InterPARES 3 Project

International Research on Permanent Authentic Records in Electronic Systems

TEAM Canada

Title: Case Study 11 – UBC Graduate School of Journalism: Preservation and Access System for High Definition Digital Video Archive in Online and Electronic Formats

Case Study Report

Status:	Final (public)
Version:	1.4
Date Submitted:	March 2012
Last Revised:	February 2016
Author:	The InterPARES 3 Project, TEAM Canada
Writer(s):	Adam Jansen School of Library, Archival and Information Studies The University of British Columbia
Project Unit:	Research
URL:	http://www.interpares.org/ip3/display_file.cfm?doc=ip3_canada_cs11_final_report.pdf

Document Control

Version history			
Version	Date	By	Version notes
1.0	2012-01-07	A. Allen	First draft of final report.
1.1	2012-03-02	A. Jansen	Final draft.
1.2	2012-03-02	A. Allen	Minor formatting and grammatical changes.
1.3	2013-07-03	R. Preston	Minor content and copy edits for public version.
1.4	2016-02-14	R. Preston	Final content and copy edits for public version.

Table of Contents

Overview

The University of British Columbia Graduate School of Journalism (hereinafter "J-School") was established in July 1996 and accepted its first intake of students in September 1998. As an academic unit within the University of British Columbia (UBC) Faculty of Arts, its mission is to achieve the highest professional standards in journalism through instruction in journalistic practice and the scholarly understanding of journalism, critical thinking, and teaching of ethical responsibility.

The case study considers the high definition digital videotapes and files created by the J-School's students as part of their course projects and theses; specifically, the study examines the students' finished video documentaries and the raw footage produced in the course of making them. Although the videos are pieces of artistic expression, they also provide evidence of one component of the students' coursework for which they are graded, while also reflecting the quality of education each student receives from the program.

The main objectives of the case study were to: establish a digital video archive of high definition video footage created by the J-School's students; devise means to ensure the preservation of the raw footage of student projects; and create policies allowing for the footage to be used internally and externally.

Statement of Methodology

The principal methodology used for the general study was content analysis. Graduate Research Assistants (hereinafter "GRAs") conducted a comprehensive review of existing cost benefit templates, and from their research, were able to provide an overview of necessary elements for these models. A matrix was created to compute elements of cost benefit templates in order to compare them to identify gaps and strengths of each model. GRAs contacted relevant InterPARES 3 case studies that had preservation cost and/or benefit information in an effort to determine those costs. Collectively, the findings from the matrix and findings from relevant InterPARES case studies form the basis for inclusion in the proposed cost benefit template. Data was then presented to the TEAM Canada researchers for evaluation, discussion and recommendations at the bi-annual research plenaries in Vancouver.

Contextual Analysis

TEST-BED

The information in this section is essential to understanding the test-bed. The focus of the analysis is the immediate administrative context of the case study.

Name

The official name of the test-bed partner is the UBC Graduate School of Journalism (hereinafter "the J-School").

Location

The UBC Graduate School of Journalism is located on the Point Grey campus of the University of British Columbia, in Vancouver, British Columbia, Canada.

Origins

The creation of a graduate school of journalism at the University of British Columbia (UBC) was announced in July of 1996. The need for a graduate programme in journalism in Western Canada had long been recognized, but had not proceeded due to unavailability of funding. With an endowment from the Sing Tao Foundation to offset the costs of a new building, plans for the J-School moved forward. The Sing Tao building was officially opened on August 27, 1997.[1] The J-School opened in 1998, accepting its first intake of students for the academic year beginning in September 1998. The UBC Graduate School of Journalism remains the only school offering a post-graduate degree programme in journalism in Western Canada.

Legal Status

The J-School is an academic unit within the UBC Faculty of Arts, but is governed by the admissions and curriculum requirements of the UBC Faculty of Graduate Studies. The University of British Columbia is a corporation under the *University Act*, R.S.B.C. 1996, c. 468. As a unit within a post-secondary institution, the School of Journalism is also subject to the *Freedom of Information and Protection of Privacy Act*, R.S.B.C. 1996, c. 165.

Work produced within the School, including theses projects, is subject to UBC's policies on scholarly activity. This includes, for example, Policy 85, Scholarly Integrity, under which individuals assume direct responsibility for the intellectual and ethical quality of their work. The School is also required to comply with UBC Policies such as those for Records Retention and Disposition (Policy 117) and Records Management (Policy 118).

In Canada, journalistic practice is governed by various laws relating to privacy, intellectual property, freedom of expression, defamation, contempt, publication bans, and interactions with law enforcement and online media, which are explored by students in the Media Law course.[2] Work produced by students and others within the School is subject to copyright legislation.

Norms

The J-School endeavours to train its students to follow the methodologies and practices commonly used by journalism professionals. Although there is no mandatory ethical code for the

[1] UBC Public Affairs (1997), "Sing Tao School of Journalism Building Opens at UBC," Media Release, August 20, 1997. Available at http://www.publicaffairs.ubc.ca/media/releases/1997/mr-97-79.html (Accessed 30 January 2008).
[2] UBC Graduate School of Journalism, "Course Descriptions." Available at http://www.journalism.ubc.ca/about/course_descriptions/ (Accessed 31 January 2008).

journalistic field, prominent associations have published principles and ethical guidelines for journalistic practice.[3] The J-School offers a course in Media Ethics to allow students to "develop an ethical framework" for the practice of journalism.[4]

Funding

The J-School receives its funding through the Faculty of Arts at UBC and is eligible for additional grants through the University, such as the Teaching and Learning Enhancement Fund (TLEF) for projects that result in sustainable benefits to students.[5]

The J-School has, in the past, also benefited from one-time sources of funding or resources that enable it to fulfil its objectives. One example is the Sing Tao endowment, which allowed for construction of the building in which the School is housed. Another example is the financing of the video cameras used in the Dan Rather Project of the Advanced TV class by Dan Rather's production company. The J-School has also received a $1 million donation from a private donor, the Mindset Social Innovation Foundation, to be used for the International Reporting class over the next nine years.

Physical Resources

The J-School resides in the Sing Tao Building at 6388 Crescent Road, Vancouver, BC. The three-storey, 1,080-square-metre building includes offices for faculty and administration, a large classroom, a first-floor media lab doubling as a seminar room (and sometimes shared with other departments), a second-floor newsroom equipped for state-of-the-art multiplatform and newswriting projects, and a video-editing lab.

Governance

The J-School operates under a traditional academic governance model with faculty meetings and various committees responsible for specific governance tasks. All staff report to the director, Peter Klein. There are two full time administrative staff and one part time tech support/instructor. The J-School has five full-time faculty members and approximately six sessional instructors.

The Director of the J-School reports, in turn, to the Faculty of Arts. The J-School relies on Arts Instructional Support & Information Technology (Arts ISIT) to operate its server and to provide technical support.

The J-School maintains regular communication with a Board of Advisors with which it exchanges information about academic and industry standards. The academic component includes members from various UBC faculties and schools and supplies information about funding, administration and academic matters. The industry component includes partners from various media and broadcasting corporations. These partners contribute knowledge of the current

[3] The Canadian Association of Journalists has issued a Statement of Principles and Ethics Guidelines, available at http://www.caj.ca/principles/principles-statement-2002.htm (Accessed 31 January 2008).
[4] UBC Graduate School of Journalism, "Course Descriptions," op. cit.
[5] UBC Provost and Vice President Academic, "TLEF Criteria 2008/2009." Available at http://www.vpacademic.ubc.ca/tlef/criteria.htm (Accessed 30 January 2008).

state of the industry and are important in shaping the curriculum and ensuring that the School is apprised of current and future industry standards.

Mandate

The J-School does not have a legislated mandate. It awards graduating students with the Master of Journalism degree (M.J.), via a programme designed to provide "the optimal mix of academic theory and practice to succeed as a journalist locally or globally."[6] According to the UBC Calendar, the program aims to enhance advanced journalism and "improve the information base and scholarly preparation of students for journalistic writing in their specialty subject areas," thus serving the journalistic profession and bringing developments in investigation to the reading public.[7]

Philosophy

The J-School offers a distinctive approach to journalism education comprising both academic specialization and applied training.[8] The first component of this philosophy may be traced to the launch of the school. UBC saw the need for a graduate program precisely because it would attract students from various disciplines and, as a consequence, offer these students a chance to become specialists in their fields. The J-School also supports a belief that journalists in the current digital environment must be competent across media platforms, including online writing, video and podcasting. Thus, the J-School aims to integrate theory and practice across the curriculum, "applying ethics, media theory and academic knowledge to the journalism skills of interviewing and reporting in a real-time multimedia environment."[9] In addition, the J-School maintains small class sizes to allow one-on-one interaction between students and faculty and opportunities for mentoring.[10]

Mission

The stated mission of the J-School is "to achieve the highest professional standards in journalism through instruction in journalistic practice and the scholarly understanding of journalism, critical thinking, and teaching of ethical responsibility."[11] The mission statement was previously summarized on the J-School's Web site as follows:

- To produce a new generation of journalists with the specialized knowledge, cultural awareness and critical thinking skills needed to excel in journalism;

[6] UBC Graduate School of Journalism, "M.J. Degree." Available at http://www.journalism.ubc.ca/about/mj_degree/ (Accessed 30 January 2008).
[7] UBC, "Calendar 2007/08, IX. Faculties, Colleges, and Schools: The School of Journalism - Master of Journalism - Introduction," Vancouver edition. Available at http://www.students.ubc.ca/calendar/index.cfm?tree=12,206,355,494 (Accessed 30 January 2008).
[8] Ibid.
[9] UBC Graduate School of Journalism, "Academic Program." Available at http://www.journalism.ubc.ca/about/academic_program/ (Accessed 30 January 2008).
[10] UBC Graduate School of Journalism, "M.J. Degree," op. cit.
[11] UBC, "Calendar 2007/08, IX. Faculties, Colleges, and Schools: The Faculty of Graduate Studies - Degree Programs - Journalism," Vancouver edition. Available at http://www.students.ubc.ca/calendar/index.cfm?tree=12,204,828,1183 (Accessed 31 January 2008).

- To improve the practice of journalism through the education and training of journalists in scholarship, research and professional development; and
- To advance through rigorous research the understanding of the vital role of journalism in the public sphere and to contribute to the current body of journalism studies existing in Canada.[12]

Policy

The J-School currently does not have a designated policy statement or written policies governing its activities. For administrative purposes, it relies on broader UBC policies and the simple reporting structure maintained within the School.

Functions

The main functions of the J-School are teaching (both academic and professional training) and administration (of academics, internship programs, awards, etc.). The J-School also has an important research function, which it carries out in partnership with the Canadian Media Research Consortium (CMRC). The CMRC is a partnership of three graduate programs in Canada, which, in addition to the UBC Graduate School of Journalism, includes the York/Ryerson Graduate Programme in Culture and Communications and the Centre d'études sur les Médias at Laval University. The CMRC's mandate is to undertake research in media and communications, with a focus on technological change; to promote collaborative research focused on Canadian issues; and to disseminate the research findings of its partners.[13]

Recognitions

Although the J-School as a whole is not the recipient of formal honours, it enjoys the success of numerous award-winning faculty members. Graduates of the program have gone on to receive Jack Webster Awards and students within the program receive student awards for their accomplishments.

The J-School retains the merit of having the only graduate degree programme in journalism in Western Canada and was recently honoured to collaborate with world-renowned journalist, Dan Rather, on the Dan Rather Project, for the Advanced TV course, at UBC.

ACTIVITIES RESULTING IN THE CREATION OF THE RELEVANT RECORDS

This section is divided into two sub-sections. The first concerns the Administrative and Managerial Framework within which the relevant digital records are created. The second

[12] UBC School of Journalism, "About the Program: Mission Statement," Internet Archive. Available at http://web.archive.org/web/20070704014540/www.journalism.ubc.ca/mission_statement.htm (Accessed 31 January 2008).
[13] UBC Graduate School of Journalism, "CMRC." Available at http://www.journalism.ubc.ca/about/cmrc/ (Accessed 31 January 2008).

focuses on the digital records themselves. Both sub-sections aim to gather information to allow the characterization of the types of activities and records that are the test-bed's concern.

Administrative and Managerial Framework

The focus of this case study was on specific records generated by students of the J-School resulting from the activities of the International Reporting class. The records include: high definition digital videotapes and digital files resulting from the digitization and editing of these tapes, which are not generated during the J-School's administrative activities. The relevant digital entities are not related to the administrative records generated by the School. Information about the management and maintenance of the relevant digital entities are covered in the following sub-section, "Activities Resulting in Document Creation: Digital Entity/Entities Under Study."

Digital Entity/Entities under Study

General description of the activity

The digital entities studied by the InterPARES 3 researchers are created in the International Reporting Class, a year-long course for second-year master's students. Students study the history of foreign correspondence and modern-day examples of best-practice international reporting. The course is designed around the planning and production of a documentary report on a topic of international significance. At the end of the first semester, 10 students, 1 professor and 2 adjunct professors participate in a two-week field study where they collaboratively shoot footage in a foreign location. The format of this section varies from year to year. Generally the class works as a single entity; however, in previous trips students have been divided into groups or teams. Upon returning from the field, students transfer footage from the cameras to computers for editing. During this process, sub-clips are created (video segments or sequences taken from the raw footage and placed into a container of other related segments or sequences). In the past, students only saved the footage they used in the final product. The J-School wants to create an archive of sub-clips and are therefore requiring that students save as much footage as possible regardless of its perceived usefulness. Because of the collaborative nature of the film shooting, sub-clip creation and editing, distinguishing authorship is virtually impossible. Thus, the entire class shares authorship for the sub-clips and the finished product.

The videos serve as records of the students' coursework and academic contribution to the J-School and, more importantly, the videos are a reflection of what the students have learned: their filming, editing, writing, researching and reporting skills, and their familiarity with established and emerging forms in documentary production and broadcast journalism. The videos can also be considered artistic or creative expressions in their own right and often the students include them in their portfolios as examples of their work. In the past, students have also sold their work to various media outlets for broadcast or publication.

As the J-School's mandate is to incorporate academic learning with applied practical training across multiple media platforms, the video documentaries are a means for students to get

both theoretical and practical experience in producing documentary programs for high-definition television broadcasting.

Type of activities

Students at the J-School may produce video documentaries in the HD format in three different contexts: 1) as part of their coursework in the Advanced TV course, 2) as part of their coursework in the International Reporting course and 3) as part of their thesis work. Currently, all of the existing works in HD format have resulted from the coursework in the International Reporting course.

In the course of creating the finished video documentaries, students prepare research and scripts, shoot footage using HD cameras, transfer the footage to a computer, make transcripts of the footage and edit the footage in Final Cut Pro video editing software.

Documents resulting from activities

The International Reporting course has a committee comprised of the private donor, faculty and members of the J-School's Advisory Board. This committee selects students to participate in the course based on journalism and travel experience, as well as the quality of the international story idea pitched by the student.

For the International Reporting course, students generate a series of documents that describe their story ideas. Collectively, the class narrows down the story ideas to three pitches, which are then sent to a media partner/broadcaster. The media partner/broadcaster then chooses one story idea, which becomes the subject for the documentary that the class works on as a group.

In the process of creating the final video documentary, a series of documents are created: raw footage, on miniDV tape, from the original shooting; shot logs recorded during the shooting that identify the persons involved in the shot;[14] sub-clips created at the School during the process of transferring raw footage to computers and editing; a single final documentary video; and transcripts that describe the film.

Existence of maintenance strategies

Currently, there are no maintenance strategies or measures to avoid technological obsolescence of the digital entities under study. Currently, the J-School keeps both digital materials and tapes in the edit suite, which is locked; however, students of the J-School have access to the room. This means that, despite being kept in a locked room, the authenticity of the materials may be easily compromised and cannot be verified. InterPARES GRAs are recommending that the J-School keep the NAS and the original tapes in a secure, locked room with controlled access. Other copies of student works (non-HD format) are kept in a locked cabinet in the Administrator's office and in the Director's Office. Generally, originals are kept in the Administrator's office and compilations or finished video works are kept in the Director's

[14] Unfortunately, there is no consensus among J-School faculty regarding the need for shot logs. InterPARES GRAs recommend that these documents are created to help identify the persons involved in each individual shot; however, at this time students are not required to maintain them.

Office. These works are kept in the forms of miniDV tapes and DVDs. Students submit all thesis works to the Director before graduation.

At the moment, the J-School has kept the tapes of raw footage from the Dan Rather project and the students keep the tapes of raw footage from their thesis work. The HD tapes from the Advanced TV/Dan Rather Project are currently kept in Peter Klein's office. Digital files kept on the hard drives in the editing suite are erased after each major project or before the beginning of the following academic year. The tapes of the raw footage from last year's International Reporting Class were sent to Frontline. The tapes are now back in the possession of Peter Klein.

Legal requirements and constraints

The *Canadian Copyright Act* is the most relevant piece of legislation affecting the production and, especially, the preservation of student video works by the J-School. The J-School plans to make the subclips from the International Reporting class available to the public, for a small administrative fee, via the internet. To protect copyright, the J-School plans to use creative commons licensing.[15] Unfortunately, creative commons does not address issues related to moral rights. This may not be an issue given the collaborative nature of project creation in the International Reporting class. However, given the J-School's hope to expand the materials available to the public to include material generated in other classes, InterPARES recommends that the J-School take a proactive approach to issues related to moral rights. For example HDNet, the television network that broadcasts the works made by Dan Rather's production company, owns the rights to the material shot for the Dan Rather Project, as stipulated in a contract made with the J-School. In the future, ownership of the material may vary. In general, students completing projects in journalism are expected to comply with all applicable legislation and with UBC Policies on Scholarly Activity.

As per UBC Policy 88, students retain intellectual property rights to the works they produce. However, the projects produced in the Advanced Broadcast class are usually joint ventures undertaken with a partner from the media industry.

Normative requirements and constraints

The J-School endeavours to train its students to follow the methodologies and practices commonly used by journalism professionals. Although there is no mandatory ethical code for the journalistic field, prominent associations have published principles and ethical guidelines for journalistic practice.[16] The J-School offers a course in Media Ethics to allow students to "develop an ethical framework" for the practice of journalism.[17]

Scientific requirements and constraints

None specified.

[15] The School's lawyer is currently drafting a policy; however, InterPARES GRA's have not yet been able to view a copy.
[16] The Canadian Association of Journalists has issued a Statement of Principles and Ethics Guidelines, available at http://www.caj.ca/principles/principles-statement-2002.htm (Accessed 31 January 2008).
[17] UBC Graduate School of Journalism, "Course Descriptions," op. cit.

Artistic requirements and constraints

The J-School stressed the importance of maintaining a record within the system of who holds the both the legal and moral copyright to the artistic work.

Ethical requirements and constraints

As stated earlier, there are no mandatory ethical codes governing the practice of journalism in Canada. However, there are principles and guidelines issued by professional bodies that influence journalistic practice in general. Students completing projects will most likely be familiar with the common ethical guidelines through the Media Ethics course and will put into practice what they have learned regarding fair representation and other critical issues.

Technological requirements and constraints

The J-School has two computer labs and one editing suite. In the first floor computer lab, which is shared with classes from the Film Production, Creative Writing and Fine Arts programs, there are 16 twenty-four-inch iMacs equipped with Final Cut Pro. In the Newsroom computer lab, which is used for the Multiplatform Journalism and Feature Writing courses, there are four twenty-four-inch iMacs equipped with Final Cut Pro. In the editing suite, there are two G5 towers and an eight terabyte NAS RAID-5 hard drive. The pre-study technical infrastructure is illustrated in Figure 1.

The J-School has seven Canon XL-H1 High Definition video cameras and seven HD Camera Kits, which include Sennheiser ME-66 Shotgun microphones, Sennheiser Wireless lavalier microphones, lighting kits, batteries, battery chargers, etc. The J-School is currently purchasing small, hand-held, tapeless cameras for other classes, which have hard drives that can save up to eight hours of footage. They plan to use these new cameras for the International Reporting Class in the future, which will eliminate the need for tapes.

Editing of the HD video generally takes place in the editing suite using Final Cut Pro 6.0 software. The types of documentary presentation include video, graphic, textual, and audio entities. There are two different formats that can be used for HD video: HDV, which is a video recording format that uses MPEG2 compression, and DVCPRO HD, which uses DV compression. DVCPRO HD is considered the professional HD digital video format and is what was used in the Dan Rather Project. For other student projects using HD video, the HDV format may be used as it results in smaller file sizes than DVCPRO HD.

The J-School endeavours to be on the cutting edge of technologies used in the production of media journalism. It has an Industry Advisory Board that offers input regarding the technologies and formats currently used in the media industries. The Advisory Board has noted that it is anticipated that HD television will become the industry standard for broadcast journalism.

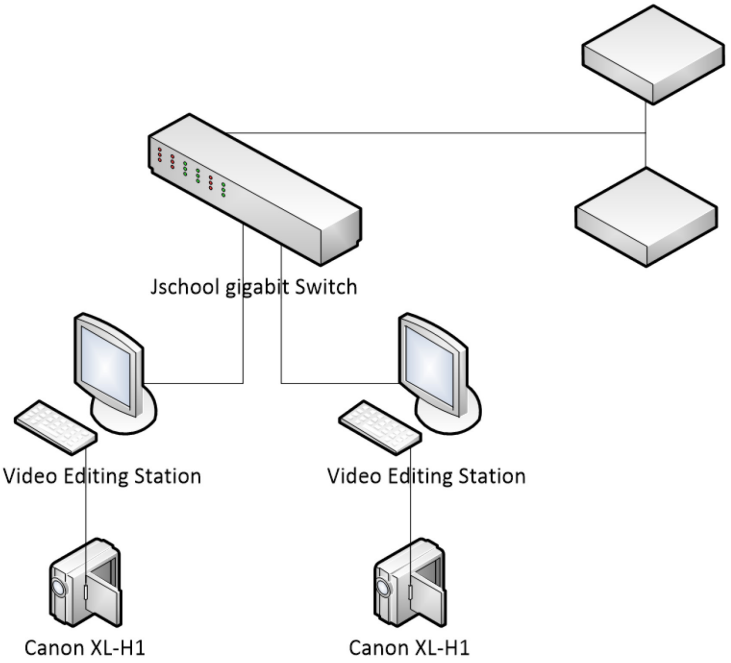


FIGURE 1: Pre-Study Technical Environment

Narrative Answers to Research Questions

Introduction

Students at the J-School carry out extensive filming in the course of video projects and capture interesting information in the process. The footage generated may, in some cases, may be uniquely and historically relevant for future students of the J-School, for other departments at UBC, or for external agencies seeking footage of local places or events. The footage generated in the production of student projects, particularly in the high-definition format which is poised to become an industry standard (but is not yet widespread in digital video archives), may prove useful editorially while also generating revenue for the School and the University.

The vision of the J-School is to establish a digital video archive of the raw footage generated during the process of filming student video projects.

The author wishes to acknowledge the help of Peter Klein, of the Graduate School of Journalism, and students Jordan Chittley and Anupreet Sandhu Bhamra, in answering the following questions.

Research Questions

1. *Which activities generate these digital records?*

The digital footage in question is generated by students at the School of Journalism during the creation of video projects for the Advanced TV and Multiplatform courses, and for thesis projects.

2. For what purpose(s) are these digital records created?

The digital records are created in order to satisfy course and degree requirements. The goal for students who generate the footage is to produce a final video piece that combines video footage with other types of media. The raw footage generated in the process is merely an intermediary used in the production of the final piece. Ultimately, for the students, the purpose of the video projects is formative. Students gain valuable experience in gathering and editing footage, thus building on their journalistic skills.

For the School of Journalism, the final projects serve the purpose of training students in journalistic practice, and ultimately fulfilling academic purposes including the granting of degrees. The School of Journalism, however, is primarily interested in preserving the raw footage for the purpose of establishing a digital video archive that may be valuable both internally and externally. In this context, raw footage might be preserved by the School of Journalism both for editorial purposes, to be used in future video projects, and for commercial purposes, as part of an repository of footage that may be of interest to external parties and used to generate revenue for the School of Journalism.

3. Who are the intended users of these digital records?

For the students who generate digital video footage in order to complete their projects, the audience for the final piece is the professor of instructor who evaluates the piece in the context of the relevant course. In the case of the raw footage, however, which might in future be preserved in an in-house archive, the users would be anyone interested in high-definition digital video footage generated by students. Internally, students at the School may be interested in using footage shot during previous projects for future projects to which the footage may be relevant. Externally, anyone from a news broadcasting agency or any other agency interested in high-definition footage within the range of subjects captured by students at the School might be interested in incorporating some of this raw footage in external projects. It should be noted that footage captured by students during video projects may capture subjects and places that are unique and historically relevant, for example, the reaction in the Vancouver downtown eastside to outbreaks of MRSA (a bacterial infection), or the impact of RAV line construction on Cambie Street businesses during the lead-up to the 2010 Vancouver Olympics.

4. What are the key formal elements, attributes, and behavior (if any) of these digital records?

The final video projects produced by students are exported from the software application Final Cut Pro 6 as QuickTime movie files. These files, however, are mixed. They consist of highly edited combinations of video files, audio files, and in some cases additional image files. Numerous media file formats are accepted by the latest version of the Final Cut Pro software.

Audio and image files may be added to videos for narrative and journalistic purposes, to increase the effectiveness of the final piece. These added files, however, are not of interest in the context of an in-house archive of video footage since in most cases the final pieces cannot be re-used in their mixed form. Individual shots in a final piece may be only three to four seconds in length. In addition, much of the raw footage generated is never used in the final product, though it may be of interest to other projects. In this context, the raw video files shot in high-definition are the focus of preservation.

The footage is initially captured on high-definition cameras on digital tape, and is then converted to a high-definition digital video file format within the software application Final Cut Pro 6. Each time a video camera is powered off and on, a new QuickTime file is generated in the digital media. Each shot is saved as a number. These names can be changed, but if they are changed prior to manipulation in Final Cut Pro, the software application will not recognize the file. To work with the raw footage, digital media is either transferred from Final Cut Pro and saved as multiple QuickTime files, or opened as a single file in Final Cut Pro, then renamed and edited. Shots are selected for inclusion in the piece within the Final Cut Pro application; these may be edited as to length, re-arranged as to order, and combined with other file types to achieve the desired effect. The Final Cut Pro program saves enough raw material that it is normally possible to make any desired changes to the final piece from the last version in which it existed in Final Cut Pro. Students do not normally save multiple versions of a project at different stages since the latest version is sufficient for making changes.

5. *What metadata is manually added to the records by their author and their creator? What metadata is automatically generated and attached to the record?*

Metadata attached to the digital video files, either manually or automatically, is currently not extensive. Counter time may be set for a blank tape by "blacking" the tape, that is, by recording through the entire tape with the lens cap of the camera in place. This lays down a time code on the tape, allowing students to track the time at any point in the footage if desired.

Once it is opened in Final Cut Pro, the program records information about each file, including the date created, date modified, date last opened, dimensions, duration, name and kind.

6. *In what formats do the digital records exist (e.g., Word or Excel files, .TIFF images, .wav files, etc.)?*

Final projects are exported as QuickTime files, and usually uploaded to websites for evaluation. Raw video footage exists in a high-definition digital video file format.

7. *What are the digital components of these digital records?*

The raw footage is unmixed, thus comprised only of high-definition video file formats.

8. *How are these digital records identified (e.g., is there a [persistent] unique identifier)?*

There is no persistent unique identifier. The files are named by the individual students working with the video footage.

9. *What measures does the creator take to ensure the accuracy, reliability and authenticity of the digital records and their documentation?*

There are no formal measures taken to ensure the accuracy or reliability of the digital video files beyond those called for by journalistic standards and academic standards. When a digital video archive system is established, measures will need to be put in place to ensure the authenticity of the records over time.

10. *Once a digital record is created, how is it handled? That is, where is the record stored (e.g., the creator's desktop, sent to an information system, printed, etc.)?*

The raw video footage is stored on the desktops of computers at the School of Journalism while the video projects are in the editing stage. The original files, then, reside on school computers. Students export their final, edited pieces from Final Cut Pro as QuickTime files, and these may be saved on laptops, on external drives or on compact discs.

As for the digital tapes used to capture footage within the cameras, these may be erased and re-recorded by students needing to shoot additional footage for the same or other projects. Frequently this is the case, as students are conscious of the cost of tapes to the school and do not see a need to preserve them. There are no formal procedures in place for maintaining raw footage; the digital video files generated in Final Cut Pro and used to produce a finished piece may be deleted by students once this goal is reached.

11. *How are changes to these digital records made and recorded?*

Once it is generated in Final Cut Pro,[18] the digital video footage, unless deleted, remains accessible in its raw form. Students may choose individual shots for inclusion in the final piece, shorten or lengthen them, choose the order in which they appear, and insert narrative or additional video and image files. Final Cut Pro saves each file as a date and time, so that it is possible to return to a previous version to make changes. The recording of such changes is dependent on individual students.

12. *Are these digital records linked by an archival bond to records on other media? If yes, what records? How is their relationships made explicit?*

The existence of archivally linked records on other media depends largely on the individual student(s) producing the footage. Some students keep logbooks in which they record detailed information about each shot they capture. At a minimum, this might include the date and location of the shot. Other students prefer to work from memory, recording little or no information about footage as it is generated, but editing the raw footage soon afterward so that the details are clear in memory.

[18] An introduction to the Final Cut Pro software is available at http://www.apple.com/finalcutstudio/finalcutpro/.

13. If the archives has the records in custody, when and how were they acquired? How were they processed? How are they preserved?

The archive is not yet established, and therefore has no records in custody at present. The School of Journalism is primarily interested in establishing an archive of raw video footage shot in high-definition format. High-definition footage was first generated at the School during the 2007-2008 academic year, as part of the Dan Rather Project, but the rights to this footage are owned by the Dan Rather company, HDNet. The first high-definition video footage eligible for inclusion in an archive maintained by the School of Journalism was filmed by students in the 2008-2009 academic year as part of the Multiplatform journalism course.

14. If the archives does not have the records in custody, when does it expect to receive them?

There is currently no system in place at the School of Journalism to preserve raw video footage. As soon as the system is in place, the School can begin to gather footage from students who have generated it during projects and preserved it independently.

Glossary of Terms

Assets: In the context of the J-School Archives, assets are those discrete high definition video clips that have future reuse value.

B-roll: In video editing, b-roll material is the supplemental material (such as landscape, city scape, park scenes, etc.) interspersed with the main topic of the interview or documentary used to emphasize or illustrate the topic being discussed or to provide backdrop against which to frame the overall piece.

Codec: A computer program capable of encoding or decoding a digital data stream into a particular format. Codec stands for "COmpression-DECompression."

DVCPRO HD: A variation of Digital Video (DV) compression used to compress video on a frame-by-frame basis, DVCPRO HD utilizes four separate DV codecs in parallel to produce variable frame rate video files, allowing for fast transfer rate when compared to standard DV. In the DV compression scheme, audio is left uncompressed.

Final Cut Pro: Video editing software produced by Apple, Inc. Final Cut Pro has one of the largest market shares of any editing software on the market and is widely used in the professional broadcasting field.

Final project: In the context of the J-School video production workflow, the final product is the end product of the video editing process. The final project is the piece that is ready to by screen (viewed) by the intended audience, containing all of the various video clips, wipes, credits, etc. that comprise a documentary.

Final Cut Server: A server-based asset management system, offered by Apple, Inc., for managing the workflow and video files used in Final Cut Pro. On June 21, 2011, Apple announced that it was moving Final Cut Server to End-of-Life with no known successor product.

HDV: A high definition video format for use on digital video (DV) cassette tapes developed by JVC and used by JVC, Canon, Sharp, and Sony on their respective DV video cameras. HDV uses a MPEG2 lossy compression method to record up to 1080p resolution video with stereo audio recorded in MPEG1. Due in part to the large number of DV tapes produced, HDV is widely used in broadcast television.

High Definition (HD): Any video that is of higher line density than standard analog video (i.e. 480 lines of horizontal resolution). The most common HD resolutions are 1280 x 720 and 1920x1080 lines of resolution (vertical and horizontal).

International Reporting Class: A class offered the UBC School of Journalism that was funded by a gift from philanthropist Alison Lawton. Offered annually, ten students are selected through

a competitive application process to travel aboard in order to create a documentary on important and under-reported global issues.

J-School: UBC Graduate School of Journalism.

Metadata: Information that characterizes another information resource, especially for purposes of documenting, describing, preserving, or managing that resource.

MiniDV: The smallest class of cassette tapes used to record video in the Digital Video (DV) format.

MPEG2: A lossy audio and video compression scheme. MPEG2 is the standard compression method used with DVD movies, as well as for transmitted video over the air for digital television and satellite television.

Network Attached Storage (NAS): A self-contained storage sub-system that resides on a network and is globally accessible to an authorized computer on that network.

PBCore: Short for Public Broadcasting Metadata Standard. PBCore is widely used in the broadcasting industry to describe video assets. Built on a foundation of Dublin Core, PBCore comprises three main metadata areas: Intellectual Content, Intellectual Property, and Instantiation (technical metadata).

Project file: In the context of Final Cut Pro, the project file is comprised of XML files containing 'pointers' to the media assets used in the production, along with the in and out time codes for the assets used, scene wipes, media order, title/text display information, etc.

RAID: Short for Redundant Array of Independent Disks. A storage technology that combines multiple disks into a single logical unit. In RAID 1, data is written identically to two drives simultaneously so that one drive 'mirrors' the contents of the second drive. This provides not only data redundancy to protect against the data loss in the event of a hard drive failure, but also provides a second source to access data, thereby providing faster access to the contents of the storage pool.

Render: The process of generating a video file from the project file.

Storage Area Network (SAN): A dedicated network designed to consolidate storage devices and provide them with a dedicated network pipeline to the servers requesting information. By creating a storage network specific to data transport, files can be moved from hard drives to servers without interfering with regular network traffic, providing faster throughput for the movement of files without impacting other routine network operations.

Shot logs: An index of the time, location, and subject of each discrete video clip. Shot logs are created as close to the time of the shoot as practicable, and ideally exist in a one to one ratio of one entry for every time the video camera is turned on and off.

Sub-clips: Discrete video clips that are of one continuous shot

XML: Short for eXtensible Markup Language. A general-purpose specification for creating custom, cross-platform, text-based, markup languages used both to encode documents and to serialize data; a subset of General Standardized Markup Language (SGML) with use and design similar to Hypertext Markup Language (HTML) but employing user-definable markup tags that indicate the logical structure in addition to the display specifications of data elements.

XSAN: Apple Inc.'s storage area network mass hard drive subsystem.

Xserve: A line of computer servers designed by Apple, Inc.

Findings

Need for a Consistent, Enforceable Workflow Process

A post-production workflow was created by Kevin Comerford, a SLAIS PhD candidate who was working independently from SLAIS as a contract records manager for the School of Journalism. The workflow was supposed to have been implemented by students during the 2008/2009 International Reporting course. However, in a July 2009 meeting with the School of Journalism, it was determined that the students had not followed the workflow procedures. Rather, left to their own devices without oversight, the students created minimal metadata (name & date of project, as well as names of students working on the projects), and what little naming conventions and folder structure that exists applied only to that student's work, which resulted in silos of consistency amongst a field of irregularity. The workflow called for an active role in the creation and preservation of the media by a Project Coordinator, but no Project Coordinator was designated and no one on staff at the J-School was performing quality assurance checks on the project generated by the students. It was decided during the meeting that a Project Coordinator was a position of need and the J-School recruited for two positions: one project coordinator to provide oversight on the workflow, and one project assistant to analyze the previous work that had been done and make corrections as necessary to bring it up to the new guidelines.

GRAs have created a list of essential metadata requirements to aid in the long-term preservation of both the raw footage and the final projects.[19]

Need to Provide a Clear Definition of the Archival Record to be Preserved

Prior to the study, students determined what video assets were kept over the long term. In some cases, it was only the sub-clips, while others had the project files and final project. With some projects, it was determined that not all the raw footage should be saved as not all of it was worthy of saving (problems with focus, unexpected interruptions etc.), yet no standards existed on how to make this determination. This lack of understanding resulted in most of the poor quality sub-clips being saved amongst the valuable assets and final projects with no distinction between the various types of footage (Interview, B-roll, final project, etc.) During the early stages of the project, there was some confusion among the faculty as to what assets were to be kept. In addition to the final product, raw footage is stored, as well as the tape logs and transcripts, which are textual documents that add context to the sub-clips. Previously, the students created sub-clips but they did not have shot logs. Sub-clips and transcripts were saved in a random fashion at the student's discretion. The director of the J-School, Peter Klein, has indicated that he would like to keep the transcripts, the final production piece, and any sub-clips that might be of value to future journalists – but not the project files used to create the final projects. The project files that are small XML 'pointer files' indicate which portion of sub-clips,

[19] These elements are drawn from the InterPARES 2 Chain of Preservation Model, the PBCore metadata schema and from recommendations from the 2006 Arts and Humanities Data Service *Moving Images and Sound Archiving Survey* http://ahds.ac.uk/about/projects/archiving-studies/moving-images-sound-archiving-final.pdf.

and in which order, are used to render the final project. It was determined by the director that these pieces are of little value moving forward, as the final project is the valuable piece and any future work would need to start over in order to avoid copyright issues with the original piece.

Need to Define and Control Archives

Since the meeting with the J-School, it was decided that the J-School would like to offer the footage to the public for use in non-profit documentary projects. In order to ensure authenticity, a number of situations and practices currently in place needed to be addressed:

- What the J-School considers to be their video "archive" is not actually an archive. Rather, it was a storage sub-system that utilized RAID mirroring to back up the data from one drive to another. Additionally, it was not uncommon for one or both of the drives to be taken out of the J-School for students to work on the projects at home. Virus scanning on the drives was not performed either before, during or after the transfer of files.
- Most students enrolled in the advanced Journalism classes had access to the "archived" material. There are no locks or permissions on the drives to access the "archive folder." Material within the folder was allowed to be edited and deleted.
- There were no "best practices" in place with regard to capturing metadata along with the video files. Students transferred files off video tapes by creating sub-clips as they saw fit, naming the resulting files according to personal preference and stored the sub-clips in a folder structure they created to mirror their personal workflow. Subsequent students and/or faculty wanting to re-use those clips would have to browse through folders looking for appropriate content, or intuit the contents through their knowledge of the student's work style and the project they worked on.
- The J-School had not designated a physical storage space for the digital video tapes, or for back-up hard drives. Without a physical space that is protected and locked, authenticity of the physical documents could not be ensured. In 2009, source tapes (tapes that were only copies) were sent to PBS (who sponsored the original documentary project); thereby risking the authenticity of the tapes, as they were out of the school's custody.
- Lastly, the physical NAS servers are not in a secured area. The storage servers were collocated in the video editing suite and could be accessed by a large number of students. Furthermore, the servers were not secured within the room; they could be turned off or on by anyone entering the room or easily taken from the room.

Rapid Technical Infrastructure and Equipment Upgrades

One of the long-term challenges facing this project is the constant and rapid change in the technology used to create, capture, manipulate and store the video files. Since the start of this project, there have been evolutionary changes to the cameras, the workflow software, and the storage technology used. At the end of 2009, the J-School investigated options to upgrade the current infrastructure and workflow capabilities of the equipment that was being used, as a

prelude to implementing recommendations from the GRAs. After some initial research into designing a standalone database repository to capture metadata and store digital objects, the J-School leveraged off of software already being used within the School and purchased Apple's Final Cut Server, a commercial off-the-shelf (COTS) solution that would integrate seamlessly into the current editing software used by the students (Apple's Final Cut Pro) to provide a repository for the video assets, as well as control the access of said assets and enforce the workflow procedures enacted by the J-School. In the year and a half since the purchase of the Final Cut Pro software, Apple has announced End-of-life on the product with no direct successor[20]. The J-School intends to continue to use and support the Final Cut Server solution they have implemented.

The new backend of the Final Cut system (see Appendix D) is comprised of a rack mounted Intel-based Mac server running OSX, running Final Cut Server 1.5.1, a Xserve SAN system with Seven 750GB ATA hard drives providing 3.41TB of usable storage in a RAID 5 configuration (data striped across multiple disks with a distributed parity check), a Fibre Channel disk enclosure with 13TB of usable storage in a RAID 5 configuration (the Final Cut Server RAID), two G5 Xserve rack mounted Mac servers running OSX (one metadata controller and one backup), the original two Mac Pro towers running OSX and Final Cut Pro 6.0, and an Overland LTO5 Fibre Channel tape library. The entire system is connected through a Qlogic 5200 16-port Fibre Channel Switch, with a secondary XSAN closed network switch to connect the video editing stations to the XSAN. The Java-based Final Cut Server (FCSvr) interface allows the archive to be accessed from any of the labs, classrooms, or offices in the building across the existing Ethernet network. At least two of the labs in the building are already configured for access; in the Newsroom, there are four 24" iMacs equipped with Final Cut Pro, and in the first floor classroom, there are 16 24" iMacs equipped with Final Cut Pro.

The equipment used to shoot the video still remains the same: seven Canon XL-H1 high definition video cameras, which use miniDV tapes, although these are now being phased out with the transition to all digital hard drive based cameras. The current Canon XL-H1 cameras are capable of shooting the equivalent of 30 (high speed) or 24 (broadcast quality) progressive frames per second in 1080i resolution, using 16-bit (48KHz) or 12-bit (32KHz) audio as either 2 channel MPEG1 or four channel Mpeg2 Audio Layer II, stored as HDV (which natively embeds MPEG2 video and MPEG1 Audio) on the mini DV tapes. The new cameras will be able to record at the same specs but can store up to 8 hours of HD footage on the enclosed hard drive. MPEG2 is a lossy compression video format that is the standard file format used in DVD video. Despite the lossy nature of the compression algorithm, HDV (and by extension MPEG2) is widely accepted within the broadcast video world, including becoming among the accepted formats for BBC TV (as published in the TV Delivery for BBC Worldwide technical delivery specification, Version 5.0, July 2009). While lossy compression is not recommended for archival

[20] https://discussions.apple.com/thread/3131590?start=0&tstart=0

storage, its widespread use and implementation means that it is highly unlikely that the J-School will switch to a more archivally sound format.

When transferred from MiniDV tape to the computer for editing, the footage is saved as .mov files (Apple QuickTime format -- a proprietary media framework owned by Apple) using Apple's Final Cut Pro video editing software. QuickTime functions as a multi-media container file that stores audio, video, and data as separate tracks within the container. This separation of tracks allows for easy editing and the QuickTime format is in wide industry use. The ease of editing and use of Apple hardware and software products within the J-School has resulted in QuickTime being used exclusively within the classroom. While QuickTime is a proprietary container format, the MPEG4 file specification (ISO 14496 – Coding of Audio-Visual Objects) is built upon the Apple Published QuickTime File Format Specification, pointing to the strong potential to forward migrate QuickTime files despite the fact that it is technically a proprietary format (similar to Adobe's PDF specification prior to adoption by ISO). As an alternate position, the individual tracks can be extracted from the QuickTime files into their original file formats should the J-School move away from QuickTime in the future, or the QuickTime format cease to be supported.

Inconsistent Use and Definition of Server Resources

To create an archival repository for the J-School video assets, it has been noted in the Video Production Media Management & Archiving Workflow[21] created by Kevin Comerford, "[that] the media storage server must be striped [sic] into two main partitions, one partition designated for archival storage, and one designated for production storage." The combination of partitioned RAID 5 storage arrays provides adequate, affordable *storage*[22] security for the School of Journalism, no matter how many physical servers there are. The need for dedicated archival storage of the video assets has been identified by the GRAs. However, business needs for a usable production system for the International Reporting class has required the J-School to focus primary attention on the purchase and installation of the production system, in order to gain intellectual control over the video files first. Although the production system has being installed, there are still questions about *access*[23] security. With the implementation of Final Cut Server, the workflow allows individuals wanting to access the video assets to work from a local copy pulled from the database. Modified video files would be limited by the database workflows to either: saved into the system under a new file name, or as a new version of the old file (with the database tracking and providing access to previous versions).

[21] UBC Graduate School of Journalism - Video Production Media Management & Archiving. Available at http://interpares.org/rws/display_file.cfm?doc=UBC-GSJ-01_01_03_UBC_GSJ_Project_upd_2008-09-22.doc.
[22] That is, secure storage that maintains the integrity, reliability and accuracy of the media.
[23] Access security refers to onsite or remote access protection for the media and privileges for its users.

Recommendations

Document Current Best Practices

It is recommended that the J-School document the appropriate and approved methods of creating, transferring, describing, and manipulating the video assets stored in the archives. This should include detailed instruction manuals for the students to follow, as well as providing the International Reporting class training and a copy of the documentation at the time they sign their waiver forms required for participation in the class. In order for this documentation to stay relevant, it is recommended that the processes contained within the documents be reviewed on an annual basis as well as with each major technology upgrade to cameras, hardware or software.

Use of Industry Standards

In addition to the conventions created for the training manual, the following industry best practices have been recommended for incorporation into the J-School processes: PBS guidelines for the taxonomy/topic category domain has been recommended[24] (included as Appendix A), the Getty Thesaurus of Geographic Names[25], ISO 8601 for date formats[26] and ISO 639-3 for language names[27].

Establish Authenticity and Preservation Metadata

To ensure that the assets created by the School of Journalism's International Reporting Class are created and maintained in a manner that ensures access, retrieval, authenticity, and long-term preservation, it is recommended that a standard set of metadata elements be required for each video asset stored within the archives (see Appendix C)[28]. Originally, two metadata standards were identified: PBCore and MPEG-7. PBCore is the Public Broadcasting Core based on Dublin Core and was designed with content management and retrieval purposes in mind. MEPG-7 is one of the Moving Picture Expert Groups' standards.

Upon closer inspection, it was determined that MPEG-7 is too complex for the School's purposes. On the other hand, PBCore is a standard created specifically for the public broadcasting community. One of the main benefits of PBCore is interoperability, which could be crucial for the School's archives in the future. It is also a less complex standard than MPEG-7, and therefore might be more appropriate for the needs of the School.

PBCore is a hierarchical arrangement of Content classes, Containers, sub-containers and elements. Content Classes are "created as 'conceptual wrappers' that cluster together a list or

[24] http://www.pbs.org/modules/docs/merlin/PBS_Topic_Taxonomy.pdf
[25] http://www.getty.edu/research/tools/vocabularies/tgn/index.html
[26] http://www.w3.org/TR/NOTE-datetime
[27] http://www.sil.org/iso639-3/codes.asp
[28] The following resource was used as a guide to point the Graduate Research Assistants to appropriate audiovisual metadata standards: Andrew Wilson, Richard Wright et al, "Moving Images and Sound Archiving Study," Arts and Humanities Data Service, pp. 66-81, last accessed March 29, 2009 from http://ahds.ac.uk/about/projects/archiving-studies/moving-images-sound-archiving-final.pdf.

structure of thematically-related Elements (metadata fields and their attributes and properties)."[29] Four Content Classes represent the conceptual wrappers for various metadata elements:

1. PBCoreIntellectualContent
   - metadata elements describing the actual intellectual content of a media asset or resource
   - examples: identifier, identifierSource, title, titleType

2. PBCoreIntellectualProperty
   - metadata elements related to the creation, creators, usage, permissions, constraints, and use obligations associated with a media asset or resource
   - examples: creator, creatorRole, publisher, publisherRole, rightsSummary

3. PBCoreInstantiation
   - metadata elements that identify the nature of the media asset as it exists in some form or format in the physical world or digitally
   - examples: dateCreated, dateIssued, formatAspectRatio, formatBitDepth

4. PBCoreExtensions
   - additional metadata requirements that have been crafted by organizations outside of the PBCore Project.[30]

This last content class might be particularly useful for the School's purposes, and for ensuring that all InterPARES benchmarks for long-term preservation are met. Each container within the content classes can be repeated to allow for numerous types of titles, rights or right holders, and dates, for example. Keeping in mind the different purposes of the COP Model (long-term preservation and the assumption of authenticity) and PBCore (content management and retrieval), it is recommended that the essential metadata elements needed for preservation and workflow from these two standards be used to build something useful for both the user of audio material in general and the School of Journalism's International Reporting Class in particular. The recommended list of metadata elements is included as Appendix C.

Define Assets to be Stored

In November 2009, the GRAs again recommended to the School of Journalism students that they create shot logs. Once in the field, however, this practice was not enforced; thus, shot logs were not created.

There is still an ongoing discussion at the J-School as to what will be stored in the asset management system (Final Cut Pro project files vs. source files). For the initial deployment, the 'archive' portion of the system will be only for the raw assets, which currently are all in QuickTime format (.mov), and the final rendered productions, also in QuickTime. It has not yet

[29] PBCore, "Background of the PBCore Public Broadcasting Metadata Dictionary Project." Available at http://www.pbcore.org/PBCore/PBCore_background.html.
[30] Ibidem.

been determined whether the Final Cut project files (.fcp) will be included into the archives. The .fcp files are comprised of XML files containing 'pointers' to the media assets used in the production, along with the in and out time codes for the assets used, scene wipes, media order, title/text display information, etc. While not usable on their own, the .fcp files detail how the final rendered productions were created and can be used to re-render productions with minor edits. As the final productions are considered copyrighted by the creator, if it is decided that the .fcp files will be included in the archive, they will also be marked as copyrighted within the system.

Hire Temporary Staff to Organize and Maintain the Video Archives

Temporary contractors will be needed to set-up and implement the digital repository, and considerations will need to be made in regard to staffing for the long-term upkeep of the repository. It is possible that the School can look to other UBC programs, particularly the Department of Computer Science, for student workers. The creation of a repository could be an excellent internship, co-op, or work-study position for a computer science student, and hiring a student contractor could help the School of Journalism save significantly on set-up costs for the repository. However, the School will still need to consider the staffing costs of sustaining the repository. The School will need to determine if this work will be divided amongst current staff, will be allocated to one current staff member, or if a new staff member will need to be brought aboard. Examples of the work involved in sustaining an online repository include monitoring the files within the "archive" for purposes of quality assurance or migration of the footage to newer formats.

There will also be added responsibilities for students in the preservation of the video and in the online repository. Students will need to ensure that appropriate metadata is captured along the way and that the proper procedures for "archiving" the material are followed. InterPARES will provide the students with guidance on how to best undertake these activities.

Provide Rapid Access to Video Assets

During a series of meetings conducted from October to December 2010, the team finalized the performance requirements for the preserved video. To balance between cost and performance, they decided to implement a two-tier approach: workstations in the HD Video Edit Suite would be provided Fibre Channel connection to the Storage Area Network (SAN), while the remaining workstations throughout the building would utilize the existing Ethernet-based network in the building. Host Bus Adaptors (HBAs) were installed in the HD Video Edit workstations with direct fiber optic cables to the SAN, providing 2 Gb/sec throughput speed. The remaining workstations will access the system through a Java client using the computer's standard network interface card (NIC). As the remaining workstations are sharing the network with all of the other computers and network traffic in the building, realized throughput may be significantly lower during normal business hours.

The decision to use a two-tier approach was based on the content that would be uploaded in the system and the equipment that could be obtained. The assets that are to be ingested into the system for the foreseeable future will be limited to the International Report Class produced material. Based on the previous three years, the two video editing stations in the HD Video Edit Suite were sufficient for the development of the final production. While using a Fibre Channel (FC) connection over fiber optic cables is the preferred method of quickly moving large video files, the equipment to do so is costly. Each computer to be connected via FC requires a special HBA, which cost approximately $1,000 each. As the video archive project did not have sufficient funds to cover the cost of providing *any* Fibre Channel connections, the J-School was fortunate to have a Fiber Channel Switch donated to the project. The donated switch allowed for a maximum of four FC connections. These four ports are currently occupied by the two video edit workstations, the XSAN metadata controller and the backup XSAN controller. To connect any additional editing stations to the SAN through FC connections will require the purchase of a large FC switch. By limiting the 'fast' FC connections to the two video edit workstations using the donated switch, the J-School was able to provide the most heavily utilized workstations the benefit of direct access to the SAN while reducing the impact to their limited project budget.

Develop Robust Backup Strategy

The database and the video assets are currently stored in a Storage Area Network (SAN) using RAID 1 (mirrored) configuration. Having two identical copies of every assets stored on separate drives protects against the failure of any single hard drive, but does not provide sufficient disaster recovery for protection against a local event, such as fire, flood, earthquake, theft, electrical surge, etc. To protect the assets (both the file and associated metadata) it is recommended that full backups onto removable tape media be conducted at the conclusion of the offload of all assets for a major project, and then on a quarterly basis. It is recommended that these tapes be sent offsite as far away as is practical in order to remove them from harm in the same local event the affects the originals. Incremental backups of changes should be written to tape nightly and sent offsite weekly.

XML metadata export

As already mentioned, the asset management system, Final Cut Server, which is utilized as the video archives has been End-of-Lifed by Apple. Therefore, the ability to export not only the video file assets, but also all the metadata created and generated for these assets in a way that directly points to the stand alone video file is essential for the long term access and preservation of the original assets. It is strongly recommended that an standardized XML schema be created that incorporates all the essential metadata elements recommended by the GRAs, as well as any additional system metadata that is created and stored by Final Cut Server.

Develop Policies and Procedures governing the Management and Access of the Video Archives

It is recommended that access security be considered a part of the mechanisms and procedures for the sharing and use of the media. As copyright and moral rights discussions are ongoing, there is opportunity for a more complete security assessment, and to produce policies and procedures based on that assessment. Wouters, Wyseur, and Preneel[31] present a security model that would be applicable to the J-School. Although this model has been designed for large broadcasters and production facilities, the Assets, Threats, and Assessment criteria are directly applicable to an analysis of security of storage and servers, whether physical or virtual, and are recommended for incorporation into the policies and procedures governing the access, use, and maintenance of the video archives.

Use of Naming Conventions

As the Final Cut Server database associates the searchable metadata elements with the file name video asset stored on the hard drives, students will never be directly searching for or accessing video assets on the hard drives - rather students will only be able to access the assets through Final Cut Server. It is still recommended, however, that the files themselves be given an intelligible name. The reason for this recommendation was so that external researchers that download a local copy of the video file will be able to understand what the file is and where it came from. The recommended naming conventions developed by InterPARES 3 GRAs for the School of Journalism will be used for the final projects as well as the sub-clips is as follows:

The naming conventions consist of the following elements: [32]

1. Course number
2. Project name
3. Date
4. Sequence number

These rules are explained further with examples below.

1. Course number

This element is based on UBC course listings and consists of three numerals, often with a letter that should be in lower case. The following example is the listing for the International Reporting course.

EXAMPLE

505i

2. Project name

[31] Wouters, K., B. Wyseur and B. Preneel, "Security Model for a Shared Multimedia Archive." Available at http://ieeexplore.ieee.org/xpl/freeabs_all.jsp?tp=&arnumber=4402884&isnumber=4402841. (Accessed 31 March 2009)

[32] Anne Thompson, "Standard Naming Conventions for Electronic Records." <http://www.sfu.ca/archives2/rm/rm_fundamentals/07UKFileNamingConventions.pdf> [accessed November 14, 2009]. The naming conventions recommended were developed according to the format outlined in this document.

The project name is to be determined by each class and is to be a brief description of the nature of the project. The first letter of each word in this part of the file name will be capitalized. An example from the February 2009 term is the e-waste projects in China, Ghana, and India. We do not recommend the use of hyphens in file names therefore the project name is ewaste followed by the country.

EXAMPLE

505iEwasteGhana

3. Date

The date should be in the format YYYYMMDD so that the files will sort into chronological order (which will make retrieval easier). Note that the year must be all four numerals and all months and days must consist of two numerals (i.e. February must be 02).

4. Sequence Number

The sequence number references the sequence number of the sub-clip for that day. Each day the sequence number starts back at 0001. In the case of final projects, rather than a sequence number, it is recommended that FINAL be used.

EXAMPLE

505iEwasteGhana20090201_0053

This example reads as the 53rd sub-clip of the e-waste project in Ghana taken on February 1, 2009 for the International Business course.

Example
505iEwasteGhana20090523_Final

This example reads as the final product of the e-waste project in Ghana taken completed on May 23, 2009 for the International Business course.

Migrate to a Supported Product

With the Final Cut Server product being moved to End-Of-Life in June 2011, the ongoing maintenance and use of the system at the J-School will be highly dependent on the J-School's ability to keep the current generation of hardware and software functioning and compatible with future technology. While this is a realistic goal over the short term, at some point in the coming years it will become increasing difficult and expensive. It is the recommendations of the GRAs that the J-School being to evaluate other software options in order to create an action plan and seek the funding necessary for this inevitable migration. It is not a question of if the migration will be necessary, but rather a question of when the migration will need to be accomplished. The impact of the migration will be a factor of time, money, and resources; the longer this transition

is delayed the more time, money, and resources that will be required to perform and validate the trustworthiness of the migration.

Products

Procedures Manuals

In December 2010 and January 2011, the GRAs produced guidelines for capturing and describing the video assets based on the technology and process present at the time. These guidelines are on file at the InterPARES office, but as of publication of this report, have been obsoleted by the introduction of new video cameras and ingestion routines. The J-School has expanded and modified the original guidelines to incorporate these changes and will distributing the new guidelines to the next outgoing International Reporting Class.

Licensing Agreements

After meeting with UBC lawyers, the School of Journalism developed two student license agreements for the International Reporting class, which will be used for the December 2010 trip. One agreement will be signed when the students go on the annual trip, and the other agreement will be signed when the students submit raw data from their trip (both agreements are included as Appendix E). These agreements allow students to retain copyright of the work, but grant the J-School the license to use, publish, sell and distribute or license all or part of the work. Both agreements also stipulate the waiving of moral rights against UBC.

With regards to video assets created in years prior to the Licensing Agreements, the J-School conferred with their lawyers on the intellectual property issues concerning the copyright and moral rights of legacy footage from the 2008/2009 and 2009/2010 International Reporting courses. Upon advice of counsel, the J-School will be ingesting only the raw footage under the Creative Commons licenses. This decision was based on the fact that the footage was created on university equipment and the trip was paid for by funds provided through the university. The final production pieces will also be ingested into the system, but will not be placed under the Creative Common licenses until the final copyright on those pieces can be determined. The final renderings will also be restricted to internal use only and the access restrictions metadata field for the final renderings will be used to note the need to determine copyright. The GRAs have recommended that the School attempt to contact all the students from the previous International Reporting classes in order to have them sign the waiver form.

Metadata Schema

Once PBCore was chosen, the standard was compared to the InterPARES 2 Chain of Preservation (COP) Model to identify crossover and gaps. The goal of this activity was to create a metadata standard for digital video assets by combining a familiar standard with the rigor of the COP Model. Due to the need to ensure long-term preservation of audiovisual material within the context of broadcast journalism, InterPARES researches felt that the metadata elements from the COP Model should be compared with PBCore to determine how PBCore might be used for assuring authenticity and long-term preservation.

Two products were prepared. The first was a crosswalk map of PBCore elements to the applicable COP Model elements (see Appendix B). This document is intended to be applicable to a broad audience interested in the long-term preservation of born digital audio-visual material. The second is a J-School specific list of the essential metadata elements drawn from this mapping (Appendix C)[33]. GRAs envision organizations and individuals creating their own lists of essential metadata elements in this manner to adapt the broader mapping to their specific contexts. This schema was incorporated into the Final Cut Server metadata model, as used as the basis for the XML Metadata Export for the individual files (see Appendix F for a sample XML metadata export – note that it includes all metadata created by the students, that metadata extracted from the camera and file format, that assigned by the system and the transcripts that were associated with the interviews.)

[33] These elements are drawn from the InterPARES 2 Chain of Preservation Model, the PBCore metadata schema and from recommendations from the 2006 Arts and Humanities Data Service *Moving Images and Sound Archiving Survey* http://ahds.ac.uk/about/projects/archiving-studies/moving-images-sound-archiving-final.pdf.

Conclusion

The School of Journalism case study proposal asked InterPARES 3 to "research, create, and implement a plan to preserve and index a high definition digital video archive in online and electronic formats." The proposal stated that the School's technological resources and software were inadequate to store and preserve the video for the long-term, and also noted that high-definition digital raw video footage is extremely expensive to obtain in the market, with an upper end estimate of $1000/second. High-definition footage created by the J-School and offered free online, therefore, would be a valuable and unique service for a number of communities.

To address these needs, the GRAs assigned to the project, with guidance from the Project Director, Project Coordinator and Project Co-Investigator, analyzed the workflow and technological infrastructure in place at the start of the project. Using this analysis as a baseline, the GRAs researched best practices for digital video preservation and the appropriate metadata schemas to support the J-Schools ongoing use of the video assets for future documentaries unrelated to those that created the footage. From this research, a new metadata schema and naming convention were proposed and the GRAs worked closely with an outside vendor to install the Final Cut Server asset management system in a way that would support the long term access and preservation of the video assets in a way that maintains their trustworthy nature as a true record of the events they record.

The J-School has completed the installation of the new hardware, expanded the SAN storage, and acquired the equipment to create offsite tape backups of the contents of the system. As part of the system installation, the recommended metadata schema was incorporated alongside the built-in Final Cut Server metadata elements. Through the combination of the Final Cut metadata and the Essential Metadata Elements proposed for this project, the J-School has a strong probably of being able to migrate the assets and all the metadata necessary to maintain the authenticity of the assets in a new asset management system. In the interim, by following the recommended backup policies, the assets will be protected and can continue to be searched, retrieved, and used in the current system while the eventual successor to Final Cut Server is research, procured and implemented at the J-School.

Bibliography

Anne Thompson, "Standard Naming Conventions for Electronic Records," available at: http://www.sfu.ca/archives2/rm/rm_fundamentals/07UKFileNamingConventions.pdf. (Accessed 14 November 2009).

Apple, Inc., "Final Cut Server X Top Features," available at: http://www.apple.com/finalcutpro/top- features/ (Accessed 02 March 2012)

Arts and Humanities Data Service *Moving Images and Sound Archiving Survey* (2006), available at: http://ahds.ac.uk/about/projects/archiving-studies/moving-images-sound-archiving-final.pdf. (Accessed 31 January 2008)

The Canadian Association of Journalists " Statement of Principles and Ethics Guidelines", available at http://www.caj.ca/principles/principles-statement-2002.htm. (Accessed 31 January 2008).

InterPARES 2, "Chain of Preservation Model," available at: http://www.interpares.org/ip2/display_file.cfm?doc=ip2_book_appendix_14.pdf . (Accessed 04 March 2012)

Corporation for Public Broadcasting, "PBCore Public Broadcasting Metadata Dictionary Project," available at: http://www.pbs.org/modules/docs/merlin/PBS_Topic_Taxonomy.pdf

UBC, "Calendar 2007/08, IX. Faculties, Colleges, and Schools: The Faculty of Graduate Studies - Degree Programs - Journalism," Vancouver edition, available at http://www.students.ubc.ca/calendar/index.cfm?tree=12,204,828,1183 (Accessed 31 January 2008).

UBC, "Calendar 2007/08, IX. Faculties, Colleges, and Schools: The School of Journalism - Master of Journalism - Introduction," Vancouver edition, available at http://www.students.ubc.ca/calendar/index.cfm?tree=12,206,355,494 (Accessed 30 January 2008).

UBC School of Journalism, "About the Program: Mission Statement," Internet Archive, available at http://web.archive.org/web/20070704014540/www.journalism.ubc.ca/mission_statement.htm (Accessed 31 January 2008).

UBC Graduate School of Journalism, "Academic Program", available at http://www.journalism.ubc.ca/about/academic_program/ (Accessed 30 January 2008).

UBC Graduate School of Journalism, "Course Descriptions", available at http://www.journalism.ubc.ca/about/course_descriptions/ (Accessed 31 January 2008).

UBC Graduate School of Journalism, "CMRC", available at http://www.journalism.ubc.ca/about/cmrc/ (Accessed 31 January 2008).

UBC Graduate School of Journalism, "M.J. Degree." Available at http://www.journalism.ubc.ca/about/mj_degree/ (Accessed 30 January 2008).

UBC Graduate School of Journalism - Video Production Media Management & Archiving. Available at http://interpares.org/rws/display_file.cfm?doc=UBC-GSJ-01_01_03_UBC_GSJ_Project_upd_2008-09-22.doc (restricted)

UBC Provost and Vice President Academic, "TLEF Criteria 2008/2009." Available at http://www.vpacademic.ubc.ca/tlef/criteria.htm (Accessed 30 January 2008).

UBC Public Affairs (1997), "Sing Tao School of Journalism Building Opens at UBC," Media Release, August 20, 1997. Available at http://www.publicaffairs.ubc.ca/media/releases/1997/mr-97-79.html (Accessed 30 January 2008).

Wouters, K., B. Wyseur and B. Preneel, "Security Model for a Shared Multimedia Archive". Available at http://ieeexplore.ieee.org/xpl/freeabs_all.jsp?tp=&arnumber=4402884&isnumber=4402841. (Accessed 31 March 2009)

Research Team

The InterPARES Project would like to thank the research and research assistants that contributed to the development of the Policy and Procedure Templates:

Researchers:
Luciana Duranti, Project Director, TEAM Canada
Alexandra Allen, Project Coordinator, TEAM Canada
Peter Klien, The University of British Columbia, Graduate School of Journalism

Graduate Research Assistants:
Adam Jansen
Adrienne Lai
Karine Burger
Kerry-Ellen Canning
Judy Hu
Shamin Malmas
Karen Moxley
Elizabeth Walker

Appendix A: PBS Taxonomy

PBS Taxonomy from:

http://www.pbs.org/modules/docs/merlin/PBS_Topic_Taxonomy.pdf

The topic taxonomy corresponds to the PBS/taxonomy/topic category domain in the RSS2.0 Specification.

- **Arts & Entertainment**
  - Film & Television
  - Performing Arts
  - Music
  - Fine Arts
  - Literature & Writing
  - Drama
  - Folk Art & Crafts
  - Biography & Profiles
- **Culture & Society**
  - Religion & Beliefs
  - Community
  - Race & Ethnicity
  - Gender & Sexual Identity
  - Food
  - Travel
  - Media & Technology
  - Sports & Recreation
  - Holidays
  - People & Profiles
- **Health**
  - Health Care & Illnesses
  - Fitness & Nutrition
  - Aging
  - Women
  - Lifestyle
  - Caregiving
- **Parents**
  - Child Development
  - Education
  - Fun & Games
  - Healthy Kids
  - Issues & Advice
  - Birthday Parties
- **Home & How-to**
  - Antiques & Collectibles
  - Cooking
  - Gardening
  - Home Improvement
- **Science & Nature**
  - Earth
  - Environment
  - Natural History
  - Weather & Natural Disasters
  - Animals
  - Psychology & The Mind
  - Biology & Chemistry
  - Astronomy
  - Physics & Mathematics
  - Forensics & Investigations
  - Biography & Profiles
- **News & Public Affairs**
  - Business & Economy
  - Government
  - Politics
  - National Security
  - Global Affairs
  - Environment
  - Science & Technology
  - Women
  - Race & Ethnicity
  - Social Issues
  - Health
  - Education
  - Religion & Beliefs
  - Arts & Entertainment
  - Media
  - Sports

- Personal Finance
- **History**
- Civilizations
- World
- United States
- Prehistoric
- Ancient & Classical
- Middle Ages
- Renaissance
- Enlightenment
- Victorian
- Modern
- Archaeology
- Genealogy
- War & Conflict
- Biography & Profiles

- Opinion
- Biography & Profiles
- **Technology**
- Space
- Energy & Environment
- Transportation & Infrastructure
- Military & Espionage
- Health
- Communications & Media
- Society
- Biography &

Appendix B: Mapping of the InterPARES 1 Authenticity Benchmarks Requirements and InterPARES 2 Chain of Preservation Model Metadata to the PBCore Metadata Standard

IP2 Authenticity Benchmarks	**IP Definitions** (taken from IP2 *Modeling Cross-domain Task Force Report* unless otherwise noted)	**Represented in PBCore?**	**PbCore Element Name**	**Free-form?**	**PBCore Definitions** (taken from *pbcore.org* website unless otherwise noted)	**Comments/Justifications**	**School of Journalism Recommendations**
chronological date of compliation (A2.2.2)	**Chronological Date**: "time of the compilation of the document and/or of the action which the document concerns." (from Duranti's "Diplomatics: New Uses for an Old Science") -	Yes	dateCreated	Yes	**dateCreated**: specifies "the creation date for a particular version or rendition of a media item across its lifecycle. It is the moment in time that the media item is finalized during its production process and is forwarded to other divisions or agencies to make it ready for publication or distribution."	The chronological date of compilation is the date or date range a subclip was shot. It is important that the date format be standardized. Because there is a delay in between filming and downloading it is important that shot logs be maintained in order to ensure the accuracy of this element.	Maintaing shot logs will ensure the accurate capture of the chronological date. Essential Metadata element in the database: **DATE OF CREATION**
documentary form (A2.2.2)	**Documentary Form:** "The rules of representation according to which the content of a record, its administrative and documentary context, and its authority are communicated. Documentary form possesses both extrinsic and intrinsic elements. Syn.: documentary presentation."	Yes	formatMediaType	Yes	**formatMediaType:** identifies the general, high level nature of the content of a media item. It uses categories that show how content is presented to an observer, e.g., as a sound or text or moving image.	This element is necessary in order to differentiate between the different types of documents created by the School of Journalism, for example: subclips or final piece.	Essential Metadata element in the database: **FORM** (drop down menu, subclip or final piece)

digital presentation (A2.2.2)	**Digital Format:** The byte-serialized encoding of a digital object that defines the syntactic and semantic rules for the mapping from an information model to a byte stream and the inverse mapping from that byte stream back to the original information model. In most contexts, digital format is used interchangeably with digital file-related concepts such as file format, file wrapper, file encoding, etc. However, there are some contexts, “such as the network transport of formatted content streams or consideration of content streams at a level of granularity finer than that of an entire file, where specific reference to “file” is inappropriate.” Syn.: digital presentation.	Yes	formatDigital	no - select from PBCore aggregate pick list, or controlled vocaluary pick list	**formatDigital:** to identify the format of a particular version or rendition of a media item as it exists in its digital form, i.e., as a digital file on a server or hard-drive, digital media formats may be expressed with formal Internet MIME types.	At the moment this element is redundant as the School is currently using and producing all the same formats, however thinking ahead to future projects, technological change, ext this element will become vital.	This can be automatically generated. Essential Metadata element in the database: **DIGITAL PRESENTATION**
Name of Author(s) (A2.2.3)	**Author(s)**: "The physical or juridical person having the authority and capacity to issue the record or in whose name or by whose command the record has been issued." (IP2 Terminology database)	Yes	creator (accompanied by creatorRole "creator")	No	**creator:** "identifies a person or organization primarily responsible for creating a media item. The creator may be considered an author and could be one or more people, a business, organization, group, project or service." / creatorRole: identifies "the role played by the person or group identified in the companion descriptor creator." Ex: reporter, writer, photographer, director, etc.	The *creator* element was chosen to represent the concept of author in PBCore. This element *must* be accompanied by the creatorRole "creator" in order for the *creator* element to adequately represent the diplomatic concept of author. Luciana Duranti's diplomatic definition for author is: "the person(s) competent for the creation of the document, which is issued by him or by his command or in his name." (*Diplomatics*, pg. 84).	The School of Journalism is the author. Essential Metadata element in the database: **AUTHOR**

Name of Writer(s) (A2.2.3)	**Writer(s)**: "The physical person(s) or position(s) responsible for articulating the content of the document."	Yes	creator (accompanied by creatorRole)	No	**creator**: "identifies a person or organization primarily responsible for creating a media item. The creator may be considered an author and could be one or more people, a business, organization, group, project or service." / **creatorRole**: identifies "the role played by the person or group identified in the companion descriptor creator." Ex: reporter, writer, photographer, director, etc.	Given the collaborative nature of creation in the International Reporting class, the class as a whole is the writer.	Essential Metadata element in the database: **CREATOR**
Name of Action or Matter (A2.2.3)	**Name of Action or Matter**: "the subject line(s) and/or the title at the top of the document."	Yes	title	Yes	**title**: "a name given to the media item you are cataloging. It is the unique name everyone should use to refer to or search for a particular media item."		Use an automatically generated number for subclip titles and a descriptive title for final piece.Essential Metadata element in the database: **TITLE**
Indication of attachments (A2.2.3)	**Indications of attachments:** "the mention of autonomous items that have been linked inextricably to the record before transmission (i.e., added during its execution) for it to accomplishes its purpose.	Yes	annotation	yes	**annotation: "**a stand alone Pbcore element where you can catalog any supplementary information about a media item or the metadata used to describe it."	At the moment the school is not creating any attachments to its work, however in the future workflow and technological change may produce such documents.	Essential Metadata element in the database: **ATTACHMENTS**
Classification code (A2.2.4)	**Classification Code:** "a series of alphabetical, numerical or alphanumeric symbols used to identify the record in its documentary context."	Yes	formatIdentifier	yes	**formatIdentifier**: "employs an unambiguous reference or identifier for a particular rendition/instantiation of a media item. Best practice is to identify the resource (media item) by means of a string or number corresponding to an established or formal identification system generated within an international standard or as a local identification scheme."	The school currently does not use a classification code, however given the desire to expand the repository to include works from other classes, best practice would require a classification code to ensure that provenance is easily identified.	Essential Metadata element in the database: **CLASSIFICATION CODE**

Indication of copyright or other intellectual rights (A2.2.4)	**Copyright:** "the right to copy; specifically, a property right in an original work of authorship (including literary, musical, dramatic, choreographic, pictorial, graphic, sculptural, and architectural works; motion pictures and other audiovisual works; and sound recordings) fixed in any tangible medium of expression, giving the holder the exclusive right to reproduce, adapt, distribute, perform, and display the work" **Intellectual property:** "a category of intangible rights protecting commercially valuable products of the human intellect – The category comprises primarily trademark, copyright, and patent rights, but also includes trade-secret rights, moral rights, and rights against unfair competition." **Moral right:** "the right of an author or artist, based on natural-law principles, to guarantee the integrity of a creation despite any copyright or property-law right of its owner. – Moral rights include rights of (1) attribution (also termed "paternity"): the right to be given credit and to claim credit for a work, and to deny credit if the work is changed; (2) integrity: the right to ensure that the work is not changed without the artist's consent; (3) publication: the right not to reveal a work before its creator is satisfied with it; and (4) retraction: the right to renounce a work and withdraw it from sale or display." (From Black's Law Dictionary 2009)	Yes	rightsSummary	yes	**rightsSummary:** an all purpose container field to identify information about copyrights and property rights [and other rights] held in an over a media item, whether they are open access or restricted in some way (...).	The school's use of creative commons licensing and a waiver address issues related to moral rights should be linked to every record stored in the repository. At this time all material in the repository is covered by creative commons licensing, however if this changes in the future this element will provide a location to record such changes.	Essential Metadata element in the database: **RIGHTS MANAGEMENT**
Access restriction code (A2.2.4)	**Access restriction code: "**the indication of the person, position or office authorized to read a record."	Yes	rightsSummary	yes	**rightsSummary:** (...) end user permissions, constraints and obligations may also be identified as needed.	At the moment all users have access to the entire database. In the future this may change, therefore this element should be included.	Essential Metadata element in the database: **ACCESS RESTRICTION CODE**
Archival Date (A2.3.2)	**Archival Date**: "the date on which a record is officially incorporated into the creator's records."	No				This is the moment in which the archival bond is created. All of the PBcore dates relate to creation, publication or distribution and are therefore not applicable to IP's definition of Archival Date.	Essential Metadata element in the database: **FILING DATE**

Draft/ version number (A2.3.2)							Essential Metadata element in the database: **VERSION NUMBER**
Expression of Archival Bond (A2.3.2)	**Archival Bond**: "the network of relationships that each record has with the records belonging in the same aggregation (file, series, fonds)." (from IP2 Glossary)	Yes	formatIdentifier	Yes	**formatIdentifier**: "employs an unambiguous reference or identifier for a particular rendition/instantiation of a media item. Best practice is to identify the resource (media item) by means of a string or number corresponding to an established or formal identification system generated within an international standard or as a local identification scheme."	The *formatIdentifier* is akin to a classification code, and can therefore place an item within and among other related items.	This information is captured in the recommended classification code element
Reason/authorization for the backup (A3.2.3.3.2)	**Backup:** "a copy of a datafile made for the purpose of system recovery." (IP2 Glossary) "A copy of all or portions of software or datafiles on a system kept on storage media, such as tape or disk, or on a sepearte system so that the files can be restored if the original data is deleted or damaged." (IP2 dictionary - Computer and Information Sciences)	No			**Annotation** "a stand-alone PBcore element where you can catalog any supplimentary information about a media item or the metadata used to describe it."		It would be possible for reasons/authorizations for the backup, type of back up, extent or content of the backup, person creating the backup, data/time of the backup, software application used to create the backup, location of the backup and backup identification number to be captured in a single annotation. Essential Metadata element in the database: **BACKUP ANNOTATION**
Type of backup (A3.2.3.3.2)		No			"		
Extent or content of the backup (A3.2.3.3.2)		No			"		
Person creating the backup (A3.2.3.3.2)		No			"		
Date/Time of the backup (A3.2.3.3.2)		No			"		
Software application (including version number) used to create the backup (A3.2.3.3.2)		No			"		
Location of the backup (A3.2.3.3.2)		No			"		
Backup identification number (A3.2.3.3.2)		No			"		

Appendix C: Recommended Essential Metadata Fields

IP3 CS11 School of Journalism

Sample Form for Essential Metadata Elements (DRAFT of metadata for a subclip)

Student Entered Metadata

	Metadata Element	Example	Explanation
	Creator	International Reporting Class 2009/2010	The person(s) primarily responsible for creating content of the media item
	Keyword	Olympics	
	Keyword	Vancouver, 2010	
	Keyword	Ceremonies	
	Keyword	Gretzky, Wayne	
	Category	Canada	
O	Subcategory	Vancouver, BC	
	Form/ Footage Type	Subclip	
R	Version Number	0.1	
R	Classification number		
O	Description	Footage of Wayne Gretzky lighting the Olympic cauldron	
	Coverage - Spatial	British Columbia, Canada	
	Coverage - Temporal	2009	
	Languages	English; Mandarin	

Key

O indicate fields that are optional.

R Recommended by InterPARES GRAs since the October 2009 version.

Technical Metadata Captured by the System

	Metadata Element	Example	Explanation
	Title	According to naming convention	
	Author	UBC School of Journalism	The person or organization ultimately responsible for creating the media item; having the juidical authority and capacity to have the item created
	Rights Summary	Copyright - Creative Commons license	
	Date of Creation	2010-02-12	
	Filing Date	2009-10-02	
R	Attachments		
R	Access Restrictions		
	Format - Physical	DV Mini	
	Format - Digital	Video/mpeg	
	Format - Media Type	Moving Image	
	Format - File Size	471234854 bytes	
	Format - Time Start	00:00:00	
	Format - Duration	00:12:45	
	Format - Data Rate	Total 1584 kilobits/sec; Video 1384 kilobits/sec; Audio 200 kilobits/sec	
	Format - Bit Depth	8-bit	
	Format - Sampling Rate	Audio 44.1 kHz	
	Format - Frame Size	640x480	
	Format - Aspect Ratio	0.16875	
	Format - Frame Rate	29.97 fps	
	Format - Colours	Colour	
	Format - Tracks	1 video and 1 audio	
	Format - Channel Configuration	Stereo audio	

Key

represent fields that will stay the same for all video produced by the School (until such time as equipment and/or technology is upgraded)

indicate fields that can be automatically captured.

R Recommended by InterPARES GRAs since the October 2009 version.

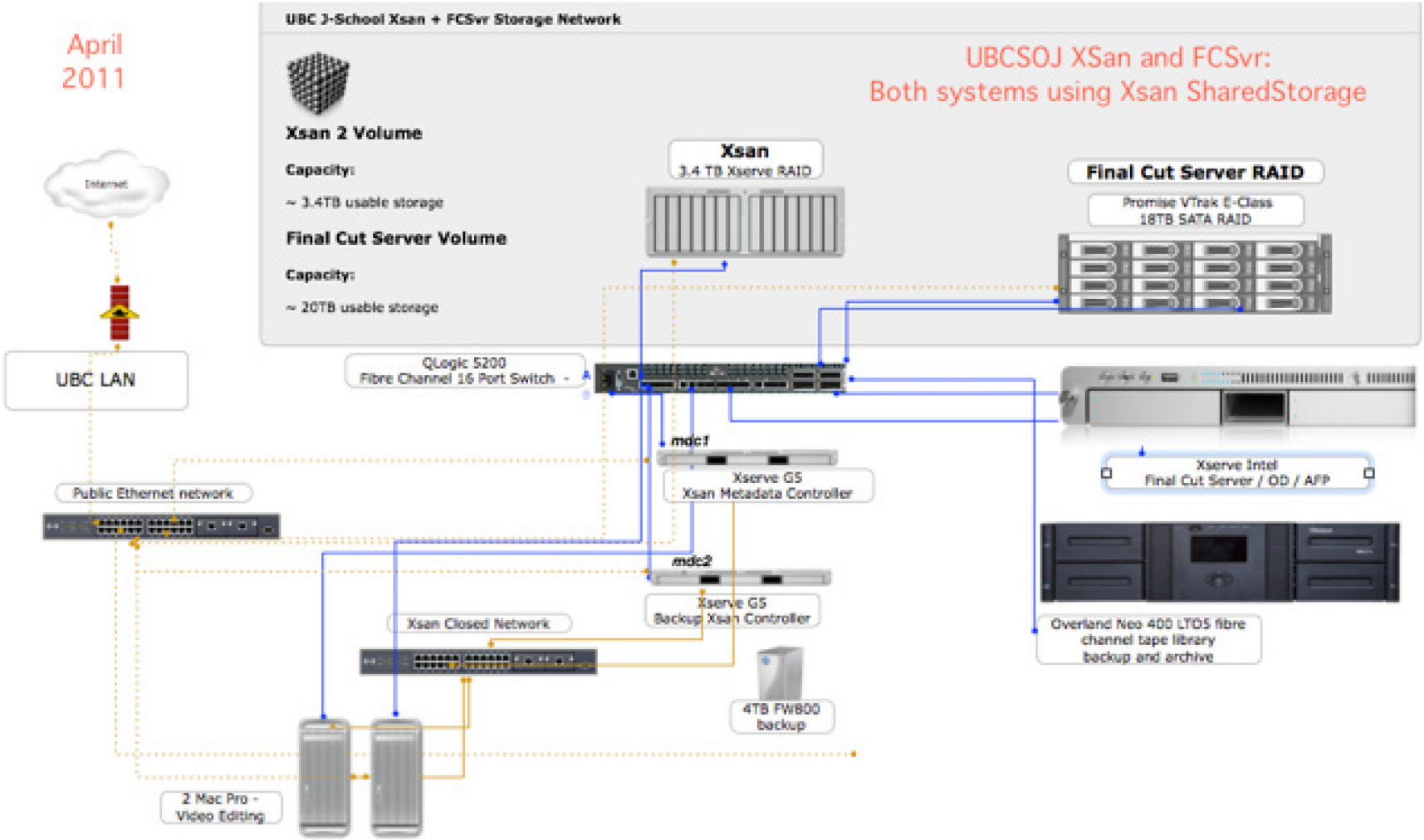
Administrative Metadata

	Metadata Element	Example	Explanation
R	Backup Annotation	Full; 2012-03-07T19:50Z	Description of type of backup conducted on piece and date created in ISO 8601 format

Key

R Recommended by InterPARES GRAs since the October 2009 version.

Appendix D: As-Built Configuration of the System



Appendix E: Licensing Agreement

THE UNIVERSITY OF BRITISH COLUMBIA

THE SCHOOL OF JOURNALISM
Sing Tao Building
6388 Crescent Road
Vancouver, BC Canada V6T 1Z2

Tel: 604 822.6688
Fax: 604.822.6707
journal@interchange.ubc.ca
www.journalism.ubc.ca
www.thethunderbird.ca

STUDENT LICENSE AGREEMENT

(Student Name) _____ , while retaining ownership of the copyright in (Name of the "Work") _____ hereby grants a non-exclusive, non-expiring license to the UBC School of Journalism to use, publish, sell and distribute or license (including granting Creative Commons license) to all or any portion of the work.

I will waive any moral rights claims against the University of British Columbia. UBC will also be exempt from any legal costs arising from any action against a third party over moral rights.
There will be named credit for any redistributed copy of the entire work. Creative Commons usage by others cannot be realistically credited.

Signature: _____

Dated: _____

THE UNIVERSITY OF BRITISH COLUMBIA

THE SCHOOL OF JOURNALISM
Sing Tao Building
6388 Crescent Road
Vancouver, BC Canada V6T 1Z2

Tel: 604 822.6688
Fax: 604.822.6707
journal@interchange.ubc.ca
www.journalism.ubc.ca
www.thethunderbird.ca

STUDENT LICENSE AGREEMENT

(Student Name) _____ , while retaining ownership of the copyright in raw video and audio for (Name of Work) _____ submitted on _____ , hereby grants a non-exclusive, non-expiring license to the UBC School of Journalism to use, publish, sell and distribute or license (including granting Creative Commons license) to all or any portion of the work.

I will waive any moral rights claims against the University of British Columbia. UBC will also be exempt from any legal costs arising from any action against a third party over moral rights.

There will be named credit for any redistributed copy of the entire work. Creative Commons usage by others cannot be realistically credited.

Signature: _____

Dated: _____

Appendix F: XML Metadata Report


```
<?xml version="1.0"?>
<FinalCutServer>
 <getMdReply>
 <entity entityType="asset" entityId="/asset/6287">
  <metadata>
  <mdValue fieldName="UBCJ-SCHOOL Author" dataType="string">UBC Graduate School of
Journalism</mdValue>
  <mdValue fieldName="Size" dataType="int64">1180282090</mdValue>
  <mdValue fieldName="Locked By" dataType="string">jbierman</mdValue>
  <mdValue fieldName="Location" dataType="string"></mdValue>
  <mdValue fieldName="File Name" dataType="string">PAIN-110601-0410.mov</mdValue>
  <mdValue fieldName="UBCJ-SCHOOL Rights" dataType="string">CC BY</mdValue>
  <mdValue fieldName="UBCJ-SCHOOL Country" dataType="string">India</mdValue>
  <mdValue fieldName="UBCJ-SCHOOL City" dataType="string">Kolkata</mdValue>
  <mdValue fieldName="UBCJ-SCHOOL Date Shot" dataType="dateTime">2010-02-22
08:00:00+0</mdValue>
  <mdValue fieldName="UBCJ-SCHOOL Type" dataType="string">Clip</mdValue>
  <mdValue fieldName="UBCJ-SCHOOL Creator" dataType="string">International Reporting
2010/2011</mdValue>
  <mdValue fieldName="Creation Date" dataType="dateTime">2011-09-22 21:52:17+0</mdValue>
  <mdValue fieldName="Duration" dataType="timecode">00:04:17:20/(24000,1001)</mdValue>
  <mdValue fieldName="UBCJ-SCHOOL_PBS_Arts_Entertainment" dataType="string">Not
Applicable</mdValue>
  <mdValue fieldName="Created By" dataType="string">jbierman</mdValue>
  <mdValue fieldName="Video Bit-rate" dataType="float">36.5441</mdValue>
  <mdValue fieldName="UBCJ-SCHOOL Classification Code" dataType="string">Project</mdValue>
  <mdValue fieldName="UBCJ-SCHOOL_PBS_History" dataType="string">Not Applicable</mdValue>
  <mdValue fieldName="File Modification Date" dataType="dateTime">2011-09-22
21:52:17+0</mdValue>
  <mdValue fieldName="Media Type" dataType="string">video_clip</mdValue>
  <mdValue fieldName="UBCJ-SCHOOL_PBS_Home_How-to" dataType="string">Not
Applicable</mdValue>
  <mdValue fieldName="Description" dataType="string">Interview of Dr. Abhijit Dam by Sarah Buell. See
annotation for transcription.</mdValue>
  <mdValue fieldName="Stored On" dataType="string">Library</mdValue>
  <mdValue fieldName="Clip ID"
dataType="string">060A2B340101010501010D4313000000919C5B3E155605DC08004602023D0038</m
dValue>
  <mdValue fieldName="UBCJ-SCHOOL Location" dataType="string">West Bengal </mdValue>
  <mdValue fieldName="Reel" dataType="string">Untitled</mdValue>
  <mdValue fieldName="Image Size" dataType="coords">1920x1080</mdValue>
  <mdValue fieldName="UBCJ-SCHOOL Subtype" dataType="string">Interview</mdValue>
  <mdValue fieldName="UBCJ-SCHOOL_PBS_Science_Nature" dataType="string">Not
Applicable</mdValue>
  <mdValue fieldName="UBCJ-SCHOOL_PBS_Technology" dataType="string">Not Applicable</mdValue>
  <mdValue fieldName="Video Frame Rate" dataType="fraction">23.97</mdValue>
```

<mdValue fieldName="UBCJ-SCHOOL Library Status" dataType="string">Public</mdValue>
<mdValue fieldName="Asset GUID" dataType="string"></mdValue>
<mdValue fieldName="Metadata Set" dataType="string">pa_asset_ubcJ-School_media</mdValue>
<mdValue fieldName="Category" dataType="string">Other</mdValue>
<mdValue fieldName="Audio Codec" dataType="string">raw16bit_le</mdValue>
<mdValue fieldName="Asset ID" dataType="int64">6287</mdValue>
<mdValue fieldName="Mime Type" dataType="string">video/quicktime</mdValue>
<mdValue fieldName="IsGood" dataType="bool">false</mdValue>
<mdValue fieldName="Local Entity" dataType="bool">true</mdValue>
<mdValue fieldName="Keywords" dataType="string">India, doctor, Dam, interview, Buell</mdValue>
<mdValue fieldName="UBCJ-SCHOOL Published" dataType="bool">false</mdValue>
<mdValue fieldName="Timecode Offset" dataType="timecode">09:30:46:08/(24,1)</mdValue>
<mdValue fieldName="Video Codec" dataType="string">xdcam_ex</mdValue>
<mdValue fieldName="UBCJ-SCHOOL_PBS_Health" dataType="string">Caregiving</mdValue>
<mdValue fieldName="Last Modified" dataType="dateTime">2012-01-27 00:00:43+0</mdValue>
<mdValue fieldName="UBCJ-SCHOOL_PBS_Parents" dataType="string">Not Applicable</mdValue>
<mdValue fieldName="Owner" dataType="string"></mdValue>
<mdValue fieldName="Title" dataType="string">INDIA Dam INTV (Part 1) 110601-0410</mdValue>
<mdValue fieldName="UBCJ-SCHOOL_PBS_News_Public_Affairs"
dataType="string">Health</mdValue>
<mdValue fieldName="File Create Date" dataType="dateTime">2011-06-11 09:36:15+0</mdValue>
<mdValue fieldName="Last Accessed" dataType="dateTime">2011-12-02 20:41:17+0</mdValue>
<mdValue fieldName="UBCJ-SCHOOL_PBS_Culture_Society"
dataType="string">Community</mdValue>
<mdValue fieldName="Original Format" dataType="string">Apple XDCAM EX 1080p24 (35 Mb/s
VBR)</mdValue>
<mdValue fieldName="UBCJ-SCHOOL Language 1" dataType="string">English</mdValue>
<mdValue fieldName="Video Elements" dataType="string">video</mdValue>
<annotations>
<annotation>
<mdValue fieldName="User id" dataType="integer">5</mdValue>
<mdValue fieldName="Full name" dataType="string">Jonathan Bierman</mdValue>
<mdValue fieldName="Out" dataType="timecode">09:35:03:08/(15,1)</mdValue>
<mdValue fieldName="Annotation" dataType="string">Interview with Dr. Abhijit Dam by Sarah Buell
(Part 1)

Sarah Buell:
09:30:46:08 Okay the first thing I am just going to get you to do is spell your first and last name for us.

Dr. Abhijit Dam:
09:30:52:03 That's Abhijit A-B-H-I-J-I-T and my last name is Dam, that is D-A-M.

Sarah Buell:
09:30:59:00 And what would you like us to title you as?

Dr. Abhijit Dam:
09:31:02:01 You can call me Dam.

Sarah Buell:
09:31:03:08 Just like Dr. Dam?

Dr. Abhijit Dam:
09:31:05:00 Yeah Dr. Dam would be fine.

Sarah Buell:
09:31:07:00 Okay alright so first this interview I am going to touch on both Calcutta [indiscernible] work here and in West Bengal and then also your home city Jharkhand, so if there is a little bit working between the two that's why – so the first thing I just like you to do is can you just describe for me the typical patient who would receive palliative care in Calcutta? Who would come into a clinic to receive palliative care?

Dr. Abhijit Dam:
09:31:30:02 Well the whole concept of palliative care is still in its infancy in the eastern part of India, so at this point of time I really doubt if any patient would spontaneously come up to a clinic demanding palliative care. Palliative care is still in its infancy and it has to be advocated, so as far as your question goes I really doubt whether any patient would spontaneously come up demanding palliative care, but it's not happening right now.

Sarah Buell:
09:31:59:03 Soon what situation would a patient be receiving it?

Dr. Abhijit Dam:
09:32:03:05 But soon in the near future a patient – any terminally ill patient, but to start off with patients with cancer, with terminal cancer would definitely be receiving palliative care and that too in specialized centers which currently have a palliative care department and currently as far as my knowledge goes in the city of Kolkata there are only two centers which have a palliative care, established palliative care department.

Sarah Buell:
09:32:28:06 Now what about your home stay? Who would be receiving palliative care there?

Dr. Abhijit Dam:
09:32:33:00 The situation is pretty much the same in my home state, it could be a bit worse in fact and currently ours is first and the only hospice providing home care in the whole of the state of Jharkhand and recently there has been another center at Tata – Tata Nagar which is an institution based palliative care OPD, that is an outpatient department.

Sarah Buell:
09:32:58:08 And why do you think that – that your – your state is worse?

Dr. Abhijit Dam:
09:33:03:00 It's worse – see Jharkhand is a newly formed state, it's been formed just in 2010 and since its formation, since 11 years of its formation, the government has changed seven times and it's a tribal state, so government changing seven times in ten years of its inception, so that would definitely give you an answer about why is it so backward.

Sarah Buell:
09:33:29:04 So do people in your state have access to morphine?

Dr. Abhijit Dam:
09:33:33:03 Morphine is currently available in just a couple of centers in the whole of Jharkhand, the main problems are with licensing and as far as the government of India regulations go, every state has its own set of – sort of rules which they are supposed to implement, although the government of India is now trying to blanket impose a set of rules for the whole of India, but then it's going to take some time for that to happen and the problem is that till that enforcement comes in, we are not going to let our patients suffer and die with pain, so something needs to be done for them.

Sarah Buell:
09:34:18:04 What hope do you have that it will actually happen?

Dr. Abhijit Dam:
09:34:21:05 It will definitely happen, maybe it will take a couple of years or maybe five to ten years for a uniform thing to come in to place, but then there are specific requirements of licensing and stocking and then the profit margin of narcotics is very limited, as far as morphine tablets are concerned especially. So – so naturally, I mean a person who would be selling morphine would not be interested in stocking morphine because the profit margin is less and the paperwork necessary for stocking that morphine is like crazy.</mdValue>
<mdValue fieldName="In" dataType="timecode">09:30:46:08/(15,1)</mdValue>
<mdValue fieldName="Timestamp" dataType="dateTime">2012-01-27 00:00:43+0</mdValue>
<mdValue fieldName="Name" dataType="string">jbierman</mdValue>
</annotation>
</annotations>
</metadata>
</entity>
</getMdReply>
</FinalCutServer>