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Abstract	Video Film Capture technology has never been more ubiquitous in our world. The factors driving down the price of technology while improving on the functions have made it possible for virtually anyone to be a contents creator. Consequently, this has caused a surge in self-produced contents sharing, and the appearance of collaborative filmmaking effort. These remotely-produced, multi-user productions have created a new niche in the filmmaking industry, which is slowly-but-surely growing and gaining recognition. However, the lack of a general guide and the underutilization of open-source technologies is hampering potential participants. The research in this thesis attempts to shed light on this by detailing the experiment of the first successful remotely-produced trans-Pacific collaborative documentary film, 'Places + Perspectives' and the workflow which supported this project. By fusing state of the art technology to preserve the naturally developing human factors of a project such as this, new innovating filmmaking method can be implemented. A discussion of difficulties and the Six Affection Factors of Remote Collaborative Documentary Filmmaking are presented. Finally, the Conclusion examines recent advances to the field, which are helpful to future remote collaborators.
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Master's Thesis
Academic Year 2012

Technology-Assisted Remote Collaborative Documentary Filmmaking
Workflow Design and Experiment

Graduate School of Media Design
Keio University

Devin Ohara

A Master's Thesis
submitted to Graduate School of Media Design, Keio University
in partial fulfillment of the requirements for the degree of
MASTER of Media Design

Devin Ohara

Thesis Committee:

Professor Naohisa Ohta (Supervisor)

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Abstract of Master's Thesis of Academic Year 2012

Technology-Assisted Remote Collaborative Documentary Filmmaking Workflow Design and Experiment

Video Film Capture technology has never been more ubiquitous in our world. The factors driving down the price of technology while improving on the functions have made it possible for virtually anyone to be a contents creator. Consequently, this has caused a surge in self-produced contents sharing, and the appearance of collaborative filmmaking effort. These remotely-produced, multi-user productions have created a new niche in the filmmaking industry, which is slowly-but-surely growing and gaining recognition. However, the lack of a general guide and the underutilization of open-source technologies is hampering potential participants. The research in this thesis attempts to shed light on this by detailing the experiment of the first successful remotely-produced trans-Pacific collaborative documentary film, 'Places + Perspectives' and the workflow which supported this project. By fusing state of the art technology to preserve the naturally developing human factors of a project such as this, new innovating filmmaking method can be implemented. A discussion of difficulties and the Six Affection Factors of Remote Collaborative Documentary Filmmaking are presented. Finally, the Conclusion examines recent advances to the field, which are helpful to future remote collaborators.

Keywords:

Remote Collaborative Documentary Filmmaking, Human Factors, CSCW

Graduate School of Media Design, Keio University

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Table of Contents

1. Introduction.....	7
1.1 Motivation.....	7
1.2 Goal.....	9
1.3 Thesis Overview.....	9
2.Scope.....	12
2.1 Scope of Research.....	12
2.2 Scope of Knowledge.....	13
3. Literature Review.....	14
3.1 Collaborative Filmmaking.....	14
3.2 Remote Collaboration.....	15
3.3 Creative Collaboration.....	15
4. Methodology.....	18
4.1 Initial Planning.....	20
4.2 Discussion/Brainstorming.....	22
4.3 Shooting.....	26
4.4 Contents Management.....	28
4.5 Editing.....	32
5. Findings.....	35
5.1 User Interviews.....	35
5.2 Limitations/Shortcomings.....	36
5.3 Positive Contributions.....	38
5.4 Six Affecting Factors.....	39
5.4.1 Discussion Hub.....	40

5.4.2 Contents Evaluation.....	42
5.4.3 Common Shared Data.....	42
5.4.4 Rough Editing.....	43
5.4.5 Refined Editing.....	44
5.4.6 Distribution and Expansion.....	45
6. Conclusion.....	47
6.1 Reflections.....	47
6.2 Recent Technological Improvements.....	48
Acknowledgments.....	49
References.....	50
Appendix.....	55

List of Figures

Figure 1.1: Thesis Overview.....	10
Figure 3.1: Quitmeyer (2012) Differing content management in fiction and documentary video production.....	16
Figure 4.1: Title Screen of PP.....	18
Figure 4.2: Timeline of Production Process of PP.....	19
Figure 4.3: Polycom video conferencing environment.....	22
Figure 4.4: Emergency Skype Sessions.....	23
Figure 4.5: KMD Remote Meeting Set Up.....	24
Figure 4.6: UCSD Remote Meeting Set Up.....	25
Figure 4.7: KMD Remote Meeting.....	25
Figure 4.8: Filming Session.....	28
Figure 4.9: KMD Cloud Server running AjaXplorer.....	29
Figure 4.10: Screenshot of PIX System.....	31
Figure 4.11: Analog Storyboarding and Ideation Session.....	33
Figure 4.12: Digital Collaborative Storyboard.....	33
Figure 5.1: Workflow of Experiment.....	35
Figure 5.2: Six Affecting Factors.....	40

1. Introduction

1.1 Motivation

Collaborative filmmaking is by no means a new field, with crowdsourcing platforms such as Wreckamovie¹ being established in 2007, as an online place for multiuser participatory filmmaking. In addition to these private platforms, there can be no doubt as to the effect that open-ended user platforms such as YouTube are having on creative collaborations. There are countless successful examples of multiuser channels, such as vlogbrothers², TheFineBros³ and the now defunct 5awesomegays⁴. These channels are maintained by two or more users who upload videos in rotation to a single channel. Noticing the success and response that these channels are gaining from these niche audiences, traditional media outlets, such as Fuji TV, Hearst Magazines and TED Conferences⁵ have begun to emulate the format, producing YouTube-exclusive contents for their private channels. While these new content distribution channels have accomplished mild success, they are in most cases merely replicating television programming on the Internet. They have by no means adapted the collaborative element to their contents.

One of the reasons for this rise in self-produced collaborative content is the rapid development of the hardware. Video cameras are now ubiquitous. They are not just video cameras. They are smart phones, they are mp3 players, they are digital SLR cameras. They have saturated the technology market to the point that there are multiple affordable options, and almost anyone can carry this technology around with them at all times. In fact, the price of HD point and shoot video cameras has become so reasonable, that you can purchase fully-

equipped HD camcorders for less than the price of a new pair of sneakers. It has never been easier to share yourself with the world, and interact with users all over the world.

Whether intentional or not, this surge in collaboration channels has ushered in a new age where physical distance is disappearing. In all of the examples above, the main collaborators reside in different parts of the same country, in some cases, different parts of the world. Limitations and hinderances which have shackled the potential collaborators have been liberated, an effect that has effectively been shared by the users as well. This paradigm shift in the traditional methods of filmmaking is the new generation.

This is undeniably, however, the first step in a long process. The remote collaborative efforts on video sharing sites are still very elementary, and there is no uniformity in the contents (whether this is intentional or not depends on the individual users and the effect that they are going for). It is still painstakingly obvious that these videos have little to no unity in their style, even though applicable technology is available to users, in most cases for little to no expense.

The author decided to undertake this research because he felt that there was a large gap separating potential remote collaborators and the available technology. This technology, mainly open-source and freely available programs, is being underutilized by participants, mostly due to the simple fact that there are too many potential solutions that it can be overwhelming for beginners trying to break into the field. The motivation for taking on the research described in this thesis was to experiment with viable solutions and workflow for this new genre of filmmaking. By sharing the experiences of the remote collaborative filmmaking project “Places + Perspectives”, the author hopes that potential filmmakers will have a better understanding of the genre and an clearer grasp of the workflow necessary to create innovative and fun content.

1.2 Goal

This thesis investigates one experiment in a remotely-produced creative collaboration in documentary filmmaking, entitled “Places + Perspectives”⁶, referred to henceforth as “PP”. Given the lack of comparable research in experimental filmmaking, this thesis is written with the intention of communicating the methodology and workflow which supported PP, and delves into details relevant to fellow researchers and academics on the topic of trans-Pacific collaborative documentary filmmaking. The author holds the long-term vision of realizing an effective environment for remote collaborative documentary filmmaking, however the main objectives of this thesis are divided as such:

- Present and examine the workflow of PP from conception to completion, followed by user feedback and a thorough discussion of shortcomings, limitations and sustainability of aforementioned experiment.
- Contribute knowledge to academic researchers and contents creators who will continue to experiment in the field of remote collaborative documentary filmmaking by passing on existing knowledge, and also current technological developments influenced by this research.

1.3 Thesis Overview

This action research thesis will be organized in the structure illustrated by the figure below. The motivation, short-term and long-term goals of the research. The second chapter will address the scope and limitations of the experiment. Chapter 3 will provide a critical review of relevant academic literature in relation to creative collaboration, remote creation,

collaborative filmmaking and computer-supported collaborative works. The methodology which supported PP will be dissected into 5 groups: Initial Planning, Discussion/ Brainstorming, Shooting, Contents Management and Editing, and will be addressed in Chapter 4. In the fifth chapter, the findings of the experiment, personal anecdotal data and segments of interviews with users will be presented, and the six affecting factors essential to remote collaborative documentary filmmaking (Discussion Hub, Contents Evaluation, Common Shared Data, Rough Editing, Refined Editing and Distribution and Expansion) will be discussed. The final chapter, Chapter 6, will be a final reflection of the experiment and discuss future research and current advancements in the field.

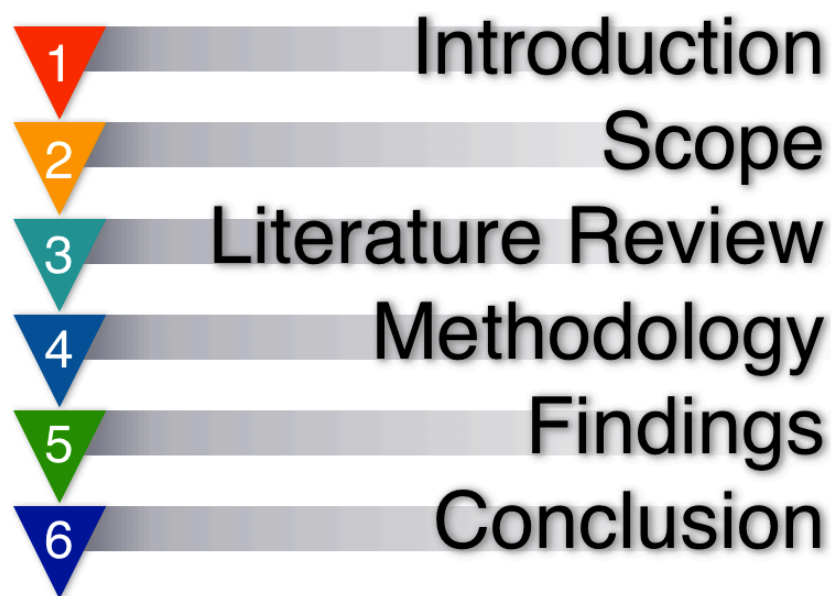


Figure 1.1: Thesis Overview

Notes

1. Wreckamovie, “Wreckamovie” <http://www.wreckamovie.com/>
2. vlogbros, “vlogbros” <http://www.youtube.com/user/vlogbrothers>
3. finebros “finebros” <http://www.youtube.com/user/TheFineBros>
4. 5awesomegays, “5awesomegays” <http://www.youtube.com/user/5awesomegays>
5. “YouTube Original Channels” Google. <http://www.youtube.com/yt/advertise/original-channels.html>

2. Scope

Given the nature of the research, it is necessary to indicate the scale and limitations author, which can cause bias and skew the authenticity of the thesis research. The author is only one member of a large group of collaborators, and does not have the omniscient abilities to know the opinions of all those who were involved in this collaboration. Also, as to be more thoroughly explained in Chapter 4, there was little communication outside of the weekly meetings between the two parties, so it is obvious how a schism in knowledge is possible. To supplement for this, the author has conducted interviews with participants of both collaborative teams, providing qualitative data to bridge the gap of knowledge. The pertinent sections of the interviews, as well as other findings, will be presented in Chapter 5.

2.1 Scope of Research

The scope of this research can be divided into a long term goal and a short term goal. It is necessary to be conscious of the time limitations that accompany a Master's Program, so for this reason the scope of the experiment was intentionally limited to a feasible goal which would be possible within the constraints without being too overbearing. In terms of long term goals, the author aims to realize a self-sufficient environment, in which potential collaborators can freely participate in remote filmmaking projects. The first step to achieving this goal is to gather and share research on the field, so that future researchers can continue and build on the achievements reached in this experiment. As such, this thesis will be presented as an Action Research thesis, and will not reference a hypothesis.

2.2 Scope of Knowledge

As mentioned above, there is a lack of previous examples and comparable works to which the details of this thesis can be compared. By sharing the data and details of the workflow and experiment, it is the author's hope that the field will continue to grow through the addition of this new knowledge.

3. Literature Review

Computer Supported Collaborative Tools (CSCW) and more specific subcategories of the subject, which include Technical Intersubjectivity, etc. constitute the backbone of this literature review. While there are no comparable experiments to directly examine in correlation, there is value in examining these related subcategories in order to gain an insight into the problems of the field and solutions that have been proposed.

3.1 Collaborative Filmmaking

Collaborative filmmaking is an idea that has been investigated as a field of its own for over 10 years, with patents dating back to 2005¹. These cutting edge ideas no doubt were remarkable by their standards, however the technological limitations kept these patents as just ideas. It is only recent strides in technology which have allowed researchers to delve into further pursuits.

Parr attempted to apply this method to local collaborators, investigating the relationship between collaboration and mental health. She argues that

“utilizing filmmaking as a fieldwork ‘art’ is argued to enable different participative, social, technological, representational and material processes and outcomes for vulnerable people.”²

Pink echoes this sentiment and discusses that

“video is not simply a ‘data collection tool’, but a technology that participates in the negotiation of social relationships and a medium through which ethnographic knowledge is produced”³

It is therefore imperative to aim to replicate a similar organic development of social relationships between participants.

3.2 Remote Collaboration

With the development and improvements in technology, new research arises. Such is the case with remote collaboration. The field of Technological Intersubjectivity (TI), which refers to a technology supported interactional relationship between two or more participants⁴, is detailed in Vatrappu, who addressed the topic of remote collaboration between participatory parties of different cultural backgrounds. The contents of this research delved deeply into interracial differences between users of their proposed system, but did not develop a system to accelerate collaborative workflow beyond the ‘text’-level.

The specifics that Vatrappu is missing are supplemented by Tsukahara, who details the design and implementation of a proposed “Global Studio”⁵, which would enable users to communicate and cooperate with each other between remote locations. The “establishment of effective video meeting environment between point-to-point” users, which is the overall vision of the research outlined by Tsukahara, is very detail-oriented, and can serve as a guide to those attempting to establish a video meeting environment that does not involve 4K quality video streaming.

3.3 Creative Collaboration

The research which most closely resembles the content of this experiment comes from Georgia Institute of Technology and is detailed in “Documatic’ Participatory, Mobile

Shooting Assistant, Pre-Editor, and Groundwork for Semi-Automatic Filmmaking”⁶.

Quitmeyer outlines an free, open-source Android application, which aids to guide the production process of documentary filmmaking by introducing metadata tagging to interview clips, assisting editing for evolving documentary projects. He stresses that the most important part of his system is providing a complete workflow, but it has many limitations which prevent its application in a remote setting. Nevertheless, his insight into the differing content management in fiction and documentary production, reprinted below, is very similar to that of this experiment, so it can be well referenced.

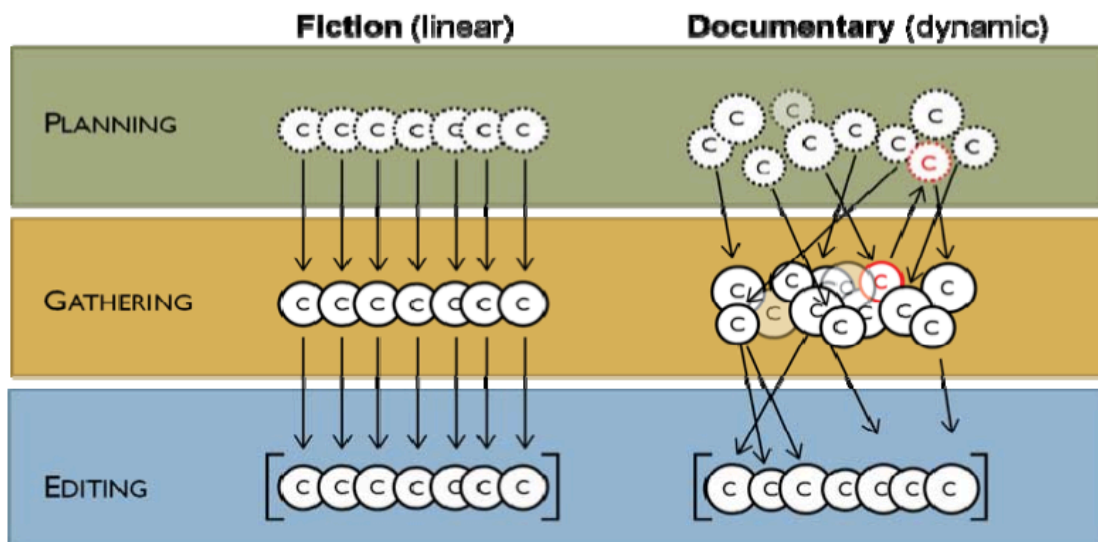


Figure 3.1: Quitmeyer (2012) Differing content management in fiction and documentary video production

Notes

1. Moder, Steven, Emmanuel C. Francisco, Richard Rublo, James F. Beshears, (2003) “Virtual Collaborative Editing Room” in *United States Patent Application Publication*.
2. Parr, Hester (2007) “Collaborative Filmmaking as Process, Method and Text in Mental Health Research” in *Cultural Geographies*, pp. 114-138.

3. Pink, Sarah, *Doing Visual Ethnography*, (New York: SAGE Publications, 2006)
4. Vatrapu, Ravi, Dan Suthers (2009) “Technological Intersubjectivity in Computer Supported Intercultural Collaboration” IWIC’ 09, pp. 155-164, Palo Alto, California, USA: ACM.
5. Tsukahara, Yasuhito, Takashi Tomine, Kazunori Sugiura (2011) “Design and Implementation of “Global Studio”: Remote Collaboration Environment with High Resolution Video Streaming Software” AINTEC’ 11, pp. 64-71, Bangkok, Thailand: ACM.
6. Quitmeyer, Andrew, Michael Nitsche (2012) “Documatic: Participatory, Mobile Shooting Assistant, Pre-Editor, and Groundwork for Semi-Automatic Filmmaking” EuroITV12, Berlin, Germany: ACM.

4. Methodology

This experiment was conducted over a time span of roughly 7 months, and the result was entitled Places and Perspectives (Title Screen shown in Figure 4.1).



Figure 4.1: Title Screen of PP

As stated previously, the action research nature of this experiment led to constant creation and constant changes in the methodology of the research. Namely, as new challenges presented themselves, there was a necessity to solve these challenges as fast and efficiently as possible, which, in some cases, resulted in redundant technological overlap. These choices will be explained in this chapter, as well as in Chapter 5. Ideal solutions derived from analyzing the findings will be postulated, and recent advancements in the implemented technologies will also be introduced.

There is an underlying reliance on technological tools in remote collaborative filmmaking, and the advancement of the project as well as the development of strong team

spirit is empowered by these technologies. As such, it is essential to be aware of the current technological tools as well as cognizant of the workflow between the two involved parties. A successful marriage of these two elements is the groundwork for any remote collaborative effort, but is especially crucial in documentary filmmaking, because of the extreme reliance on communication throughout the entire project.

The schedule of the experiment is illustrated below, in Figure 4.2. Initially, time was devoted to discussion with regards to the possibilities and realities of this research. Once a consensus was reached, the experiment moved on to the first stage. In regards to this thesis, the relevant sections are color-coded into five categories: Initial Planning, Discussion/Brainstorming, Shooting, Contents Management and Editing. Each facet of the workflow supporting PP, as well as the challenges and technical solutions, will be detailed below in subsequent sections.

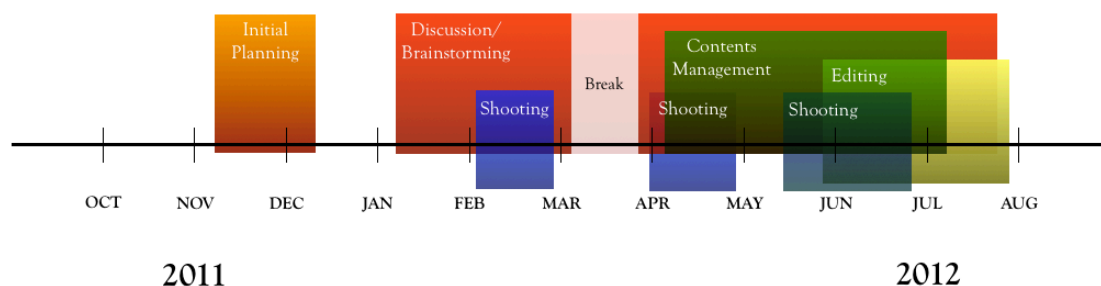


Figure 4.2: Timeline of Production Process of PP

The experiment was designed around many short deadlines. After the Initial Planning stage, the first deadline was set at March 1st, when a completed trailer of the project was to be shown at the 11th Annual Optical Networked Virtual Environments for Collaborative

Trans-Oceanic Research Conference (On*Vector)¹ in San Diego, California. After the presentation at On*Vector, it was decided that a short hiatus would be taken for a one month period, with meetings resuming in the beginning of April. The projected date for the completion of the project was June 15th. The completed film was shown at the 3rd Annual CineGrid@TIFF 2012 event at the 25th Annual Tokyo International Film Festival at Roppongi Academyhills on October 23rd², with an accompanying presentation and Q&A Session on the workflow and creative process of remote collaborative filmmaking.

4.1 Initial Planning

The initial planning for this project began after the success of the CineGrid@TIFF event in 2011. After the event, a separate meeting was held at KMD, between the Board Members of the CineGrid Association and the faculty and students of Power of Motion Pictures Real Project of KMD. Stemming from their interest in the Growing Documentary project, researchers from University of California San Diego California Institute for Telecommunications and Information Technologies (UCSD Calit2) and the author and team agreed to collaborate between student led teams at their respective schools, with the goal of creating a new saga in the Growing Documentary legacy.

In order to gather up a team of students at KMD, an informational meeting was held. The initial contact between the two schools was held via Polycom video conferencing technology. Simple to access, clear streaming video and audio initially made Polycom a stable solution to video conferencing. However, the fixed location of the camera forced a wide, overhead shot of both of the participating parties, which detracted from the reality of the communication. Mainly, the KMD camera is fixed above the classroom, which appears

like a voyeuristic viewpoint, and does not engage or encourage communication. Another contributing factor to the reservation of the first meeting was undoubtedly the fact that the groups were meeting for the first time. It is important to take note of the human factors during the course of the project. In order for a collaboration to be successful in traditional terms, the development of good rapport between group members is essential, and as such, should develop in a remote collaborative environment as well. This sentiment is echoed by Parr, which agrees that “the filmmaking process itself help[s] to facilitate and enable our collaborative and creative relationship”³, so it is a factor to keep in mind. More on this topic will be discussed in Chapter 5, in the interviews with participants. During the information session, the groups of interested parties gathered on both sides, and discussed their goals for the project, as depicted in the figure below.



Figure 4.3: Polycom video conferencing environment

It was during the initial planning stage that the VROOM Project Google Site⁴ was established, with the goal of being the central hub for information exchange and communication outside meetings. It contains meeting minutes, contact information and other important data. More will be discussed on the central discussion hub and other alternatives that arose in the end of Section 4.2.

4.2 Discussion/Brainstorming

The discussion and brainstorming sessions were weekly meetings that ranged from two to three hours, during which various matters were debated between the participatory parties. The spontaneous nature of these meetings (which had multiple people speak at once, interruptions, etc) is a very important factor to the creative process. This led to the adaption of video conferencing tools which meshed with the more intimate setting of the sessions. Over the entire course of the experiment, four different video conferencing tools were employed. In addition to the Polycom video conferencing system pictured in the previous figure, attempts involving Sype are shown below in Figure 4.4.

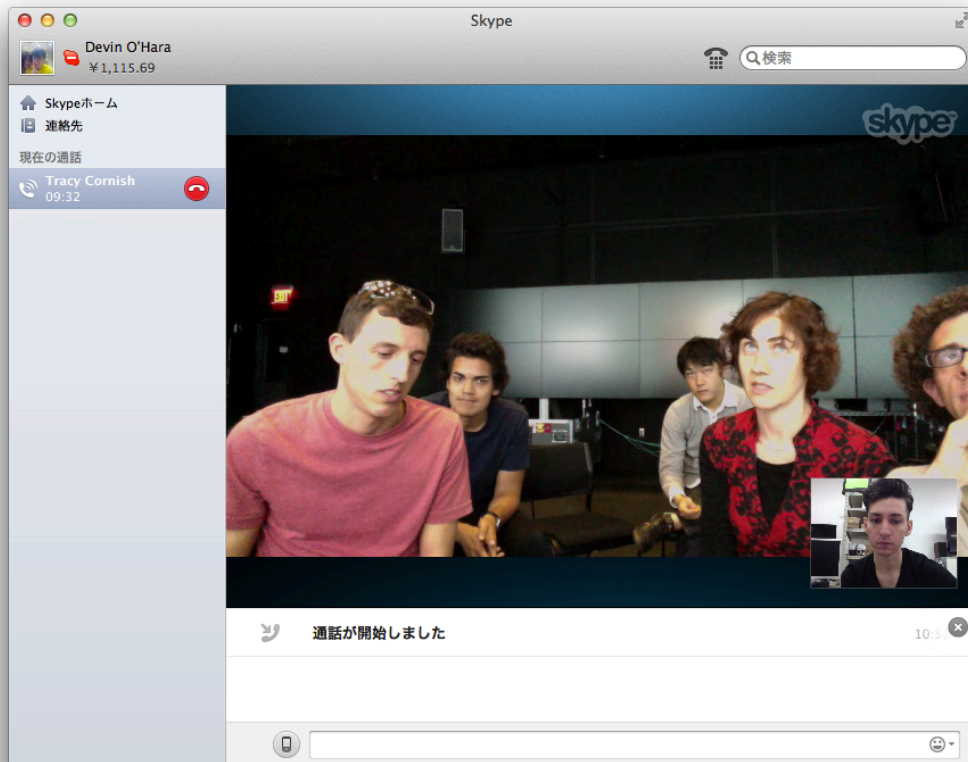


Figure 4.4: Emergency Skype Sessions

As was the case with Polycom, Skype was not a feasible solution for our remote collaboration. Even when connected to the fastest wireless network, the lag in the audio and visual information did not allow for effective debate on issues. Real time debating and conversational dialogue on topics, themes, art direction, etc. all grow in an organic manner, with ideas spring-boarding from one to another, evolving and growing. This necessity was not adequately met by the service, and eliminated Skype as a possible solution. That is not to say that Skype was not used at all. In times of technical difficulties, Skype was an essential means of keeping the communication channels open and allowed us to effectively use our meeting time while technical issues were resolved. Ultimately, the latency issues were apparent and unavoidable, which led to the implementation of the latter solution, pictured below.

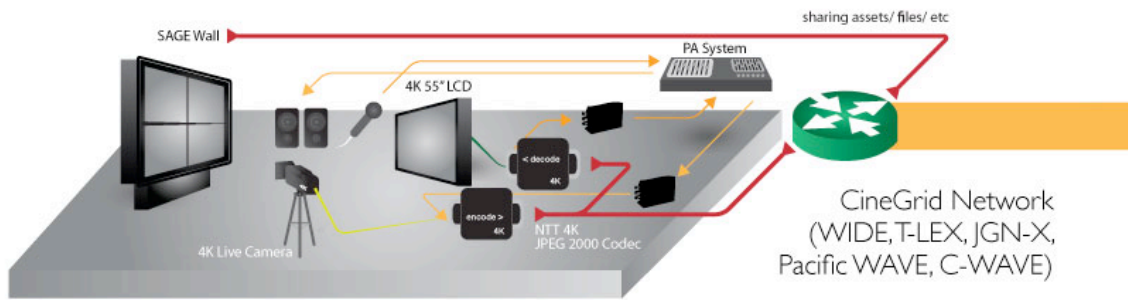


Figure 4.5: KMD Remote Meeting Set Up

Starting from the left, an integral technology which aided throughout the entire experiment was a Scalable Adaptive Graphics Environment unit (SAGE)⁵. SAGE is an essential tool for visual brainstorming and a convenient method for sharing photo and video contents. The SAGE units at KMD and UCSD were connected over the CineGrid network, a high-bandwidth network which permits contents sharing in the blink of an eye. During the brainstorming stage, SAGE was essential in sharing inspirational photos, sample clips of documentary film shooting styles, etc. By visualizing our brainstorming sessions over the SAGE unit, a better shared understanding of the direction of the project was attained. The large screen presents shared contents comfortably for all participants in a large room, an improvement over personal sharing over Vimeo or Flickr.

Moving to the right, a Canon HD camera or a JVC 4K camera and a bidirectional microphone were employed. These were connected into a NTT JPG2K encoder unit, which operates over the same CineGrid network to which the SAGE units were connected. Over the same network came the visual and audio information from UCSD, which was decoded by a similar NTT JPG2K decoder unit. The decoded visual data was sent to 55 inch ASTRO 4K LCD monitor, and the audio signal was routed to the same bidirectional microphone which shared our sound. The bi-directionality of the microphone replicated the environment on

both sides of the camera, and preserved the directionality of participant's voices. UCSD used a similar setup on their side, as depicted in Figure 4.6, with a JVC 4K projector in place of an LCD monitor and a larger-scaled SAGE wall.

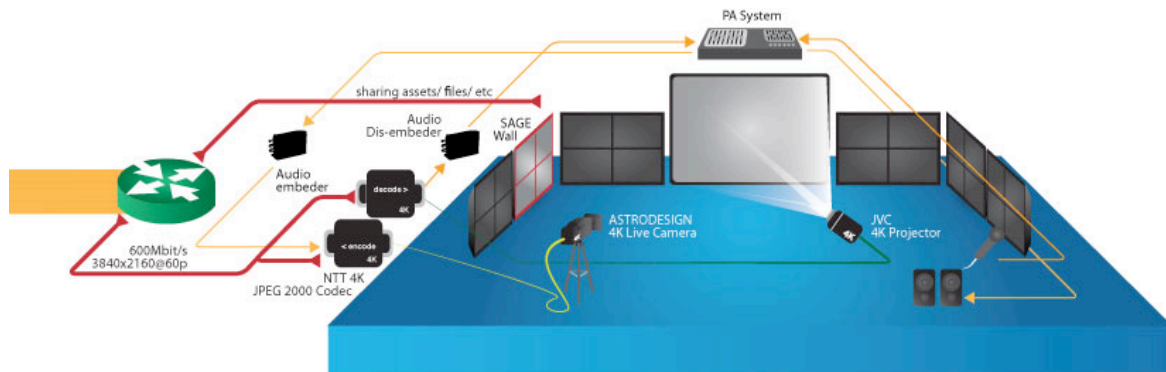


Figure 4.6: UCSD Remote Meeting Set Up



Figure 4.7: KMD Remote Meeting

Reference photos of the actual set up on the KMD side are shown in Figure 4.7. This configuration improves on Polycom video conference system in many aspects. First, the position of the camera is more personable, allowing for a greater cooperative environment.

The SAGE opti-portable is also featured and fully visible, which permits both sides to keep track of exactly what contents are being discussed on which side at all times, essentially preserving visual communication channels.

However, there were still some limitations. Until this point, the communication options for the weekly meetings have been discussed in length, but there were also multiple channels of communication open all around the clock, allowing the team members to stay in constant contact. In addition to the Google Page discussed in the Initial Planning subsection, a Facebook page, a Google Group and multiple YouTube channels were used by participants of the experiment. Each one of these discussion channels were viable solutions, and had their respective pros and cons, however as the number of hubs for communication began to grow in number, so did the level of confusion. It was impossible to keep track of all of the information sprawled out over multiple platforms, and as a result, Facebook became the main discussion channel, and the other resources fell to the wayside.

4.3 Shooting

The shooting process began shortly after the initial ideas were solidified during the brainstorming session. An important decision that had to be made early on in the course of the process, especially before the filming began, was whether to use 4K or HD resolution. As a result of multiple factors, HD was decided by both parties. To establish unity of contents, it was necessary to keep the filming process as similar as possible, which was easier to attain by choosing to film with digital SLR cameras (specifically, Canon 60D and 5D DLSR bodies and 70-200mm zoom lens, a 16-35mm fixed zoom lens and a 24-70mm and 115mm and 100mm lenses for special effects in the b-roll).

By choosing HD over 4K, the size of movie files were at a manageable level for cloud sharing. Details of contents management methods will be discussed in the next section, but the difference in speed and size made HD preferable. Also, there is no particular reason to choose 4K quality, not only due to large file sizes, but also because it would have in no way contributed to the message of the film.

In addition to deciding these details, the contents of the interview questions were discussed and worked over through weekly meetings, Google Group and the Facebook page. When deciding the solid base questions for the interview, it was important to keep in mind that the questions could not inhibit the organic flow and growth of the speaker's thoughts. This led to a common pattern where the initial interview questions were similar, but each individual interview session branched off in a unique direction.

This caused a schism in the content of the video interviews, which differed not only between different interviews in the same production team, but most obviously between the two different sides. SAGE was essential for keeping the communication channels open, and allowed each group to easily share video contents. It was decided on filming in .MOV file format, not only because it simplifies the editing process, but also because it is one of the supported files formats on SAGE. This means that the original file could be shared directly from the camera, without the need to first convert the contents. Sharing the contents in this manner established unity in shots and continuity, and in the case that re-shooting was necessary, the problem could be identified and the interview re-shot in a timely manner.



Figure 4.8: Filming Session

The actual shooting process, as illustrated in the above in Figure 4.8, was completed by a team of four to five KMD students. There were two cameramen, a sound technician, an interviewer and, at times, a technical assistant. The two cameras used were a Canon 5D and a Canon 60D, set to capture a wide and tight shot, stabilized on two Manfrotto tripods. Canon EOS Utility Software was employed to optimize and establish continuity between the camera settings. Sound was captured through a Zoom H4n Handy Recorder⁶, which has 4 channel audio recording functionality, optimized for XLR recording. The contents of each individual interview were synched in separate Adobe Premiere sequence files, and shared on multiple contents management services, which will be addressed below.

4.4 Contents Management

An essential aspect of workflow between two remote parties is open access to common shared data. This was realized and referred to as contents management, and required two separate assisting technologies to function. This first technology which was implemented to manage assets was a cloud server, established at KMD. The cloud server was established such that it was accessible not only on the kmd-hiyoshi local wireless network,

but also accessible through a browser as a website, powered by AjaXplorer⁷(Shown below in Figure 4.9), and through FTP.

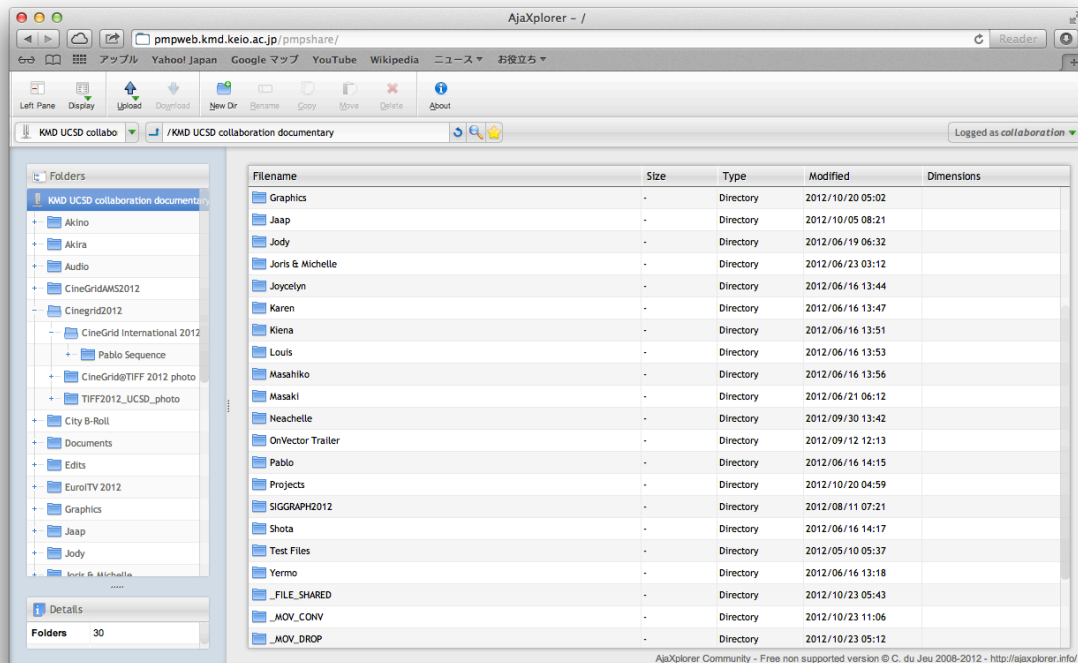


Figure 4.9: KMD Cloud Server running AjaXplorer

The cloud server was an essential resource for sharing the barebones of the project. It was a space for files, including video, audio and the aforementioned Premiere compilation files, and only that. There were some limitations which made the cloud server a slightly unfavorable environment. Namely, any file that exceeded 2.0 GB in size would not be accessible through the AjaXplorer site, but only through FTP or the local network connection. Secondly, there was only one username with which all users shared and accessed files with, which resulted in security problems.

The solution to these managerial problems was the introduction of supplementary software to manage video contents; PIX System⁸. The PIX System allows access to a shared

project file that all participants can access. Inside the shared project file, in this case the project that would ultimately be PP, there were subdirectories for each interviewee, which included not only the two different angled shots, but any accompanying b-roll shots that would be relevant to the subject and their story. Inside those folders were the actual film contents, which could be tagged, added to playlists, and even noted upon. The noting feature is similar to commenting on Facebook, in that you can write a comment in correlation to a specific time code in the film. This can be used not only to share thoughts on the content of a certain interview, but also to transcribe contents, translate contents, and categorize, by text, designated sections of a longer clip. The PIX System is essentially another extension of the visual storyboarding that was being accomplished by SAGE, except where SAGE allowed for streamlined group creative visual storyboarding during meeting time, the PIX System complemented the time outside of weekly meetings. That is to say that Pix System created an environment where interactive storyboarding could continue even when the users were separated. A shot of the PIX System is depicted below in Figure 4.10.

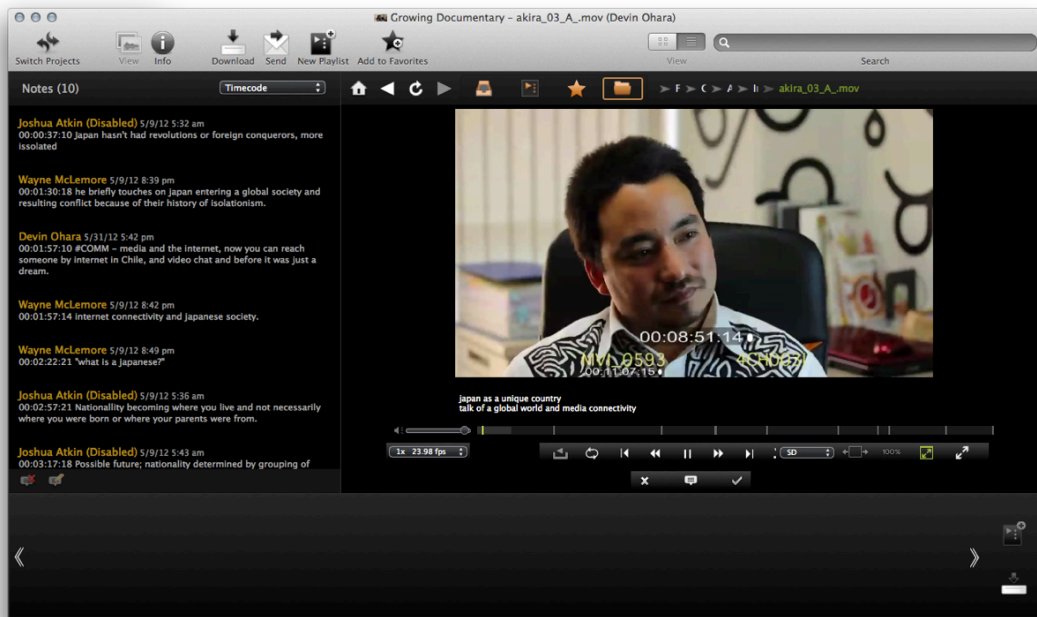


Figure 4.10: Screenshot of PIX System

SAGE and the PIX system worked very well to complement each others, however by concurrently using these two systems, one unfortunate side effect was caused. The PIX System was optimized for proxy files, which resulted in some contents management problems, the exact thing that was trying to be avoided by implementing these two systems. As such, the workflow became slightly muddy. After synching the contents of the shoot in Adobe Premiere, a compressed proxy version of the same clip would have to be exported. There is also a time limit on the length of clips that the PIX System can add to a project file, so interview clips were spliced down into smaller five minute pieces. Each of these proxy clips would also need to have documentation of the uncompressed counterpart(s), the audio file with which it was originally comprised, and a timecode showing its place in the Adobe Premiere sequence. Obviously, this was counterintuitive in nature, as this was creating more problems in the contents curation process than it was solving.

A solution was realized by the development of an auto-compression folder in the KMD cloud server. To explain the details of this folder, it would automatically assign a timecode, a filename and compress any high quality video files added to this folder. This created a streamlined automatic contents curation workflow, which peacefully united the KMD cloud server and the PIX systems as the ideal solutions for contents management.

4.5 Editing

The editing of the project took place in many stages. The post-production of an average documentary film typically involves reviewing the acquired contents and assembling a story out of seemingly unrelated interviews and other clips. As such, each team conducted a separate internal review and editing session before discussion at a meeting.

The editing session was greatly aided by the notes and tags on the PIX System. The tags on all the videos are not only searchable, but they have the ability to be exported into a spreadsheet, such as Microsoft Excel, so that the tags can be visualized. From the biggest umbrella tags, the general categories were established. The proxy videos on the PIX System were then re-tagged, with each possible scene from all of the interviews being assigned into one of the aforementioned general categories. The process was then carried from the digital to the physical world, by means of Post-its. This process can be seen below in Figure 4.11. From this point, the post-production process was identical to conventional filmmaking, with the contents being arranged and storyboarded, then consequently edited in an editing suite.

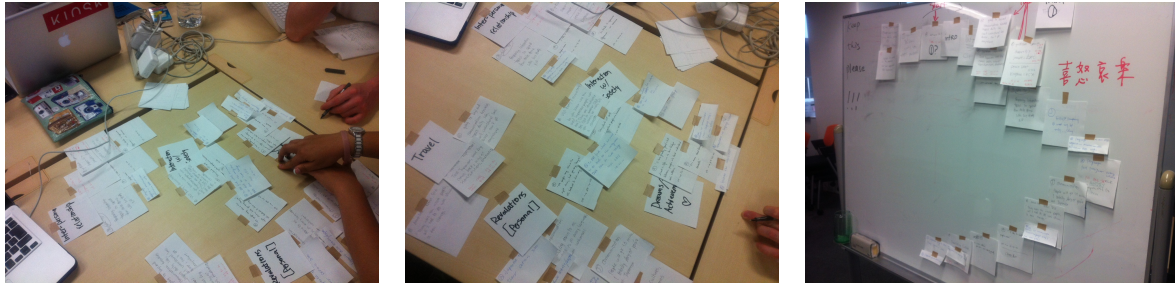


Figure 4.11: Analog Storyboarding and Ideation Session

After the internal brainstorming post-production sessions, each team would take turns showing off their respective editing. After going through seven rounds of ideation, the edits were continuing to grow further apart from each other, almost as if it was not collaborative filmmaking, but competitive filmmaking using the same contents. For this reason, a finalized graphic of the storyboard was created, and acted as the anchor to which all subsequent edits were aligned. This can be seen below in Figure 4.12.

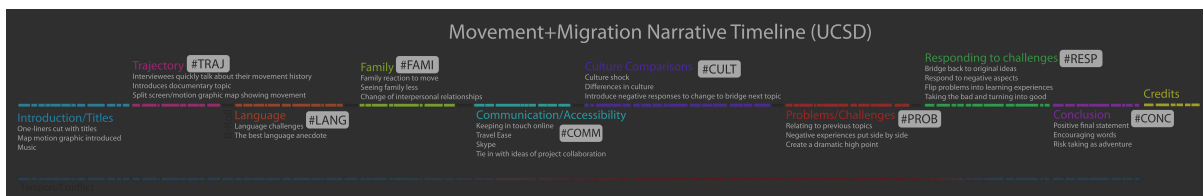


Figure 4.12: Digital Collaborative Storyboard

Given that there was no method for users to collaboratively edit together in an online editing suite or through remote access, each edit was managed by one member of each respective team, and the final edited movie file only was shared, not the sequences or the assets which made up the edit. This created yet another schism in contents management. Even if the project files were shared, it would take a tremendous amount of time and effort to

relink all of the local media, which was not feasible on such a tight schedule. As a result , this caused an imbalance in work towards the end of the project, and one group member of the UCSD side took over the entirety of the editing on his own.

The final edit of the project was completed in San Diego on July 24th 2012.

Notes

1. On*Vector, “On*Vector” <http://onvector2012.eventbrite.com/>
2. CineGrid@TIFF 2012, “CineGrid@TIFF 2012” <http://cinegrid.kmd.keio.ac.jp/english.html>
3. Parr, Hester (2007) “Collaborative Filmmaking as Process, Method and Text in Mental Health Research” in *Cultural Geographies*, pp. 114-138.
4. VROOM Project, “VROOM Project” <https://sites.google.com/site/vroomproject/>
5. SageCommons, “SageCommons” <http://www.sagecommons.org/>
6. Zoom Co., “H4n Handy Recorder” <http://www.zoom.co.jp/english/products/h4n/>
7. Jeu, Charles de, “AjaXplorer” <http://ajaxplorer.info/>
8. Pix System LLC., “PIX System” <http://www.pixsystem.com/>

5. Findings

5.1 User Interviews

In order to gather a legitimate data set which could be analyzed to substantiate the experiment, participants from both KMD and UCSD were asked to share their opinions and experiences on being involved and on using certain technologies (These are listed in the Appendix). The pertinent sections of these interviews will be referenced below to establish results with less bias. The scope of the interview encompassed the entirety of the experiment (supported by the overarching workflow outlined below in Figure 5.1), and as such, will be discussed in a similar order.

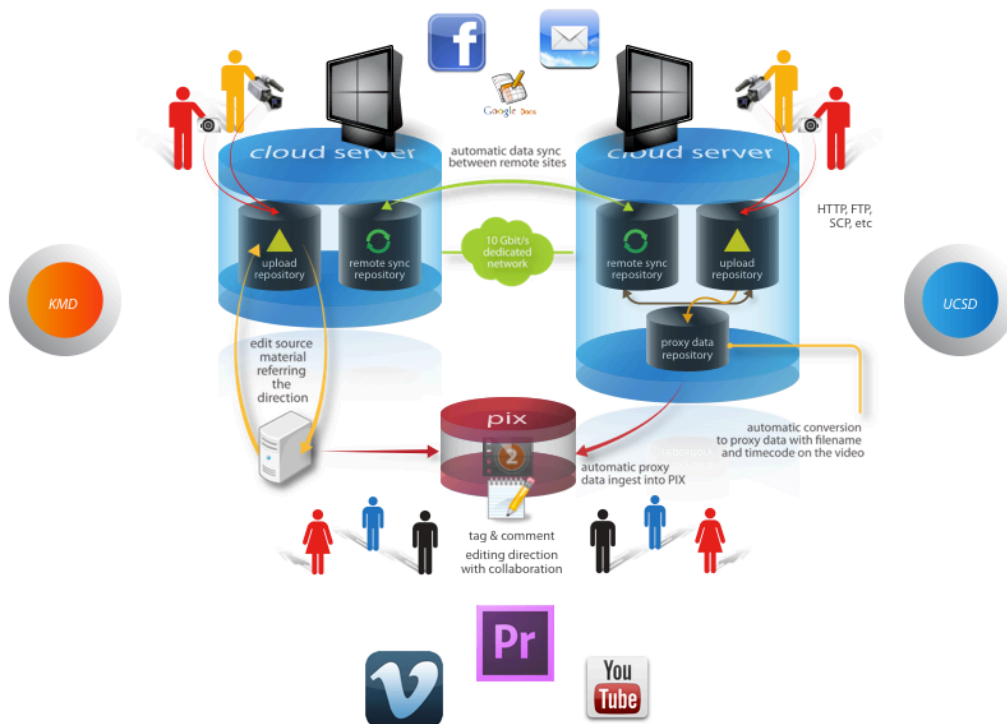


Figure 5.1: Workflow of Experiment

5.2 Limitations/Shortcomings

First, as previously noted, the abundance and use of Social Networking Sites appeared to hamper communication between participants. Student A commented that

“(we) have used so many different platforms that it has become very confusing to stay on top of all the information. Google Sites, Google Groups, Google Docs, Facebook, Email, then comments on PIX, etc. It can be confusing to keep the locations of all the information straight in my mind,”

and suggests that media convergence is a possible solution. Student B echoes this sentiment, stating that

“the main problem with this (workflow) is it has alienated some of the members and made it hard for everyone to stay engaged. Keeping up with all the systems is requiring a technical engagement that might push away potential collaborators, but the project is fairly complicated with tons of data and decisions being made so we need to use several tools to make it happen. Hopefully by improving the workflow we can make projects like this more inviting for people with different levels of experience.”

Student B mentions a poignant argument, stating that several tools which have been implemented throughout the process are indeed essential, without which the teams would not be able to function.

In regards to the Contents Management stage, there were several criticisms in regards to the various systems employed and their interactivity. Specifically in regards to the PIX System, the lack of native storyboarding functions with proxy materials was a point of

contention. Student B said that, “The playlist had a lot of potential to aid in storyboarding that was not realized due to a few small limitations. We should be able to add subclips to the playlist and have multiple instances of each clip.” and Student A echoes this sentiment, “It would be nice to be able to set multiple "in and out" points on a clip to create playlists including multiple quotes from a single clip.” Of course, one of the best features of SAGE is this visual storyboarding function, but the lack of interactivity between the two systems was a disappointment for participants.

While SAGE is being discussed, the feedback was relatively positive, however Student B commented that “We can’t retrieve data from the server or other locations. Data has to be sent to SAGE.” The reverse can be said too, that data shared over the SAGE terminal unit can not be accessed or manipulated in any manner. That is to say that once the visual storyboarding session has been concluded, and decisions have been made in regards to contents usage, there is a need to re-send compressed and de-compressed assets. Also, the storyboarding sessions can be shared, but the fact that “[it is impossible] to send saved sessions. It might be nice to create a playlist or a set of images and send the session to another place (that would also include any needed media.)” was a big problem for Student C. As this muddies up the workflow, it can be regarded as a limitation and revision point of the workflow.

The Cloud Server only had minimum criticism, with Student C postulating that automatic synchronization of the Cloud Server to other local directories would be desirable.

In general terms, the experiment had positive feedback, but some felt that the project was too ambitious and lasted too long. During the course of the entire experiment, a few participants from UCSD graduated and a few new students entered during the beginning of the new term. Not only was time an issue, but informing new members of the details of the

experiment wasted some of our precious resources. The biggest problem that was echoed by all participants was the lack of a collaborative editing method. The solution to this will be discussed in the Chapter 6.2.

5.3 Positive Contributions

Firstly, there was very little feedback on the video conferencing setup, but one student expressed their preference for the HD/4K camera setup, which ultimately took the place of Skype and other options. This student said that “[the] video teleconferencing, HD/4K was more comfortable; installation and set up [is preferable]”. However, this solution is not a feasible option for those who do not have access to the private CineGrid network, which is absolutely a problem to prospective remote collaborators. Fortunately, this can be overcome with external cameras, microphones and video conferencing tools. Specifically, the Automated Main Video Switching Function of Google+ Google Hangout¹ has been suggested as a viable replacement service.

In regards to the visual storyboarding features of SAGE, participants felt that the system was a success. Student A said that “it’s great to be able to view things on such a large scale.” The scalability factor of the system makes it a great solution, because the size of the monitors can be adjusted to the number of participants, and the fact that it is developed on open-source technologies makes it accessible to any future remote collaborator.

The PIX System was also praised for “making material more accessible, which was essential to a project mostly comprised of students volunteering time.” Student B also commented that “[PIX System] served as a convenient way to add notes to important moments in the clips.” The various functions of the PIX System were no doubt a great asset

to the experiment, however this service is the only service which we relied upon that is not open-sourced freely distributed software (with the exception of technologies that would be necessary in traditional filmmaking: editing suite, etc.) Whether this is a crucial factor in deciding its usability in prospective remote collaborators projects is subjective, but it was an essential factor in the workflow of this experiment.

Ultimately, accomplishing research of this magnitude in itself is a positive contribution to not only the field of photonics, for which the experiment has been praised in multiple international academic conferences², but in general to the community of future remote collaborators and filmmakers. Until this experiment, there have been no resources, no building blocks to assist researchers in this field, and this experiment changes the entire playing field. By reading this thesis, researchers now have a stepping stone. The workflow which was used in this experiment was not the optimal workflow, but involvement in this experiment led to the realization of the Six Affecting Factors necessary to a successful remote collaborative documentary filmmaking project.

5.4 Six Affecting Factors

These six affecting factors are best described as the six essential building blocks for establishing a successful environment for remote collaborative filmmaking (and are illustrated in Fig. 5.2). These factors were drafted upon personal experience, based both on past filmmaking experiences and the current experiment. It was obvious after many unsuccessful attempts to interact with previous participants that some level of revision to the workflow was necessary if there was to be any chance of successfully involving multiple

parties in the filmmaking process.

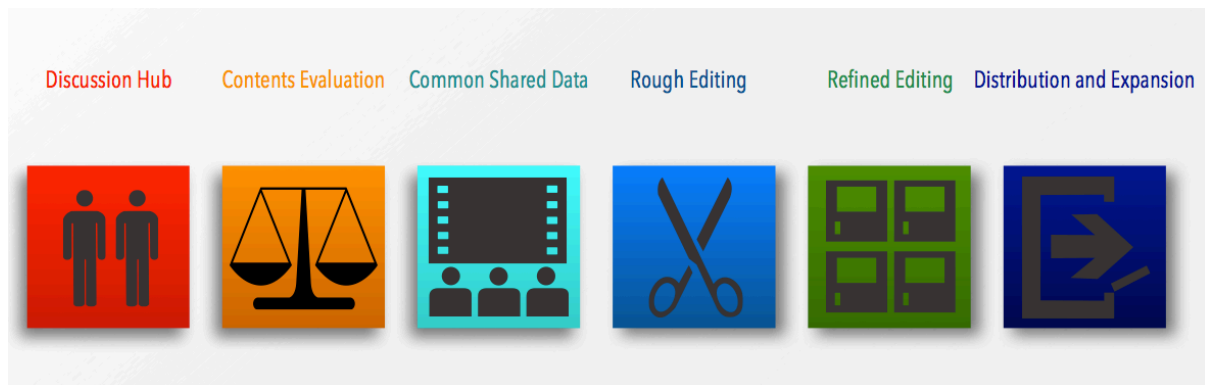


Figure 5.2: Six Affecting Factors

While this particular method is by no means the definitive workflow which must be followed for a successful remote collaboration, it is the result of past experiences and a postulation for future projects. It is also important to emphasize that it is not the specific technologies, but rather the roles that they fill, that are important to the successful of remote collaborative filmmaking. The technology surrounding us in not only our daily lives, but during the course of the filmmaking process is rapidly changing and evolving. As such, it is essential to focus on the roles that specific applications and hardware fill, rather than the names of the softwares themselves. For this reason, I will reserve mentioning specifics in this section. Details of applicable technology will only be used for imaging purposes, to represent current solutions, as applicable.

5.4.1 Discussion Hub

Perhaps the most essential out of all of the six building blocks to successful remote collaborative filmmaking, a solid discussion hub is a necessary part of the filmmaking

process that has nothing to do with the actual act of filming. The purpose and necessity of a general hub for any film project may be painfully obvious, and while a majority of projects and experiments in the past attempted multimember chat room or mailing lists, the ideal solution is on a much grander scale.

The discussion hub is a platform available to all members of a given remote collaborative film project, and is accessible at all times. It must have not only an open space where members are allowed to make text posts and carry on conversations and share ideas, but this is also an environment for ideation. The ability to share photos which inspired the director of cinematography, or to share videos of documentary styles to establish unity between both factors - and then be able to easily organize this data in a presentable manner - is the essence of the discussion hub. It, by nature, has to facilitate discussion on the film subject, cinematography, equipment and filming settings, but it needs to be categorizable and transparent.

As the project continues, the discussion hub increases in necessity, as it is a log of meetings as well as a calendar of critical dates, and an open window for communication. As the two participating parties of remote collaborative filmmaking are presumably handicapped by distance, the discussion hub acts as the window. It is a place where the members can look with complete transparency through to the other side and maintain crystal clear communication, perhaps even better than traditional filmmaking.

Solutions such as those mentioned in the experiment are viable solutions, however in excess, can conversely cause confusion. IFTTT³ and other compilation services can be a clean way to unify an excess number of discussion sites.

5.4.2 Contents Evaluation

The next step is Contents Evaluation. Especially in the case of documentary filmmaking, the general thought process behind the production is shoot first, assemble later. The same holds true in remote collaborative documentary filmmaking as well. It is paramount for both teams of a project to be able to not only discuss the cinematography, but also to preview and provide feedback.

It is ideal for this step to deal with proxy data for many reasons; the first and foremost being speed, both technical and literal. In the technical sense, it is unnecessary to state that dealing with compressed proxy files is both faster and less space-consuming than their uncompressed counterparts, but the time it takes in regards to sharing them is a pivotal factor in remote collaborative filmmaking. In that respect, and also in the next affecting factor that will be discussed, Common Shared Data, the smaller the proxy, the better. The main objective of this step, just to clarify, is not to critique the color temperature or the aperture of the shots, or anything that would require a high quality picture resolution (although extreme cases are a different story), but rather to preview the framing of the shots, the content of the clips, the basic elements. On these factors, both teams come together to evaluate the clips and receive feedback on the material they had prepared separately. This is the main function of the Contents Evaluation factor.

Systems such as the PIX System, SAGE System or Quitmeyer's Documatic application (if developed further) are examples of potential solutions.

5.4.3 Common Shared Data

After contents are judged and decisions have been made, there has to be a place where both parties can upload the predetermined files; a shared server where film contents can both be stored and managed remotely and fairly by both parties. Since the previous step involved not the original files themselves, but rather compressed proxy files, there is a necessity for metadata management as well, so that film clips can be managed on multiple levels.

As demonstrated in the experiment, there is not a viable solution at the present time. When dealing with a cloud server, there is a need to acquire contents through FTP or by some other means. Ideally, there would be an efficient method to synchronize the project contents of both participating parties, essentially a very large DropBox that can handle large file sizes.

5.4.4 Rough Editing

Perhaps not so necessary in commercial filmmaking, where the storyboarding and diagramming are meticulously planned out and decided beforehand, but in the case of documentary filmmaking, a second session of brainstorming and ideation is necessary after the filming period has ended. Since no more filming will occur from this point on, one would effectively enter the rough editing stage. The ways in which people brainstorm and arrange ideas and film clips are countless, and as such, there should be accommodations for all types, analog - such as photos of post-its, text, or digital - photoshopped pictures of potential themes or even digital timelines of rough edits, be it .xml files etc.

This step only extends to the roughest of the rough in terms of editing, and does not deal with background tracks or exact cropping. The aim of the Rough Editing factor is for both sides to have access to a shared vision of the flow of their collaborative piece. It should be not be done unilaterally, and both factors need to have equal opportunity to order, manage

and input their own perspective into the work. It is only after the rough order of all of the film clips have been determined and the entire outline of the film has been decided and a consensus has been met that the users move on to the next step.

Current solutions are limited to the visual storyboarding functions of the SAGE system, given that the playlist creation function in the PIX System does not allow for multiple in and out points on a single clip. However, the tagging and comment function of the PIX System supplements the SAGE system well, and is a function that should remain in future workflows.

5.4.5 Refined Editing

This is the step where the film takes its final form. Ideally, both participant parties would have equal access to either a web-based multi-user editing suite, or have a multi-user shared project function on a local machine. The difficulties in this step come not only from managing the contents when editing, as mismatched files will not show up on timelines, but also the speed and quality. The effect of not having a balanced workload between the two factors results in one side bearing more burden, and consequently, the collaborative element of the film gets diluted or lost. The important thing to accomplish in this step is to maintain the collaborative element, while producing a tightly edited final product by the hands of multiple users.

When conducting the experiment, many methods of remote access were researched, but no method tested yielded fruitful results. A web-based multi-user solution is the most ideal when compared to current models, because if users could simply remotely access a

designated machine, which managed and housed the entirety of the projects assets, the contents would be better managed as well. This could allow for the Common Shared Data step of this proposed workflow to be modified and streamlined.

5.4.6 Distribution and Expansion

It is commonly assumed that the collaboration ends with the completion of a final product, but that is not how collaborative documentary filmmaking should be viewed. By effectively choosing relevant channels and distributing to viewers in creative collaborative creation grounds, even more content is born. It is in this manner that the new seeds of collaboration are sewn, and the cycle of remote collaboration begins again.

Given that a user has access to the resources and follows this proposed workflow, it is by all means plausible that said user can create a film with users 5000 miles away in a different time zone. However, the aforementioned resources can be staggering in price, and some of the things, like the web-based multi-user editing suite mentioned in the Rough Editing section, have yet to be developed/released to the public. That is not to say that remote collaborative documentary is impossible.

As mentioned at the beginning of this section, it was after multiple experiences that an ideal workflow was able to be designed. As such, the proposed six affecting factors detailed in this section are the hope of what is to come in the future, and are designed in a way that might not yet be feasible with the technological constraints of today.

That being said, it has to be noted that during this research experiment, a complete final product was produced, and there was a deviation from the hypothesis due to the lack of technology. This is an important fact to recognize for two main reasons. Firstly, the majority

of the hypothesis was subject to testing, which produced results. But the segment of the hypothesis which was not able to be subject to testing still results in data, which is critical to the future development of remote collaboration filmmaking technology tools. Secondly, during this experiment, we were able to produce a final product as a team of remote filmmakers, which is to say that even though we cannot function to the highest capacity of the ideal workflow, there is still a viable, feasible method to remote collaboration.

Notes

1. Traphagen, Mark, “Google Plus Hangout for Business: Customer Contact on Steroids” <http://windmillnetworking.com/2012/09/27/google-plus-hangouts-for-business-customer-contact-on-steroids/>
2. Bhimani, Janak, Ali Almahr, Daisuke Shirai, Devin Ohara, Wayne McLemore, Naohisa Ohta (2012) “Collaborative Visual StoryBoarding: A Multi-User Model” CVMP’ 12
3. IFTTT <https://ifttt.com/>

6. Conclusion

The experiment outlined in this research demonstrates that successful remote collaborative documentary filmmaking can be achieved by supplementing traditional filmmaking techniques with state of the art technologies. Through the various combinations, a viable workflow can begin to be melded and realized. The sense of accomplishment achieved at the end of an experiment such as this cannot be described in words, and it is no doubt not only due to the workflow and technology, but also to all the fabulous participating parties and their continued efforts to strive for innovation in the field.

6.1 Reflections

Though the experiment itself comprised only one project, an insurmountable amount of new knowledge and data is available to the masses. This information is not simply contained within the bounds of this thesis, but will expand to inspire and guide.

In retrospect, the factors that never changed in remote collaborative documentary filmmaking in respect to the traditional documentary filmmaking process are the human factors that develop between members of a certain project. In a way, every single technology that was employed in the workflow had the function of supporting/creating an environment where even in remote locations, these real emotional relationships could develop, perhaps even more than in physical space. It is exactly the sentiment echoed by Jenkins, that “freedom is fostered when means of communication are dispersed...”¹

6.2 Recent Technical Improvements

The feedback garnered by participants of this experiment has led to improvements in the field of remote collaborative documentary filmmaking. In a recent academic conference on Networked Media Collaboration at CineGrid International Workshop 2012, there was a demonstration given on the workflow outlined in this thesis. In addition to the technological tools assisting the workflow which have been described in previous sections, a new additional function to the SAGE System framework was announced. This new function allows a user to not only project their workspace on a SAGE wall, possible in the past version, but allowed multiple users access to the projected workspace. In the past, collaborators could only resize the window or move it across the screen, however now it is possible for users to manipulate the inside of the window. What this ultimately means is that there is now a possible solution to remote collaborative editing. One screen can be dedicated to editing, with all the local media linked within one project file, and participatory editors can simply move contents around within this window. It is no longer necessary for all members to have access to the contents or have their own editing software. This has the potential to further streamline remote collaborative documentary filmmaking workflow, however, in order to do this, there need to be more real-life experiments of this nature.

Notes

1. Jenkins, Henry, *Convergence Culture: Where Old and New Media Collide*, (New York: NYU Press, 2006) pp. 11.

Acknowledgements

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Wreckamovie, “Wreckamovie” <http://www.wreckamovie.com/>

“YouTube Original Channels” Google. <http://www.youtube.com/yt/advertise/original->

channels.html

Zoom Co., “H4n Handy Recorder” <http://www.zoom.co.jp/english/products/h4n/>

5awesomegays, “5awesomegays” <http://www.youtube.com/user/5awesomegays>

8. Appendix

Transcription of Participatory Interviews:

places + perspectives

Student A - Green

Student B - Blue

Student C - Burnt Orange

Feedback about experiences using

GENERAL SUGGESTIONS:

- I want to see a more unified network between SAGE, cloudservers and PIX - uploading RAW data (which will be automatically transcoded), group viewing and storyboarding, and off-site viewing and commenting. - it will be important to minimize uploading with the mass number of files. we could save a lot of time if we could just upload once, have the data transcoded and organized, then available to use on SAGE and through PIX (and the cloudserver).

-A lot of things are working really well, but each system seems isolated from the others.

Masahiko's filesystem is working to connect these links, but more fundamental integration

within each system would not only save some time but also encourage users to get the most out of each system.

SAGE:

Successes:

- It's great to be able to view things on such a large scale.

Limitations:

- We can't retrieve data from the server or other locations. Data has to be sent to SAGE. (i think)

-I'm not sure if this feature already exists, but it would be nice to have the ability to load content to the walls from a public connection or within the building. I feel like sage was disconnected from the rest of the process, and would be more likely to use it for review/ presentations in meetings if it was more inviting to load content to it from the editing machine. For all I know we can do this, but haven't so far.

Suggestions for development/improvements

- I would really like to see some kind of "post-it" function where we can storyboard by placing multiple clips side by side and be able to watch them consecutively. - this would also

involve being able to place multiple “in and outs” on a single clip. - and then it would be nice to remotely share these “post-it” storyboards, watch them at different locations simultaneously, etc.

-more storyboarding and editing functions. -simple editing features.

- have an option for the touch screen to toggle between the current setting (accelerated movements) and a one-to-one setting. This would allow for precise movements when necessary. **Second**

- allow for grouping into folders to allow for more control over a lot of files within one sage session

-Is it possible to send saved sessions? It might be nice to create a playlist or a set of images and send the session to another place (that would also include any needed media.)

PIX:

Successes:

- made viewing the videos via streaming much easier, and allowed for remote collaboration//
input

- served as a convenient way to add notes to important moments in the clips.

-Made material more accessible, which was essential to a project mostly comprised of students volunteering time.

Limitations:

- The playlist had a lot of potential to aid in storyboarding that was not realized due to a few small limitations. We should be able to add subclips to the playlist and have multiple instances of each clip.

-User permissions seem overly complicated

-Compatible formats are limited

Suggestions for development/improvements

- we should be able to search notes.

- how about an option to view the next video without having to return to the previous window? (maybe that would be difficult depending on how people were sorting the videos)

- It would be nice if there was a visible running-time/timecode on the pix video player for reference. (right now, you have to click and hold on the timeline/load bar to view the timecode.)

- you can't see the entire description of a clip from the file directory. (i know you can see it from the hitting the info button, but it might be nice to hover over the description segment and see the entire description of a clip).

- ***It would be nice to be able to set multiple "in and out" points on a clip to create playlists including multiple quotes from a single clip.

- It would be nice to have an option to view user participation. - how much footage they've viewed, how many comments they've written, etc.

- i'd like to see more improvements to the spelling correction. ex - red underlines, etc.

- It would be nice to jump to the middle of a clip without having to load it from the beginning. (like YouTube).

- It'd be nice to make comments on playlists (right now you can comment on individual videos, but there is no way to comment on the progression of the playlist clips, etc.)

- Could there be a visible representation of a tag cloud/map within PIX? - making it easier to draw connections between quotes and interviews.

- ***There are really multiple types of notes/comments that need to be made on clips, but there is no way to distinguish or sort through them.

types of comments:

- notes strictly about contents - about what an interviewee says at a particular time
- notes with personal thoughts about what is being talked about. - this could also include comments connecting a quote to a different interview response.

- notes about style, editing, etc.

- *** also with notes... It would really be nice to have something kind of like Facebook - where you can comment on other people's notes or even just "like". it would bring more structure for remote-collaborative discussion.

- let users have profiles where we they can post their own vision for a project or even post a rough edit or playlist exactly the way they envision it.

- Add the option of taking the timecode from the video so all of the timecodes are synced

- Add quality of video playback selection, or auto detect optimal playback size/resolution

- Advanced search w/ options for filenames/tags/description/notes

- More metadata fields/user created fields to add information like date shot, angle, photographer etc. << This might be the same as the "attributes" feature but we should be able to use these keys for searching/sorting and in list view.

Cloud Server:

Successes:

- works for easily accessible raw data storage

-I've used mainly via ftp, works great for sharing huge multi gig files in a timely manner.

Limitations:**Suggestions for development/improvements**

-the files scroll a little too quickly in the window.

-could we see a preview on the video window just by single clicking a video file (without having to click "play")? - maybe just a few thumbnails repeating.

- I don't know if I like the double-click download option for the files. Sometimes I want to rename a file, so I will click, wait a moment, and click again and it will download the file instead of allowing me to change the file name.

- I want to be able to select multiple individual files from different parts of a list using the "command" key + click (mac). I can use the "shift" key but it will only select multiple in a row, not at different locations on the list.

-Would be nice to have the local raid automatically synchronize with the cloud server as files are added to it (like dropbox) but this may be an entirely different application altogether.

Masahiko's Filesystem

Successes:

- It saves sooo much time!!! we don't have to put every single file into Premiere to compress.

Limitations:

- It there is no good way of organizing the footage.

Suggestions for development/improvements

-with creating transcoded material. - it would be nice to somehow group the files better. what if we could upload a group of files that were of the same interview or b-roll location and we could specify a grouping that would be included in the renaming of the file.

for example, if we uploaded a series of video files from a b-roll shoot at a temple. we batch upload 30 files (ex. MVI_1100.MOV - MVI_1130.MOV) it would be nice to give a label "temple" to the batch and have that automatically added to the filename. (ex. mvi_1100_tc_temple_01.mov - mvi_1130_tc_temple_30.mov). That would save some time in renaming files as well as making it easier to sort view on PIX.

-A separate batch renaming option for both PIX and cloud server (mentioned above too)

-Still not viable for multi angle interviews. I really can't see a way around this without a GUI. We're syncing two different video files with an audio (3+ different files,) all with different in and outs. On top of that the user has to make determinations about when to start the interview, when to cut out questions, and when to break the full thing in to clips. If we skip the step of shortening the content before PIX the interview footage can be sometime over twice as long-- adding several hours to the review/editing process for the rest of the project. (In other words it is still worth the initial time investment it takes to edit these down in Premiere.) In addition, even if b-roll doesn't have to be synced, it is still preferable to have the ability to set in/out points, and some of our b-roll has even been split into multiple files for PIX in order to have each segment focus on one shot. I still feel like overall we're having to put up too much unfiltered content when we use the automated system vs manual exports. I can't think of a solution without a command line or a gui when uploading.

~~-It would be useful for the system to send the proxy "PIX version" to both PIX and the cloud server. Because we're using the proxy versions of videos for our rough edits, we've had to go to PIX to download them and it's been a bit of a mess getting them from there. If they were~~

~~on the cloud server and users moved them to the correct file, it would be really helpful for people to be able to access the proxy files for editing. Yes, they are on PIX but they are a pain to download off their system; they all download to the same place and file downloads sometimes fail. Also, having them on the cloud server gives us a file structure to synchronize to when trading premiere projects. Looks like it does this already, but no one moved the proxy files to an appropriate folder. User error!~~

Other platforms we have used

Successes:

Limitations:

- We have used so many different platforms that it has become very confusing to stay on top of all the information. Google sites, google groups, google docs, facebook, email, then comments on PIX, etc. It can be confusing to keep the locations of all the information straight in my mind.

Suggestions for development/improvements

- Are we using too many platforms? Should we look towards some type of convergence?

-I agree, and the main problem with this is it has alienated some of the members and made it hard for everyone to stay engaged. Keeping up with all the systems is requiring a technical engagement that might push away potential collaborators, but the project is fairly complicated with tons of data and decisions being made so we need to use several tools to make it happen. Hopefully by improving the workflow we can make projects like this more inviting for people with different levels of experience.

PIX - low res proxy good to share

video teleconferencing - hd 4k was more comfortable ; installation + set up

multi-camera cameras - wide of sage + collaborators

project too big - one or two minute project/interviews preferred get more people involved

research into workflows

meeting: planning meetings - possible to make working meetings?

shared editing sessions - more storyboarding

different groups different aspects of project - small interviews

can we add nodes? how

digital distribution project wayne - sustainable media

local level -

gathering content easier with more nodes in different places.

persistent portals - have connection on all the time?

open source software development - cathedral and the bazaar

<http://www.catb.org/esr/writings/homesteading/>

unifying/integrating different platforms