	59.7% (95)	18.9% (30)	17.6% (28)	3.48	159
Library, educational, cultural programs (Ch3)	1.9% (3)	2.6% (4)	55.5% (86)	22.6% (35)	17.4% (27)	3.51	155
Other public access programs (Ch7)	1.9% (3)	1.3% (2)	64.3% (101)	16.6% (26)	15.9% (25)	3.43	157
SCOLA International Programs (Ch96)	1.3% (2)	0.7% (1)	81.0% (124)	6.5% (10)	10.5% (16)	3.24	153
TIU World (Ch17)	1.9% (3)	0.0% (0)	59.2% (93)	22.3% (35)	16.6% (26)	3.52	157
	<i>answered question</i>						159
	<i>skipped question</i>						41

28. How much do you agree with the following statements?								
	Strongly Disagree		Indifferent		Strongly Agree	Rating Average	Response Count	
Being able to view videos of government meetings is valuable to me.	2.5% (4)	8.6% (14)	21.0% (34)	30.9% (50)	37.0% (60)	3.91	162	
Having a neutral and complete video record of government meetings is valuable to me.	3.7% (6)	5.6% (9)	17.9% (29)	32.7% (53)	40.1% (65)	4.00	162	
International news on PEG is valuable to me.	6.8% (11)	11.8% (19)	49.1% (79)	21.7% (35)	10.6% (17)	3.17	161	
Educational and local cultural programming on PEG is valuable is valuable to me.	1.8% (3)	3.7% (6)	28.2% (46)	35.6% (58)	30.7% (50)	3.90	163	
The constitutional protection of free speech on public access TV is valuable to me.	1.9% (3)	2.5% (4)	14.2% (23)	17.9% (29)	63.6% (103)	4.39	162	
	<i>answered question</i>							163
	<i>skipped question</i>							37

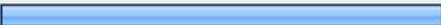
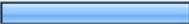
29. Overall, how important would you rate PEGs (CATS/TIU World) to the future of the Bloomington community?								
	Extremely unimportant		Undecided		Extremely important	Rating Average	Response Count	
Please indicate how important:	1.7% (2)	6.1% (7)	19.1% (22)	33.9% (39)	39.1% (45)	4.03	115	
	<i>answered question</i>							115
	<i>skipped question</i>							85

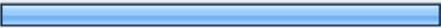
30. How would you prefer to receive PEGs (CATS/TIU World) in the future? For Telecasts:						
	Least Preferred		Most Preferred	Rating Average	Response Count	
Comcast cable	24.8% (37)	29.5% (44)	45.6% (68)	2.21	149	
AT&T U-verse/Smithville S+TV	35.6% (48)	39.3% (53)	25.2% (34)	1.90	135	
Over the air/aerial - digital broadcast	33.6% (46)	40.9% (56)	25.5% (35)	1.92	137	
Mobile delivery to cell phones	50.0% (69)	43.5% (60)	6.5% (9)	1.57	138	
The Internet (e.g. live video streaming)	8.8% (13)	30.6% (45)	60.5% (89)	2.52	147	
	<i>answered question</i>					160
	<i>skipped question</i>					40

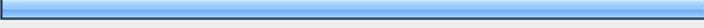
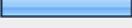
31. How would you prefer to receive PEGs (CATS/TIU World) in the future? For On Demand Content:					
	Least preferred		Most preferred	Rating Average	Response Count
Be able to record any PEG program with my cable DVR (digital video recorder built into your cable box)	25.2% (35)	49.6% (69)	25.2% (35)	2.00	139
Video on Demand delivered by telecommunications provider (e.g. Comcast, AT&T U-verse, Smithville S+TV, etc)	16.1% (23)	47.6% (68)	36.4% (52)	2.20	143
Internet access to archive of video productions by CATS and the public (from 1970s to now) and government meetings	8.2% (12)	34.0% (50)	57.8% (85)	2.50	147
Downloads/Video podcast	19.6% (28)	37.1% (53)	43.4% (62)	2.24	143
<i>answered question</i>					151
<i>skipped question</i>					49

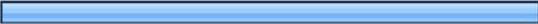
32. What kinds of programming would you suggest adding to the PEG channel lineup?		Response Count
		28
<i>answered question</i>		28
<i>skipped question</i>		172

33. Each CATS channel has a distinct identity.								
	Strongly disagree		Indifferent		Strongly agree	Rating Average	Response Count	
How much do you agree or disagree with this statement?	3.3% (5)	7.2% (11)	41.4% (63)	31.6% (48)	16.4% (25)	3.51	152	
	<i>answered question</i>							152
	<i>skipped question</i>							48

34. Would you watch more CATS programming if it were all available on the internet?			
		Response Percent	Response Count
Yes		51.3%	80
No		21.8%	34
Don't know		26.9%	42
	<i>answered question</i>		156
	<i>skipped question</i>		44

35. Would you watch more CATS programming if it were offered in HD (high definition)?		
	Response Percent	Response Count
Yes 	15.0%	23
No 	51.0%	78
Don't know 	34.0%	52
<i>answered question</i>		153
<i>skipped question</i>		47

36. Would you pay an additional monthly cable fee for rental of a digital converter to view the CATS channels?		
	Response Percent	Response Count
Yes 	3.2%	5
No 	81.9%	127
Don't know 	14.8%	23
<i>answered question</i>		155
<i>skipped question</i>		45

37. Did you know that CATS provides free access to its video production facilities for use by the public and offers equipment specific training as part of this process?			Response Percent	Response Count
Yes			62.7%	99
No			37.3%	59
<i>answered question</i>				158
<i>skipped question</i>				42

38. Have you ever created a video program for one of the following?						
	Never	Once	A few times	A few times a year	Once a month or more	Response Count
Home-video for self or friends (not for the web)	49.7% (75)	7.3% (11)	31.8% (48)	8.6% (13)	2.6% (4)	151
Video production for the web (e.g. youtube or other)	75.3% (113)	6.0% (9)	12.7% (19)	2.7% (4)	3.3% (5)	150
Public access programming for telecast on PEG channels	85.3% (128)	2.7% (4)	7.3% (11)	1.3% (2)	3.3% (5)	150
<i>answered question</i>						152
<i>skipped question</i>						48

39. How likely are you to produce the following video programs in the future?					
	Very likely	Somewhat likely	Somewhat unlikely	Very unlikely	Response Count
Home-video for self or friends (not for the web)	22.0% (33)	27.3% (41)	13.3% (20)	37.3% (56)	150
Video production for the web (e.g. youtube or other)	14.7% (22)	20.7% (31)	18.7% (28)	46.0% (69)	150
Public access programming for telecast on PEG channels	10.7% (16)	14.0% (21)	20.0% (30)	55.3% (83)	150
				Tell us why? (optional)	27
				<i>answered question</i>	150
				<i>skipped question</i>	50

40. To produce your program, would you use any of the following resources?				
	Yes	No	Don't know	Response Count
Training at the station	52.3% (69)	23.5% (31)	24.2% (32)	132
Training online through CATS website	44.3% (58)	29.0% (38)	26.7% (35)	131
Loan cameras: High Definition Video or Standard Definition Video	56.1% (74)	19.7% (26)	24.2% (32)	132
Television studio	42.0% (55)	26.0% (34)	32.1% (42)	131
Sound recording equipment	48.1% (63)	22.1% (29)	29.8% (39)	131
My own camera	41.7% (53)	28.3% (36)	29.9% (38)	127
Post production equipment (editing software) at CATS	51.9% (68)	20.6% (27)	27.5% (36)	131
My own editing software at home (please specify below):	22.0% (28)	40.2% (51)	37.8% (48)	127
If you do, please let us know what type of video editing software you use at home:				21
				answered question
				133
				skipped question
				67

41. Is there any other equipment or service not mentioned above that CATS could provide to help you create a video program for PEG telecast:		Response Count
		14
	<i>answered question</i>	14
	<i>skipped question</i>	186

42. Please share with us any further thoughts you might have on video services in Bloomington (either through PEG channels or the City)?		Response Count
		42
	<i>answered question</i>	42
	<i>skipped question</i>	158

43. Your gender:			
		Response Percent	Response Count
male		41.8%	66
female		58.2%	92
	<i>answered question</i>		158
	<i>skipped question</i>		42

44. Your age:				
			Response Percent	Response Count
0-19			1.3%	2
20-24			9.5%	15
25-29			15.2%	24
30-39			24.1%	38
40-49			20.9%	33
50-64			24.7%	39
65+			4.4%	7
			<i>answered question</i>	158
			<i>skipped question</i>	42

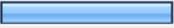
45. What is the highest level of education you have completed?			Response Percent	Response Count
Some High School, or High School Degree			6.4%	10
Some College			14.6%	23
College Degree			35.0%	55
Graduate Degree			40.8%	64
Other (please specify)			3.2%	5
<i>answered question</i>				157
<i>skipped question</i>				43

46. Are you:			Response Percent	Response Count
American Citizen			100.0%	155
Permanent Resident (Green Card Holder)			0.0%	0
Temporary US Resident (e.g. international student, overseas visitor, etc)			0.0%	0
Other (please specify)			0.0%	0
<i>answered question</i>				155
<i>skipped question</i>				45

47. Languages spoken at home:			Response Percent	Response Count
English			100.0%	158
Spanish			4.4%	7
Korean			0.0%	0
Other (please specify)			1.3%	2
<i>answered question</i>				158
<i>skipped question</i>				42

48. Your household income:			Response Percent	Response Count
not provided			10.5%	16
under \$25,000			22.2%	34
\$25,000-\$49,999			26.1%	40
\$50,000 to \$74,999			20.3%	31
\$75,000-\$99,999			10.5%	16
over \$100,000			10.5%	16
		<i>answered question</i>		153
		<i>skipped question</i>		47

49. Where do you live?				
			Response Percent	Response Count
Bloomington			77.8%	123
Ellettsville			5.1%	8
Monroe County other			13.9%	22
Other (e.g. other county or state, please specify)			3.2%	5
<i>answered question</i>				158
<i>skipped question</i>				42

50. Number of years lived in Monroe County:				
			Response Percent	Response Count
Less than 5 years			19.6%	30
5 years or more			80.4%	123
<i>answered question</i>				153
<i>skipped question</i>				47

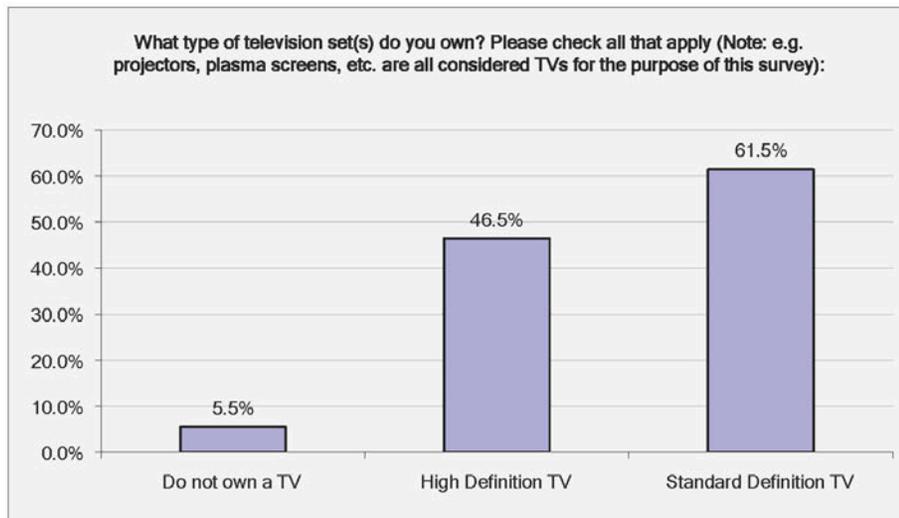
Video Services User Survey – Full Answer Set

Question 1

Video Services User Survey

What type of television set(s) do you own? Please check all that apply (Note: e.g. projectors, plasma screens, etc. are all considered TVs for the purpose of this survey):

Answer Options	Response Percent	Response Count
Do not own a TV	5.5%	11
High Definition TV	46.5%	93
Standard Definition TV	61.5%	123
<i>answered question</i>		200
<i>skipped question</i>		0



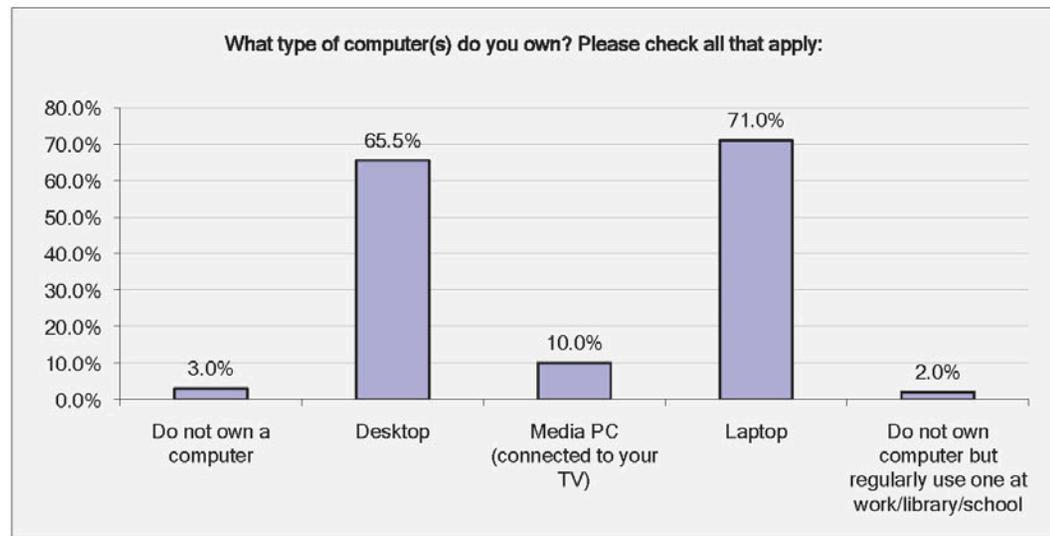
Question 1

Question 2

Video Services User Survey

What type of computer(s) do you own? Please check all that apply:

Answer Options	Response Percent	Response Count
Do not own a computer	3.0%	6
Desktop	65.5%	131
Media PC (connected to your TV)	10.0%	20
Laptop	71.0%	142
work/library/school	2.0%	4
<i>answered question</i>		200
<i>skipped question</i>		0



Question 2

Question 3

Video Services User Survey

Do you have Internet access at home? Please check all that apply:

Answer Options	Response Percent	Response Count
Do not have Internet access at home	8.0%	16
Dial up	2.5%	5
Mobile data provided by cellphone carrier	7.0%	14
speed through cable, satellite, etc.). Please specify type and	88.5%	177
<i>answered question</i>		200
<i>skipped question</i>		0

Number	Response Date	High-speed (e.g. dsl: high-speed over phone line or high-speed through cable, satellite, etc.). Please specify type and provider:
1	Mar 12, 2010 2:23 PM	ATT DSL
2	Mar 12, 2010 2:26 PM	Cable; Comcast
3	Mar 12, 2010 2:26 PM	cable
4	Mar 12, 2010 2:39 PM	Smithville DSL
5	Mar 12, 2010 2:43 PM	Comcast cable (horrible, wish there were options)
6	Mar 12, 2010 2:45 PM	Cable through Comcast
7	Mar 12, 2010 2:55 PM	Comcast for home and business
8	Mar 12, 2010 3:07 PM	Comcast
9	Mar 12, 2010 3:07 PM	Cable through Comcast
10	Mar 12, 2010 3:09 PM	Comcast
11	Mar 12, 2010 3:10 PM	Comcast
12	Mar 12, 2010 3:10 PM	Comcast
13	Mar 12, 2010 3:11 PM	DSL AT&T
14	Mar 12, 2010 3:11 PM	ATT UVERSE
15	Mar 12, 2010 3:18 PM	AT&T

Question 3

Question 3

16	Mar 12, 2010 3:19 PM	DSL AT&T
17	Mar 12, 2010 3:37 PM	Comcast Cable
18	Mar 12, 2010 3:48 PM	Comcast cable modem
19	Mar 12, 2010 4:04 PM	dsl
20	Mar 12, 2010 5:54 PM	verizon
21	Mar 12, 2010 6:04 PM	pegasus
22	Mar 12, 2010 6:20 PM	Comcast
23	Mar 12, 2010 6:57 PM	Smithville Telephone Co.
24	Mar 12, 2010 7:14 PM	high-speed cable, Comcast
25	Mar 12, 2010 7:52 PM	Verizon
26	Mar 12, 2010 8:13 PM	high speed through ATT
27	Mar 13, 2010 12:18 AM	Smithville
28	Mar 13, 2010 11:38 AM	DSL via AT & T
29	Mar 13, 2010 8:10 PM	cable
30	Mar 14, 2010 2:23 PM	att uverse high speed staellite
31	Mar 15, 2010 2:43 AM	High Speed Cable, Comcast
32	Mar 15, 2010 2:07 PM	Comcast
33	Mar 15, 2010 2:28 PM	At&t U-Verse
34	Mar 15, 2010 4:11 PM	Cable - Comcast
35	Mar 15, 2010 5:33 PM	comcast
36	Mar 15, 2010 6:44 PM	asdfasdf
37	Mar 15, 2010 7:05 PM	High speed through cable AT & T Uverse
38	Mar 15, 2010 8:17 PM	Cable - AT&T
39	Mar 15, 2010 8:20 PM	IU Campus High Speed
40	Mar 15, 2010 11:27 PM	Highspeed over phone with Smithville
41	Mar 16, 2010 12:53 PM	DSL, AT&T
42	Mar 16, 2010 1:00 PM	att
43	Mar 16, 2010 5:44 PM	Comcast
44	Mar 16, 2010 6:24 PM	High-speed via cable
45	Mar 17, 2010 4:22 PM	high-speed through cable ...and I hate dealing with them!!!
46	Mar 17, 2010 4:37 PM	cable, comcast
47	Mar 17, 2010 5:06 PM	Comcast
48	Mar 18, 2010 1:58 AM	Comcast
49	Mar 18, 2010 2:53 AM	comcast
50	Mar 18, 2010 6:34 AM	comcast
51	Mar 18, 2010 4:13 PM	comcast
52	Mar 18, 2010 8:39 PM	Smithville Telephone
53	Mar 18, 2010 10:14 PM	High speed through comcast cable

Question 3

Question 3

54	Mar 19, 2010 1:56 AM	Comcast
55	Mar 19, 2010 1:42 PM	comcast
56	Mar 19, 2010 2:47 PM	Comcast
57	Mar 19, 2010 7:42 PM	Smithville Fiber
58	Mar 19, 2010 8:12 PM	comcast
59	Mar 20, 2010 1:41 AM	AT&T
60	Mar 20, 2010 12:39 PM	AT&T DSL
61	Mar 20, 2010 1:37 PM	Comcast
62	Mar 20, 2010 4:54 PM	AT&T
63	Mar 21, 2010 10:15 AM	comcast
64	Mar 21, 2010 11:42 AM	cable
65	Mar 21, 2010 4:04 PM	i think comcast
66	Mar 21, 2010 5:18 PM	Comcast
67	Mar 21, 2010 5:26 PM	dsl, comcast
68	Mar 21, 2010 10:04 PM	ATT
69	Mar 22, 2010 12:41 AM	comcast
70	Mar 22, 2010 2:07 AM	T1
71	Mar 22, 2010 11:38 AM	Comcast high speed cable
72	Mar 22, 2010 12:33 PM	AT&T Uverse
73	Mar 22, 2010 6:11 PM	Comcast; high speed cable
74	Mar 22, 2010 7:08 PM	comcast
75	Mar 22, 2010 8:03 PM	Comcast
76	Mar 23, 2010 3:09 AM	High-speed, AT&T
77	Mar 23, 2010 1:18 PM	cable
78	Mar 23, 2010 1:30 PM	Comcast
79	Mar 23, 2010 3:08 PM	High-speed through cable/ATT
80	Mar 23, 2010 4:39 PM	IU
81	Mar 23, 2010 5:59 PM	Comcast high speed cable
82	Mar 23, 2010 6:23 PM	Comcast Cable.
83	Mar 23, 2010 6:54 PM	comcast high speed cable
84	Mar 23, 2010 9:30 PM	comcast
85	Mar 24, 2010 2:57 PM	comcast cable broadband
86	Mar 24, 2010 7:42 PM	Smithville Phone
87	Mar 26, 2010 1:57 AM	comcast
88	Mar 26, 2010 4:02 AM	AT&T
89	Mar 26, 2010 12:04 PM	comcast
90	Mar 26, 2010 12:44 PM	comcast cable modem
91	Mar 26, 2010 5:08 PM	Smithville Telephone

Question 3

Question 3

92	Mar 26, 2010 5:09 PM	COMCAST
93	Mar 26, 2010 6:47 PM	Comcast
94	Mar 26, 2010 7:04 PM	Linksys
95	Mar 27, 2010 2:53 AM	cable: Comcast
96	Mar 27, 2010 1:26 PM	AT&T
97	Mar 29, 2010 1:03 AM	AT&T
98	Mar 29, 2010 5:18 AM	high-speed, Campus Court HSIA network
99	Mar 29, 2010 12:13 PM	comcast
100	Mar 29, 2010 12:44 PM	AT&T
101	Mar 29, 2010 1:05 PM	Comcast
102	Mar 30, 2010 12:42 AM	U-Verse
103	Mar 30, 2010 12:51 AM	Comcast
104	Mar 30, 2010 3:05 PM	Comcast
105	Mar 30, 2010 7:06 PM	Wireless ATT
106	Mar 30, 2010 8:15 PM	cable
107	Mar 30, 2010 10:20 PM	AT&T DSL
108	Mar 30, 2010 11:39 PM	A T & T dsl over phone line
109	Mar 31, 2010 1:03 AM	ATT
110	Mar 31, 2010 1:35 PM	Comcast, though looking at other options
111	Mar 31, 2010 1:54 PM	dsl eGix
112	Mar 31, 2010 4:41 PM	High speed through cable
113	Mar 31, 2010 6:38 PM	cable-Comcast
114	Mar 31, 2010 7:53 PM	Cable via Comcast
115	Mar 31, 2010 7:53 PM	att cable
116	Mar 31, 2010 8:33 PM	at&t uverse
117	Mar 31, 2010 8:45 PM	DSL, AT&T
118	Mar 31, 2010 8:54 PM	Cable - Comcast
119	Mar 31, 2010 9:53 PM	cable via Crappycast
120	Apr 1, 2010 2:02 PM	ATT
121	Apr 1, 2010 2:04 PM	high speed over phone
122	Apr 1, 2010 2:09 PM	comcast
123	Apr 1, 2010 2:13 PM	High speed through Comcast
124	Apr 1, 2010 2:20 PM	high-speed through satellite
125	Apr 1, 2010 2:20 PM	Smithville DSL
126	Apr 1, 2010 2:21 PM	comcast
127	Apr 1, 2010 2:22 PM	ATT
128	Apr 1, 2010 2:25 PM	DSL- AT&T
129	Apr 1, 2010 2:32 PM	AT&T U-Verse high speed cable internet

Question 3

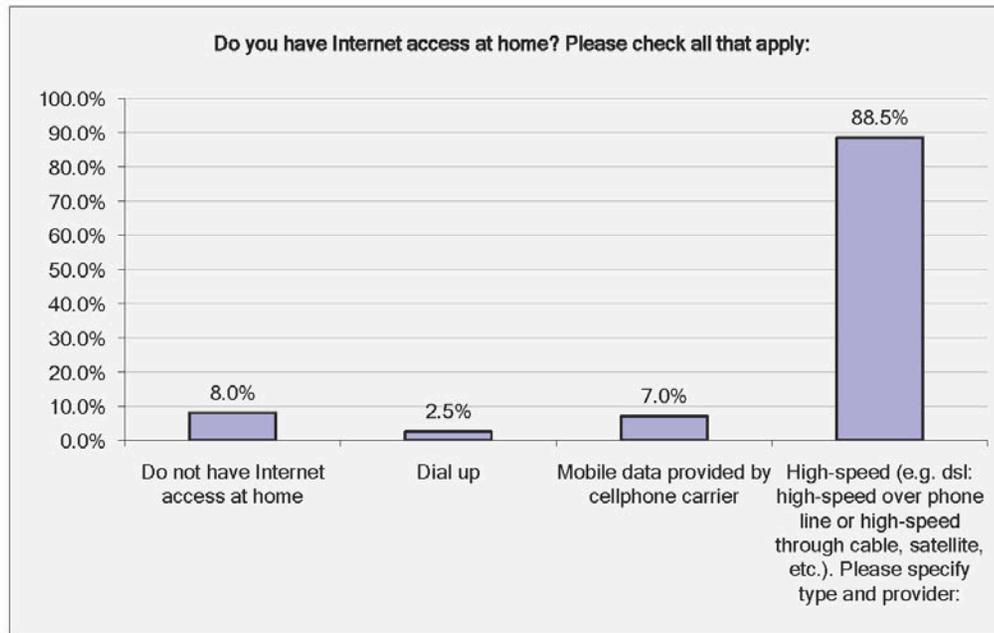
Question 3

130 Apr 1, 2010 2:50 PM High-speed cable through Comcast
131 Apr 1, 2010 2:54 PM Fios Smithville
132 Apr 1, 2010 3:02 PM Through cable--Comcast
133 Apr 1, 2010 3:18 PM Cable - Comcast
134 Apr 1, 2010 3:40 PM cable, Comcast
135 Apr 1, 2010 3:40 PM DSL, AT&T
136 Apr 1, 2010 4:00 PM high-speed through cable - Comcast
137 Apr 1, 2010 4:14 PM DSL
138 Apr 1, 2010 4:27 PM Comcast
139 Apr 1, 2010 4:28 PM Smithville DSL
140 Apr 1, 2010 4:53 PM high-speed through cable
141 Apr 1, 2010 4:53 PM AT&T
142 Apr 1, 2010 5:12 PM phone line
143 Apr 1, 2010 5:12 PM at &t
144 Apr 1, 2010 5:15 PM Smithville Telephone Company
145 Apr 1, 2010 5:37 PM Smithville Telephone Company
146 Apr 1, 2010 5:52 PM Comcast
147 Apr 1, 2010 5:53 PM bluemarble/smithville
148 Apr 1, 2010 5:58 PM dsl at&t
149 Apr 1, 2010 6:08 PM high speed over phone line, att
150 Apr 1, 2010 6:18 PM dsl - Pegasus Communications
151 Apr 1, 2010 7:08 PM ATT
152 Apr 1, 2010 7:15 PM dsl phone line
153 Apr 1, 2010 7:19 PM Comcast
154 Apr 1, 2010 7:33 PM Comcast
155 Apr 1, 2010 7:40 PM dsl, Smithville Telephone Co.
156 Apr 1, 2010 8:07 PM cable - comcast
157 Apr 1, 2010 8:52 PM FIOS through Smithville Telephone
158 Apr 1, 2010 9:24 PM AT&T DSK
159 Apr 1, 2010 9:43 PM ATT (NOT u-verse)
160 Apr 1, 2010 10:35 PM DSL, Jest Inc.
161 Apr 2, 2010 12:20 AM Smithville
162 Apr 2, 2010 2:09 AM 10 m
163 Apr 2, 2010 2:43 AM cable modem, Comcast
164 Apr 2, 2010 12:56 PM through cable, comcast
165 Apr 2, 2010 1:16 PM wireless
166 Apr 2, 2010 1:26 PM Wireless through Verizon
167 Apr 2, 2010 1:46 PM bluemarble

Question 3

Question 3

168	Apr 2, 2010 2:05 PM	Comcast broadband
169	Apr 2, 2010 2:23 PM	cable
170	Apr 2, 2010 3:17 PM	DSL, Smithville
171	Apr 2, 2010 3:50 PM	high speed through cable
172	Apr 2, 2010 3:59 PM	Comcast Cable
173	Apr 3, 2010 2:31 PM	Cable, comcast (Yuk)
174	Apr 3, 2010 3:37 PM	Apartment complex provider
175	Apr 4, 2010 12:12 AM	Comcast
176	Apr 5, 2010 11:42 AM	smithville
177	Apr 5, 2010 2:48 PM	Comcast high-speed through cable



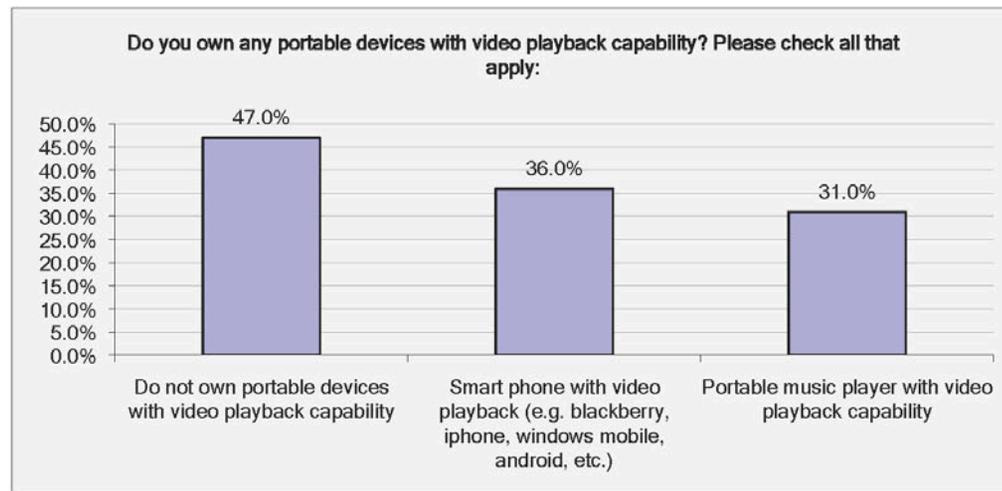
Question 3

Question 4

Video Services User Survey

Do you own any portable devices with video playback capability? Please check all that apply:

Answer Options	Response Percent	Response Count
Do not own portable devices with video playback capability	47.0%	94
windows mobile, android, etc.)	36.0%	72
Portable music player with video playback capability	31.0%	62
<i>answered question</i>		200
<i>skipped question</i>		0

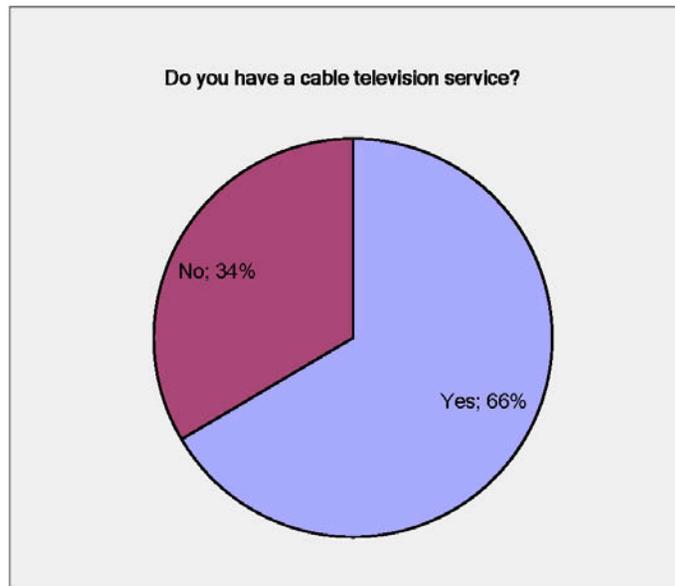


Question 4

Question 5

Video Services User Survey

Do you have a cable television service?		
Answer Options	Response Percent	Response Count
Yes	66.5%	133
No	33.5%	67
<i>answered question</i>		200
<i>skipped question</i>		0



Question 5

Question 6

Video Services User Survey

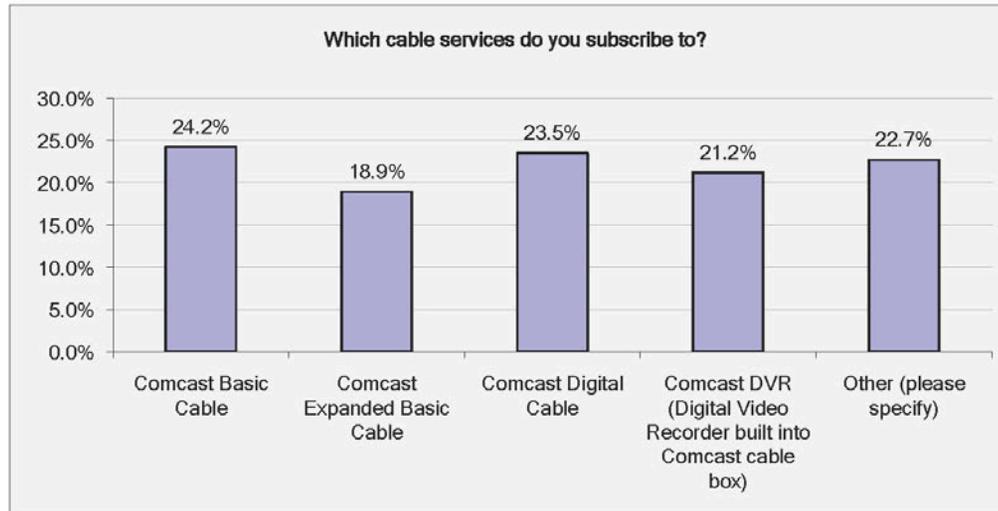
Which cable services do you subscribe to?		
Answer Options	Response Percent	Response Count
Comcast Basic Cable	24.2%	32
Comcast Expanded Basic Cable	18.9%	25
Comcast Digital Cable cable box)	23.5%	31
Other (please specify)	21.2%	28
	<i>answered question</i>	132
	<i>skipped question</i>	68

Number	Response Date	Other (please specify)
1	Mar 12, 2010 3:11 PM	ATT UVERSE
2	Mar 12, 2010 6:04 PM	pegasus
3	Mar 12, 2010 8:13 PM	ATT uverse
4	Mar 15, 2010 2:29 PM	At&t U-Verse
5	Mar 15, 2010 7:06 PM	AT&T Uverse
6	Mar 20, 2010 1:42 AM	AT&T U-verse
7	Mar 22, 2010 12:33 PM	AT&T Uverse
8	Mar 22, 2010 4:01 PM	Direct TV
9	Mar 23, 2010 3:10 AM	AT&T U-verse
10	Mar 29, 2010 1:03 AM	direct
11	Mar 29, 2010 5:19 AM	Provided by Campus Court Apartments
12	Mar 30, 2010 12:42 AM	AT&T U-verse
13	Mar 31, 2010 4:41 PM	Direct TV
14	Mar 31, 2010 5:43 PM	I get mine from saltlite
15	Mar 31, 2010 7:53 PM	att uverse
16	Mar 31, 2010 8:34 PM	at&t uverse
17	Apr 1, 2010 2:04 PM	AT&T Uverse
18	Apr 1, 2010 2:26 PM	insight- expanded basic
19	Apr 1, 2010 2:32 PM	AT&T U-Verse
20	Apr 1, 2010 2:54 PM	Smithville with DVR
21	Apr 1, 2010 4:27 PM	Directv

Question 6

Question 6

22	Apr 1, 2010 4:54 PM AT&T Uverse
23	Apr 1, 2010 6:09 PM Direct TV
24	Apr 1, 2010 6:19 PM not sure - comes with condo
25	Apr 1, 2010 7:43 PM Direct TV
26	Apr 1, 2010 8:53 PM Smithville FIOS DVR HD
27	Apr 1, 2010 10:36 PM DirecTV
28	Apr 2, 2010 1:23 PM DISH
29	Apr 3, 2010 4:53 PM direct tv
30	Apr 5, 2010 11:42 AM direct tv

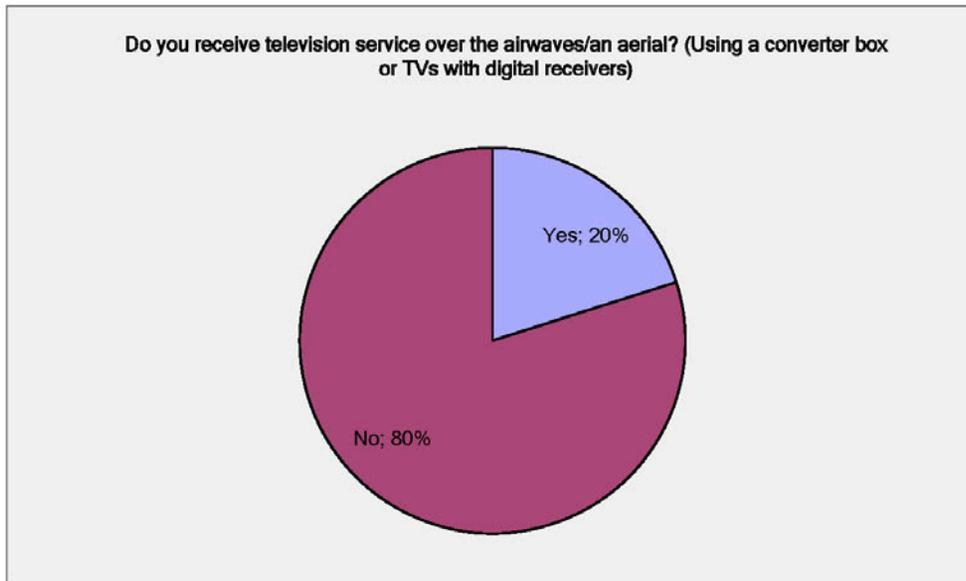


Question 6

Question 7

Video Services User Survey

Do you receive television service over the airwaves/an aerial? (Using a converter box or TVs with digital receivers)		
Answer Options	Response Percent	Response Count
Yes	20.1%	39
No	79.9%	155
<i>answered question</i>		194
<i>skipped question</i>		6

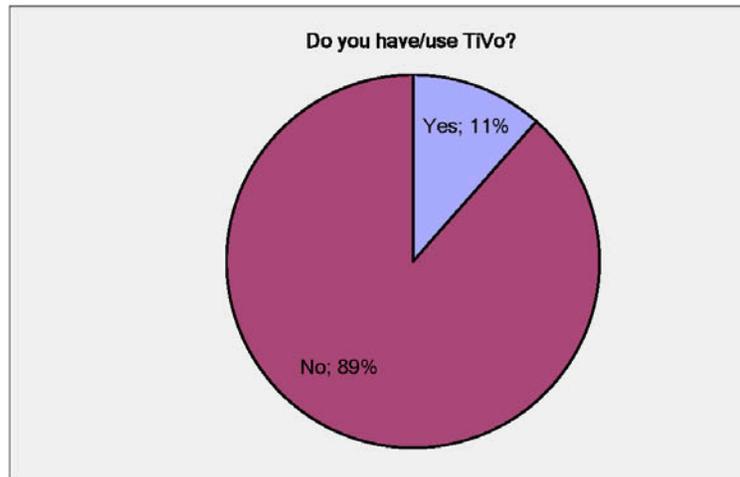


Question 7

Question 8

Video Services User Survey

Do you have/use TiVo?		
Answer Options	Response Percent	Response Count
Yes	11.5%	22
No	88.5%	170
<i>answered question</i>		192
<i>skipped question</i>		8

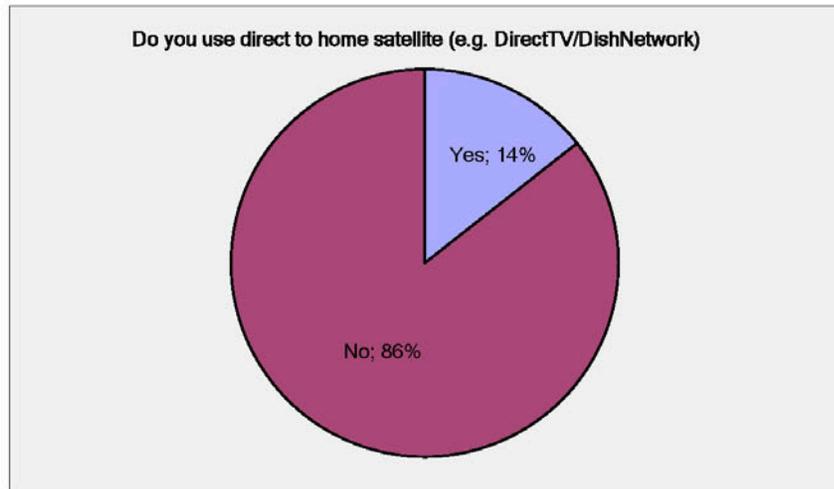


Question 8

Question 9

Video Services User Survey

Do you use direct to home satellite (e.g. DirectTV/DishNetwork)		
Answer Options	Response Percent	Response Count
Yes	14.4%	28
No	85.6%	166
<i>answered question</i>		194
<i>skipped question</i>		6



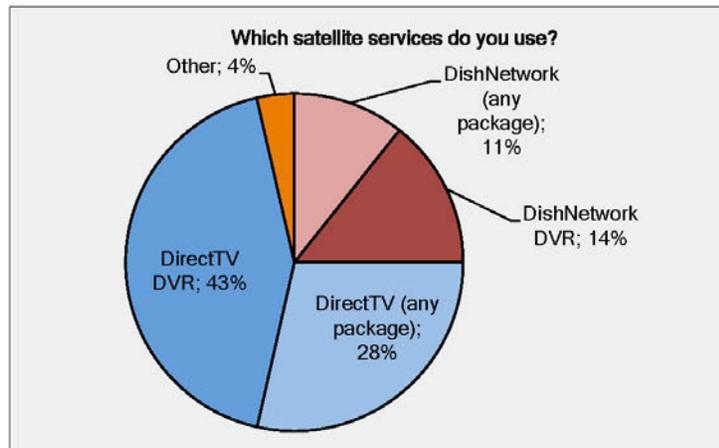
Question 9

Question 10

Video Services User Survey

Which satellite services do you use?		
Answer Options	Response Percent	Response Count
DishNetwork (any package)	10.7%	3
DishNetwork receiver	14.3%	4
DirectTV (any package) receiver	28.6%	8
Other (please specify)	3.6%	1
answered question		28
skipped question		172

Number	Response Date	Other (please specify)
1	Apr 1, 2010 5:13 PM	AT & T Uverse

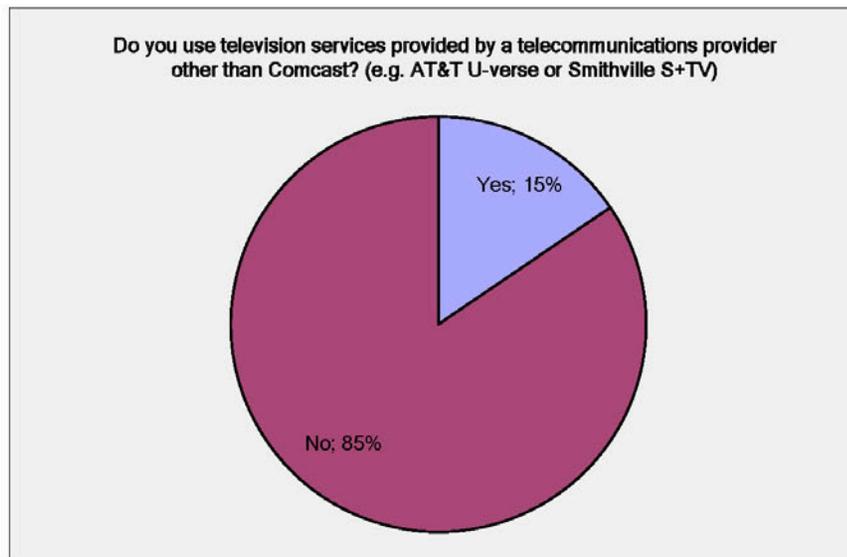


Question 10

Question 11

Video Services User Survey

Do you use television services provided by a telecommunications provider other than Comcast? (e.g. AT&T U-verse or Smithville S+TV)		
Answer Options	Response Percent	Response Count
Yes	15.5%	30
No	84.5%	164
<i>answered question</i>		194
<i>skipped question</i>		6



Question 11

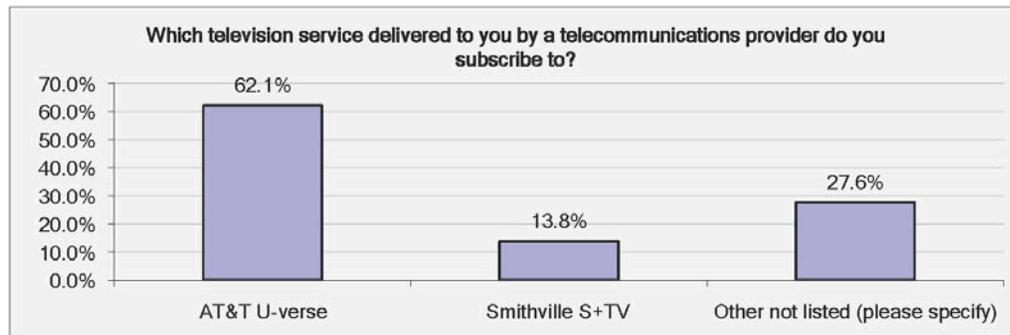
Question 12

Video Services User Survey

Which television service delivered to you by a telecommunications provider do you subscribe to?

Answer Options	Response Percent	Response Count
AT&T U-verse	62.1%	18
Smithville S+TV	13.8%	4
Other not listed (please specify)	27.6%	8
<i>answered question</i>		29
<i>skipped question</i>		171

Number	Response Date	Other not listed (please specify)
1	Mar 12, 2010 6:04 PM	pegasus
2	Mar 13, 2010 12:19 AM	DishNetwork
3	Mar 22, 2010 2:08 AM	ESPN/Broadcast Sat Feeds
4	Apr 1, 2010 2:26 PM	Insight
5	Apr 1, 2010 4:13 PM	I use antenna ONLY
6	Apr 1, 2010 6:10 PM	Direct TV
7	Apr 1, 2010 7:44 PM	Direct TV
8	Apr 2, 2010 1:28 PM	DIRECTV

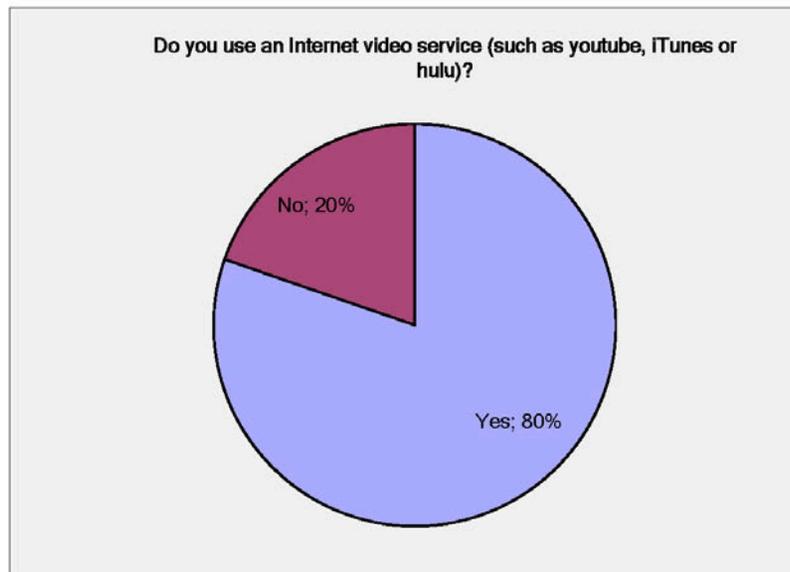


Question 12

Question 13

Video Services User Survey

Do you use an Internet video service (such as youtube, iTunes or hulu)?		
Answer Options	Response Percent	Response Count
Yes	80.3%	155
No	19.7%	38
<i>answered question</i>		193
<i>skipped question</i>		7



Question 13

Question 14

Video Services User Survey

Please specify which video websites or services you use:		
Answer Options	Response Percent	Response Count
Video sharing sites (e.g. youtube, vimeo)	93.4%	142
IPTV (e.g. hulu.net, netflix instant streaming)	71.1%	108
For pay downloads and subscriptions (e.g. iTunes, Amazon)	53.9%	82
		answered question 152
		skipped question 48

Number	Response Date	Video sharing sites (e.g. youtube, vimeo)	IPTV (e.g. hulu.net, netflix instant streaming)	For pay downloads and subscriptions (e.g. iTunes, Amazon)
1	Mar 12, 2010 2:24 PM	youtube, vimeo	hulu	
2	Mar 12, 2010 2:27 PM	youtube	hulu	
3	Mar 12, 2010 2:27 PM	youtube	netflix	none
4	Mar 12, 2010 2:40 PM	youtube	hulu	itunes
5	Mar 12, 2010 2:45 PM	youtube, godtube	netflix, hulu	
6	Mar 12, 2010 2:45 PM	Youtube	Hulu	None
7	Mar 12, 2010 2:56 PM	Youtube, Vimeo	Hulu, Netflix	Itunes and Amazon
8	Mar 12, 2010 3:08 PM	youtube	hulu, netflix	iTunes
9	Mar 12, 2010 3:09 PM	youtube, vimeo	ustream, hulu	Amazon (through Tivo)
10	Mar 12, 2010 3:10 PM	YouTube, Vimeo	HULU	iTunes
11	Mar 12, 2010 3:11 PM	youtube	hulu, netflix	
12	Mar 12, 2010 3:11 PM	youtube	hulu, netflix streaming to my xbox, bittorrent	
13	Mar 12, 2010 3:12 PM	youtube	hulu	
14	Mar 12, 2010 3:13 PM	youtube		itunes
15	Mar 12, 2010 3:19 PM	Youtube	Netflix, Hulu	
16	Mar 12, 2010 3:20 PM	Youtube	Netflix and Hulu	
17	Mar 12, 2010 3:38 PM	YouTube, Vimeo	Hulu	None
18	Mar 12, 2010 3:49 PM		Netflix Streaming	XBOX Marketplace, Playstation Store
19	Mar 12, 2010 4:05 PM	YouTube	Hulu, Netflix	
20	Mar 12, 2010 5:55 PM	youtube		itunes

Question 14

Question 14

21	Mar 12, 2010 6:20 PM	youtube.com		
22	Mar 12, 2010 6:59 PM	youtube	netflix instant streaming; Amazon hulu.net; boxee	
23	Mar 12, 2010 7:15 PM	YouTube		iTunes
24	Mar 12, 2010 7:53 PM	youtube, CATS via library web site		
25	Mar 12, 2010 8:14 PM	Youtube, Vimeo, and Hulu		Itunes, amazon
26	Mar 13, 2010 12:20 AM	all	hulu	iTunes, Amazon
27	Mar 13, 2010 11:39 AM	youtube	hulu	netflix
28	Mar 14, 2010 2:24 PM	youtube		itunes
29	Mar 15, 2010 2:44 AM	Youtube	Netflix	iTunes, Amazon
30	Mar 15, 2010 2:30 PM	youtube		iTunes
31	Mar 15, 2010 4:14 PM		Netflix	iTune and Amazon
32	Mar 15, 2010 5:35 PM	youtube	hulu	itunes
33	Mar 15, 2010 7:07 PM	youtube	hulu.net	itunes
34	Mar 15, 2010 8:18 PM	youtube, vimeo	netflix streaming and hulu	none
35	Mar 15, 2010 8:21 PM			iTunes subscriptions and podcasts
36	Mar 15, 2010 11:29 PM	youtube		iTunes
37	Mar 16, 2010 12:54 PM		Netflix instant streaming	Amazon
38	Mar 16, 2010 5:45 PM	Youtube	Hulu	iTunes
39	Mar 16, 2010 6:25 PM	youtube	hulu & netflix instant	none
40	Mar 17, 2010 4:23 PM	YouTube,	Hulu, Netflix,	
41	Mar 17, 2010 4:38 PM	youtube	hulu and netflix streaming	iTunes
42	Mar 17, 2010 5:07 PM	YouTube	NetFlix	iTunes
43	Mar 18, 2010 2:54 AM	youtube, bit-torrent	netflix	
44	Mar 18, 2010 6:36 AM	youtube	netflix, comcast xfinity,	itunes
45	Mar 18, 2010 4:14 PM	youtube		mp3panda
46	Mar 18, 2010 10:15 PM		www.tv.blinkx.com	
47	Mar 19, 2010 1:57 AM	youtube		
48	Mar 19, 2010 1:43 PM	youtube, hulu	netflix	itunes
49	Mar 19, 2010 2:48 PM	youtube, crunchyroll	hulu	
50	Mar 19, 2010 7:43 PM	youtube	hulu, netflix	Amazon
51	Mar 19, 2010 8:14 PM	youtube		itunes
52	Mar 20, 2010 12:40 PM	Youtube	hulu, netflix	

Question 14

Question 14

53	Mar 20, 2010 1:39 PM	YouTube Vimeo FaceBook Current TV		itunes
54	Mar 20, 2010 4:55 PM	utube	hulu	
55	Mar 21, 2010 10:16 AM	youtube	hulu	
56	Mar 21, 2010 11:43 AM	youtube, uhbruh (sp?)		
57	Mar 21, 2010 4:04 PM	youtube, vimeo	hulu	
58	Mar 21, 2010 5:20 PM	youtube, vodpod, vimeo	hulu	iTunes
59	Mar 21, 2010 5:27 PM	youtube	hulu, network websites	
60	Mar 21, 2010 10:05 PM	youtube	hulu.net, netflix	
61	Mar 22, 2010 12:42 AM	youtube	hulu, nbc	
62	Mar 22, 2010 11:39 AM	youtube	hulu.net, ustream	netflixs
63	Mar 22, 2010 12:12 PM	youtube		
64	Mar 22, 2010 12:34 PM	youtube	hulu and netflix	
65	Mar 22, 2010 3:01 PM	youtube	netflix	
66	Mar 22, 2010 4:01 PM	hulu		
67	Mar 22, 2010 6:12 PM		hulu	iTunes
68	Mar 22, 2010 7:09 PM	youtube	netflix, hulu	iTunes, amazon
69	Mar 22, 2010 8:04 PM	youtube.com, gametrailers.com	hulu.net	
70	Mar 23, 2010 3:11 AM	youtube	hulu.net	iTunes
71	Mar 23, 2010 1:32 PM	youtube	hulu, netflix streaming	itunes
72	Mar 23, 2010 2:06 PM	youtube, sciencestage, flickr, digg		
73	Mar 23, 2010 3:09 PM		Justin.tv channelsurfing.net	
74	Mar 23, 2010 6:01 PM	youtube		itunes
75	Mar 23, 2010 6:25 PM	Youtube, Blinkx, Metacafe	Hulu, Veoh	
76	Mar 23, 2010 9:32 PM	youtube	network sites CBS,NBC,ABC,Bravo,T VLand	real player superpass
77	Mar 24, 2010 2:58 PM	youtube	hulu, metflix	
78	Mar 24, 2010 5:46 PM	Youtube, Myspace	Hulu.com	
79	Mar 24, 2010 7:44 PM	youtube	hulu.net, netflix	
80	Mar 26, 2010 12:45 PM	youtube		itunes, amazon
81	Mar 26, 2010 5:10 PM	YOUTUBE		
82	Mar 26, 2010 6:48 PM	youtube		iTunes
83	Mar 26, 2010 7:05 PM	Youtube, vimeo	hulu, megavideo	iTunes, Amazon
84	Mar 27, 2010 2:55 AM	youtube		iTunes
85	Mar 27, 2010 1:28 PM			i-Tunes

Question 14

Question 14

86	Mar 29, 2010 5:20 AM	youtube	n/a	iTunes
87	Mar 29, 2010 12:45 PM	youtube	hulu, fancast	itunes
88	Mar 29, 2010 1:06 PM	you tube	netflix	
89	Mar 30, 2010 12:42 AM	YouTube		
90	Mar 30, 2010 3:06 PM	youtube	hulu	netflix
91	Mar 30, 2010 7:07 PM	Youtube	Hulu	iTunes
92	Mar 30, 2010 10:21 PM	youtube		
93	Mar 30, 2010 11:40 PM	youtube	hulu.net, netflix	
94	Mar 31, 2010 1:04 AM	youtube	hulu	iTunes (rarely)
95	Mar 31, 2010 1:56 PM	you tube	hulu	
96	Mar 31, 2010 2:18 PM	youtube		
97	Mar 31, 2010 4:42 PM	youtube	hulu	
98	Mar 31, 2010 7:53 PM	Youtube	Hulu	
99	Mar 31, 2010 7:54 PM	pretty much anything	netflix	
100	Mar 31, 2010 8:35 PM	youtube	blockbuster	itunes
101	Mar 31, 2010 8:46 PM	youtube, facebook	hulu, ustream	itunes, amazon
102	Mar 31, 2010 9:56 PM	YouTube, Vimeo, Yahoo! video, news networks and occasional use of others	Netflix streaming	Amazon but rarely
103	Apr 1, 2010 12:36 PM	youtube		
104	Apr 1, 2010 2:03 PM	Youtube		iTunes
105	Apr 1, 2010 2:06 PM	youtube		iTunes
106	Apr 1, 2010 2:10 PM	youtube	netflix	itunes
107	Apr 1, 2010 2:14 PM	youtube		
108	Apr 1, 2010 2:21 PM	youtube		iTunes
109	Apr 1, 2010 2:22 PM	youtube	hulu	don't use
110	Apr 1, 2010 2:24 PM	Youtube, Vimeo, funnyordie	hulu, netflix	none
111	Apr 1, 2010 2:25 PM	youtube	hulu.net	iTunes
112	Apr 1, 2010 2:27 PM	youtube	hulu, tv networks	
113	Apr 1, 2010 2:33 PM	YouTube	Hulu	iTunes
114	Apr 1, 2010 2:51 PM	youtube		
115	Apr 1, 2010 2:55 PM	youtube	hulu, netflix	
116	Apr 1, 2010 3:14 PM	youtube.com	hulu.net	
117	Apr 1, 2010 3:19 PM	youtube	Netflix, hulu	
118	Apr 1, 2010 3:41 PM	YouTube	Hulu	

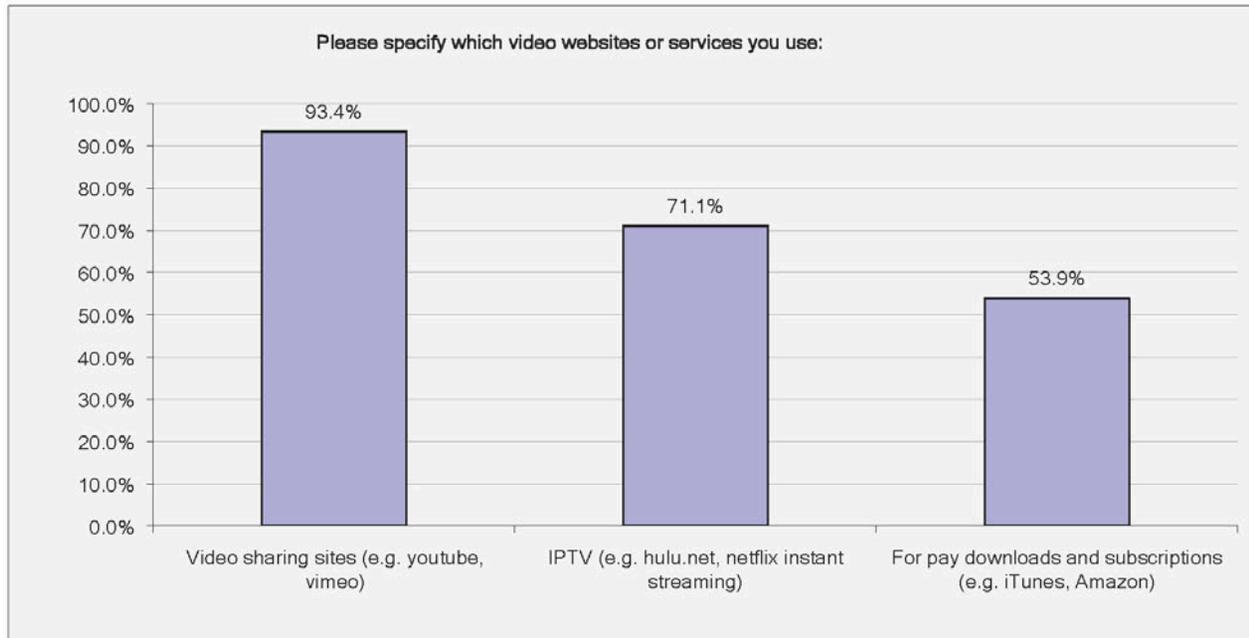
Question 14

Question 14

119	Apr 1, 2010 3:42 PM	youtube		
120	Apr 1, 2010 4:14 PM	Youtube	Hulu	
121	Apr 1, 2010 4:29 PM	youtube		
122	Apr 1, 2010 4:29 PM	youtube		
123	Apr 1, 2010 4:55 PM	youtube, vimeo, hulu	hulu, netflix	itunes
124	Apr 1, 2010 4:55 PM	youtube	hulu.net	
125	Apr 1, 2010 5:13 PM			iTunes
126	Apr 1, 2010 5:13 PM	youtube		
127	Apr 1, 2010 5:53 PM	youtube, vimeo		iTunes
128	Apr 1, 2010 5:54 PM	YouTUBE,	hulu.net, netlix,	
129	Apr 1, 2010 6:00 PM	YouTube	Hulu, abc.com, funimation, etc.	
130	Apr 1, 2010 7:09 PM	youtube, vimeo	hulu, specific channels	iTunes
131	Apr 1, 2010 7:20 PM	YouTube		
132	Apr 1, 2010 7:30 PM	Youtube		
133	Apr 1, 2010 8:08 PM	youtube	hulu	iTunes -sparingly
134	Apr 1, 2010 8:54 PM	youtube, vimeo	hulu, netflix, youtube	None
135	Apr 1, 2010 9:25 PM	YouTube	Netflix Instant Streaming	
136	Apr 1, 2010 9:44 PM	not app	netflix	amazon
137	Apr 1, 2010 10:36 PM	youtube		
138	Apr 2, 2010 12:22 AM	youtube	hulu	itunes
139	Apr 2, 2010 2:44 AM	youtube and vimeo	hulu	iTunes
140	Apr 2, 2010 12:57 PM		hulu, netflix	iTunes
141	Apr 2, 2010 1:17 PM	youtube	hulu & netflix	
142	Apr 2, 2010 1:30 PM	youtube	hulu.net	
143	Apr 2, 2010 1:47 PM	youtube	hulu.net	Zune
144	Apr 2, 2010 2:06 PM	youtube		Amazon
145	Apr 2, 2010 2:24 PM	youtube	netflix	amazon
146	Apr 2, 2010 3:18 PM	YouTube		
147	Apr 2, 2010 3:51 PM	youtube	netflix streaming	iTunes
148	Apr 2, 2010 4:00 PM	YouTube, MetaCafe, Crunchyroll, Funimation	Hulu, Boxee, Netflix	iTunes
149	Apr 3, 2010 2:32 PM	Youtube, vimeo	hulu	
150	Apr 3, 2010 3:43 PM	You Tube	Hulu	iTunes
151	Apr 4, 2010 12:13 AM	Vimeo, Youtube,	Hulu.net	iTunes
152	Apr 5, 2010 2:51 PM	youtube	hulu, world championship sports network	

Question 14

Question 14

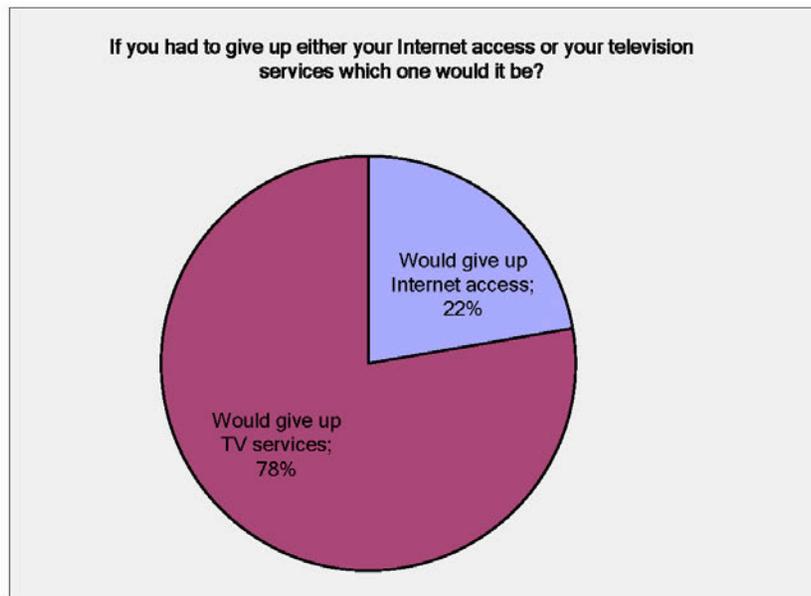


Question 14

Question 15

Video Services User Survey

If you had to give up either your Internet access or your television services which one would it be?		
Answer Options	Response Percent	Response Count
Would give up Internet access	22.3%	41
Would give up TV services	77.7%	143
<i>answered question</i>		184
<i>skipped question</i>		16



Question 15

Question 16

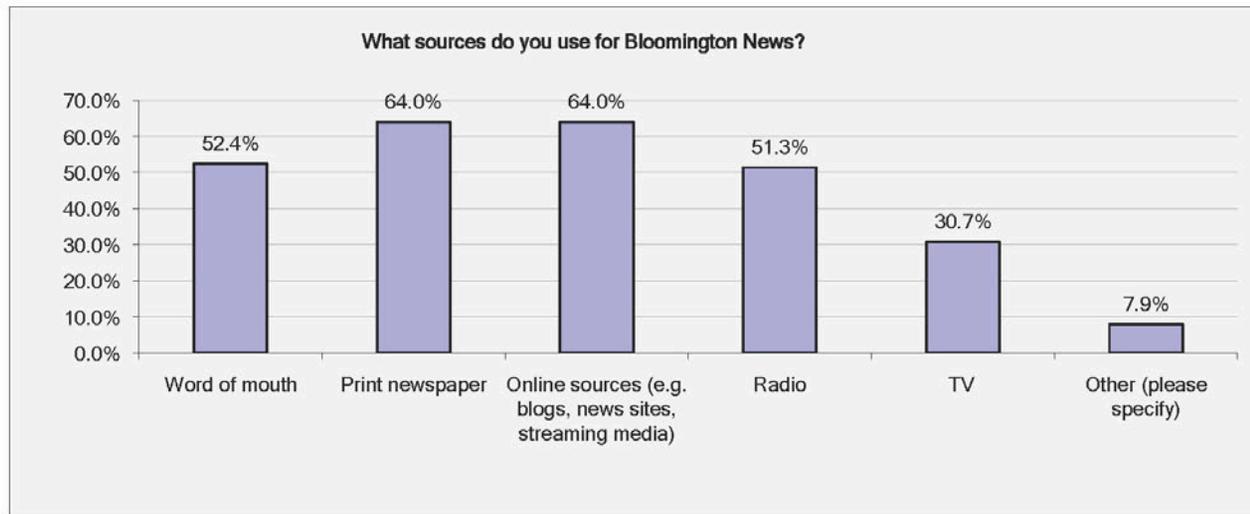
Video Services User Survey

What sources do you use for Bloomington News?		
Answer Options	Response Percent	Response Count
Word of mouth	52.4%	99
Print newspaper	64.0%	121
Online sources (e.g. blogs, news sites, streaming media)	64.0%	121
Radio	51.3%	97
TV	30.7%	58
Other (please specify)	7.9%	15
		answered question 189
		skipped question 11

Number	Response Date	Other (please specify)
1	Mar 12, 2010 2:41 PM	The open comments in the HT often give news (slanted as it is) that doesn't quite make the HT publication. It requires mental sifting.
2	Mar 12, 2010 3:10 PM	word of mouth sort of = email, which is where a percentage of my local news originates
3	Mar 12, 2010 3:11 PM	Twitter
4	Mar 12, 2010 7:53 PM	CATS on web
5	Mar 12, 2010 8:40 PM	mobtalk
6	Mar 15, 2010 4:14 PM	Herald Times Online
7	Mar 18, 2010 6:37 AM	mobtalk message board, htonline
8	Mar 21, 2010 11:43 AM	None really
9	Mar 21, 2010 5:25 PM	Monroe County Public Library
10	Mar 31, 2010 4:42 PM	work
11	Mar 31, 2010 9:56 PM	Facebook
12	Apr 1, 2010 2:24 PM	attending public meetings
13	Apr 1, 2010 9:44 PM	HT On-line
14	Apr 2, 2010 2:45 AM	Facebook
15	Apr 4, 2010 12:14 AM	C.A.T.S (Community Access Television Services)

Question 16

Question 16



Question 16

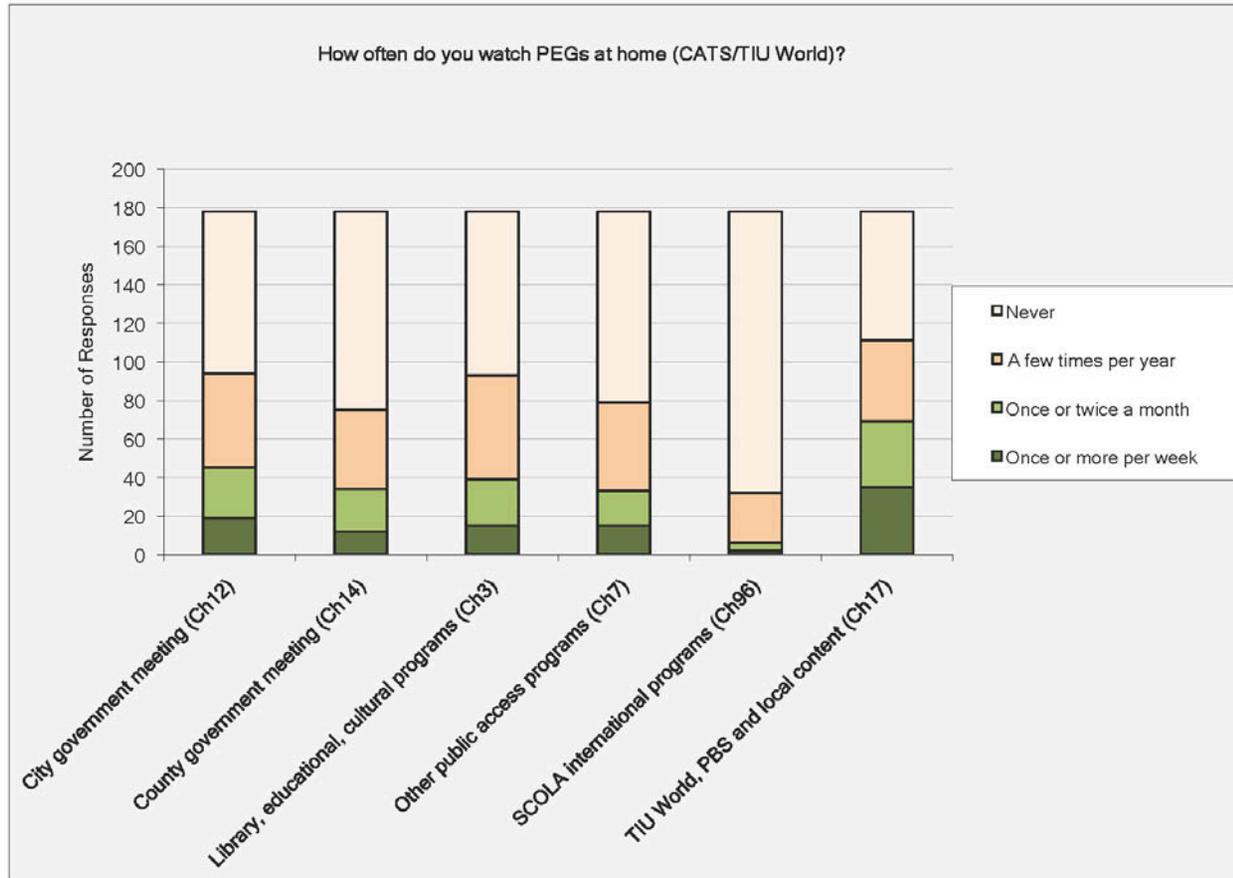
Question 17

Video Services User Survey

How often do you watch PEGs at home (CATS/TIU World)?					
Answer Options	Once or more per week	Once or twice a month	A few times per year	Never	Response Count
City government meeting (Ch12)	19	26	49	84	178
County government meeting (Ch14)	12	22	41	103	178
Library, educational, cultural programs (Ch3)	15	24	54	85	178
Other public access programs (Ch7)	15	18	46	99	178
SCOLA international programs (Ch96)	2	4	26	146	178
TIU World, PBS and local content (Ch17)	35	34	42	67	178
				<i>answered question</i>	178
				<i>skipped question</i>	22

Question 17

Question 17



Question 17

Question 18

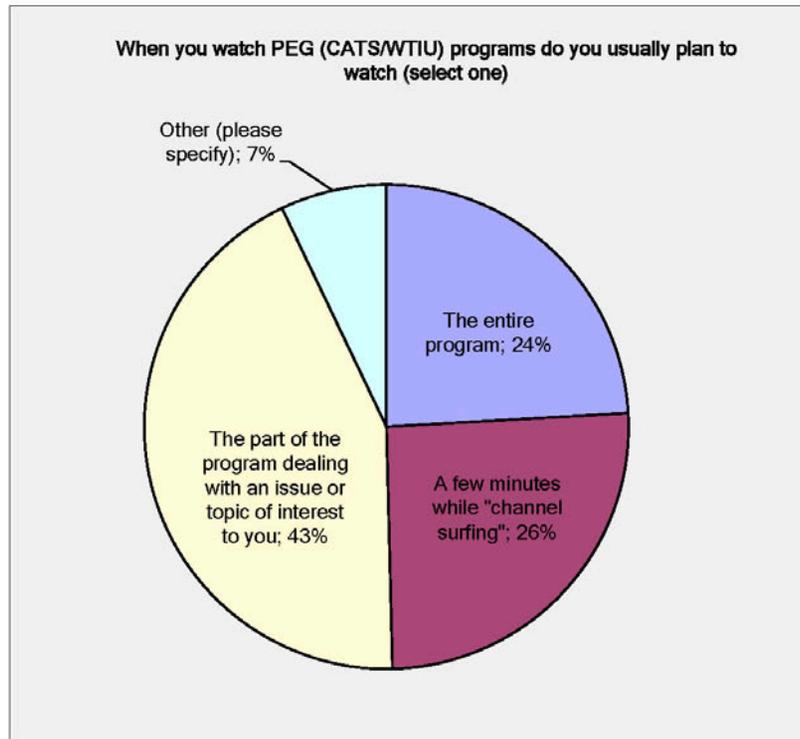
Video Services User Survey

When you watch PEG (CATS/WTIU) programs do you usually plan to watch (select one)		
Answer Options	Response Percent	Response Count
The entire program?	24.1%	34
A few minutes while "channel surfing"?	25.5%	36
interest to you?	43.3%	61
Other (please specify)	7.1%	10
<i>answered question</i>		141
<i>skipped question</i>		59

Number	Response Date	Other (please specify)
1	Mar 12, 2010 3:10 PM	none
2	Mar 12, 2010 3:15 PM	No Cable
3	Mar 20, 2010 1:43 PM	All of the above
4	Mar 21, 2010 4:06 PM	don't watch
5	Mar 23, 2010 4:44 PM	only use free tv channels
6	Mar 31, 2010 5:45 PM	I watch different programs that are fun to watch
7	Apr 1, 2010 2:25 PM	don't watch - don't have access on tv
8	Apr 1, 2010 4:15 PM	NO CABLE like I said many questions ago!
9	Apr 1, 2010 5:07 PM	No access to TV or Internet at home.
10	Apr 1, 2010 6:02 PM	none

Question 18

Question 18



Question 18

Question 19

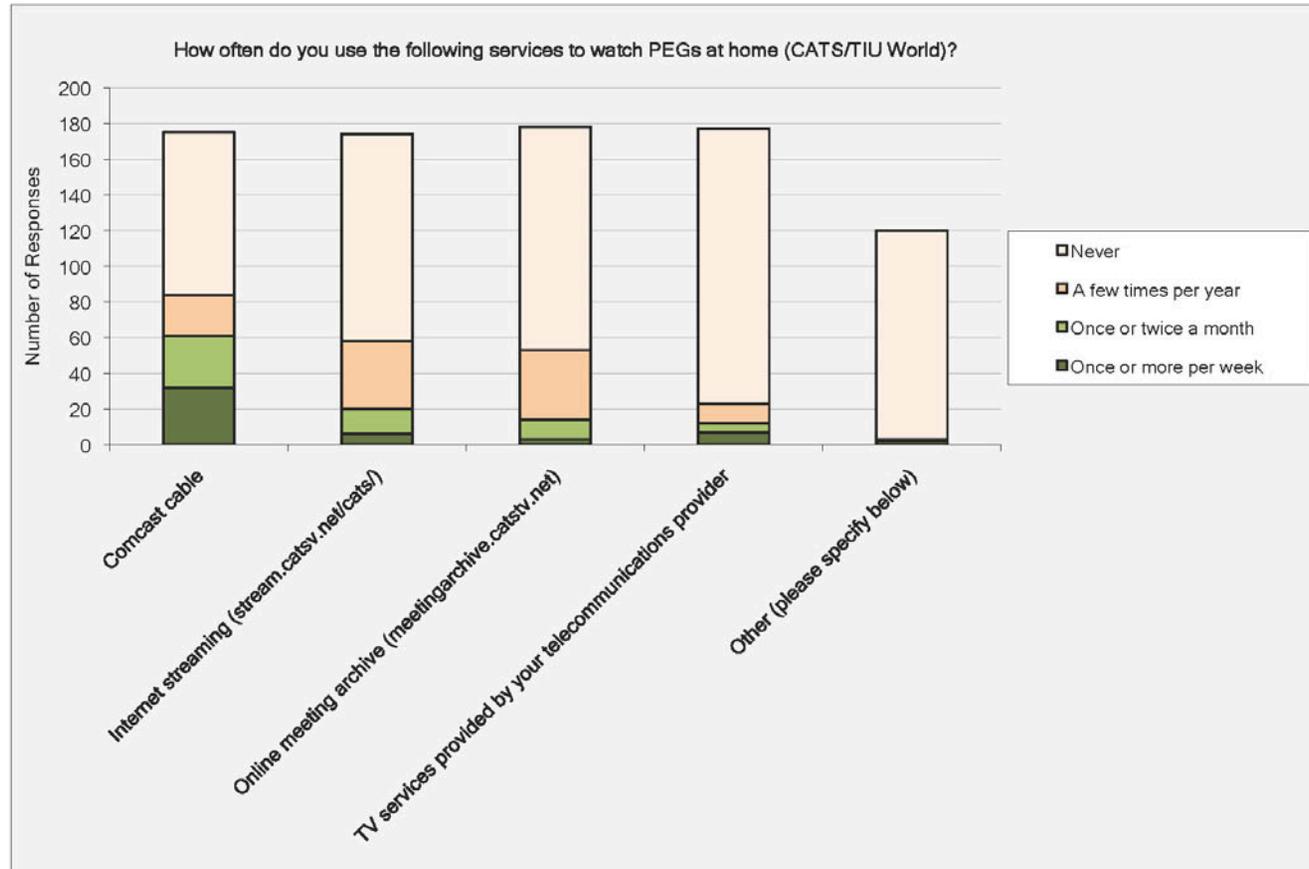
Video Services User Survey

How often do you use the following services to watch PEGs at home (CATS/TIU World)?					
Answer Options	Once or more per week	Once or twice a month	A few times per year	Never	Response Count
Comcast cable	32	29	23	91	175
Internet streaming (stream.catsv.net/cats/)	6	14	38	116	174
Online meeting archive (meetingarchive.catsv.net)	3	11	39	125	178
(e.g. AT&T U-verse, Smithville S+TV)	7	5	11	154	177
Other (please specify below)	2	0	1	117	120
If you selected "other" above, please tell us which other service you use to watch PEGs					4
					<i>answered question</i>
					<i>skipped question</i>
					178
					22

Number	Response Date	If you selected "other" above, please tell us which other service you use to watch PEGs
1	Mar 12, 2010 2:43 PM	over-the-air broadcast by aerial
2	Mar 22, 2010 3:04 PM	digital converter
3	Mar 31, 2010 1:07 AM	I did not know I could watch it online, I might start.
4	Apr 2, 2010 3:22 PM	Directv

Question 19

Question 19



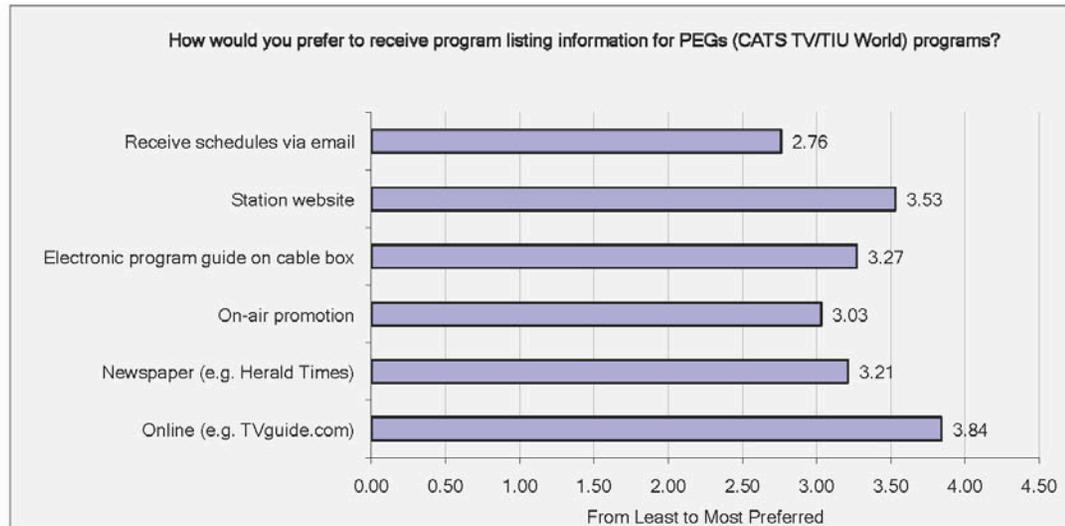
Question 19

Question 20

Video Services User Survey

How would you prefer to receive program listing information for PEGs (CATS TV/TIU World) programs?

Answer Options	Least Prefer		Indifferent		Most Prefer	Rating Average	Response Count	
Online (e.g. TVguide.com)	9	5	47	38	59	3.84	158	
Newspaper (e.g. Herald Times)	28	4	65	33	30	3.21	160	
On-air promotion	19	12	74	30	12	3.03	147	
Electronic program guide on cable box	29	8	51	28	40	3.27	156	
Station website	14	12	46	44	39	3.53	155	
Receive schedules via email	41	18	50	29	17	2.76	155	
							<i>answered question</i>	173
							<i>skipped question</i>	27



Question 20

Question 21

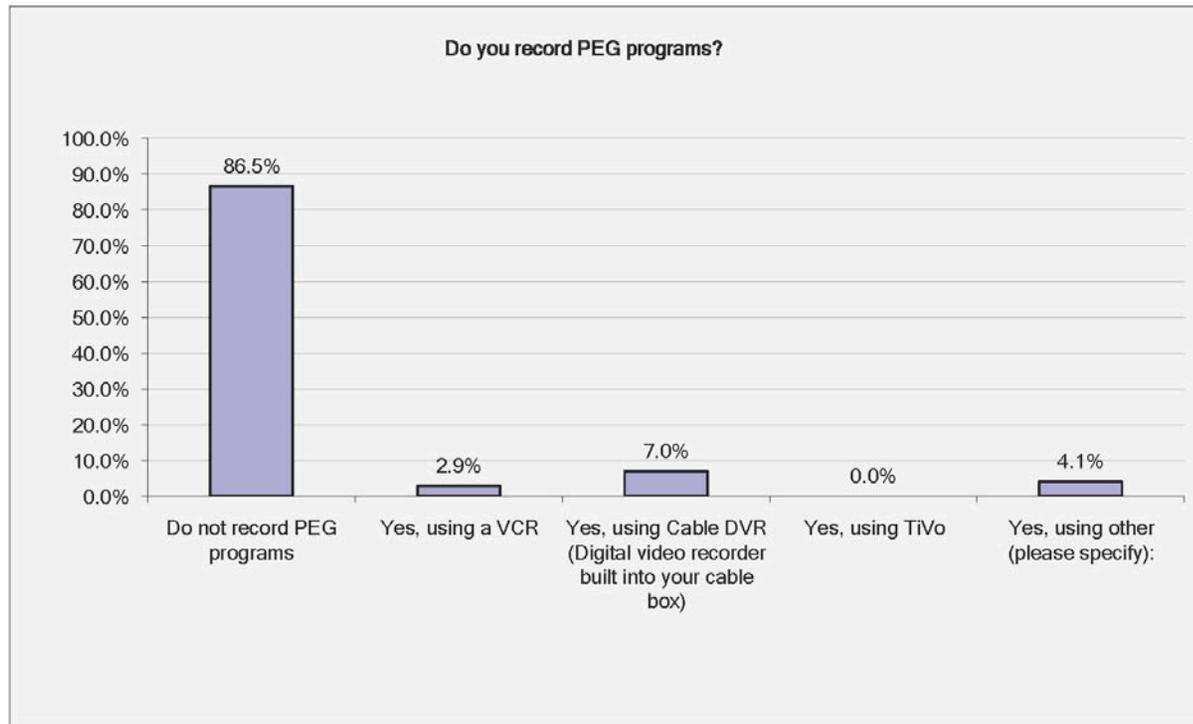
Video Services User Survey

Do you record PEG programs?		
Answer Options	Response Percent	Response Count
Do not record PEG programs	86.5%	148
Yes, using a VCR	2.9%	5
cable box)	7.0%	12
Yes, using TiVo	0.0%	0
Yes, using other (please specify):	4.1%	7
<i>answered question</i>		171
<i>skipped question</i>		29

Number	Response Date	Yes, using other (please specify):
1	Mar 13, 2010 12:23 AM	DVR built into DishNetwork service
2	Mar 15, 2010 2:33 PM	At&t U-verse DVR
3	Mar 20, 2010 1:43 PM	Get copies from library
4	Mar 22, 2010 2:12 AM	DVCR/DVD
5	Apr 1, 2010 2:17 PM	DVR
6	Apr 1, 2010 2:27 PM	DV tapes
7	Apr 1, 2010 3:46 PM	dvr NOT built into cable box

Question 21

Question 21



Question 21

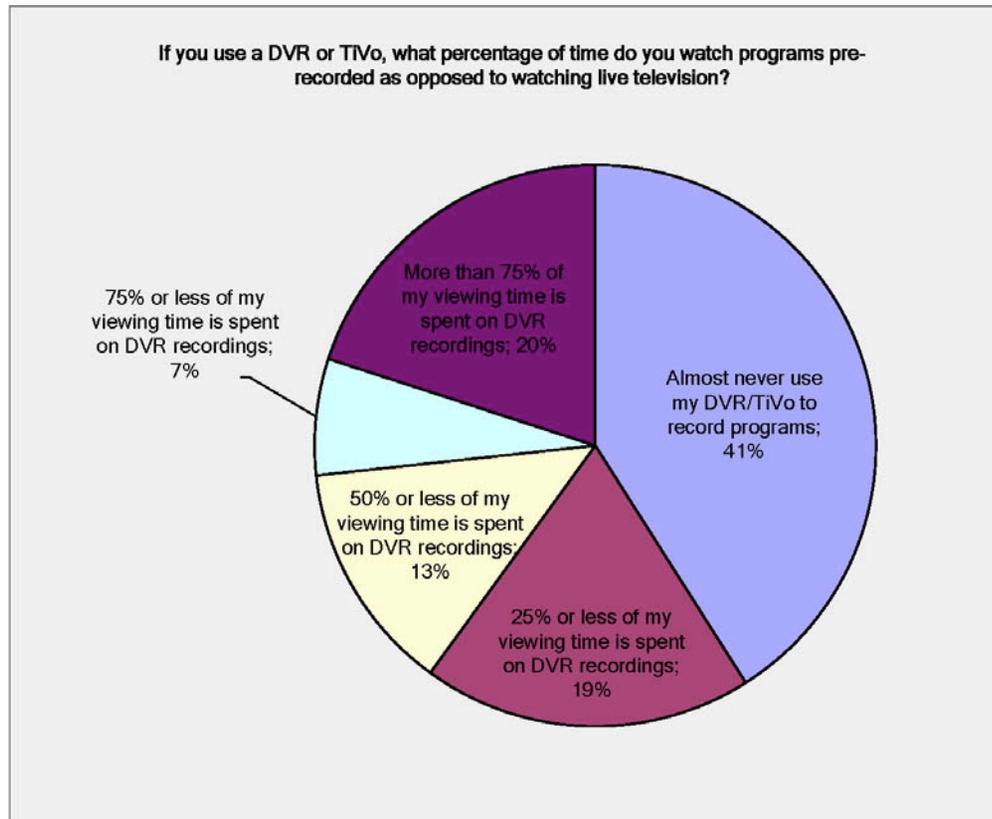
Question 22

Video Services User Survey

If you use a DVR or TiVo, what percentage of time do you watch programs pre-recorded as opposed to watching live television?		
Answer Options	Response Percent	Response Count
Almost never use my DVR/TiVo to record programs	41.0%	43
25% or less of my viewing time is spent on DVR recordings	19.0%	20
50% or less of my viewing time is spent on DVR recordings	13.3%	14
75% or less of my viewing time is spent on DVR recordings	6.7%	7
	20.0%	21
	<i>answered question</i>	105
	<i>skipped question</i>	95

Question 22

Question 22



Question 22

Question 23

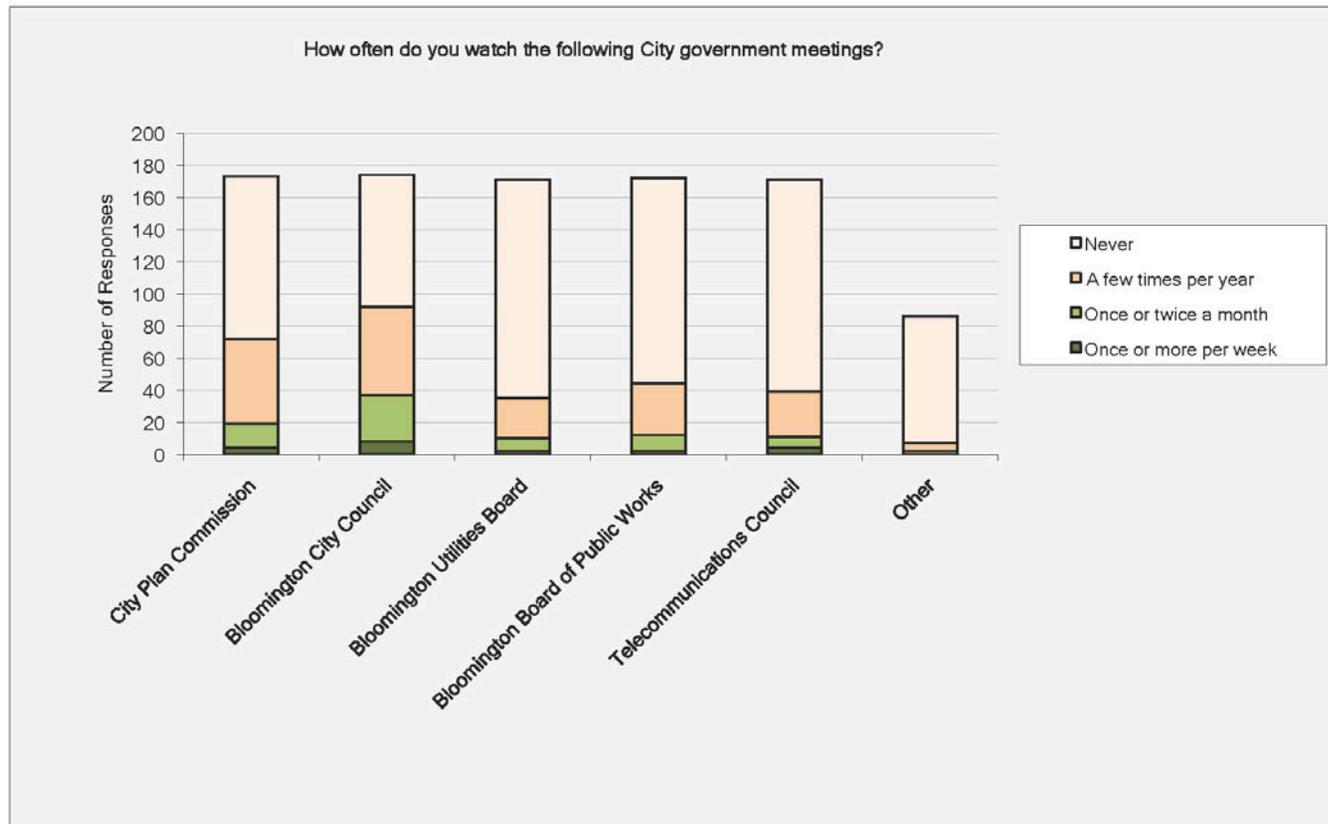
Video Services User Survey

How often do you watch the following City government meetings?					
Answer Options	Once or more per week	Once or twice a month	A few times per year	Never	Response Count
City Plan Commission	4	15	53	101	173
Bloomington City Council	8	29	55	82	174
Bloomington Utilities Board	2	8	25	136	171
Bloomington Board of Public Works	2	10	32	128	172
Telecommunications Council	4	7	28	132	171
Other	0	2	5	79	86
If you selected "other" above, please tell us which other government meetings you watch:					8
					<i>answered question</i> 174
					<i>skipped question</i> 26

Number	Response Date	If you selected "other" above, please tell us which other government meetings you watch:
1	Mar 12, 2010 4:08 PM	MLK celebration, Women's History Month Lunch
2	Mar 12, 2010 6:05 PM	varies
3	Mar 19, 2010 4:31 PM	N/A
4	Mar 20, 2010 5:23 PM	Never knew most were even on tv-had no idea!
5	Mar 22, 2010 4:35 PM	board of zonig appeals
6	Mar 23, 2010 9:36 PM	planning board and zoning appeals
7	Apr 1, 2010 4:35 PM	Library Board meetings
8	Apr 4, 2010 12:18 AM	all other meetings covered by C.A.T.S

Question 23

Question 23



Question 23

Question 24

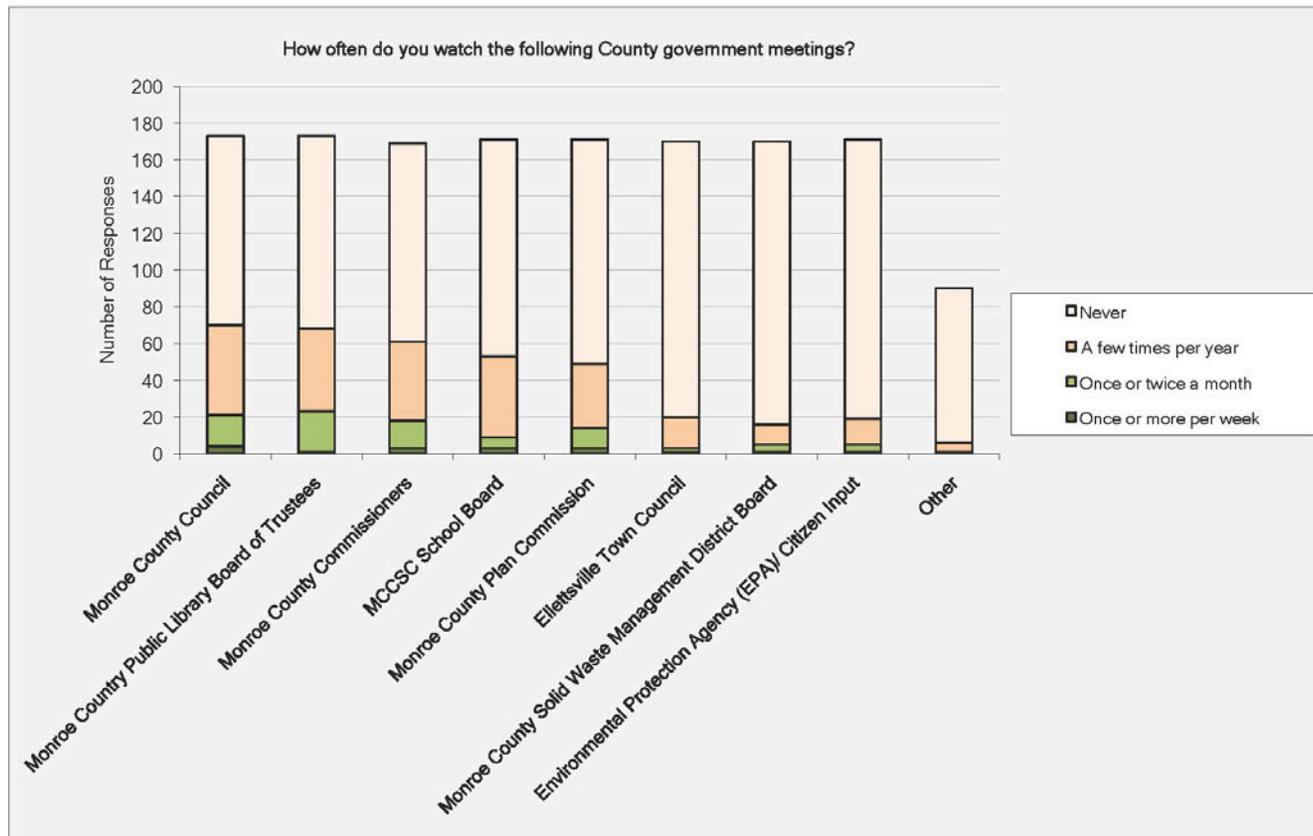
Video Services User Survey

How often do you watch the following County government meetings?					
Answer Options	Once or more per week	Once or twice a month	A few times per year	Never	Response Count
Monroe County Council	4	17	49	103	173
Monroe County Public Library Board of Trustees	1	22	45	105	173
Monroe County Commissioners	3	15	43	108	169
MCCSC School Board	3	6	44	118	171
Monroe County Plan Commission	3	11	35	122	171
Ellettsville Town Council	1	2	17	150	170
Monroe County Solid Waste Management District Board	1	4	11	154	170
Committee (CIC)	1	4	14	152	171
Other	1	0	5	84	90
If you selected "other" above, please tell us which other government meetings you watch:					6
					answered question
					173
					skipped question
					27

Number	Response Date	If you selected "other" above, please tell us which other government meetings you watch:
1	Mar 12, 2010 6:05 PM	varies
2	Mar 12, 2010 7:05 PM	RBBCSC Board Meetings
3	Mar 19, 2010 4:31 PM	N/A
4	Mar 20, 2010 5:23 PM	I dont think the public even knows these are on tv! Blgtn should do better to let the public know that.
5	Apr 1, 2010 5:00 PM	Library Board meetings
6	Apr 4, 2010 12:18 AM	all other meetings covered by C.A.T.S

Question 24

Question 24



Question 24

Question 25

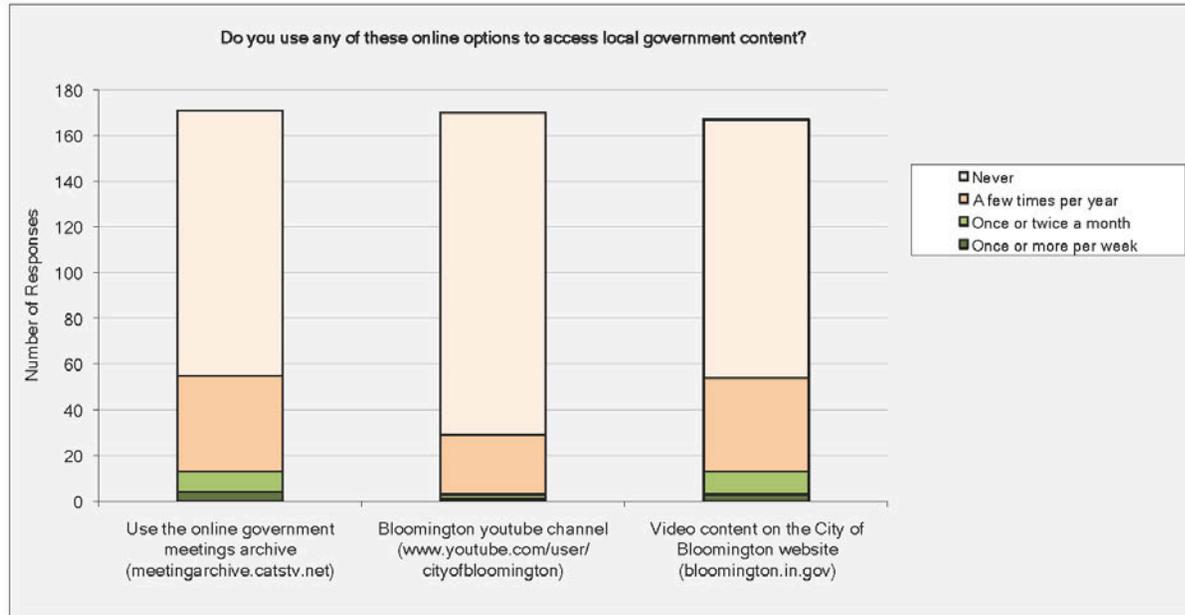
Video Services User Survey

Do you use any of these online options to access local government content?					
Answer Options	Once or more per week	Once or twice a month	A few times per year	Never	Response Count
(meetingarchive.catstv.net)	4	9	42	116	171
(www.youtube.com/user/cityofbloomington)	1	2	26	141	170
(bloomington.in.gov)	3	10	41	113	167
What video content on these sites would you like to see more of? Or is there other content you would like to see on these sites that is currently not featured?					12
				<i>answered question</i>	173
				<i>skipped question</i>	27

Number	Response Date	What video content on these sites would you like to see more of? Or is there other content you would like to see on these sites that is currently not featured?
1	Mar 12, 2010 3:12 PM	no
2	Mar 12, 2010 3:14 PM	well-edited interviews, particularly with people not currently "online" (I'd find value in new information)
3	Mar 12, 2010 6:05 PM	don't know
4	Mar 20, 2010 12:43 PM	I didn't know I could watch all this online. What about a facebook group to let folks know when meetings and such are available?
5	Mar 21, 2010 5:43 PM	It would be great to have Comcast load the programming schedules for all the television channels, instead of just displaying "Local programming content" all the time.
6	Mar 29, 2010 1:09 PM	don't watch it
7	Mar 31, 2010 1:08 AM	I did not know we had a youtube channel! I might start checking that out.
8	Mar 31, 2010 1:53 PM	Increase the number of Boards and Commissions meetings that are recorded and broadcast; answer expanded upon below.
9	Apr 1, 2010 9:48 PM	make it like a pod-cast that would auto-download.
10	Apr 2, 2010 1:25 PM	More about the Human Society
11	Apr 2, 2010 2:13 PM	Not sure but didn't know a Bloomington youtube channel exists
12	Apr 4, 2010 12:18 AM	Ch. 3 and Ch. 7 archives.

Question 25

Question 25



Question 25

Question 26

Video Services User Survey

What could the City of Bloomington do to take better advantage of Internet video?		
Answer Options	Response Count	
	50	
<i>answered question</i>	50	
<i>skipped question</i>	150	

Number	Response Date	Response Text
1	Mar 12, 2010 2:45 PM	I did not know about catstv.net, the Bloomington youtube channel, nor that the City of Bloomington's website hosted video. Now that I know, I might use these resources.
2	Mar 12, 2010 2:49 PM	Internet video? Bloomington does that? Get the word out better. This is the first I have heard of the sites listed in #3.
3	Mar 12, 2010 3:12 PM	Sometimes I watch the 11pm news but its all about Indy. I didn't even know there was a local news program for Bloomington.
4	Mar 12, 2010 3:15 PM	Better advertising -- I did not know about the Bloomington youtube channel.
5	Mar 12, 2010 3:18 PM	Twitter feed publishing links to new videos as they are posted. RSS news feeds with videos posted in feeds.
6	Mar 12, 2010 3:25 PM	More promotion. I didn't know the city even had a youtube page or streaming video on its website. Can't really evaluate it until I've seen it.
7	Mar 12, 2010 6:01 PM	Does CATS stream their other channels? I would like to watch those online too.
8	Mar 12, 2010 6:05 PM	better interface
9	Mar 12, 2010 7:57 PM	more archived content, faster uploading
10	Mar 12, 2010 8:49 PM	don't know...i have dial up
11	Mar 12, 2010 9:02 PM	promote more on the Herald times' website
12	Mar 13, 2010 12:25 AM	Multiple topical video podcast series offered through iTunes. Weekly 5-10 minute shows on arts, public works, policy, parks, etc.
13	Mar 17, 2010 4:27 PM	Um, advertise! I didn't know about a lot of things mentioned in this survey. I would have been using more of the online application if I had only known about them!

Question 26

Question 26

14	Mar 17, 2010 5:10 PM	Provide content that is of interest, allow for indexing so that viewers can find parts of content they want to watch. Higher quality.
15	Mar 18, 2010 2:58 AM	advertise the Bloomington youtube channel more, along with the meeting archive website.
16	Mar 20, 2010 1:47 PM	Work with the public library in developing an arts and tourism channel
17	Mar 20, 2010 5:23 PM	Let the public know it exists! We had NO idea that Blgtn has any of the above websites you listed in question #3. We have our own utube site? Who knew?! We've watched a very few town meetings on the tv and when we have its always clear that our gov. panel really doesnt care much to hear what we have to say...it's the same ole' thing...a person in gov calls for the next public person to come to the mic...they get just a few minutes to speak and then asked to sit down...the panel barely acknowledges the person ever spoke, then moves on...the panel acts half asleep, with a glazed over look, clearly giving us the impression that the panel really would prefer no public involvement. We're not stupid. Anyone can tell by their body language, their tone of voice, that they could care less what we have to say...so why ask our opinion....in 2015 it will still be the same....boring, with gov officials that put on the show for the tv, but clearly really dont care. If they did, this info of these websites, etc... would be posted all over town, in the paper, on the web, etc... Even the MCPL...they have monthly meetings and it's a joke. They're all too serious, stiff, not friendly to the public when they stand up to speak-the panel gets offensive for no reason....we're ADULTS here people! The last mcpl meeting i watched on tv, some rude guy on the panel was trying to tell we public people that the library database showed they had like 400,000 members.... so he could get done what he wanted, and the publics point was that, that # included all deceased, moved-away, under 18/minors, etc.... and that the "active" mcpl card holders is WAY-WAY less than that figure...he got huffy... how stupid do they think we public are? Even mcpl doesn't want the public to really show at their meetings...if they did, that info would be plastered all over the library...yet there's just a tiny sign that mentions it, and that sure isn't located where all the public can see it! If you all want the public to get involved....prove it....get the word out...show us by your manners, tone of voice, behavior...cause up till now,we the public have NOT seen it!

Question 26

Question 26

18	Mar 21, 2010 11:48 AM	I don't know - maybe updated on web site content via video daily -
19	Mar 21, 2010 5:31 PM	i didn't know that the city did any internet video, so i think publicity for that is most important
20	Mar 21, 2010 5:43 PM	Making videos available in a downloadable/convertible format (avi/mpeg) would be great, but you might be planning to do that already.
21	Mar 21, 2010 10:08 PM	Advertise. I didn' know some of it existed but I think it's a good idea and way to get news out there.
22	Mar 22, 2010 2:14 AM	Have better widespread hi-speed/fiber optic more available
23	Mar 22, 2010 4:35 PM	Embedded meeting video on meeting or department pages
24	Mar 23, 2010 1:37 PM	Use the COB website to advertise what new videos are available- it already there, make it clearer where to find them. Possibly make a drop-down list of what the video's topics are (based on which commission, meeting date, or topic).
25	Mar 23, 2010 6:30 PM	Have a show called "take a walk in bloomington". Put a camera on a guy's head. Have him walk. Don't let him speak. Just walk. Walk trails at Griffey lake. Walk around downtown. Walk walk walk. That way, you could sit at home and explore Bloomington. Don't let him talk.
26	Mar 24, 2010 5:49 PM	as far as I am aware, you can not watch CATS programming online.
27	Mar 27, 2010 3:03 AM	Add more links to CATS
28	Mar 30, 2010 3:10 PM	use CATS to produce short summaries of what happened at city meetings, county meetings, etc.
29	Mar 31, 2010 1:08 AM	More advertising!

Question 26

Question 26

30	Mar 31, 2010 1:53 PM	Same as above: Provide video access to more Boards and Commissions meetings, in addition to those currently recorded. Due to the sheer number of these groups/meetings, I don't believe it is necessary and/or feasible to broadcast more, or many more, "live", but possibly in a pre-recorded manner. It can be difficult to make it to City Hall to attend Boards & Commissions meetings of interest; in addition (for better or for worse...) the public is growing used to having that type of information accessible to them off-site via video access. Also, I am a City staff member and thus am generally aware of what these groups do - more specifically with groups than others - and I believe the public is unaware of a lot of the work of the City that gets done via these Boards & Commissions and that increased access would help in educating the citizenry on the work and the issues being addressed. Increased access to Boards and Commission would also be good for learning purposes -- students sometimes attend one commission meeting for a class project, and they may wish to continue to follow that group and/or other groups to a certain extent after they have been exposed to the work of the commission.
31	Mar 31, 2010 5:46 PM	Help other people who don't have it at all
32	Mar 31, 2010 8:48 PM	better publicize the available options!
33	Mar 31, 2010 10:00 PM	advertising and promotion of current and archived content
34	Apr 1, 2010 2:27 PM	Make people more aware of its existence.
35	Apr 1, 2010 2:28 PM	make sure everyone in town with an internet connection knows about it
36	Apr 1, 2010 2:31 PM	advertise its availability
37	Apr 1, 2010 2:33 PM	The City of Bloomington could make the availability of these online videos more well known by doing some sort of promotion or public service announcements.
38	Apr 1, 2010 3:07 PM	Don't know.
39	Apr 1, 2010 3:17 PM	USE OPEN TV INSTEAD OF CABLE.
40	Apr 1, 2010 3:43 PM	More cowbell!
41	Apr 1, 2010 3:48 PM	no idea
42	Apr 1, 2010 5:01 PM	I wasn't aware of the youtube site - that's a good idea. I'd also like the content to somehow be searchable by content (people's names, topics, etc).
43	Apr 1, 2010 5:59 PM	For one thing let people know about them. There were a couple of options in 3 above I didn't know existed.

Question 26

Question 26

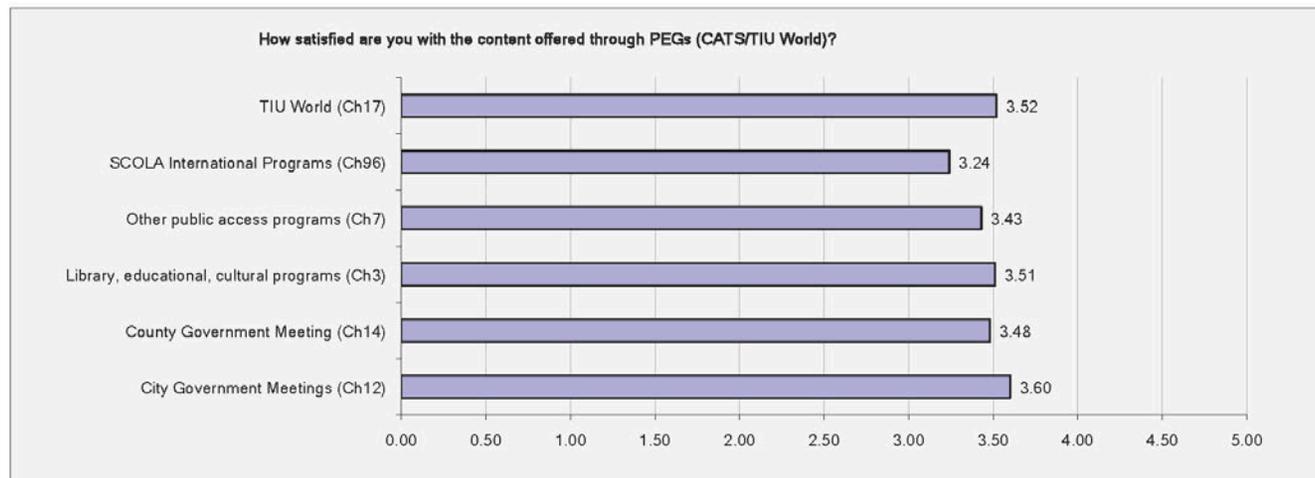
44	Apr 1, 2010 6:04 PM	Publicize more.
45	Apr 1, 2010 8:57 PM	Local advertising campaign through the downtown area (posters, signage, etc), local businesses TVs tuned to stations, etc.
46	Apr 1, 2010 9:48 PM	Make it like a pod-cast that i could automatically download on my ipod and play. i would probably do that.
47	Apr 1, 2010 10:39 PM	Publicize it more in main street areas.
48	Apr 2, 2010 1:35 PM	Go wireless!!!
49	Apr 3, 2010 2:37 PM	Some of the things I answered "never" I would be ineterested in but had never heard of. Need better notification, single point of information -- "open government" site? Would be interested in helping with this.
50	Apr 3, 2010 3:46 PM	Increase the profile of these services. Didn't know they existed.

Question 26

Question 27

Video Services User Survey

How satisfied are you with the content offered through PEGs (CATS/TIU World)?							
Answer Options	Very Dissatisfied		Indifferent		Very Satisfied	Rating Average	Response Count
City Government Meetings (Ch12)	4	2	79	42	32	3.60	159
County Government Meeting (Ch14)	4	2	95	30	28	3.48	159
Library, educational, cultural programs (Ch3)	3	4	86	35	27	3.51	155
Other public access programs (Ch7)	3	2	101	26	25	3.43	157
SCOLA International Programs (Ch96)	2	1	124	10	16	3.24	153
TIU World (Ch17)	3	0	93	35	26	3.52	157
<i>answered question</i>							159
<i>skipped question</i>							41



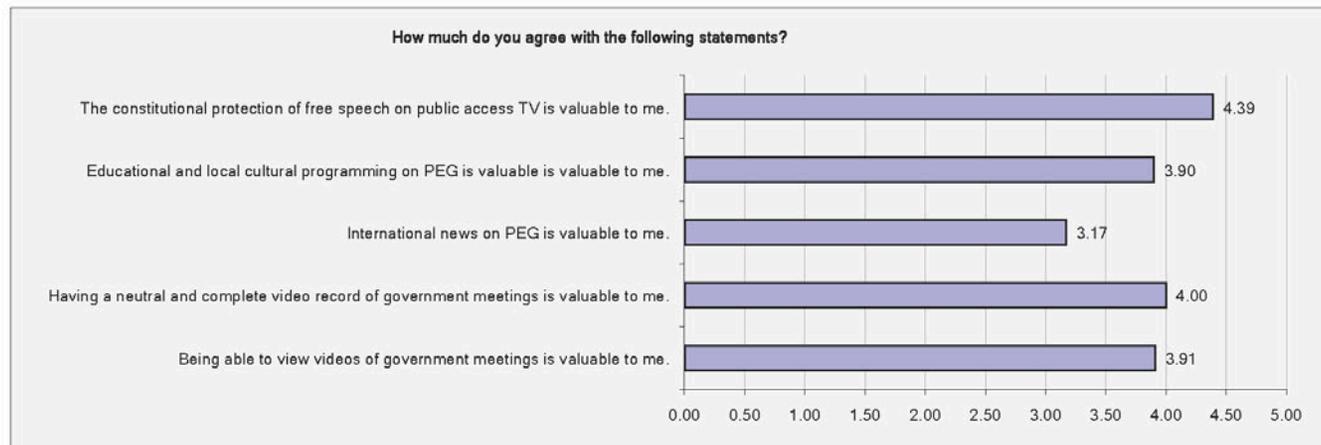
Question 27

Question 28

Video Services User Survey

How much do you agree with the following statements?

Answer Options	Strongly Disagree		Indifferent		Strongly Agree	Rating Average	Response Count
to me.	4	14	34	50	60	3.91	162
meetings is valuable to me.	6	9	29	53	65	4.00	162
International news on PEG is valuable to me.	11	19	79	35	17	3.17	161
valuable is valuable to me.	3	6	46	58	50	3.90	163
TV is valuable to me.	3	4	23	29	103	4.39	162
<i>answered question</i>							163
<i>skipped question</i>							37



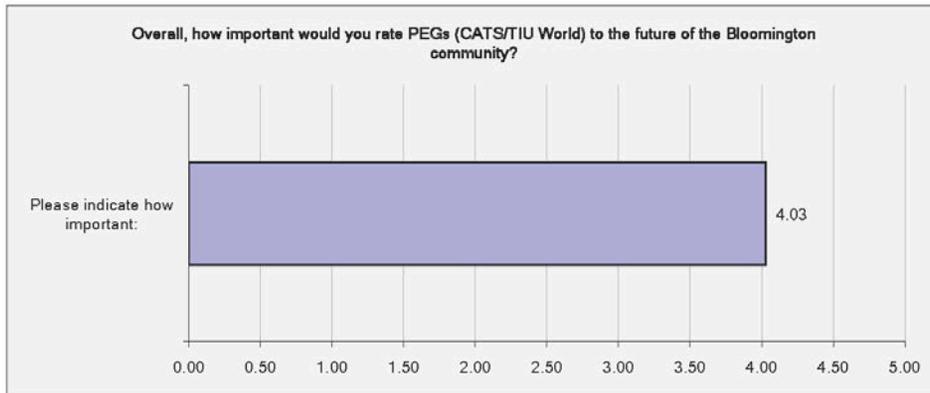
Question 28

Question 29

Video Services User Survey

Overall, how important would you rate PEGs (CATS/TIU World) to the future of the Bloomington community?

Answer Options	Extremely unimportant	Unimportant	Neutral	Important	Extremely important	Rating Average	Response Count	
Please indicate how important:	2	7	22	39	45	4.03	115	
							<i>answered question</i>	115
							<i>skipped question</i>	85



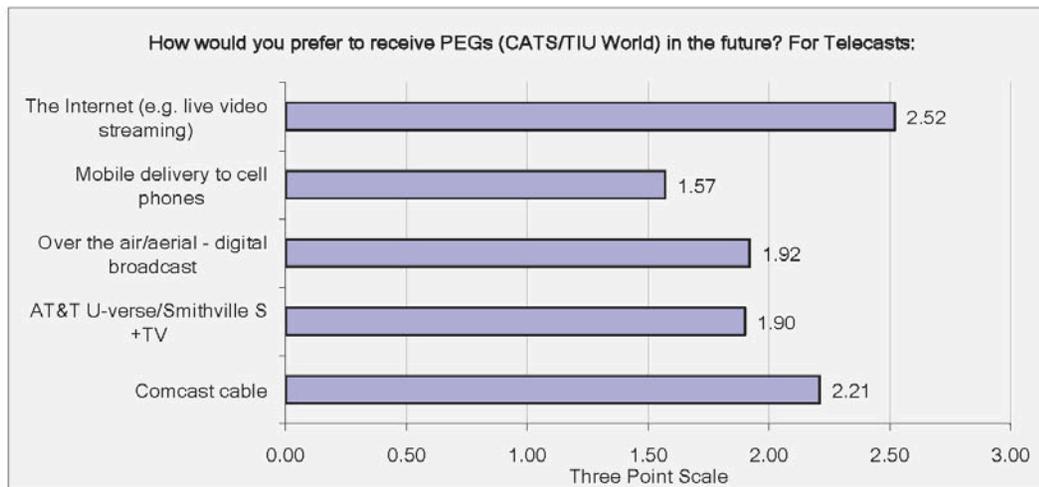
Question 29

Question 30

Video Services User Survey

How would you prefer to receive PEGs (CATS/TIU World) in the future? For Telecasts:

Answer Options	Least Preferred		Most Preferred	Rating Average	Response Count
Comcast cable	37	44	68	2.21	149
AT&T U-verse/Smithville S+TV	48	53	34	1.90	135
Over the air/aerial - digital broadcast	46	56	35	1.92	137
Mobile delivery to cell phones	69	60	9	1.57	138
The Internet (e.g. live video streaming)	13	45	89	2.52	147
<i>answered question</i>					160
<i>skipped question</i>					40



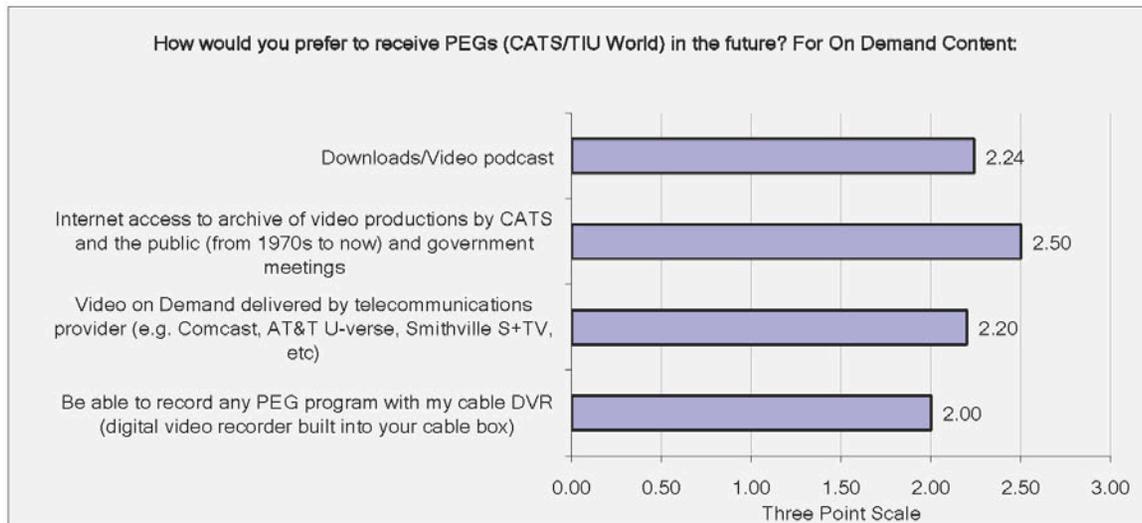
Question 30

Question 31

Video Services User Survey

How would you prefer to receive PEGs (CATS/TIU World) in the future? For On Demand Content:

Answer Options	Least preferred		Most preferred	Rating Average	Response Count	
(digital video recorder built into your cable box)	35	69	35	2.00	139	
(e.g. Comcast, AT&T U-verse, Smithville S+TV, etc)	23	68	52	2.20	143	
the public (from 1970s to now) and government meetings	12	50	85	2.50	147	
Downloads/Video podcast	28	53	62	2.24	143	
					answered question	151
					skipped question	49



Question 31

Question 32

Video Services User Survey

What kinds of programming would you suggest adding to the PEG channel lineup?		
Answer Options	Response Count	
	28	
<i>answered question</i>	28	
<i>skipped question</i>	172	

Number	Response Date	Response Text
1	Mar 12, 2010 2:27 PM	More local arts programming - concerts, interviews
2	Mar 12, 2010 2:51 PM	I want to see more community-produced content. Not just government meetings, but take the spectrum of possible media entertainment and encourage the community to produce it. I want not just imitative productions, but wholly new home-grown ideas. PEG should reflect the community that consumes it. The idea is that it should be a more-perfect mirror. WFHB is a good example of what PEG could become (in television, rather than radio).
3	Mar 12, 2010 2:52 PM	Is there any way to get the French Newscast on TIU World subtitled again?
4	Mar 12, 2010 3:14 PM	Discuss upcoming local events
5	Mar 12, 2010 3:18 PM	Well-edited overviews of lengthy meetings (with an option to view and SEARCH unedited video, too) would be valuable. I would prefer shorter clips that are topic-focused rather than a longer overview of everything.
6	Mar 12, 2010 3:18 PM	more coverage of local non-for-profit events.
7	Mar 12, 2010 6:04 PM	more community coverage of events, fairs, "quirks" of bloomington that is implemented by CATS staff. So as not to rely soley on entries from public.
8	Mar 12, 2010 6:05 PM	don't know.
9	Mar 12, 2010 7:22 PM	More professional local TV service from local TV stations, not the county library.

Question 32

Question 32

10	Mar 12, 2010 9:02 PM	love the international news..maybe more animal behavior including domesticated animals ie. on dog breeds; cat breeds;
11	Mar 12, 2010 9:04 PM	cultural including music and dance Different events around Bloomington.
12	Mar 13, 2010 12:28 AM	5-minute 'summary highlight reel' of public meetings in the form of a podcast.
13	Mar 13, 2010 11:42 AM	local people that make a difference
14	Mar 18, 2010 6:43 AM	Community events, or maybe a locally produced local news show
15	Mar 20, 2010 1:51 PM	Programming that gives general information about the channels and what's on the channels, Local news, local arts, local tourism
16	Mar 20, 2010 5:52 PM	Religious ones!! :-) For starters.....It would be FABULOUS to see our local churches take turns to have their Sunday services taped and aired! Do you have any idea how many home-bound folks there are in Blgtn? It's a LOT. And do you realize how many wont attend church because they dont think they can? There's more than you realize! So much is offered on PEG except God... so having aired church services would be awesome! Everyone should have the choice to see that. How about televising the mcpl's programs they hold in their auditorium? Many families/kids can't get out, or have transportation, etc... to see and experience such great things. It would be nice if more library events/shows were shown on tv....CATS is right there and can live-feed it or record it to show a few days later or something like that. Its amazing to me of how many parents I know that they had no idea our library even has a website, and that they can put things on hold online, see the calendar of events online, etc... We live in a tech world,but not all of us are tech-adept to know how to even use what is available to us. How about a program that shows our town and all it offeres; the music scene, the shops, restaurants, our schools, activities outside and in, the playhouses, theaters, parks, hotels, local services, etc.... There are thousands of people that travel to Blgtn every month/year for sports, college activities, etc... that may not even know what we have to offer. So lets show them! :-) Bet tourism & relocations, and college enrollment would increase!
17	Mar 21, 2010 11:50 AM	Live events - like Lotus downtown - seeing the actual parade and crowds

Question 32

Question 32

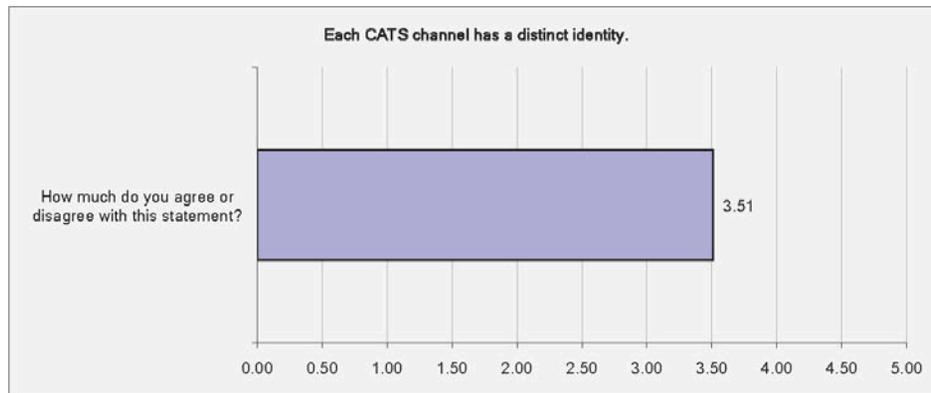
18	Mar 21, 2010 5:46 PM	More local arts programming would be great (especially out-of-town live music, if the artist(s) give consent).
19	Mar 23, 2010 6:32 PM	The Walk around Bloomington Program, in which I just bought and sold you on. It's a great idea. I would watch that joker hike Griffey Lake all day, as long as he can't talk.
20	Mar 24, 2010 5:51 PM	I really enjoyed (when I had cable) being able to watch cultural event broadcasts (rebroadcasts) on CATS - live concerts and Bloomington community member generated content.
21	Mar 27, 2010 3:08 AM	Live MCCSC Board meetings
22	Mar 31, 2010 2:07 PM	One thought would be - and I haven't yet checked out the programming associated with the new website campaign for enticing business relocations to Bloomington (the title of which escapes me at the moment), is programming similar to the segment of the City Council in which departments report to the council on their activities, events, accomplishments, etc. during Mayor Kruzan's time. This could be expanded in the future to programming that does not just provide an overview of what is presented but more details, pictures and video from an event, interviews with participants of a seminar or workshop, etc.
23	Mar 31, 2010 5:47 PM	I don't think any one should waych anything that is not good
24	Apr 1, 2010 2:18 PM	How to projects
25	Apr 1, 2010 2:34 PM	Help people produce videos to promote grassroots efforts such as rallying to save schools or raise awareness of particular issues.
		more local arts events. maybe partner with wfhb to do a local music talk show?
26	Apr 1, 2010 2:36 PM	More variety on the public channel.
27	Apr 1, 2010 3:48 PM	Cage matches where Steve Volan takes on a different Glenn Beck fanatic each week. Except Steve would have a chain saw, and the Glenn Beck fanatics would be tied to a chair. For audio, add Jim Nabors singing "Nearly My Lord to Thee".
28	Apr 3, 2010 3:49 PM	Something that is a hybrid of local news programming and news analysis - don't recreate a cable show but something that focuses solely on local Bloomington news and information.

Question 32

Question 33

Video Services User Survey

Each CATS channel has a distinct identity.							
Answer Options	Strongly disagree		Indifferent		Strongly agree	Rating Average	Response Count
How much do you agree or disagree with this statement?	5	11	63	48	25	3.51	152
	<i>answered question</i>						152
	<i>skipped question</i>						48

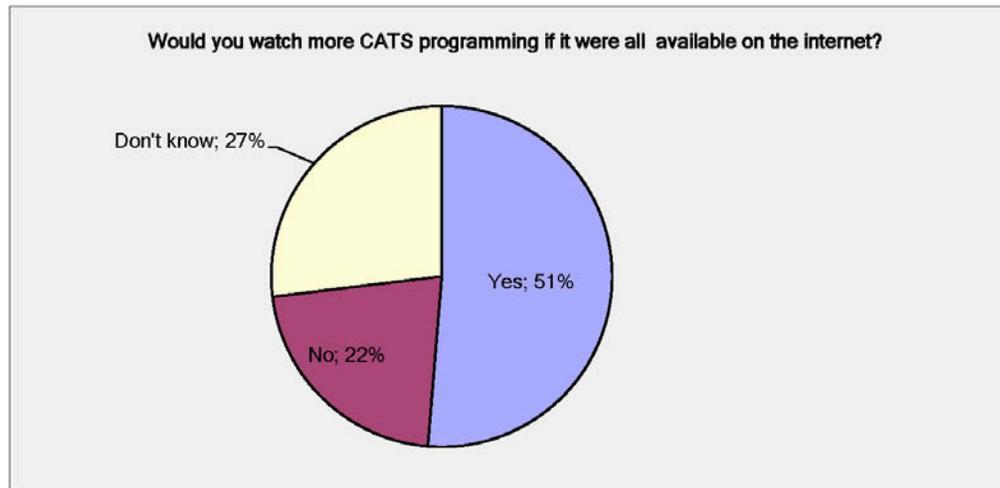


Question 33

Question 34

Video Services User Survey

Would you watch more CATS programming if it were all available on the internet?		
Answer Options	Response Percent	Response Count
Yes	51.3%	80
No	21.8%	34
Don't know	26.9%	42
<i>answered question</i>		156
<i>skipped question</i>		44

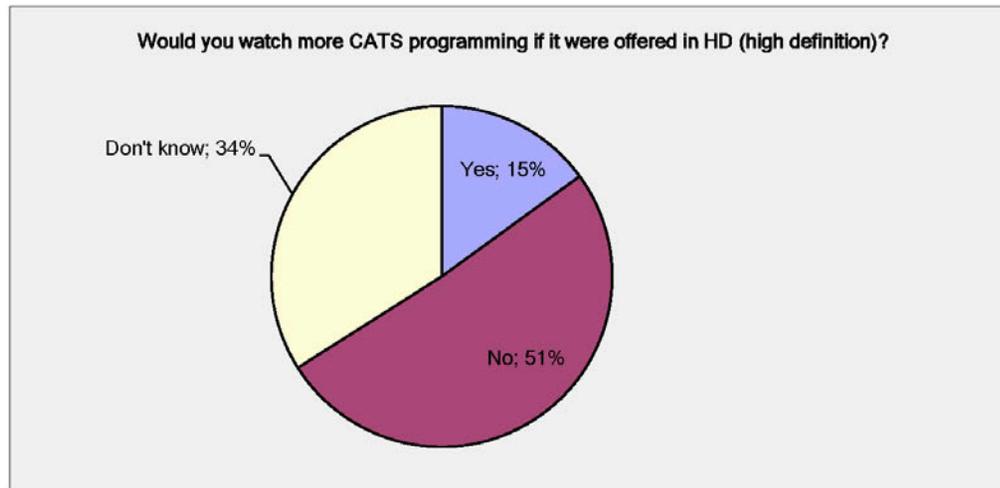


Question 34

Question 35

Video Services User Survey

Would you watch more CATS programming if it were offered in HD (high definition)?		
Answer Options	Response Percent	Response Count
Yes	15.0%	23
No	51.0%	78
Don't know	34.0%	52
<i>answered question</i>		153
<i>skipped question</i>		47



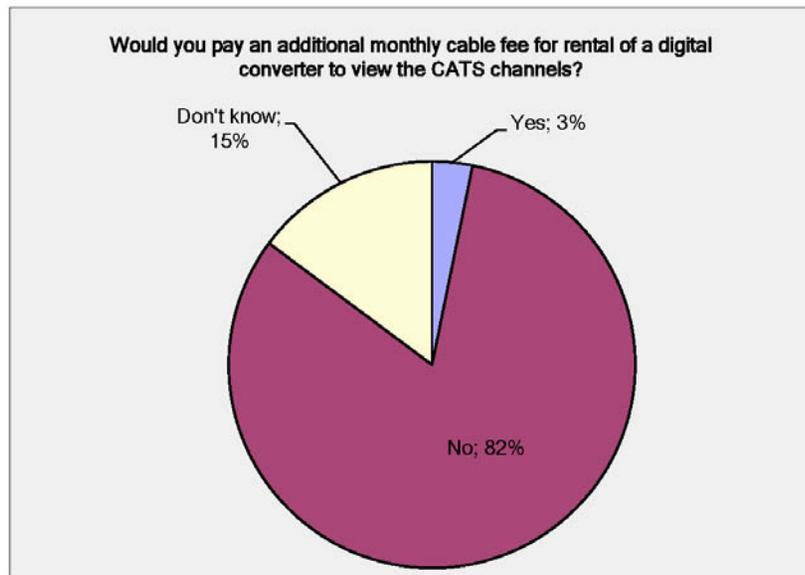
Question 35

Question 36

Video Services User Survey

Would you pay an additional monthly cable fee for rental of a digital converter to view the CATS channels?

Answer Options	Response Percent	Response Count
Yes	3.2%	5
No	81.9%	127
Don't know	14.8%	23
		<i>answered question</i> 155
		<i>skipped question</i> 45



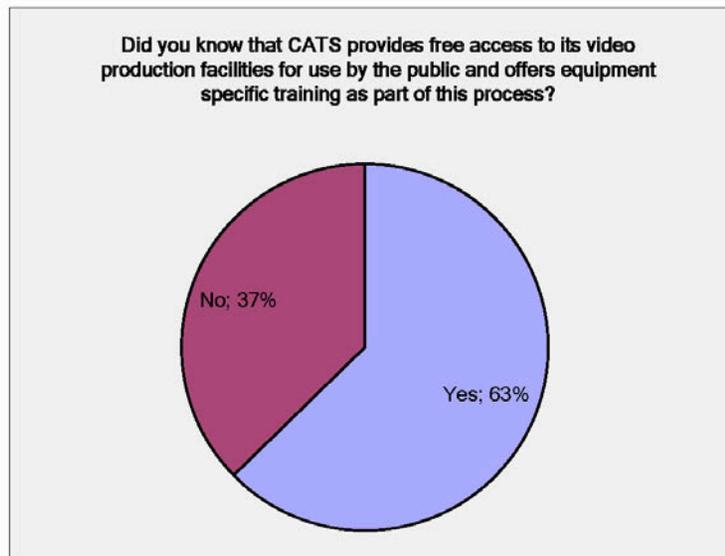
Question 36

Question 37

Video Services User Survey

Did you know that CATS provides free access to its video production facilities for use by the public and offers equipment specific training as part of this process?

Answer Options	Response Percent	Response Count
Yes	62.7%	99
No	37.3%	59
<i>answered question</i>		158
<i>skipped question</i>		42

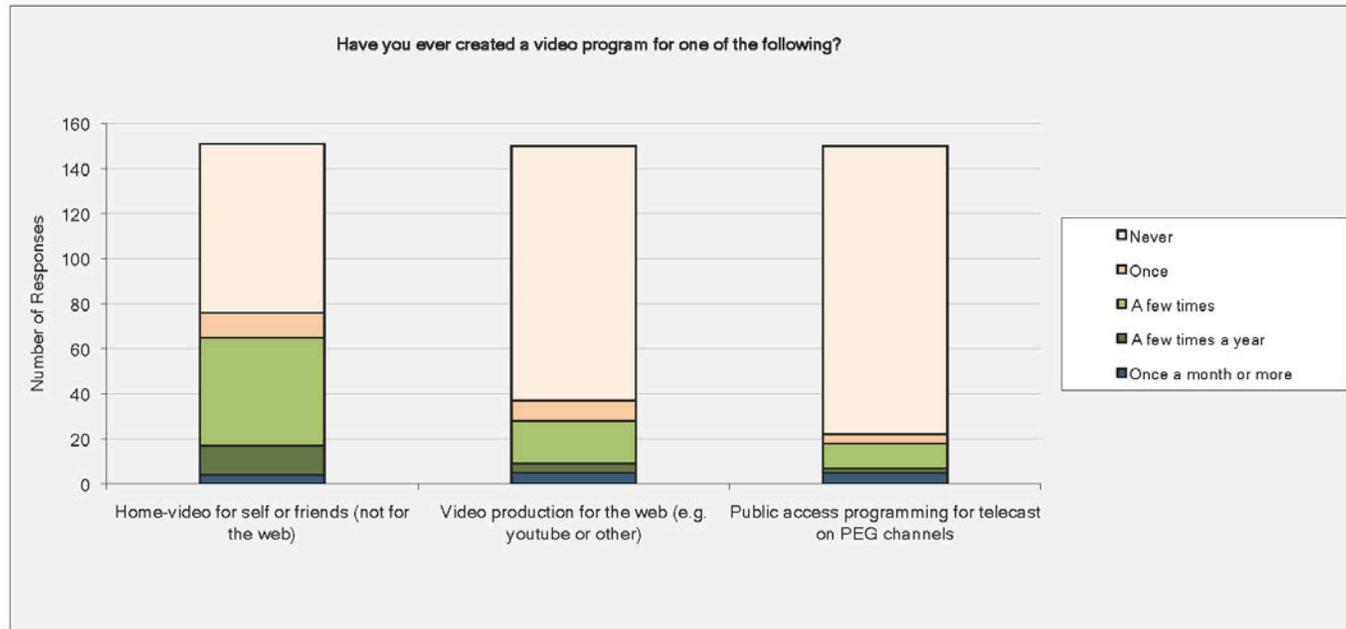


Question 37

Question 38

Video Services User Survey

Have you ever created a video program for one of the following?						
Answer Options	Never	Once	A few times	A few times a year	Once a month or more	Response Count
Home-video for self or friends (not for the web)	75	11	48	13	4	151
Video production for the web (e.g. youtube or other)	113	9	19	4	5	150
Public access programming for telecast on PEG channels	128	4	11	2	5	150
<i>answered question</i>						152
<i>skipped question</i>						48



Question 38

Question 39

Video Services User Survey

How likely are you to produce the following video programs in the future?					
Answer Options	Very likely	Somewhat likely	Somewhat unlikely	Very unlikely	Response Count
Home-video for self or friends (not for the web)	33	41	20	56	150
Video production for the web (e.g. youtube or other)	22	31	28	69	150
Public access programming for telecast on PEG channels	16	21	30	83	150
Tell us why? (optional)					27
				<i>answered question</i>	150
				<i>skipped question</i>	50

Number	Response Date	Tell us why? (optional)
1	Mar 12, 2010 2:54 PM	At the moment, I don't have any production plans. That doesn't change my enthusiasm to encourage others to create such productions.
2	Mar 12, 2010 3:20 PM	I like the idea of local access, with the potential to do creative entertainment shows, but I don't have time in my life for that kind of production.
3	Mar 12, 2010 6:07 PM	if it somehow fit into the work I do for my job...maybe to promote my programs.
4	Mar 12, 2010 8:09 PM	I'm an enthusiast
5	Mar 12, 2010 9:08 PM	am rather private but would enjoy doing a public program on a NFO or something of the like.
6	Mar 13, 2010 11:43 AM	How To care for various reptiles and amphibians
7	Mar 18, 2010 10:23 PM	I work for CATS....I pretty much have to produce programming for telecast on PEG channels.
8	Mar 20, 2010 6:01 PM	Don't know how, don't have the equipment, and dont know what you mean by "public access programming for telecast on PEG channels"....how can the public do that? There's WAY more non-tech folks out there than you may realize.
9	Mar 23, 2010 6:37 PM	No time. No interest. I consume. I don't create.
10	Mar 29, 2010 2:31 AM	I just dont see myself making videos but i think the opportunity is good to have.
11	Mar 30, 2010 3:12 PM	I am "SO" not that interesting.

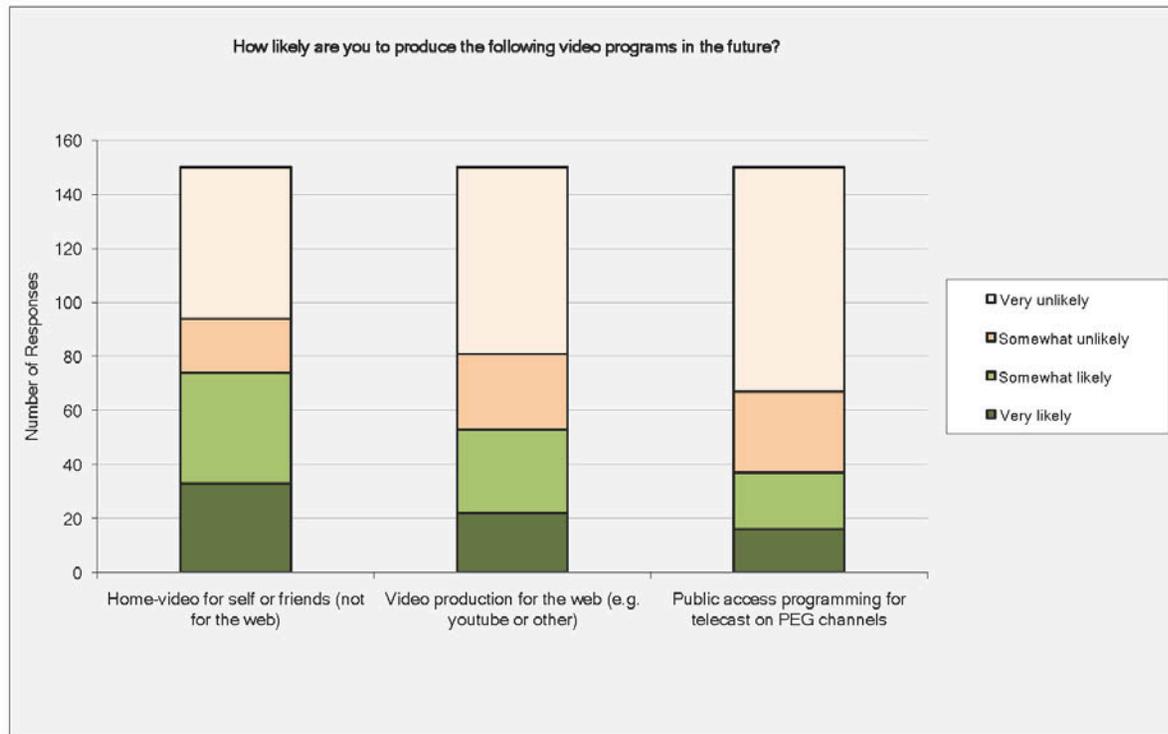
Question 39

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12	Mar 31, 2010 1:14 AM	I have some ideas to share! But first I have to watch!
13	Mar 31, 2010 2:11 PM	At this point in time, as a single mother of an elementary school-aged child with a full-time career, I do not see myself taking on this additional activity. As for later... who knows!
14	Mar 31, 2010 2:24 PM	CATS provides equipment, editing, and staff support and a venue to the community's viewing audience. The process is easy, unfettered, and free. There is no other opportunity for the community to create television or express opinions in this media format. This is a most unique opportunity and CATS has a history of managing its programming and access with a true understanding of community access. It's one of the best in the nation.
15	Mar 31, 2010 4:48 PM	no way to record video
16	Mar 31, 2010 5:49 PM	I think its bad to watch stuff that can make you cry
17	Apr 1, 2010 2:21 PM	Not interested at this time.
18	Apr 1, 2010 2:39 PM	I think that the public PEG channel is a great resource to display creative programs through freedom of speech. It is also just great to see something you created on television and know that others throughout the community could be watching.
19	Apr 1, 2010 3:04 PM	I do some children's programming for the library
20	Apr 1, 2010 5:04 PM	Don't have time/inclination.
21	Apr 1, 2010 5:15 PM	Not very interested at this time, but maybe in the future.
22	Apr 1, 2010 6:03 PM	Lack of time is really the only reason.
23	Apr 1, 2010 8:17 PM	I'm boring and I can't possibly imagine an audience that would be interested in watching me galavant around like some kind of loser spouting non-sequiturs and embarrassing myself. I like having the option of doing this, though.
24	Apr 2, 2010 2:59 AM	no interest.
25	Apr 2, 2010 1:09 PM	it is not something that interests me
26	Apr 2, 2010 3:57 PM	I am not familiar with how to do this
27	Apr 3, 2010 3:51 PM	Creating video, with no experience, is an investment of time I don't have. Would love to see more local news programming.

Question 39

Question 39



Question 39

Question 40

Video Services User Survey

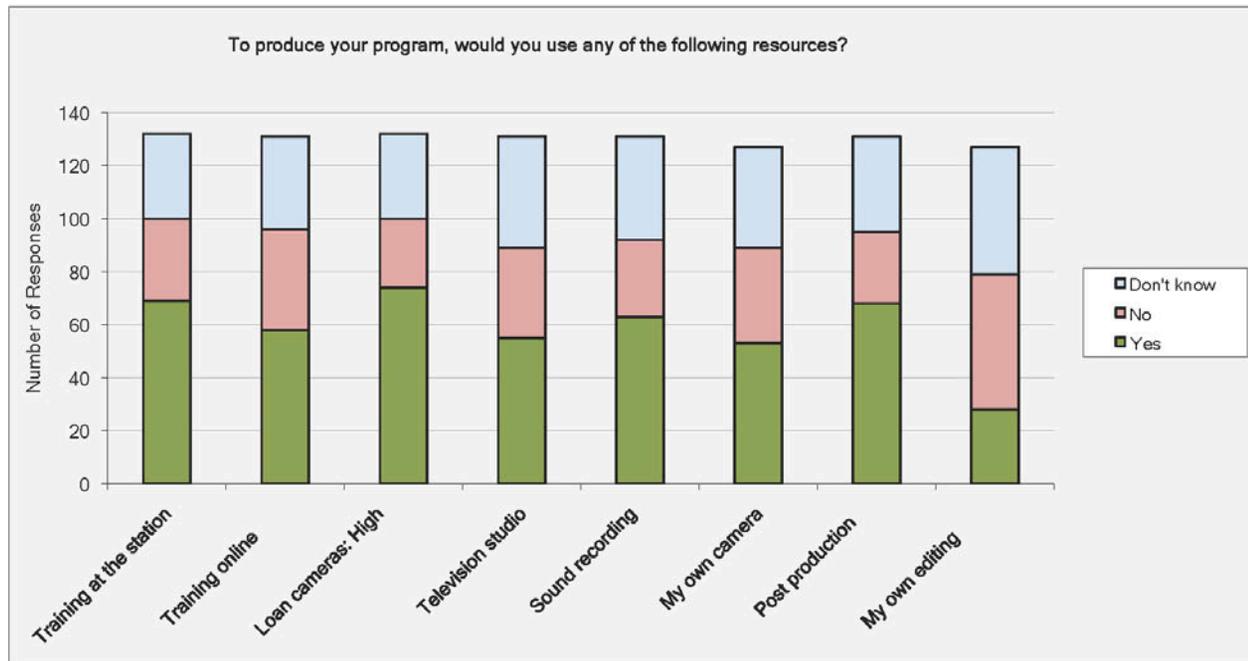
To produce your program, would you use any of the following resources?				
Answer Options	Yes	No	Don't know	Response Count
Training at the station	69	31	32	132
Training online through CATS website	58	38	35	131
Video	74	26	32	132
Television studio	55	34	42	131
Sound recording equipment	63	29	39	131
My own camera	53	36	38	127
Post production equipment (editing software) at CATS	68	27	36	131
My own editing software at home (please specify below):	28	51	48	127
If you do, please let us know what type of video editing software you use at home:				21
<i>answered question</i>				133
<i>skipped question</i>				67

Number	Response Date	If you do, please let us know what type of video editing software you use at home:
1	Mar 12, 2010 2:54 PM	If I do video editing at home, I'm likely to find a FOSS solution due to legal and cost reasons.
2	Mar 12, 2010 3:16 PM	iMovie
3	Mar 12, 2010 3:21 PM	Apple iMovie & iDVD
4	Mar 12, 2010 3:30 PM	Final Cut Pro
5	Mar 12, 2010 7:25 PM	iMovie
6	Mar 20, 2010 1:54 PM	Final Cut Pro, iMovie, Windows Media
7	Mar 20, 2010 6:01 PM	I may have it but just have no idea whats available to me.
8	Mar 21, 2010 10:29 PM	sony movie studio
9	Mar 22, 2010 2:18 AM	Avid/Final Cut Pro HD formats
10	Mar 22, 2010 5:53 PM	Adobe Premiere Elements
11	Mar 23, 2010 1:41 PM	Apple iMovie
12	Mar 23, 2010 2:11 PM	adobe
13	Mar 24, 2010 5:53 PM	I have used iMovie
14	Mar 30, 2010 12:47 AM	Windows Live Movie Maker
15	Mar 31, 2010 2:11 PM	None, although there may be a package on my computer of which I am not aware.

Question 40

Question 40

16	Mar 31, 2010 10:05 PM	Not at home but at IU
17	Apr 1, 2010 5:05 PM	iMovie
18	Apr 1, 2010 5:15 PM	none
19	Apr 1, 2010 5:23 PM	husband has video editing equipment
20	Apr 1, 2010 6:03 PM	None currently, but if I produced I would install
21	Apr 4, 2010 12:23 AM	iMovie, Final Cut Pro, Pencil 2.0,



Question 40

Question 41

Video Services User Survey

Is there any other equipment or service not mentioned above that CATS could provide to help you create a video program for PEG telecast:

Answer Options	Response Count
	14
<i>answered question</i>	14
<i>skipped question</i>	186

Number	Response Date	Response Text
1	Mar 12, 2010 2:55 PM	Having not started yet but planning to offer training videos as part of our department at work, I don't know what it is I need to know.
2	Mar 12, 2010 3:16 PM	no
3	Mar 12, 2010 6:07 PM	no.
4	Mar 12, 2010 7:25 PM	No
5	Mar 12, 2010 9:08 PM	no
6	Mar 20, 2010 1:54 PM	Worthless question
7	Mar 20, 2010 6:01 PM	Assistants
8	Mar 21, 2010 10:29 PM	No
9	Mar 31, 2010 2:11 PM	Not that I can think of.
10	Mar 31, 2010 2:24 PM	more staff for technical support, to help create programs, and to cover community meetings and events.
11	Mar 31, 2010 5:49 PM	It's not a good ideal to watch cats on tv
12	Mar 31, 2010 10:05 PM	Again advertising and promotion of CATS facilities and equipment.
13	Apr 1, 2010 2:39 PM	lighting equipment
14	Apr 4, 2010 12:23 AM	HD camera's, Schoeps + Neumann + Telefunken microphones, or microphone packages, Field Recorders that record straight to a hard drive i.e. the Sound Devices or similar. Portable lighting kits/ generators.

Question 41

Question 42

Video Services User Survey

Please share with us any further thoughts you might have on video services in Bloomington (either through PEG channels or the City)?			
Answer Options		Response Count	
		42	
<i>answered question</i>		42	
<i>skipped question</i>		158	

Number	Response Date	Response Text
1	Mar 12, 2010 2:58 PM	I am moving out of the city, into the county soon. My only option I think is satellite. I have no idea what I am getting into with that type of service or what I have for internet. I would love to stillhav the options I have on cable.
2	Mar 12, 2010 3:16 PM	none
3	Mar 12, 2010 3:22 PM	Keep up the good work and THANKS for all you already offer to our community!
4	Mar 12, 2010 3:25 PM	Please show sustainable bandwidth uses so we can get google gigabit service.
5	Mar 12, 2010 4:13 PM	CATS has problems when videotaping live concerts - the audio and video are not in sync on CATS-produced DVDs of the concerts.
6	Mar 12, 2010 6:08 PM	I think its all great. I would like to see more of a journalistic reporting component added to CATS programming that covers more than City adn County meetings.
7	Mar 12, 2010 8:10 PM	I think that CATS plays a vital role in the political health of our community. An addition it enriches our lives with cultural programming.
8	Mar 12, 2010 9:16 PM	how about a channel that airs the schedule for all local stations for the day...maybe 2+x a day. Some of them just show the same written ads repeatedly or the adoption animals. Could flash a schedule up there occasionally at a set time.
9	Mar 13, 2010 12:30 AM	Get CATS channels on DishNetwork!
10	Mar 13, 2010 11:43 AM	Keep up the great work
11	Mar 14, 2010 2:40 PM	I pay PEG fees to ATT and cannot receive Monroe County Programing. I am not happy with this arrangement. I have contacted ATT without any progress.

Question 42

Question 42

12	Mar 15, 2010 11:41 PM	I do not watch regularly, but I am very glad these channels are available. I am not now a cable TV subscriber, but am investigating subscription options mostly to have ability to watch CATS channels and other local televisions stations.
13	Mar 16, 2010 6:34 PM	Thank you. I like to watch archived government meetings via the CATS website, but find it hard to do so because the meetings are so slow to load and freeze up.
14	Mar 18, 2010 6:47 AM	I wish that the library would make comcast list the programs on the tv schedule. It would make it easier to record coounty and city meetings using the comcast dvr.
15	Mar 18, 2010 10:24 PM	Not being able to see which programs are playing when on the CATS channels on my TV in the guide is the most frustrating part of trying to view them at home. Since the community calendar is on between government meetings, it's hard to tell if there's a program coming on soon or not.
16	Mar 20, 2010 1:55 PM	We are blessed to have a public library that guarantees open access to PEG.

Question 42

Question 42

17	Mar 20, 2010 6:12 PM	GET THE WORD OUT! :-) The majority of Blgtn is not under 30 or in school...we're the older generations, where some of us never saw a computer till college, and other never knew of them till through grandkids...and it's not easy to learn. Im in my late 40's and know a lot of how to use a computer, but my college-age kid has to teach me out to download music to my mp3, etc.... but some, like her grandparents-some dont even own a cell phone or answering machine! Lol Blgtn is filled with people that have NO idea this stuff even exist's! I knew of our local channels, but didnt know that we have websites to our gov's meetings, or that we even had our own youtube site! OH-I just thought of something...but maybe should have written it in a previous section, but...what about a tv cooking demo show....see if "Goods for Cooks" can do a show about how to use some kitchen tools, gadgets, etc... And how about taping local bus's in what they specialize in, like going to the Bakehouse and showing all the diff breads, what to use them for, etc... How about filming the Farmers Mkt on Sat's and Tues's... You'd be floored as to how many people dont know you or any of these services even exist....so, GET THE WORD OUT! Thanks for the survey, for taking time to read this, and for caring enough to ask all these questions. Bless You!♥
18	Mar 21, 2010 11:52 AM	No but thanks for asking
19	Mar 21, 2010 4:13 PM	when i am interested in a city council meeting topic or city meeting topic, i usually go to the meeting myself or find out how it went from a friend who attends. our tv is only for watching dvds--we don't have cable or a digital receiver. tv issues like this aren't very important to me though i do see how others could rely heavily on access to them (inability to attend meetings b/c of work, home-bound, etc).
20	Mar 22, 2010 2:19 AM	Michael White- just keep CATS going for the future
21	Mar 22, 2010 11:49 AM	You're invaluable to us.
22	Mar 23, 2010 1:26 PM	I am glad these services are provided for those that are indeed interested.
23	Mar 24, 2010 5:54 PM	Once again, I would love to watch CATS programming, but since I do not have cable at home and since CATS does not offer their programs online, I am not able to.
24	Mar 27, 2010 3:11 AM	Shorter surveys
25	Mar 30, 2010 3:13 PM	I like CATS. Wish there were a cost-effective way to give it a higher profile.

Question 42

Question 42

26	Mar 31, 2010 1:15 AM	I went to CATS to volunteer last week, and there was no one at the desk, so I found someone, and they attempted to dig out volunteer forms, but none could be found. CATS is clearly in need of volunteers, and I think it would be valuable to leave volunteer forms and pens on the counter in the reception area.
27	Mar 31, 2010 3:17 PM	I believe that the City - in conjunction with CATS - is doing an excellent job in this arena, and that if one were to compare the City's video services with other cities of comparable size - or larger cities - across the nation that we would find ours to be superior in both access and breadth of coverage. I appreciate efforts to improve video services with time, technological developments, and the lowered cost and increased access that will lead to more citizens presumably having access to these services via the Internet (presuming easier and less costly access to having computers in their homes). Thank you!
28	Mar 31, 2010 5:49 PM	I don't think anyone should watch cats because it don't make sense
29	Apr 1, 2010 2:22 PM	Airing local government meetings should continue.
30	Apr 1, 2010 2:34 PM	Cats is a very valuable service to our community; we are lucky to have it
31	Apr 1, 2010 2:36 PM	I think CATS provides an invaluable service in that local politicians accountable for their actions. Even if there isn't a high viewership per se I am glad to know CATS is there - and that if I feel that I missed something big I can get a copy.
32	Apr 1, 2010 2:42 PM	I very much enjoy the PEG channels, but am unable to watch them on television at my apartment because my complex only uses Dish Network. I am pleased that I am still able to watch the channels at friends' houses who have Comcast and see the government meetings online, but I would like to see the PEG channels be available to all Monroe County Residents who have ANY kind of television service.
33	Apr 1, 2010 3:39 PM	I Watch quite a bit of the programming offered on that CATS channels. I'm quite sure I watch more that probably 95+ percent of the rest of television watchers. I watch 2-3 hr. of television per day (more in the Winter) and I would divided my time up in the following way 33% regular TV like Lost, Syfy Channel; 25% CSPAN and Non Fiction TV (CSPAC2); 25% PBS and CABLE News)MSNBC,FOX,CNN, and 18% CATS. I like watching Monroe County City Council, Zoning Board, Library Board, Lotus Music Festival on Thursday Nights, Arts Shocase on channel 3, and stuff done by local people on Channel 7.

Question 42

Question 42

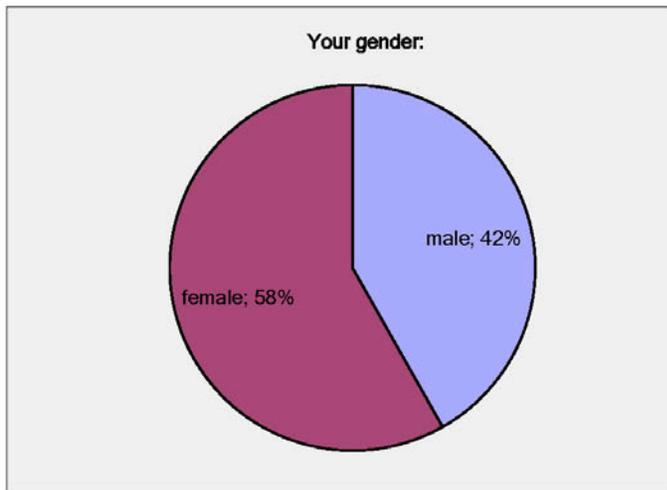
34	Apr 1, 2010 4:39 PM	I would watch more if programming was available through my provider, DirecTV
35	Apr 1, 2010 5:05 PM	I don't use CATS much, but it is a really important resource for the community. It is a historical record for all of our community meetings.
36	Apr 1, 2010 5:17 PM	Although I do not have TV or Internet access at home, I do think these video services are important.
37	Apr 1, 2010 5:23 PM	It's a wonderful thing, that is very creative, and needs to be supported!
38	Apr 1, 2010 9:52 PM	would be nice if i could get them over the air - could be very short-range transmission.
39	Apr 1, 2010 10:42 PM	Happy overall with video services. I like the interviews on the street asking citizens topical questions.
40	Apr 2, 2010 3:00 AM	Just that easy access to broadcast of public meetings is vital.
41	Apr 3, 2010 2:44 PM	Focus on delivery of information and records to improve local governance and decision making. International news and other info are secondary. Providing facilities and equipment are not important to me personally, but I understand the value of giving voice to other and support it.
42	Apr 4, 2010 12:26 AM	I cannot stress how important C.A.T.S. is to the community. I think that what they are doing is impeccable. I would only ask that they receive more funding to further perfect their approach to community based video production.

Question 42

Question 43

Video Services User Survey

Your gender:		
Answer Options	Response Percent	Response Count
male	41.8%	66
female	58.2%	92
<i>answered question</i>		158
<i>skipped question</i>		42

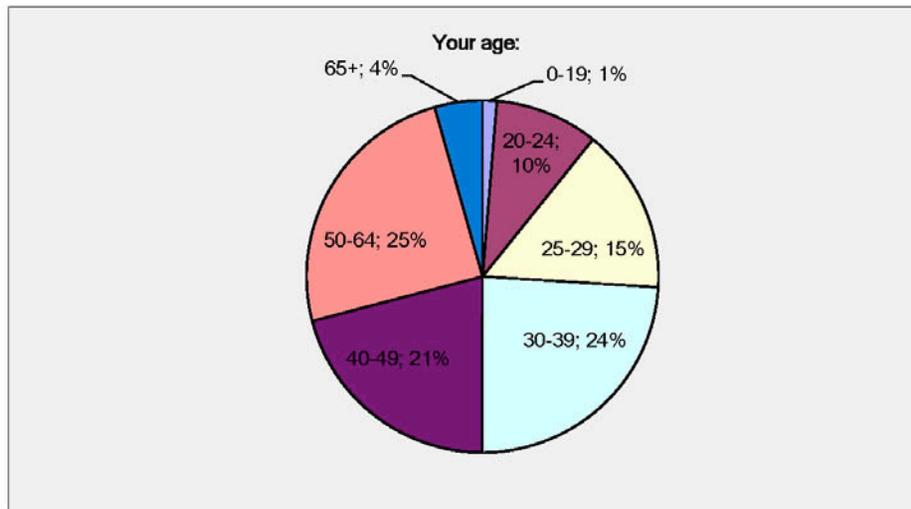


Question 43

Question 44

Video Services User Survey

Your age:		
Answer Options	Response Percent	Response Count
0-19	1.3%	2
20-24	9.5%	15
25-29	15.2%	24
30-39	24.1%	38
40-49	20.9%	33
50-64	24.7%	39
65+	4.4%	7
<i>answered question</i>		158
<i>skipped question</i>		42



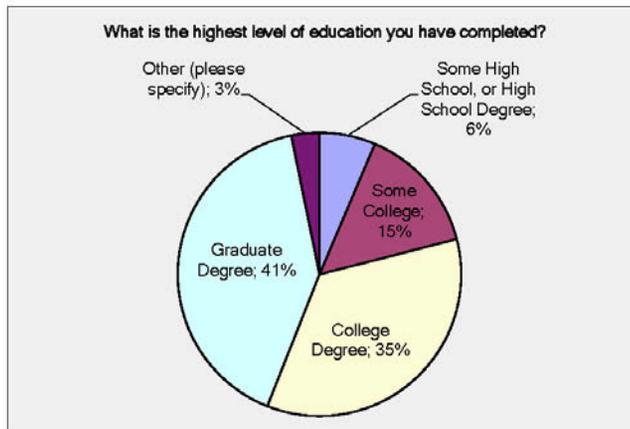
Question 44

Question 45

Video Services User Survey

What is the highest level of education you have completed?		
Answer Options	Response Percent	Response Count
Some High School, or High School Degree	6.4%	10
Some College	14.6%	23
College Degree	35.0%	55
Graduate Degree	40.8%	64
Other (please specify)	3.2%	5
answered question		157
skipped question		43

Number	Response Date	Other (please specify)
1	Mar 24, 2010 5:54 PM	Currently enrolled on a graduate program at IU.
2	Mar 31, 2010 3:19 PM	Master's Degree plus Ph.D. course work and post-graduate studies
3	Apr 1, 2010 3:27 PM	HIGH SCHOOL AND TECH TRAINING
4	Apr 1, 2010 6:04 PM	associates Degree
5	Apr 1, 2010 7:14 PM	currently in graduate school

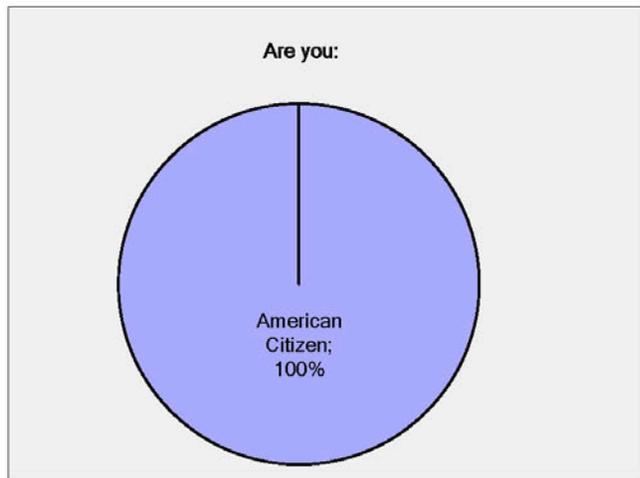


Question 45

Question 46

Video Services User Survey

Are you:		
Answer Options	Response Percent	Response Count
American Citizen	100.0%	155
Permanent Resident (Green Card Holder)	0.0%	0
visitor, etc)	0.0%	0
Other (please specify)	0.0%	0
<i>answered question</i>		155
<i>skipped question</i>		45



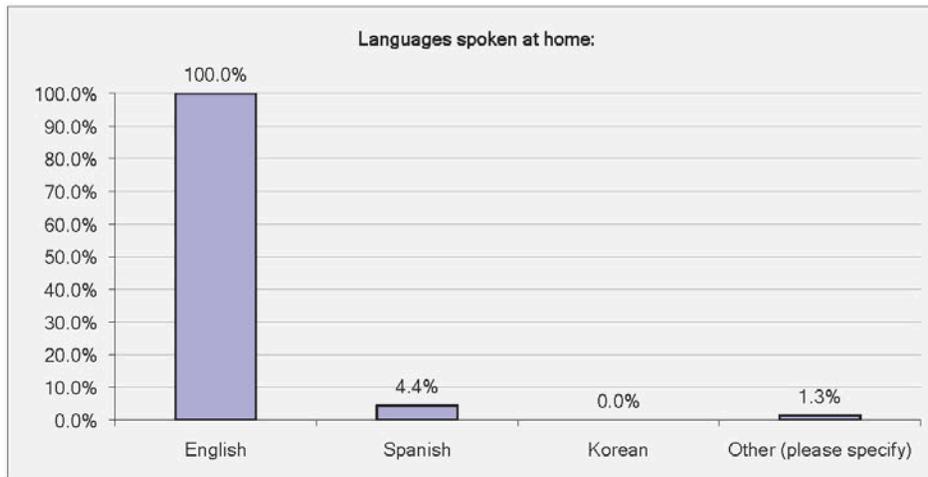
Question 46

Question 47

Video Services User Survey

Languages spoken at home:		
Answer Options	Response Percent	Response Count
English	100.0%	158
Spanish	4.4%	7
Korean	0.0%	0
Other (please specify)	1.3%	2
<i>answered question</i>		158
<i>skipped question</i>		42

Number	Response Date	Other (please specify)
1	Mar 23, 2010 3:15 PM	Portuguese
2	Apr 4, 2010 12:27 AM	Italian

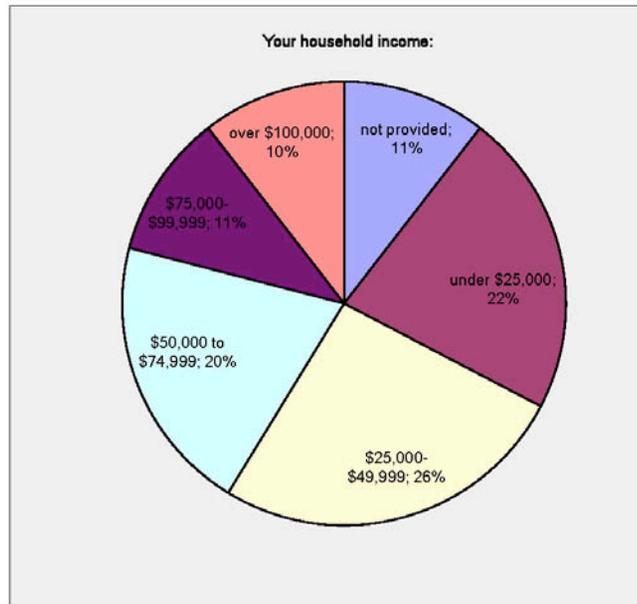


Question 47

Question 48

Video Services User Survey

Your household income:		
Answer Options	Response Percent	Response Count
not provided	10.5%	16
under \$25,000	22.2%	34
\$25,000-\$49,999	26.1%	40
\$50,000 to \$74,999	20.3%	31
\$75,000-\$99,999	10.5%	16
over \$100,000	10.5%	16
<i>answered question</i>		153
<i>skipped question</i>		47



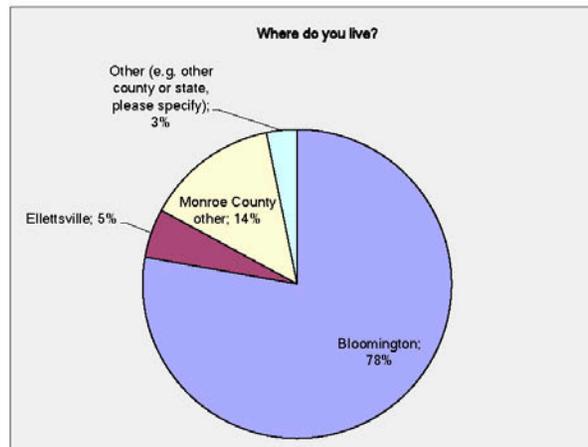
Question 48

Question 49

Video Services User Survey

Where do you live?		
Answer Options	Response Percent	Response Count
Bloomington	77.8%	123
Ellettsville	5.1%	8
Monroe County other	13.9%	22
Other (e.g. other county or state, please specify)	3.2%	5
		<i>answered question</i> 158
		<i>skipped question</i> 42

Number	Response Date	Other (e.g. other county or state, please specify)
1	Mar 23, 2010 2:11 PM	Brown
2	Mar 23, 2010 7:01 PM	chicago
3	Mar 24, 2010 8:03 PM	Owen County
4	Mar 31, 2010 1:16 AM	In keeping with Bloomington's good reputation for queer-friendliness, please add a "Trans" option to the gender question on future surveys :)
5	Apr 2, 2010 2:58 PM	Brown

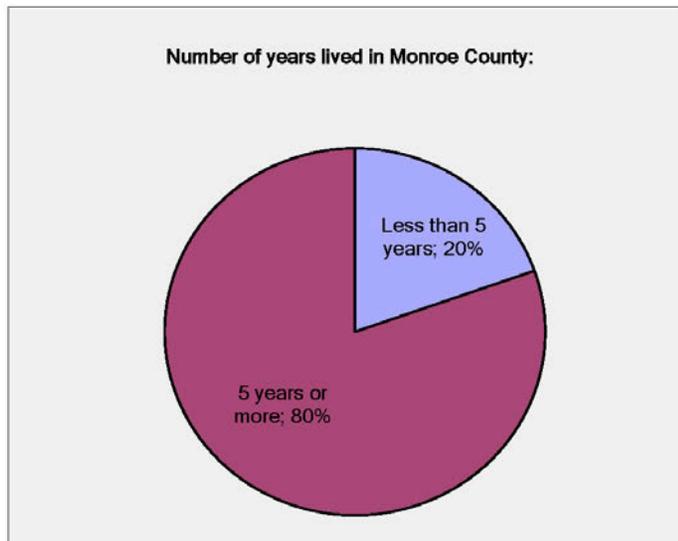


Question 49

Question 50

Video Services User Survey

Number of years lived in Monroe County:		
Answer Options	Response Percent	Response Count
Less than 5 years	19.6%	30
5 years or more	80.4%	123
<i>answered question</i>		153
<i>skipped question</i>		47



Question 50

Video Services User Survey, Cross-Tab Selection

Channels Consumption by Gender

Video Services User Survey

How often do you watch PEGs at home (CATS/TIU World)?				
		Your gender:		
		male	female	Response Totals
City government meeting (Ch12)	Once or more per week	18.2% (12)	6.5% (6)	
	Once or twice a month	13.6% (9)	15.2% (14)	
	A few times per year	31.8% (21)	25.0% (23)	
	Never	36.4% (24)	53.3% (49)	
		66	92	158
County government meeting (Ch14)	Once or more per week	15.2% (10)	2.2% (2)	
	Once or twice a month	12.1% (8)	12.0% (11)	
	A few times per year	25.8% (17)	21.7% (20)	
	Never	47.0% (31)	64.1% (59)	
		66	92	158

Library, educational, cultural programs (Ch3)	Once or more per week	12.1% (8)	5.4% (5)	158
	Once or twice a month	12.1% (8)	17.4% (16)	
	A few times per year	22.7% (15)	33.7% (31)	
	Never	53.0% (35)	43.5% (40)	
		66	92	
Other public access programs (Ch7)	Once or more per week	12.1% (8)	6.5% (6)	158
	Once or twice a month	12.1% (8)	10.9% (10)	
	A few times per year	22.7% (15)	29.3% (27)	
	Never	53.0% (35)	53.3% (49)	
		66	92	
SCOLA international programs (Ch96)	Once or more per week	1.5% (1)	1.1% (1)	158
	Once or twice a month	1.5% (1)	2.2% (2)	
	A few times per year	21.2% (14)	10.9% (10)	
	Never	75.8% (50)	85.9% (79)	

		66	92	158
TIU World, PBS and local content (Ch17)	Once or more per week	31.8% (21)	12.0% (11)	158
	Once or twice a month	15.2% (10)	20.7% (19)	
	A few times per year	16.7% (11)	30.4% (28)	
	Never	36.4% (24)	37.0% (34)	
		66	92	158
	<i>answered question</i>	66	92	158
			<i>skipped question</i>	0

Service Use by Gender

Video Services User Survey

How often do you use the following services to watch PEGs at home (CATS/TIU World)?				
		Your gender:		
		male	female	Response Totals
Comcast cable	Once or more per week	23.4% (15)	13.2% (12)	
	Once or twice a month	15.6% (10)	18.7% (17)	
	A few times per year	15.6% (10)	14.3% (13)	
	Never	45.3% (29)	53.8% (49)	
		64	91	155
Internet streaming (stream.catsv.net/cats/)	Once or more per week	6.3% (4)	1.1% (1)	
	Once or twice a month	12.5% (8)	5.6% (5)	
	A few times per year	18.8% (12)	24.4% (22)	
	Never	62.5% (40)	68.9% (62)	

		64	90	154
Online meeting archive (meetingarchive.catstv.net)	Once or more per week	4.5% (3)	0.0% (0)	
	Once or twice a month	6.1% (4)	5.4% (5)	
	A few times per year	24.2% (16)	22.8% (21)	
	Never	65.2% (43)	71.7% (66)	
		66	92	158
TV services provided by your telecommunications provider (e.g. AT&T U-verse, Smithville S+TV)	Once or more per week	4.5% (3)	3.3% (3)	
	Once or twice a month	1.5% (1)	3.3% (3)	
	A few times per year	6.1% (4)	5.5% (5)	
	Never	87.9% (58)	87.9% (80)	
		66	91	157
Other (please specify below)	Once or more per week	4.3% (2)	0.0% (0)	

	Once or twice a month	0.0% (0)	0.0% (0)	
	A few times per year	0.0% (0)	1.7% (1)	
	Never	95.7% (44)	98.3% (58)	
		46	59	105
If you selected "other" above, please tell us which other service you use to watch PEGs		2 replies	2 replies	4
answered question		66	92	158
			skipped question	0

	male	female	If you selected "other" above, please tell us which other service you use to watch PEGs	
1	X		over-the-air broadcast by aerial	Mar 12, 2010 2:43 PM
2	X		digital converter	Mar 22, 2010 3:04 PM
3		X	I did not know I could watch it online, I might start.	Mar 31, 2010 1:07 AM
4		X	Directv	Apr 2, 2010 3:22 PM

Channel Consumption by Education

Video Services User Survey

How often do you watch PEGs at home (CATS/TIU World)?		What is the highest level of education you have completed?					Response Totals
		Some High School, or High School Degree	Some College	College Degree	Graduate Degree	Other (please specify)	
City government meeting (Ch12)	Once or more per week	10.0% (1)	13.0% (3)	20.0% (11)	4.7% (3)	0.0% (0)	
	Once or twice a month	20.0% (2)	13.0% (3)	7.3% (4)	21.9% (14)	0.0% (0)	
	A few times per year	20.0% (2)	43.5% (10)	16.4% (9)	31.3% (20)	40.0% (2)	
	Never	50.0% (5)	30.4% (7)	56.4% (31)	42.2% (27)	60.0% (3)	
		10	23	55	64	5	157
County government meeting (Ch14)	Once or more per week	0.0% (0)	8.7% (2)	12.7% (7)	4.7% (3)	0.0% (0)	
	Once or twice a month	30.0% (3)	17.4% (4)	7.3% (4)	12.5% (8)	0.0% (0)	
	A few times per year	20.0% (2)	26.1% (6)	10.9% (6)	32.8% (21)	20.0% (1)	
	Never	50.0% (5)	47.8% (11)	69.1% (38)	50.0% (32)	80.0% (4)	
		10	23	55	64	5	157

Library, educational, cultural programs (Ch3)	Once or more per week	0.0% (0)	8.7% (2)	12.7% (7)	6.3% (4)	0.0% (0)	157
	Once or twice a month	20.0% (2)	13.0% (3)	10.9% (6)	20.3% (13)	0.0% (0)	
	A few times per year	30.0% (3)	39.1% (9)	20.0% (11)	29.7% (19)	60.0% (3)	
	Never	50.0% (5)	39.1% (9)	56.4% (31)	43.8% (28)	40.0% (2)	
		10	23	55	64	5	157
Other public access programs (Ch7)	Once or more per week	0.0% (0)	0.0% (0)	12.7% (7)	10.9% (7)	0.0% (0)	157
	Once or twice a month	10.0% (1)	8.7% (2)	12.7% (7)	12.5% (8)	0.0% (0)	
	A few times per year	30.0% (3)	43.5% (10)	20.0% (11)	25.0% (16)	20.0% (1)	
	Never	60.0% (6)	47.8% (11)	54.5% (30)	51.6% (33)	80.0% (4)	
		10	23	55	64	5	157
SCOLA international programs (Ch96)	Once or more per week	0.0% (0)	0.0% (0)	1.8% (1)	1.6% (1)	0.0% (0)	157
	Once or twice a month	0.0% (0)	0.0% (0)	0.0% (0)	4.7% (3)	0.0% (0)	
	A few times per year	0.0% (0)	17.4% (4)	18.2% (10)	14.1% (9)	0.0% (0)	
	Never	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	
		10	23	55	64	5	157

Service Use by Education

Video Services User Survey

How often do you use the following services to watch PEGs at home (CATS/TIU World)?		What is the highest level of education you have completed?					Response Totals
		Some High School, or High School Degree	Some College	College Degree	Graduate Degree	Other (please specify)	
Comcast cable	Once or more per week	22.2% (2)	8.7% (2)	23.6% (13)	16.1% (10)	0.0% (0)	154
	Once or twice a month	0.0% (0)	17.4% (4)	18.2% (10)	21.0% (13)	0.0% (0)	
	A few times per year	11.1% (1)	17.4% (4)	9.1% (5)	16.1% (10)	40.0% (2)	
	Never	66.7% (6)	56.5% (13)	49.1% (27)	46.8% (29)	60.0% (3)	
		9	23	55	62	5	
Internet streaming (stream.catsv.net/cats/)	Once or more per week	0.0% (0)	0.0% (0)	9.3% (5)	0.0% (0)	0.0% (0)	153
	Once or twice a month	10.0% (1)	13.6% (3)	7.4% (4)	8.1% (5)	0.0% (0)	
	A few times per year	40.0% (4)	9.1% (2)	13.0% (7)	27.4% (17)	60.0% (3)	
	Never	50.0% (5)	77.3% (17)	70.4% (38)	64.5% (40)	40.0% (2)	
		10	22	54	62	5	

1 of 3

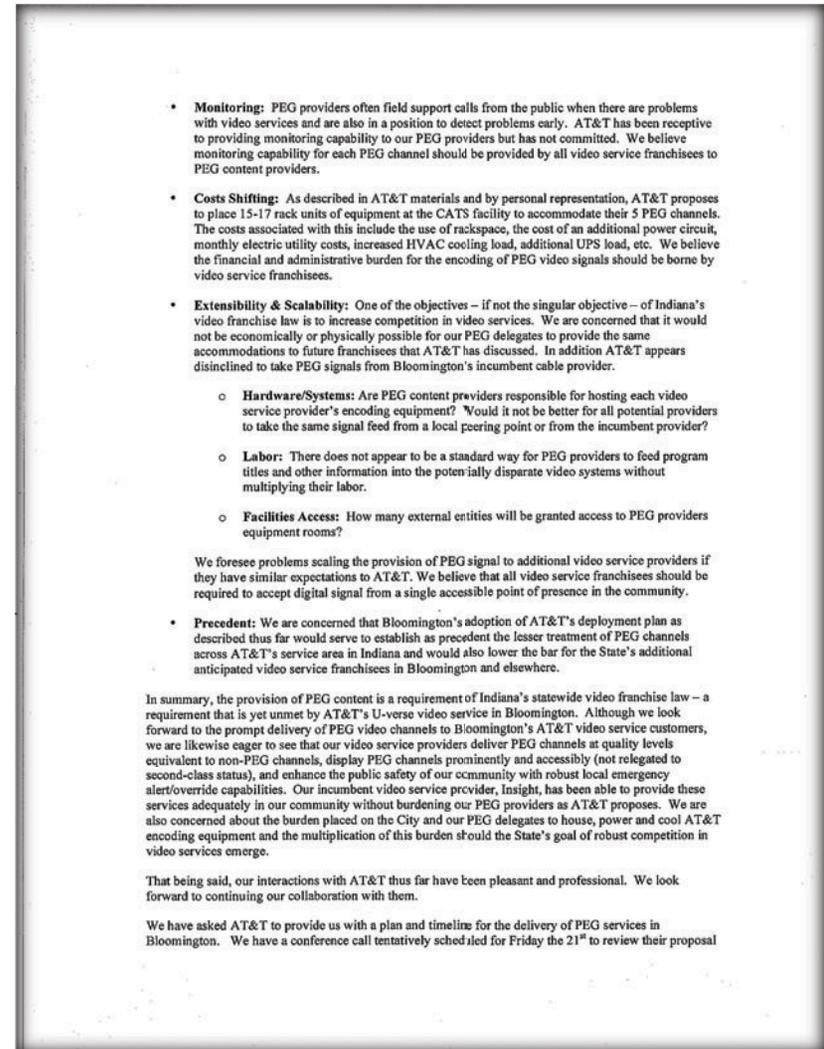
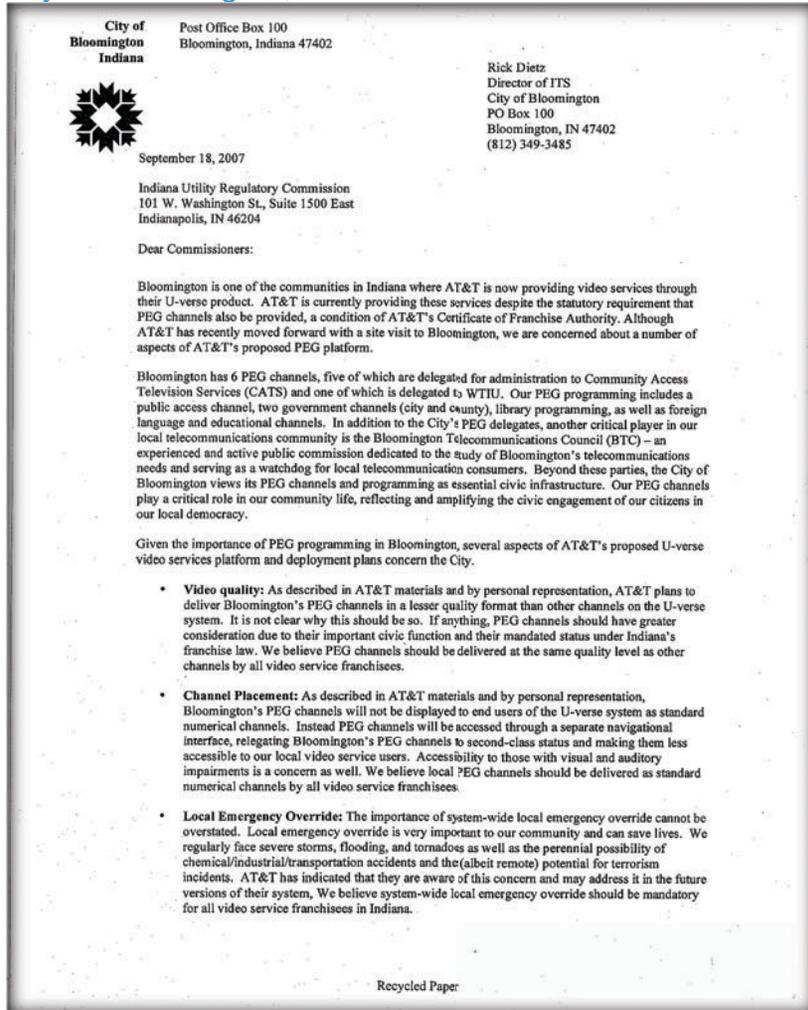
Online meeting archive (meetingarchive.catstv.net)	Once or more per week	0.0% (0)	0.0% (0)	5.5% (3)	0.0% (0)	0.0% (0)	157
	Once or twice a month	10.0% (1)	4.3% (1)	5.5% (3)	6.3% (4)	0.0% (0)	
	A few times per year	30.0% (3)	13.0% (3)	18.2% (10)	28.1% (18)	60.0% (3)	
	Never	60.0% (6)	82.6% (19)	70.9% (39)	65.6% (42)	40.0% (2)	
		10	23	55	64	5	
TV services provided by your telecommunications provider (e.g. AT&T U-verse, Smithville S+TV)	Once or more per week	0.0% (0)	4.5% (1)	1.8% (1)	6.3% (4)	0.0% (0)	156
	Once or twice a month	10.0% (1)	0.0% (0)	1.8% (1)	3.1% (2)	0.0% (0)	
	A few times per year	0.0% (0)	18.2% (4)	5.5% (3)	3.1% (2)	0.0% (0)	
	Never	90.0% (9)	77.3% (17)	90.9% (50)	87.5% (56)	100.0% (5)	
		10	22	55	64	5	
Other (please specify below)	Once or more per week	0.0% (0)	0.0% (0)	2.9% (1)	0.0% (0)	0.0% (0)	
	Once or twice a month	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	0.0% (0)	
	A few times per year	0.0% (0)	6.3% (1)	0.0% (0)	0.0% (0)	0.0% (0)	

	Never	100.0% (8)	93.8% (15)	97.1% (34)	100.0% (42)	100.0% (3)	
		8	16	35	42	3	104
If you selected "other" above, please tell us which other service you use to watch PEGs		0 replies	1 reply	2 replies	0 replies	0 replies	3
answered question		10	23	55	64	5	157
skipped question							0

	Some High School, or High School Degree	Some College	College Degree	Graduate Degree	Other (please specify)	If you selected "other" above, please tell us which other service you use to watch PEGs	
1			X			over-the-air broadcast by aerial	Mar 12, 2010 2:43 PM
2			X			I did not know I could watch it online, I might start.	Mar 31, 2010 1:07 AM
3		X				Directv	Apr 2, 2010 3:22 PM

Complaints / Representations to IURC Regarding Treatment of PEG Channels on AT&T U-verse (2007)

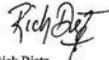
City of Bloomington, ITS



City of Bloomington Telecommunication Council

based on their recent site visit. It remains to be seen how the problems described above are addressed in that plan. Due to the importance of PEG programming in general and the precedent-setting nature of this deployment in Indiana, we hope that the IURC will give consideration to our concerns and help us ensure that our citizens in Bloomington and those throughout the State receive the level of service they deserve.

Sincerely,



Rick Dietz
Director of ITS
City of Bloomington, IN
dietzr@bloomington.in.gov

Enclosures:

Letter from CATSTV
Letter from WTIU
Letter from BTC

CC: Michael White (CATS) & Phil Meyer (WTIU), Duane Busick (BTC)

From: The City of Bloomington Telecommunication Council
To: Indiana Utilities Regulatory Commission

Date: September 14, 2007

To the Indiana Utilities Regulatory Commission,

The City of Bloomington Telecommunication Council respectfully registers its concerns regarding the proposed AT&T U-verse PEG Platform and notes the absence of support for local emergency alerts on the A&T video system.

Indiana's General Assembly passed a Video Franchise Law in July 2006 to increase competition in the video services market with benefits accruing to subscribers.

The Indiana Law requires that all video service providers who apply for, and who are certified to operate a video system in the State of Indiana, shall transmit all of the PEG channels that existed as of July 2006, the date that the Indiana Franchise Law went into effect.

The City of Bloomington operates six (6) PEG channels, and AT&T applied for and was granted a Certificate under the Indiana Franchise Law in August 2006. Thus, AT&T is required by the Indiana Franchise Law to transmit these PEG channels on their U-verse video service system that serves Bloomington.

AT&T has acknowledged that it has been operating its U-verse system, and selling related services, to residents of the City of Bloomington since or before March 2007.

The Telecommunications Council has received complaints from AT&T U-verse subscribers that they are not receiving any of the community's PEG channels. At least one AT&T's UVerse customer has formally stated her concerns to the City Telecommunications Council. Another, who is a former Monroe County office holder, simply terminated her U-verse contract after learning she could not receive the PEG channels that broadcast government meetings that are important to her. The Indiana Utility Regulatory Commission was notified of these subscriber complaints in April 2007.

In admission of this requirement for PEG carriage and of its outstanding failure to fulfill this requirement, AT&T representatives stated that they-do intend to carry the PEG channels.

Unfortunately, AT&T has offered a method of transmission, and strategy for layout and presentation of the PEG channels that fails to meet the standards of fairness and reasonableness.

First, AT&T has stated it intends to limit the resolution of all PEG channels. This would create a system on which, for example, the must-carry, over-the-air channels would be

transmitted as an H.264 2.0 Mbps digital encoding while the PEG channels would be transmitted as an WMV 1.3 Mbps digital encoding. This disparity is profound, especially in light of the fact that the quality of PEG source content is steadily increasing. Specifically, the local PEG channels are producing more and more content in HD format.

If implemented, AT&T's proposal would unfairly discriminate between must-carry, over-the-air content and PEG content by its proposed incorporation of a significantly lower bit-rate and lower-quality encoding algorithm for PEG content.

Secondly, AT&T proposes to isolate all PEG channels from the rest of their channel line-up and require all subscribers to initiate a second-level application to view any PEG channel. This fosters a side-show placement for PEG content and forces subscribers to make an extra effort before being able to access the PEG channels.

Finally, AT&T's proposal does not include any provisions for supporting the existing local emergency alert infrastructure. With the understanding that the Indiana Franchise Law does not require that video service providers allow for local initiation of emergency alerts, the City of Bloomington Telecommunications Council requests to go on record with a statement asserting the inestimable value of provisions for efficient and direct dispatch of notices regarding existing and emergent emergency situations that affect the local area. The City of Bloomington and Monroe County have maintained a local emergency alert infrastructure for over 20 years that has been fully supported by the existing (cable) video service provider and which has been written into the local franchise agreements.

We believe that it is *not* the Indiana Law's intent to create a marketplace favoring some video service providers while simultaneously acting to discriminate against other video service providers. Rather, we believe and support, a fair and reasonable interpretation of the Indiana Law that is grounded in historical precedents, both legal and logistic, whereby the City operates and makes available each PEG channel on an equal, non-discriminatory, and neutral basis to every video service provider that is licensed under the Indiana Law.

The City of Bloomington Telecommunications Council hereby requests that the Indiana Utility Regulatory Commission

1. Require all certified video service providers to transmit, and carry on their systems, the required PEG channels in as good a quality encoding as the other content.
2. Require that the video service providers ensure that the each digital stream is transmitted on their system to all subscribers in as high a level of quality as technically possible, without arbitrary discrimination.
3. Require all video service providers to transmit and carry the PEG channels in the same layout scheme as their other channels and not to create a side-show presentation environment.

Further, we request that the Indiana Utility Regulatory Commission work with the Indiana Legislature to amend the Indiana Franchise Law to require all video service providers to include complete support for initiation of local emergency alerts.

Sincerely,



Duane Busick, President

The City of Bloomington Telecommunications Council

Members:

Duane Busick, President
 Jesse Stryker, Vice President
 Suzann Owen
 Eric Ost
 Carl Zager

cc: Mayor of Bloomington
 City of Bloomington Common Council
 City of Bloomington Board of Public Works

CATS / MCPL

MONROE COUNTY PUBLIC LIBRARY

Main Library
303 E. Kirkwood Ave.
Bloomington, IN 47408-3534
812-349-3050

Ellettsville Branch
600 W. Temperance St.
Ellettsville, IN 47429
812-876-1272

www.monroe.lib.in.us

Indiana Utility Regulatory Commission
302 West Washington Street, Room 306
Indianapolis Indiana 46204

9/10/07

CATS
COMMUNITY ACCESS TELEVISION SERVICES

Dear IURC Members,

As with any new partnerships, there exists both difficulty and opportunity. Recently CATS was contacted by representatives from AT&T, to discuss and review technical aspects of CATS (Community Access Television Services) PEG carriage on their Bloomington system. I have three primary points to address concerning this vital communications matter:

On a very practical level, main engineering for CATS was designed in 1995, to provide sufficient rack space, cooling and UPS power for up to six local access channels, four satellite feeds, and sufficient monitoring equipment and modulators to serve the local cable community. To propose adding perhaps dozens of rack units, along with increased cooling and UPS needs to this room would doubtless stress our engineering limitations. Further, CATS Master Control operators would need a way to monitor the AT&T system, both on output and return transmission, to ascertain and correct problems as they inevitably arise. Unfortunately, the current state franchise law does not address these and other technical issues.

Secondly, the current proposed architecture of PEG delivery would represent a compromised signal to the home viewer, as compared to encoding and delivery of other local broadcast stations. Further, the proposed placement of access channels would relegate them to a different tier of the home viewer's menu system, further moving them out of the full bandwidth, broadcast-retransmission neighborhood. I believe this compromised architecture represents a slippery slope, where once the precedent of lower quality has been established, other video providers will doubtless follow suit and similarly degrade PEG systems, perhaps nationwide.

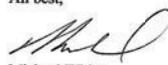
Central to the current controversy surrounding PEG carriage on the AT&T system, is that this video provider does not currently carry the local access channels, as required by state franchise law. While I feel it is vital that any new video providers comply fully with state franchise law, I also believe it is vital that the laws regarding noncompliance with the state language should be vigorously enforced. Specifically AT&T has been marketing video services in the Bloomington market since March of '07. Since that time, I have received a number of phone calls from concerned AT&T cable viewers who believed in good faith that they would be able to access the local PEG channels. To their dismay, and nine months since the granting of a state franchise, this is unfortunately not the case.

I have other public safety concerns with the global aspects of the AT&T system. Specifically that they do not currently offer and have not publicly proposed to implement an emergency override system. Insight Communications currently serves the Bloomington area with cable, and provides an emergency interrupt across all tiers of service. Though a requirement for such an emergency system was an apparent oversight in the Indiana state franchise law, it remains a vital component of the city's emergency alert system.

On the positive side, all contacts with AT&T have been pleasant, productive and highly informative to all parties. Additionally, other aspects of the proposed PEG architecture, wherein viewers may access local community channels nation-wide, remains an exciting prospect of the AT&T system.

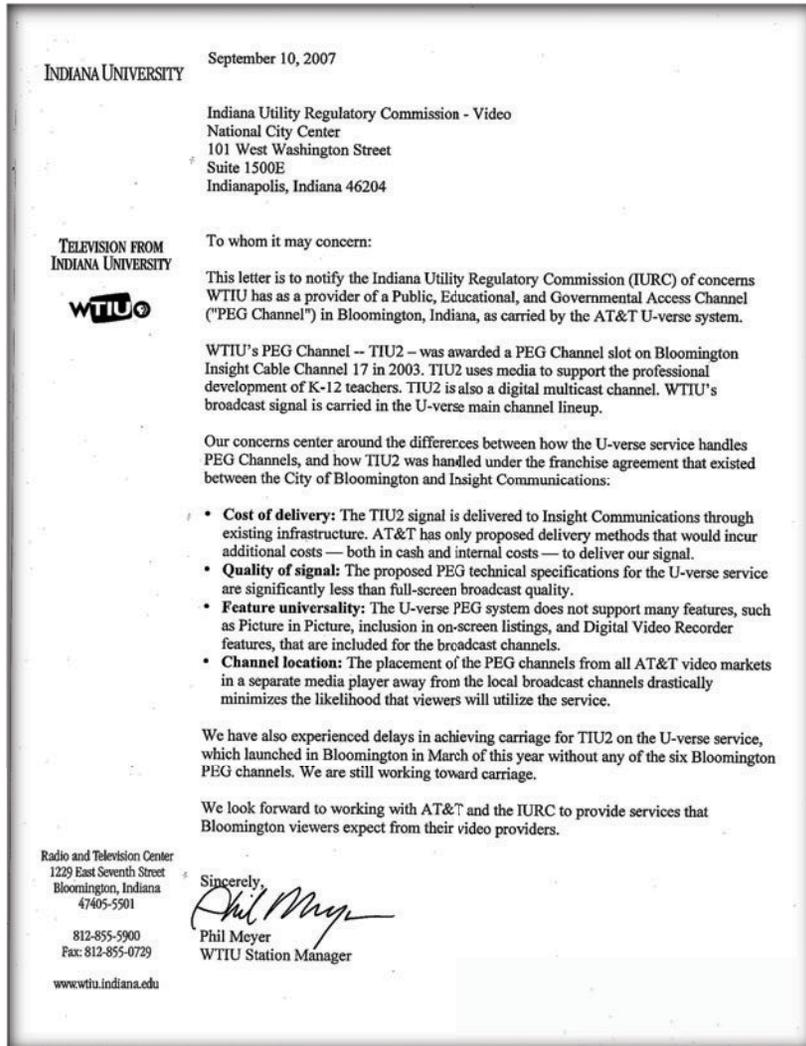
As always, I look forward to working with all video providers, well as with the IURC, to maintain and improve PEG delivery and content throughout the state.

All best,



Michael White
General Manager CATS
mbwhite@mcpl.info
catstv.net
812-349-3111

WTIU



MCPL Board of Trustees, Resolution Regarding AT&T's Treatment of PEG Channels on U-verse (2009)

RESOLUTION URGING INDIANA UTILITIES REGULATORY COMMISSION TO TAKE ACTION TO PROVIDE QUALITY ACCESS TO PUBLIC EDUCATIONAL GOVERNMENTAL (PEG) CHANNELS

Whereas the Monroe County Public Library hosts five community access television channels. In 2008, the Library's channels cablecast 16,731 hours of government meetings for County and City government and two school corporations; foreign language news, and a range of educational, cultural, and library programming. The Library's 2008 community survey confirmed that more than 60 percent of cable subscribers had watched city, county, and library channels in the preceding year, proof of the high value that Monroe County residents place on civic engagement.

Whereas, the Library provides 7,000 square feet of space in our facility and funding for supplies and equipment and operates the stations in partnership with the City of Bloomington, Monroe County, and the Town of Ellettsville, each of which contributes 50 percent of its cable franchise revenues to support staffing.

Whereas, since March 2007, AT&T has been operating its U-verse system and selling related services to residents of the City of Bloomington, under the authority of a Certificate of Franchise Authority as required by Video Franchise Statute (Indiana Code 8-1-34). It is our belief that AT&T is not in compliance with the statute and does not intend to offer residents of our community the ease and quality of access they expect.

Whereas, a February 3, 2009, article in the *Chicago Tribune* suggests that our local experience is not unique (see attachment).

Now therefore, the Board of Trustees of the Monroe County Public Library hereby resolves to make three requests of the IURC:

14A

1. That the IURC use its authority to assure that AT&T complies with the conditions of their state-issued Certificate of Franchise Authority by providing access to the five Public Educational Governmental (PEG) channels managed by the Library, as well as the channel managed by WTIU, on its U-verse system.

The Library and the City of Bloomington Telecommunications Council have both received complaints from AT&T subscribers that they are unable to access the Library's channels.

2. That all Public Educational Governmental (PEG) channels receive equivalent placement to local broadcast channels and not be relegated to a portion of the AT&T system architecture which requires additional menu functions and significant wait-time for the selected channel to appear.

As described in AT&T materials and representatives have stated that Bloomington's Public Educational Governmental (PEG) channels will not be displayed to viewers of the U-verse system as standard numerical channels. Instead, Public Educational Governmental (PEG) channels will be accessed through a separate navigational interface, relegating them to a second-class status and making them dramatically less accessible to local video service users. Viewers would not be able to view any of the channels using their remote, but would have to make a selection from a secondary menu, dramatically increasing the complexity and time required to view the content. Accessibility to those with visual and auditory impairments is a concern as well.

3. That all Public Educational Governmental (PEG) channels receive full-bandwidth retransmission,

14B

MCPL Cover Letter to Indiana Attorney General Regarding AT&T's Treatment of PEG Channels on U-verse

equivalent to other local broadcast channels, and that their signals not have less than full-screen broadcast quality.

AT&T materials and representatives have promised a lower quality format for PEG channels than for other channels on the U-verse system – WMV 1.3 Mbps digital encoding, compared with the must-carry over-the-air channels of H.264 2.0 Mbps digital encoding.

Approved February 18, 2009.

cc:
Rick Dietz, City of Bloomington
City of Bloomington Telecommunications Council
Monroe County Commissioners
Rep. Matt Pierce
Rep. Peggy Welch
Sen. Vi Simpson
Greg Zoeller, Indiana Attorney General

14C

February 23, 2009

Greg Zoeller, Attorney General
Indiana Senate
302 W. Washington
Indianapolis, IN 46204

Dear Attorney General Zoeller:

At their meeting on February 18, 2009, the Board of Trustees of the Monroe County Public Library approved the enclosed Resolution Urging the Indiana Utilities Regulatory Commission to Take Action to Provide Quality Access to Public Educational Governmental (PEG) Channels.

The Monroe County Public Library hosts five PEG television channels. In 2008, the Library's channels cablecast 16,731 hours of government meetings, foreign language news, and educational, cultural and library programming. In our 2008 community survey more than 60 percent of cable subscribers in Monroe County reported that they watched the channels in the preceding year, proof of the high value that Monroe County residents place on civic engagement.

We urge you to add your support to the three items in the Resolution:

1. That the Indiana Utilities Regulatory Commission use its authority to assure that AT&T complies with the conditions of their state-issued Certificate of Franchise Authority by providing access to the five PEG channels managed by the Library, as well as the channel managed by WTIU, on its U-verse system.
2. That all PEG channels receive equivalent placement to local broadcast channels and not be relegated to a portion of the AT&T system architecture which requires additional menu functions and significant wait-time for the selected channel to appear.
3. That all PEG channels receive full band-width retransmission, equivalent to other local broadcast channels, and that their signals not have less than full-screen broadcast quality.

Michael White, manager of CATS, or I would be happy to answer any questions.

Thank you for your support,

Sara Laughlin
Director

enc.

Author's Resume

RALF FRIESER

EDUCATION

Kelley School of Business, Indiana University, Bloomington, IN, USA

Dec 2010

Master of Business Administration, major in Corporate Innovation and Entrepreneurship

- Faculty-selected Member, Entrepreneurial Management Academy
- Technology Strategy Consultant to MBA Association

School of Informatics, Indiana University, Bloomington, IN, USA

Sep 2008

Master of Science, major in Human Computer Interaction Design, GPA 3.975

- Primary Research: Environmental Sustainability in Information and Communication Technology

Ravensbourne College of Design and Communication / University of Sussex, UK

Jul 1999

Bachelor of Arts (with Honors), major in Professional Broadcasting

- Graduated at Honors Level 2.1 (second highest level of academic achievement)

EXPERIENCE

End2End Consulting LTD, London, UK – Technology Consultant and Owner

Sep 2003 – Aug 2006

- Assimilate INC, global: Principal consultant to the company board, informing strategic technology choices and long term product positioning in the digital film production market; Spearheaded technology certification and partnership program; Developed online support portal
- Broadcast Networks LTD (BCN), global: Managed tender response process and structured technology architecture for joint bid by BCN and local partners in Kuala Lumpur for nation wide digital television system (Bid value > \$20Mil); Led commissioning of new station for TVJ (Kingston, Jamaica) and guided transformation of operational workflows for TVJ's engineering department; Provided consulting services for broadcast infrastructure projects in Dubai, Qatar, The Netherlands and Bulgaria

- Spectrum Strategy, Singapore: Specified high-level IPTV head-end architecture and requirements for digital asset management infrastructure for SingTel's IPTV development project as part of a cross-functional consulting task force

British Broadcasting Corporation / BBC Technology LTD (BBCT), London, UK – Technology Manager *Dec 1999 – Aug 2003*

- United Nations ECOSOC ICT Task Force, New York/Geneva, BBC World Service Trust, London: Collaborated with ICT Task Force members and Director of Education for the World Service Trust as technology expert on initiatives concerning ICT, The Digital Divide, and education
- TVJ, Kingston Jamaica: Developed “end to end” technical architecture for “green field site” TV station for the Caribbean broadcaster; Created full technical tender documentation; Jointly developed procurement process and budget with client and BBCT project manager for this \$6.5 million dollar project; Was later re-engaged to lead commissioning of the built station
- BBC Radio, London: Evaluated the technology aspects of tender responses for acquisition of over \$12 million dollar tapeless/digital radio play out infrastructure for the BBC's national radio networks; Provided recommendations that resulted in dramatically improved system availability and implementation speed, especially compared to similar acquisition made by another division of the BBC
- SABC, South Africa, ABC Radio, New York: Consulted on process re-engineering and technology aspects

Fresh Records, London, UK – Head of Technology (Part-Time)

Aug 1999 – May 2000

- Managed integration of programming and web design teams to execute the label's ecommerce strategy in the challenging environment of the late stages of the Dot-Com Bubble

ADDITIONAL

- Voting Member of SMPTE DC28 (Digital Cinema Technology Engineering Committee) 2005 – 2007

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Useful Links

The following links provide additional useful information pertinent to the topics covered in this report. Some links may be included in other sections of this report and are collated here for convenience of access. See description for further details or simply follow the link.

<http://www.openmediafoundation.org/community-tools/19> - provides a range of free open source software tools to manage operational processes at PEG stations

<http://www.cpb.org/publicmedia2.0/> - repository for recent CPB commissioned research and work covering public media in the digital age

<http://www.cpb.org/publicmedia2.0/docs/EmbracingDigitalReviewPublicMediaEfforts2009.pdf> - “Current Digital Media Activities Within U.S. Public Broadcasting” 2009 report

<http://www.pbs.org/mediashift/> - PBS hosted articles and blog covering public media issues in the digital age. Relevant to PEG and public media alike

<http://cmediachange.net/blog/category/publishing/> - Blog covering community media issues in the digital age

<http://www.newpublicmedia.org/blog> - Blog covering community media issue in the digital age, organized by FeePress

<http://www.cctvcambridge.org/> - Innovative community media center based in Cambridge MA

<http://www.denveropenmedia.org/> - Innovative PEG operator based in Denver CO

Further Recommended Reading

This list of books covers relevant business, design and technology concepts that have inspired the author's thinking for this report. Some of the books suggested below may also appear in the citations above. This list is included for convenience only and does not constitute citation.

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