

Toward a Vision for an IPTV Education Channel Over ORION – A Discussion Paper

Preface

This paper has been prepared to serve as a catalyst for discussion among the members and stakeholders of Ontario's postsecondary education community regarding a proposal put forward by the [Ontario Research and Innovation Optical Network](#) (ORION) to provide a platform for enabling and supporting an Ontario education IPTV¹ (Internet Protocol Television) channel² or network.

The principal aim in creating this new IPTV channel or network lies in providing Ontario's postsecondary students, educators, researchers, teaching institutions, and industry partners with a broadly accessible tool for posting, distributing and sharing content, as well as a platform³ for collaboration in the creation and innovation of live and on-demand digitally-mediated content⁴ and related technologies.

This document has been researched and prepared on behalf of [ORION](#) by Adriana Ieraci and Arnold Wytenburg of [A-Line Consultants Inc.](#) with assistance and support from André Quenneville and Tamara Stoll of ORION. Queries relating to this document may be directed to either [André](#) or [Tamara](#).

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¹ IPTV ([Internet Protocol Television](#)) is a system where a digital television service is delivered using Internet Protocol over a network infrastructure, which may include delivery by a broadband connection. A general definition of IPTV is television content that, instead of being delivered through traditional broadcast and cable formats, is received by the viewer through the technologies used for computer networks.

² Channel vs. Network: A "channel" denotes some form of content theme where a "network" is made up of multiple channels.

³ Platform is defined here as a combination of software and hardware that would enable management and distribution of digital content in real-time and on demand, that provides for user interaction, and that will also eventually encompass the content creation.

⁴ Content is defined here to include such things as films, documentaries, animation, performance works, lectures, news reports, sports events, entertainment programming, and practically any other form of media-based content that requires or would benefit from a high-performance, on-demand digital delivery and interaction platform.

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Introduction

Ontario's broadcast, film, video, and animation schools enjoy a substantial and well-deserved international reputation for quality and innovation. Also, research institutions in Ontario are renowned for their computer science, engineering, and design programs, and have a long history of creating important, leading-edge innovations. [ORION](#) perceives a window of opportunity to extend and leverage these successes, and has produced this discussion paper to support a wide spectrum of interested parties' efforts at further exploring this opportunity.

The essence of the perceived opportunity lies in developing and implementing a high quality student- and education-focused Internet Protocol Television ([IPTV](#)) channel, or network of channels, which is aimed at fostering and supporting increased sharing of information, resources, capabilities, and media content among students, researchers, faculty, and institutions.

Using the ORION optical communications network as the enabling platform connecting Ontario's education and research organizations, it is anticipated such a channel would provide significant dividends to students, researchers, faculty, institutions, industry, and the community as a whole.

Apart from providing immediate direct benefits to Ontario's postsecondary institutions and the broader educational community, the proposed channel or network of channels would also provide a fresh global showcase for Ontario's and Canada's excellence in producing digital, film, and broadcast content. It would also establish a far-reaching, innovative research and development platform delivering test-bed capabilities for collaborative research in advanced media technologies and applications.

The channel is also envisioned as a training platform and potential "centre of excellence" for students, faculty, and industry partners by virtue of providing a "living lab" environment for researching and developing operations, administration, and management skills related to programming and distributing media content.

Ideally, the new channel will establish a foothold within each of Ontario's postsecondary institutions, and also within organizations lying beyond the traditional education community including such potential content providers as the [Royal Ontario Museum](#), the [Art Gallery of Ontario](#), the [Canadian Film Centre](#), [TVOntario](#), [La Chaine Française](#), the [Bibliocentre](#), [National Film Board](#), [Cinematheque](#), and others.

The remainder of this document aims to provide crucial insight into the nature and characteristics of the prevailing opportunity so as to inform discussion and brainstorming, and to aid in gathering support and the resources needed to identify and launch an initial pilot IPTV project.

The document is also intended to provide supporting context for a broader consultative process that begins with an [ORION workshop](#) on June 18 and 19, 2008, hosted by the [Sheridan College Institute of Technology and Advanced Learning](#).

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The aim for the workshop is to explore the practical implications of launching the proposed IPTV channel using the existing high-capacity ORION optical communications network as the enabling backbone infrastructure, and to engage a sufficient number of interested parties in forming an initial working group for realizing the proposed project.

Participants in the workshop will include representatives from across the full spectrum of Ontario's postsecondary educational institutions, as well as industry partners and businesses currently engaged in digital content distribution within the education and research community.

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Status Quo in Ontario – a Summary Review

This section provides a survey overview of the status quo among Ontario's leading postsecondary educational institutions with respect to their activities, interests, initiatives, and capacities for researching, producing, distributing, sharing, and receiving digitally-mediated content and related services and infrastructures.

Content & programming

More than 20 distinct initiatives were reviewed in preparing this document. This review indicated that numerous Ontario educational institutions and their stakeholders are actively engaged in producing and broadcasting a wide range of digital video and audio content. Furthermore, it also indicated they were doing so with a number of key objectives and concerns in mind.

Specific objectives and concerns were generally closely aligned with those of the individual responsible for championing, funding, or leading a given initiative. Yet while each initiative presented its own unique sets of goals, experiences, issues, priorities, and concerns with respect to content and programming, the vast majority of these fell into one or more of seven broad focal groupings. These are explored in more depth, along with examples of relevant initiatives, in the following sub-sections.

FOCUS #1 – Engage students, giving them a means of communicating their student experience

Initiatives in this area include:

- Producing content showing campus-wide student activities
- Providing tools which allow students to create content relevant to their student experience
- Programming information that students need about campus events and activities.

Examples of such initiatives include:

- [tvWestern](#): student-funded, showcasing local events on and off-campus
- [BrockTV](#): student-funded, student-run, broadcasting of student activities on and off-campus
- **SheridanTV**: a planned college-wide channel for broadcasting content from the arts, media, and film programs.

FOCUS #2 – Remain relevant to an increasingly media- and technology- savvy student body

Initiatives in this area are mostly concerned with providing access to alternative and leading edge video and web technologies that make it possible to easily deliver educational content to students in forms that enhance and extend the lecture experience.

The following is an example of such a project:

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- **[York University](#)**: pilot test of [iTunes University](#) to allow students to review video and audio formats of posted lectures on demand.
- **[tvWestern](#)**: podcasting of all tvWestern content through iTunes.
- **[MedSchoolTV](#)**: experiments with how different kinds of viewers and learners interact with different formats of production (for example, interviews versus docudramas), and which kinds of technologies facilitate particular learning experiences.

Also, university and college professors in several Ontario postsecondary institutions have independently begun posting podcasts and video lectures, using the web and a variety of freely available technologies, to support students in their studies and exam preparation, and to engage them more deeply in coursework.

FOCUS #3 – Attract top students

Initiatives in this area aim to provide institutions with a powerful and effective means of attracting targeted prospective students by demonstrating the availability of their advanced media and communications facilities.

Examples of related initiatives include:

- **[Brock University](#)**: produces promotional video segments and broadcasts student-run/supported [BrockTV](#) to show student life to prospective students and the community at large
- **[University of Waterloo](#)**: Media and Mobility Network project will provide [VeloCity](#) residents with a platform for testing and implementing mobile content and related applications.

FOCUS #4 – Provide relevant curriculum that prepares students for future employment opportunities

Many of Ontario's broadcast, film, animation, and media programs are faced with the need to keep pace with rapid advances in the employment market for students who are aiming to work in the arts, entertainment, and media production industries.

Examples of curriculum-related initiatives include:

- **[Loyalist College](#)**: students from the broadcast program work with students from the culinary school to develop episodes for a regular cooking show that is broadcast via a website and on local cable
- **[Niagara College](#)**: broadcast students develop instructional content in collaboration with the culinary and dentistry schools, which is then made available on demand via [Youtube](#)
- **[Conestoga College](#)**: broadcast program students are provided a mobile production facility for capturing and streaming live events via [Ustream](#)

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- **SheridanTV:** will provide students opportunities to program and manage a broadcast channel over a college-wide digital signage network.

FOCUS #5 – Replace old or expensive infrastructure with more flexible and effective tools

Several institutions are seeking to establish modern, cost effective, and highly flexible IP networks for content distribution that replace or enhance existing cable networks.

One example is as follows:

- **University of Waterloo:** evaluating [INUK Networks](#) as a replacement for existing cable infrastructure so as to facilitate providing students with access to commercial content channels via computers over the Waterloo IP network.

FOCUS #6 – Research into content creation and distribution technologies

The creation, distribution, and consumption of digital content is expected to undergo dramatic evolution as the penetration of video and HD capable devices, IPTV, and IP based broadcast networks grows.

This will provide significant opportunity for Ontario's research institutions to research, develop, and test new technologies, processes, and content for the global market.

- **Ryerson University:** working with the [Open Student Television Network](#) (OSTN) on a pilot research project to explore the implications of bi-directional distribution of SD and HD content over the global OSTN platform.

FOCUS #7 – Internal Marketing and Communications

Ongoing branding, promotion, and marketing are becoming increasingly important to the success of educational institutions, and many are seeking opportunities to leverage IP networks and online video content as a means of communicating more effectively with students in a way that extends traditional on-campus newspapers and radio.

- **SheridanTV:** will provide a TV channel that allows college administrators to more quickly, effectively, and efficiently keep students up to date on university programs, activities, news, and events.

FOCUS #8 – External Marketing and Communications

Institutions looking to maintain and develop relationships with their stakeholders including public and private partners, faculty, students, and alumni and the community at large can showcase the activities within the institution. The content bridges the gap between entertainment and education.

- **MedSchoolTV:** interviews with leading faculty about their research are available on the site for both internal and external viewers.

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Technology, platform & infrastructure

Institutions are employing a wide range of technologies, platforms, and communications infrastructures to produce, program, and deliver content to their respective target audiences, including local campus IP and cable networks as well as the open Internet and the Web. The more prominent of these are described below.

[INUK Networks Inc.](#)

Waterloo University is conducting a pilot project with INUK Networks, to be completed in the fall, in order to prove out INUK's technology and to ensure that multicasting capabilities function robustly. INUK plans to launch Unibox.TV in the fall to provide students with a broadcast channel for their content and programming.

[iTunes University](#)

York University is exploring the use of iTunes University as a simple means of distributing lecture and educational material over the web. Individual faculty can post their own material to iTunes at their convenience, requiring little or no support.

[Open Student Television Network \(OSTN\)](#)

Ryerson University, Loyalist College, Brock University, and others are currently uploading content to the OSTN network for consumption by audiences in the US and abroad. OSTN's content is multicast and is accessible to member institutions connected to the [Internet2 research and education network infrastructure](#). While none of Ontario's institutions are currently streaming content from OSTN to their own campuses, ORION currently hosts the network's live multicast streams on the ORION Student TV portal.

Numerous independent websites

Schools such as Loyalist College, Brock University, and University of Western Ontario have developed dedicated initiative-specific websites where content can be posted, managed and streamed. None of those surveyed are currently using specialized platforms to simplify the process of uploading, managing, and distributing this content.

Proprietary broadcast platforms:

Proprietary broadcast platforms now in use in Ontario include G-Channel (commercial platform for information channel programming), used by SheridanTV, and [V-Brick](#) (commercial solution for networked video distribution infrastructure) combined with the [Scala](#) platform (commercial solution for managing and delivering content over digital signage networks) that is used by Conestoga College.

Broadcast through local cable:

Some schools provide local community access cable channels with relevant and timely student-produced newscasts, other topical programs, and sporting events coverage. Loyalist and Niagara Colleges have partnered with [Cogeco](#) to regularly upload content to

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the local stations for broadcast. University of Western Ontario has a similar relationship with [Rogers Cable](#).

Publicly available tools:

Freely-available tools such as [Youtube](#) for video on demand and [Ustream](#) for broadcasting live events coverage are used by many students and schools alike as a low-cost alternative to expensive infrastructure. These tools often have additional features including ratings capabilities, social networks, and audience measurement and reporting.

Future considerations:

Outside of schools' arts, entertainment, and media programs, the capture and creation of content continues to challenge students and faculty alike. In cases where institutions have programs in broadcast or media these programs are being leveraged to assist other areas in content production, however a widely-accessible, low-cost, easy-to-use, and streamlined means of content capture and editing would significantly reduce the barriers to developing content focused on research programs, in laboratories, and for many other additional activities within institutions.

Operations, management & funding

Strategies, approaches, and issues related to funding, managing, and operating IPTV and other related initiatives in Ontario are as widely diverse as the initiatives themselves.

Among these, several key themes consistently arise with respect to the implications for launching a province-wide IPTV channel which are worthy of note:

1. Distributing content beyond their campus and local community is highly appealing to students, faculty, and institutions alike – however, differentiating content that is sufficiently relevant will likely become a growing challenge
2. Enough off-the-shelf tools exist, most at low or no-cost, to conduct a preliminary launch of a province-wide IPTV channel, and many of these are already being actively explored – the challenges appear to lie in gaining enough critical mass of support province-wide for implementing the channel and driving use
3. Adequate funding for resources, content production facilities, and appropriate equipment for distribution and broadcasting is limited within and across institutions – institutions will be challenged to obtain additional funding to support a pilot project and beyond, including providing support for appropriate branding and marketing to attract audiences.
4. Institutions with production facilities and on-campus expertise in creating professional-quality content would be able to contribute to the proposed initiative at the initial stage - schools without such programs, such as the University of Waterloo and several of the province's smaller colleges, may be challenged to

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- implement not only production facilities but also capabilities and expertise in creating and capturing quality content
5. Ontario's institutions have adopted a wide variety of operating models for managing, programming, and distributing audio and video content, whereas some initiatives are student supported and operated and others are part of curriculum and involve faculty in programming and management – the challenge will be to create a province-wide operating model that easily addresses the often conflicting priorities of institutions' diverse models
 6. Approaches to establishing, respecting, and enforcing rights-in-ownership and rights-in-use with regard to content varies significantly depending upon a wide range of factors, ranging from all content being owned by the institution such as at Loyalist College, to where content is explicitly the property of its creator – a considerable challenge lies in establishing an appropriate rights management framework capable of supporting increasingly innovative and diverse attitudes and approaches to copyright and licensing.

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The Path Ahead

The state of prevailing technologies in the marketplace and the nature of activities already underway among Ontario's postsecondary and research institutions indicate that a key opportunity currently exists for developing and implementing a student- and education-focused IPTV channel over the ultra high speed ORION optical communication network.

The research carried out in producing this document suggests there are many immediate practical and economic benefits to providing students, faculty, researchers, and institutions with leading edge tools for information sharing, communication, and collaboration such as would comprise the proposed initiative.

Such an initiative would also provide a high-profile global showcase for the province's digital media capabilities.

The research also points to the proposed new channel providing the leaders and administrators of Ontario's postsecondary teaching and research institutions with an unprecedented new strategic tool for addressing many of the critical challenges they are facing today and into the foreseeable future, most notably:

1. Providing a platform for next generation media and interaction that affords Ontario researchers, innovators, and entrepreneurs the tools needed to discover new ideas and develop leading-edge innovations
2. Using media and content that blurs the line between education and entertainment in order to more effectively market institutional brands, activities, capabilities, and accomplishments
3. Attracting and maintaining fruitful and mutually beneficial industry partnerships
4. Engaging in more efficient and productive interdisciplinary collaboration across organizational, political, and geographic boundaries
5. Attracting top students, researchers, faculty, and administrators, and remaining relevant to an increasingly media- and technology-savvy educational community
6. Engaging students socially and experientially as well as intellectually, giving them a means of communicating and sharing their experiences of student life
7. Making curriculum relevant to the demands of jobs and careers students are likely to encounter in the foreseeable future.

Moving forward...

The research carried out in preparing this document reveals there are many individual initiatives already underway throughout the Province that each aim to 'push the envelope' in researching, creating, producing, and distributing meaningful education-oriented content.

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More importantly, this research taken together with the results of a recent open survey carried out by ORION (see the appendices for a summary of this survey) indicates a widespread interest among faculty, students, and institutions alike in working together to create a world-class media showcase for Ontario's capabilities – such as the proposed IPTV channel would provide. Among survey respondents, 72% of Ontario's postsecondary institutions are keen to create and leverage the proposed channel.

Most interestingly, it appears the Ontario postsecondary education community is in a significantly advantaged position with respect to the available skills, resources, and existing content needed to launch and sustain the proposed channel. With world-class researchers, broadcast, film and media programs, advanced broadband connectivity, and an educated and media-savvy audience, all the necessary elements are in place for a successful province-wide channel.

What lacks, however, is a single unifying initiative or enabling entity capable of leveraging these substantial assets into a viable province-wide effort. A unified effort would reduce the barriers for institutions to initiate their own projects, would create a network of content across the province, and would reach audiences beyond local institutions.

Based on the research to date, such an initiative is essential to:

- Providing a platform for the world-class media- and content-related research, experimentation, and development that Ontario is known for, and that also gives the province's commercial interests the needed leverage and exposure to establish leadership in world markets
- Showcasing Ontario's innovation and creative talent while catalyzing the development of a robust 'culture of collaboration' among Ontario's educational and research institutions, their industry partners, and more
- Creating a strategic opportunity for Ontario and Canada to take a lead role in creating, producing, and distributing high value education, news, and entertainment content to local, regional and international markets.

ORION is taking the lead in proposing a unified provincial effort through preparing this discussion document and by partnering with Sheridan College Institute of Technology and Advanced Learning to stage a workshop for participants to engage face-to-face in moving the proposed IPTV initiative forward.

Next Steps

A facilitated consultative process is immediately called for to engage the Province's students, educators, researchers, and institutional leaders in acting upon the opportunities identified in this discussion paper and in the survey conducted by ORION.

The first task for this process is to create an initial working group tasked with launching, guiding, and pursuing the IPTV initiative proposed by ORION. In doing so, it will be

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necessary to provide a broad forum and framework for establishing the group and its on-going terms of reference.

Once formed, the first priority for this working group will be to determine the viability and impact of a pilot project for the proposed initiative, particularly with respect to:

- Content and programming
- Technology, platform, and infrastructure needs
- Operations, management, and potential sources of funding.

The results of this analysis can then be used as the basis for formulating the essential founding strategies, teams, and initiatives needed to launch the proposed IPTV channel.

These next steps will be pursued beginning with the aforementioned [ORION workshop](#) on June 18 and 19, 2008, hosted by the [Sheridan Institute of Technology and Advanced Learning](#).

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Appendix 1

State of the Art in the Marketplace – a Summary Review

This section provides an overview of examples of the state-of-the-art in digitally-mediated education-, research-, and collaboration-oriented networks and related tools, services, and infrastructures.

Publicly-available Platforms, Technologies & Initiatives for Distributing Digital Video & Other Media

This subsection identifies a number of tools widely available – several at no-cost – which are currently favored by creators and end consumers of user-generated, student- and education-oriented digital media and content.

Essentially, there is no universally standard technology or protocol for digital content and interaction on the Web with respect to on-demand streaming and downloading of video, audio, and still images. For video a relatively small group of preferred formats have emerged as popular leaders, such as Adobe's Flash, Microsoft's Windows Media, QuickTime, MP4 and others.

Among the most popular forums and tools are:

- [YouTube](#), [DailyMotion](#) and [Vimeo](#) (user generated content platforms, Vimeo streams HD quality) and their imitators
- [Ustream](#) (live video streaming) and imitators
- [FaceBook](#), [MySpace](#) (social network platforms) and their imitators
- [iTunes](#), [iTunes University](#), (revenue generating and podcasting/vidcasting platforms) and imitators
- [Veoh](#) (commercial as well as user generated content distribution) and imitators
- [Miro](#) (an open source desktop video player and networked content distribution platform) and others
- [Kontiki](#), [The Pirate Bay](#), and [BitTorrent](#), and other peer-to-peer⁵ imitators

Many of these tools are in common use among students and faculty alike throughout Ontario's education and research community. Dominant characteristics of these widely varied tools and solutions that are especially noteworthy include:

1. The socially interactive nature of related forums coupled with the essential requirement for open sharing of content and feedback among a network of trusted familiars and peers⁶

⁵ <http://en.wikipedia.org/wiki/Peer-to-peer>

⁶ http://en.wikipedia.org/wiki/Social_networks

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2. The relative simplicity and ease with which they make it possible for digital content in a wide range of formats and categories to be posted, promoted, and consumed across a broad range of technology platforms almost at will, by practically anyone

Practically all of these technologies address key trends faced by educational content creators and media producers and researchers alike, including:

1. Growing popularity of media and content that blurs the line between education and entertainment
2. Rapidly accelerating demand for user-centric media programming and device-agnostic content creation and delivery
3. Increasing complexity in how the market for research, information, and media is realized and served

Although many of the platforms that are currently available were initially aimed at the mainstream public, practically all have seen significant and growing adoption rates throughout the professional academic, business, and entertainment communities globally, as well as among many ‘prosumers’⁷. At the very least, these are setting the standards and expectations by which advanced, commercially viable, professional grade technologies and services will be measured.

Proprietary Education-focused IPTV & Broadband Video Platforms, Networks & Initiatives

This subsection identifies and describes leading commercial and not-for-profit IPTV platform technologies designed to support the production and operation of a student- and education-focused TV channel.

Inuk Networks

UK-based Inuk Networks provides a platform for programming, scheduling, and distributing broadcast quality TV content and carrier-class telephony over closed IP networks.

Aiming ultimately to deliver TV, voice, and converged entertainment media services to broadband providers and network operators in a variety of industries, Inuk’s initial customer focus is on universities, colleges, and students.

Inuk’s technological framework comprises a proprietary head-end technology to support programming, scheduling, and distribution of digital content, an underlying closed multicast-enabled IP-based network provided by the hosting institution, and a proprietary client-side technology for end users/consumers.

In addition to providing a stream of professionally produced content from a variety of commercial and non-commercial sources Inuk also provides host institutions with a

⁷ <http://en.wikipedia.org/wiki/Prosumer>

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means of distributing their own student- and faculty-created content internally and among other subscribing educational institutions around the world through Unibox.tv. Unibox will launch in September in the UK. Content is supported through an advertising model and INUK will co-invest in content produced by students at partner institutions.

At the time of writing, Inuk had a subscriber base of more than 40,000 students and 20+ learning institutions based in the UK and North America. According to [Alexa](#)⁸, Inuk's viewer traffic has grown by 70% in the most recent three-month period.

The [University of Waterloo](#) is currently undertaking a pilot project in collaboration with INUK Networks Inc. that provides on-campus access to INUK's programmed content to a limited number of students.

Cdigix

Cdigix is an enterprise content management solution which allows institutions to manage the media content within the institution and integrates with the major course management systems. Cdigix allows schools to purchase content titles as well as share content across institutions through their community module.

JANET

UK-based JANET is an online platform and support infrastructure that facilitates information exchange and collaboration among researchers and educational institutions located throughout Great Britain and, via the open Internet, the rest of the world. JANET also makes a separate, dedicated network available to its community for experimental activities in network development.

Specifically, JANET connects UK-based universities, colleges, research councils, and adult and community learning providers. It also provides connections between the Regional Broadband Consortia to facilitate an initiative to create a national schools' network. At this writing, JANET published claims indicate that over 18 million end-users are served by the JANET network.

JANET aims to provide researchers and educational institutions with tools for teaching, learning, and research methods. This including such things as providing video conferencing and video streaming capabilities needed to deliver lectures to remote groups of students. For researchers, the high capacity of the JANET backbone allows the linking of large data storage and high performance computing facilities at a national and international level.

JANET's IPTV solution provides students with the ability to showcase films, documentaries, and university-specific content. This aspect of the JANET platform's capabilities is intended to appeal mostly to media and journalism students, film schools, and any other disciplines that involve the creation and distribution of digital media-based content.

⁸ http://en.wikipedia.org/wiki/Alexa_Internet

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JANET is working with a number of other concurrent student-focused IPTV-based projects including INUK's [Unibox.TV](#) and the [OSTN](#) so as to help optimize the services they provide to the JANET community.

[Open Student Television Network \(OSTN\)](#)

OSTN multicasts student-produced programming to member educational organizations. OSTN indicates that content which has been aggregated is being delivered to nearly 60 million subscribers at more than 4,500 member campuses in 46 countries around the globe. OSTN can be viewed on computers using Windows, Mac-OS, or Linux through a campus cable system. OSTN also distributes its programming through the [Associated Press](#) and [Joost](#), with others being added soon.

Based in the US, OSTN is actively working with a number of Ontario institutions in obtaining student-produced content and in transmitting OSTN programming on campus. Participating institutions include Brock and Ryerson Universities, and Loyalist, Fanshawe, and Georgian Colleges. Currently, OSTN's multicast content streams can only be viewed in Ontario institutions that are multicast-enabled, a process that involves specialized network configuration.

[ResearchChannel.org](#)

The US-based ResearchChannel.org is an online platform that allows research and academic institutions to share their research with each other and the public. ResearchChannel.org also actively participates in testing and developing next generation technologies to distribute video and interactive media content worldwide.

ResearchChannel.org uses advanced streaming and broadband technologies and is testing new methods of global video distribution and interaction that are deemed essential for enhancing collaboration, reaching more audiences, and providing high-speed exchanges of video resources.

At this writing, ResearchChannel.org is available to more than 30 million U.S. satellite and cable television subscribers as well as via their website which receives more than 1.6 million visitors annually. ResearchChannel.org is also available on 70 in-house university and school-based cable systems in the US and in other countries.

Viewers can access ResearchChannel.org's programs online via live webstream and through a video-on-demand library. Their library currently houses more than 3,500 full-length programs that are available 24 hours a day, seven days a week.

Commercially-oriented IPTV & Broadband Video Platforms, Networks & Initiatives

[Brightcove](#)

Massachusetts-based Brightcove provides content owners, ranging from independent producers to major broadcast networks, with a comprehensive platform for launching and delivering privately-branded IPTV channels.

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[iThentic](#)

Toronto-based [iThentic](#) is a source for curated professional and independent content for the web and mobile phones including webisodes, mobisodes, and short films. Content producers submit their productions for evaluation and incorporation into iThentic's channels. Content is distributed to mobile devices in Canada through Rogers and Telus, in the US through Cellfish, and online through Joost and YouTube. iThentic shares all revenues with content producers.

[JumpTV](#)

JumpTV is a Toronto-based IPTV company with both international and sports channels from over 80 countries from around the world. JumpTV streams both live and pre-recorded content on a subscription basis in addition to offering video on demand and pay-per-view content.

[Joost](#)

Joost is a consumer focused peer-to-peer IPTV network and platform that provides access to a myriad of licensed TV channels using a free proprietary viewer that is available for modern PC and MAC computers with high-speed access to the open Internet.

Conceived and launched by the founders of [Skype](#) several years ago, Joost provides on-demand access to more than 28,000 shows over nearly 500 discrete channels.

[Mogulus](#)

New York-based Mogulus provides content creators with a web-based platform for editing, programming, scheduling, and publishing an IPTV channel. In addition to user-created content, Mogulus is also capable of integrating content drawn from YouTube and [Metacafé](#). Mogulus is currently in beta, and a business model cannot be determined at this time.

[Noank Media Inc.](#)

Noank Media is a spin-out of [Harvard University](#) that is primarily active in China. Canadian arts and media entrepreneur Paul Hoffert⁹ is founder and CEO. Noank's platform provides rights-managed content distribution for creators and producers of proprietary copyright digital content for entertainment and education, including music, video, still images, and text-based documents.

In broad technical terms, Noank provides non-compulsory blanket licenses that monetize and legalize online file-sharing. Their business model shares all content fees and advertising revenues with content owners.

⁹ http://en.wikipedia.org/wiki/Paul_Hoffert; <http://www.linkedin.com/in/polibop>

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mtvU

mtvU is Viacom's MTV Networks' college-focused channel. mtvU is distributed solely through broadband. Student-produced content is mixed with MTV's television content and available through the live stream as well as on demand. [UWIRE](#)

CBS-owned UWIRE is a student newswire service. Student-run media outlets submit their text, video, and audio news content to the service which is aggregated for other student media outlets and UWIRE mainstream news affiliates. UWIRE recently also launched a social network application where students and professionals can interact and collaborate on stories.

Experimental technologies & related initiatives

Advanced Broadband Enabled Learning (ABEL)

Affiliated with York University, ABEL makes use of next-generation interactive content and video conferencing technologies that are available through ORION and other advanced networks to bring high-impact, real-world learning experiences to students.

ABEL acts to eliminate distance as a barrier to teaching and learning, and showcases the potential of using network-based technologies and advanced computer software to transform the way teachers teach and the way students learn by connecting them in real time to the world outside the classroom.

ABEL aims to raise students' experience and achievement levels by engaging them in a myriad of authentic learning activities including virtual tours, live interactions with experts, and direct contact with teachers and students in other regions of the province and country. Content and sessions are also archived for subsequent downloading by student and faculty audiences.

DSpace

DSpace is a web-based application that provides a comprehensive tool for uploading, storage, and retrieval of scholarly works. DSpace captures data in any format including text, video, audio, and numerical data, indexes these for search and retrieval, makes them widely available over the web, and archives them for long term preservation. The Dspace platform has been released through an open source license and the [University of Toronto has implemented DSpace](#) as part of its library services.

MediaGenerator at U of T Mississauga and ePresence

MediaGenerator at the U of T Mississauga campus is a collaboration of KMDI and the Institute of Communication and Culture which provides students with the resources to develop their own media projects. The centre provides the services of a facilitator with media production skills (in film and web) and basic video equipment such as camera and lighting kits that students can access to create their own media projects.

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MediaGenerator is designed to promote student production, distribution and experimentation with digital media. The MediaGenerator holds a periodic competition where students can apply for funding for their projects. Each project selected will receive between \$500 and \$2000. MediaGenerator was funded through the Student Experience Fund of the Office of the Provost.

Oasis

Oasis is a similar initiative to DSpace, aimed at serving educational and research institutions throughout the European Union.

ePresence

ePresence is a web-based technology platform designed to support conferences, online meetings, lectures, seminars and demonstrations and broadcasting them live over the internet, or making them available as on-demand webcasts. ePresence is developed at the Knowledge Media Design Institute at the University of Toronto, is offered under an Open Source BSD-style license, and is available for free download.

Virtual Researchers on Call (VROC)

VROC is an educational initiative of Partners in Research (PIR) designed to link Canadian high school students with top researchers and their trainees from the scientific community, within their classroom setting. VROC aims to provide Canadian secondary school students with advanced interactive learning opportunities in all aspects of the natural and health sciences, technology, engineering, and mathematics.

Zed

Zed was a CBC-initiated project created in 2002 as a “launch pad for independent creative expression.” Using TV, the web, and consumer-based mobile communications platforms, ZED’s aim was to seek out and broadcast the best new short films, documentaries, animation, visual art, performance, and music in Canada and around the world.

Since Zed's initial inception until it was taken off the air in 2006, the show aired almost 3,000 individual works by emerging and acclaimed artists and performers. Nearly half of these were uploaded to the show’s website directly by independent content creators.

An early mover in the area of collaborative content creation and programming, the Zed website and archival content is still available online however there appears to be no recent effort at actively supporting the website.

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Appendix 2

Top-line Summary of ORION Survey findings

As part of its initial consultation with Ontario's research and education community, ORION conducted an open survey inviting the province's postsecondary institutions and other stakeholders to share information about current activities and future plans for media content creation, production, and distribution.

At the time of writing, the survey had attracted 41 responses, 39 of which came from the postsecondary education community, the remaining 2 from industry. According to this survey, the current status of their activities and initiatives is as follows:

- 72% of the 39 postsecondary respondents currently offer programs in broadcast, film, and digital media
- 67% of postsecondary respondents currently have or plan to distribute student-, faculty- and/or institution-generated content in one form or other over local campus-wide in-house communications systems
- Of those respondents currently operating a broadcast channel, 25% are student-operated, and 50% are operated by a mix of students and faculty supervisors. One-third of postsecondary respondents are using 'in-house' or ad-hoc technologies while 15% are using proprietary systems provided by a third-party vendor:
- Among all responding postsecondary institutions, 51% are involved in research or areas of study that involve video and/or HD video production, and/or technologies for collaborative production.

Of all postsecondary respondents, 72% of all respondents felt it would be valuable to participate in an IPTV educational channel built over the ORION network which is also accessible to mainstream audiences over the open Internet.

Respondents expressed specific interest in contributing to an educational IPTV channel where they can make available content that is relevant to the following target audience groups:

- Students – 62%
- Faculty - 54%
- Institution community (i.e. staff, alumni etc.) - 18%
- Industry/business stakeholders - 38%
- General Public - 49%
- Government and policy makers - 21%
- Potential Funders - 28%

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Respondents identified the sources of this content would be as follows:

- Student-produced films/animation - 64%
- Student-produced TV shows/broadcast news - 59%
- Student performances and concerts - 41%
- Other institutional special events - 49%
- Faculty lectures/course material - 36%
- Showcase of faculty/student research - 41%
- Institutional promotional content - 46%

Overall, the survey indicates there is sufficient support and the necessary foundational resources to initiate an educational IPTV channel in Ontario, however the diversity of individual institutions' goals and objectives and the uniqueness of their respective strategies and tools indicates that some form of joint coordination will be needed to ensure adequate, appropriately focused collaboration amongst the numerous interested parties throughout the province.