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# Producing a Scheduled TV Magazine Based on Voluntary Student Work

Metro TV

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Helsinki Metropolia University of Applied Sciences

Bachelor of Engineering

Media Engineering

Thesis

22 May 2013

Author(s) Title	Liam Thomas Producing a Scheduled TV Magazine Based on Voluntary Student Work
Number of Pages Date	36 pages + 8 appendices 4 June 2013
Degree	Bachelor of Engineering
Degree Programme	Media Engineering
Specialisation option	Name of the specialisation option
Instructor(s)	Erkki Aalto, Principal Lecturer
<p>The aim of this thesis is to define the planning, organization and workflows for producing a scheduled regular television magazine to be delivered to an online target audience using internet web streaming video technology. The production will be customized to a specific target audience and be published online through various internet browsers that can be accessed via the internet. The website will be designed to be easy to navigate for the user, and have a media player embedded that will play the live production during scheduled advertised live performances. It will also have the ability to stream the recorded productions later at the user's convenience. The production will be viewable on multiple devices such as personal computers, laptops, tablets and handheld smartphones.</p> <p>This thesis also entails the various stages of planning and development of a real life project. A real life test case was produced over the winter of 2011/12 called 'Metro TV', which was produced by Metropolia students and faculty. The Metro TV team and I produced four scheduled productions that targeted Metropolia students as the intended audience. The content of the magazine covered many aspects of student life as well as students projects and events directly related to the target audience. There were several video inserts produced for the magazine that were made by Metropolia students as well as several live interviews with important guests directly related to Metropolia students.</p> <p>During my time as a producer of Metro TV, the project produced four successful online productions from the middle of December 2011, through to the end of February 2012. With every production, much was learned and many improvements were made by the Metro TV team and the amount of viewers increased with every episode. In the future, this kind of project could become a useful method of communication for schools, businesses, organizations or local area groups as well as a useful training tool for students to learn more about video production.</p>	
Keywords	internet, video streaming, video insert, Metro TV, TV magazine, Media Engineering, Tricaster, video production

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## 1 Introduction

Television production has been a popular medium for information and entertainment for many years and with the evolution of the internet and modern streaming technology along with fast internet speeds, has allowed television production to reach a larger audience with more convenience and variety for the viewer.

Commercially available since the 1920s, traditional Television production has evolved to be an important source of entertainment and information to a large portion of the world's population. Due to the nature of Television programming, it has not always been so convenient for viewers to see the programmes they prefer as the scheduling is set by the company that produces the channel.

People around the world have grown up watching their favourite TV shows as well as programmes such as news, sports, weather and just about whatever else is on at the time you want to watch TV. Even though there is something always viewable on regular television, it does not always guarantee quality viewing or satisfaction for the viewer.

With today's technological advancements, it occurred to me to be unintelligent and time wasting to be obliged to view something on TV that you might not want to watch, which was what led me towards streaming video on the internet. Streaming video offered an alternative to sitting in front of the TV and being unsatisfied with the content. Streaming video content also had the ability to be interactive, infinite content to choose from and the revolutionary concept of content being streamed on demand.

After several years of watching video streaming content, I began to think about the content I was viewing and how it was not easy to find content closely related to me or my friends. In fact, streaming video content that had information relevant to my life was not so easy to come by.

After some research, I found there were many events taking place nearby where I lived, studied and worked but limited video content available about them. Traditional methods such as reading newspapers, magazines, news broadcasts and radio, do provide some information, but rarely does it have anything closely related to me or my life.

Although there are many forms of communication, the idea of this project was to allow people in a local area or specific target audience, to view video content that could be customized to them. One of the best things about this is that viewers can watch online, from home, work or even on their mobile phones, content that is directly related or relevant to them, their school, their work or their local area.

As a communication tool, this concept gives the ability to reach a specific target audience and can allow customization of the content, which has not been previously available in modern video production. This idea could be implemented in organizations, schools, universities, companies and/or local communities to help them to stay better in touch, entertained and moreover, better informed with relevant information to them.

## 2 Metro TV

### 2.1 Metro TV as a concept



Figure 1 Metro TV logo

Computers and the internet have become cheaper and more powerful, especially in the last 10 years. These technological advancements, when combined with video streaming technology, has allowed social media websites such as Facebook, streaming websites such as YouTube and YLE Areena, along with high internet speed connection, to make it much more convenient for the user to communicate and stream the video content they prefer to watch, at their own convenience.

Internet and Facebook Usage in Europe					
EUROPE	Population ( 2012 Est. )	Internet Users, 30-June-12	Penetration (% Population)	Users % in Europe	Facebook 31-Dec-12
Albania	3,002,859	1,471,400	49.0 %	0.3 %	1,097,800
Andorra	85,082	68,916	81.0 %	0.0 %	34,540
Austria	8,219,743	6,559,355	79.8 %	1.3 %	2,915,240
Belarus	9,643,566	4,436,800	46.0 %	0.9 %	533,360
Belgium	10,438,353	8,489,901	81.3 %	1.6 %	4,922,260
Bosnia-Herzegovina	3,879,296	2,327,578	60.0 %	0.4 %	1,345,020
Bulgaria	7,037,935	3,589,347	51.0 %	0.7 %	2,522,120
Croatia	4,480,043	3,167,838	70.7 %	0.6 %	1,595,760
Cyprus	1,138,071	656,439	57.7%	0.1 %	582,600
Czech Republic	10,177,300	7,426,376	73.0 %	1.4 %	3,834,620
Denmark	5,543,453	4,989,108	90.0 %	1.0 %	3,037,700
Estonia	1,274,709	993,785	78.0 %	0.2 %	501,680
Faroe Islands	49,483	39,948	80.7 %	0.0 %	31,820
Finland	5,262,930	4,703,480	89.4 %	0.9 %	2,287,960
France	65,630,692	52,228,905	79.6 %	10.1 %	25,624,760
Germany	81,305,856	67,483,860	83.0 %	13.0 %	25,332,440

Figure 2 [1]

Figure 1 illustrates the internet and Facebook usage in Europe in 2012, where Finland's statistics are highlighted. The most notable statistic related to this thesis is the internet penetration percentage in Finland. This figure suggests that 89.4% of Finnish people use the internet and therefore have access to video streaming [1].

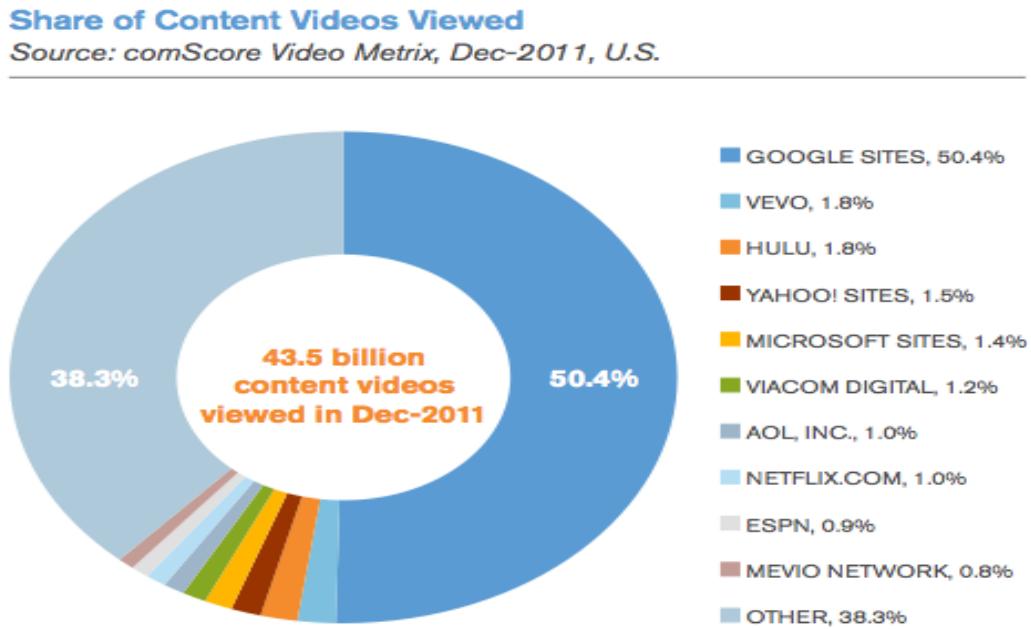


Figure 3 [2]

Today there are many websites that offer video streaming to the end user which can be both used for entertainment, education and information. There is an abundance of material made by both professional and amateur productions which has allowed an industry to form from what had previously been mostly commercially dominated productions. As Constine (2012) points out, Television is now losing a lot of their audience to internet streaming video. Figure 2 illustrates the amount of video streaming content viewed in the U.S. at the end of 2011 as well as the leading streaming video websites and their share in this developing market. [2]

The idea of Metro TV came to me in September 2011, after completing the ‘Television Technology and Video for the Web’ course at Metropolia. Metropolia is a University of Applied Sciences in Finland and has over 16000 students, around 21 campuses, and several degree programmes in each campus.

My first thought was how to possibly communicate with this many people who are so spread out. This is where the idea of making a regular scheduled TV magazine (targeted specifically at the students) that might lead to a better method of communicating between the students, school and faculty.

Some of my previous courses at Metropolia had taught me about producing video, where I gained experience working on various amateur productions. Instead of just making aimless video productions for the courses I was doing, I believed it more professional to make video productions that had an informational or educational point to the viewer. Several of these video productions which are also known as ‘video inserts’, I believed would be interesting and informational for students. This led me to having the idea of making the video inserts for Metro TV.

The next step was to speak with another student from my degree, Allan Arriaga, about the idea of Metro TV. He had some better skills than I with Web Development and together, we came up with a basic plan for Metro TV.

The production part will be the focus of this thesis but it is also good to talk about practical matters such as content for the show. After all, if the content for the show is not suitable to the audience, who will want to watch it?

## 2.2 Research Questions

To begin with, I asked myself these questions.

1. How to choose what content will be on the show?
2. How to know if that is what the viewers want to see?
3. How to customize the content for a specific audience?

Here are some possible video insert genre/styles for Metro TV:-

- Documentary - are usually entertaining, educational and informative.
- Animation - usually fictional and entertaining but can also be educational
- Short films - usually fictional and entertaining
- Special Interest - can be something specifically made for a target audience
- News - usually informative and educational
- Interviews - usually with a person of interest
- Events – occasions and productions that could be interesting to the viewers

For Metro TV, we wanted to cover anything and everything related to Metropolia student life. This could be anything from what you eat for lunch at school to where you will go on your student exchange.

Due to the amount of different degrees and campuses, it was quite easy to source ideas for video inserts for the show, including live performances such as theatre, musicals, opera, sports and various other student projects.

### 3 Concept

#### 3.1 Audience

Firstly I had to ask myself, who will I be making this production for? When making any video production, it is critical to think about what audience you are targeting. In the case of Metro TV, it made sense to target the production at the students and faculty, since there is a large enough student population at Metropolia to source a large amount of material for the shows and to potentially reach several thousand viewers with a TV magazine.

Since Metropolia is a University or Applied Sciences in Finland, Finnish is the native language of the majority of attending students. This led to some debate about what language the production would be made in and also will there be subtitles.

Of course this question depends on some differing factors such as the native language, target audience and country. However, the most common language understood by the majority of the target audience, was the best guess scenario. In the case of Metro TV, we chose English as the working language and also the language to be spoken on the TV magazine; since it was known already that the majority of Finnish students had studied English at school for several years and also that the international students predominately spoke and studied in English too. All of the students Metro TV would recruit would also speak English which made English the best choice for Metro TVs' working language. Finnish Subtitles were considered for Metro TV but not implemented during the time I was producing.

The next good question to ask ourselves, was what will interest the target audience the most? This is where it is almost impossible to know exactly what your target audience wants or prefers. In some cases, even the audience does not know what they want. Of course there are several methods such as polling, questionnaires, feedback forms, forums, social media and surveys which can be used to give a better idea of what might work but in truth, there is not a 100% accurate method for this and best guess is probably the easiest way to get started. Grady (2010) wrote that 'Streaming video is now used in all levels of the U.S. education system, including prestigious universities like Harvard and Stanford which use this medium for broadcasting university lectures and events [3]. In the case of Metro TV, we chose to choose topics that were directly

related to students of Metropolia, or made by students of Metropolia as to keep the show completely related to Metropolia Students.

The content of the TV magazine was the focus of much debate. Did we want to entertain, inform or educate our target audience? The idea of educating, informing and entertaining came to me when I thought about what I prefer to watch while streaming video. It is more difficult to combine these three forms of productions together, but I always felt that when I viewed streaming video that did manage to, my level of satisfaction was much higher. With Metro TV we decided that trying to combine these productions together, was the best option. We wanted our target audience to learn something as well as enjoy the show.

There were also things to consider about the potential audience of the TV magazine, for example, appropriate material for children who might view the TV magazine by accident and content that was culturally sensitive to certain types of audiences. When producing video content, it is important to consider these types of questions. Also the answers can vary a lot, depending on aspects such as culture, region, religion, age and gender. There are laws that prevent certain types of material being shown to children. However, usually common sense here is a good way to try not to offend anybody.

### 3.2 Cultural Interest

Due to the increasing amount of international students attending Metropolia, it would be both beneficial and interesting for Finnish and international students, to have a regular segment in the TV magazine. The segment would be focused on the international students' experiences in Finland and to talk about cultural differences and of the overall experience of being an international student in Finland. Finland, as part of the European Union since 1995, has seen an influx of foreigners (students and immigrants).

As Janhonen-Abruquah and Palojoki wrote (2005), 'Finland is undergoing a rapid change from a homogenous culture to a heterogeneous culture. With immigrants from all over the world making Finland their home, a lot of multicultural integration work is needed. Collaborative learning in peer groups can work as a useful framework for enhancing tolerance toward differences, and consumer education and home economics education offer a fruitful setting for this kind of collaborative teaching of tolerance.' [4]

To help Finnish people to understand and become more tolerant of different cultures and societies, this kind of project could allow Finnish people to work with foreigners to achieve something that everyone can enjoy and be proud of.

During the production of Metro TV, there were approximately 25 students from several different countries, all working together in English. This project forged friendships, understanding and good working cohesion, plus also allowed the foreign students to learn about Finnish working environment and mentality.

In today's global environment, it is not always easy to develop projects that bring people together as equals. However, the organization of Metro TV was designed to allow everyone working on the project to voice their opinions and therefore feel their opinions mattered. This simple idea, also allows people to feel more included and important to the project as a whole, rather than just being told what to do, which is the case more often than not in the real world.

## 4 Project

### 4.1 Team Building and Multicultural Work Environment

To develop this kind of project, there is requirement for many tasks to be performed simultaneously. Therefore the size of the production team depends on the size of the production and in the real world, generally the budget of the production.

The right team will make any production work smoother and more efficiently but how to choose the right team is a challenge in itself. Many considerations must be made before allocating jobs to people. Previous experience in particular works, as well as personal interest and skills all matter when filling important positions.

Different nationalities can also perform the same tasks differently, which can make for some complications but also some can give some options and ideas that might not have been known otherwise. There is usually more than one correct way to do something, and having a multicultural team is a positive way to better see this in action, especially with problem solving in pressure situations.

With the Metro TV team, there were many situations that required fast thinking and proactive people to perform the tasks needed. Some pre-requisites for students wanting to work on Metro TV were having a positive attitude towards working in a multicultural team, some basic knowledge of video production as well as the ability to put the effort into the project to get their tasks done in the time frame given.

### 4.2 Working with Metropolia Students

The concept of Metro TV is that this project could collaborate with the students who are studying Media Engineering and more specifically are interested in anything related to audio visual production and want to further their knowledge and skills. The Television Technology and Video for the Web course is enough to give students a taste of this kind of production. However, Metro TV would allow them to progress to the next level and beyond, potentially into a career in the television and film industry.

Metro TV did not have any budget or ability to pay any money to the students. However, Metropolia students are required to do practical training (work placement - 6 months) and this project would allow the opportunity for students to get some training and experience related to television production which in the real world, might not be so easy to get. This project might also offer an alternative method for students to earn some extra credits towards the completion of their degree.

For Metro TV, we initially decided to keep the team restricted to Media Engineering students, exchange students and faculty from the Media Engineering department. This was due to the nature of the production requiring video production skills and the previous studies that were done in relation to this project. This was expanded to include students from the IT degree who had interest in the project, or were recommended by Erkki Aalto (Director of Media Engineering Degree programme).

Media Engineering faculty, Erkki Aalto and Jonna Eriksson (Media Engineering Lecturer) in particular, were crucial in moving forward past the planning phase. Erkki asked me if another student, Elisa Rakkolainen, could join our team since she had previous experience in Television Production which she had gained in her student exchange to Germany. At this point, the team consisted of myself, Allan Arriaga and Bella Kayumova who was working part time at Finnish National Broadcaster YLE as a junior editor.

Elisa would go on to become a very important member of Metro TV. She was in charge of the main organization of the team; she was very helpful in assisting in some of the production aspects as well as the studio director for the live show.

The Metro TV team then grew to include Peter Griffin, Aleksandra Kretova, Marko Pekkanen and Aarne Wallen who were also studying Media Engineering and had skills with video production as well as web development. Foreign students such as Simon Boahen, Keija Jin, Saray Renilla Lamas and Guzman Alvarez then were also recommended by Erkki Aalto and from this point in time, we had the original Metro TV team.



**Figure 4** This picture was taken in the Metro TV studio with some of the original Metro TV team taken in January 2011.

## 5 Production

### 5.1 Types of Video Production

Video production, also known as videography, is the process of creating video by capturing moving images, and creating combinations of parts of this video in live production and post-production (video editing). The captured video can be recorded on to video tape, hard disk, or solid state storage. It can also be distributed to the web without recording video internet streaming. Video Production is the same as filmmaking, although the video is recorded electronically instead of to classic film roll. [5]

Video production can be live or non-live depending on the topic, availability of information and guests for interviews. Live production refers to the TV magazine (live show) itself, where there is the possibility for the audience to see the show in real-time.

Non-live production refers to productions that are made previously to the live show such as video inserts which need to be planned, produced and edited, generally before a deadline for use in the upcoming show.

The live show requires a studio to be set-up. Modern talk shows use couches and homely looking furniture to give a feeling that you are in someone's home rather than in a studio.

On-location Production means production anywhere outside the studio. This kind of production is for the video inserts that will be shown on the live show. There is potential for 'live feed' On-location production where the host of the show can introduce another Interviewer and/or interviewee/s that are not in the studio for live interviews which might be relevant to the topic or show, however with Metro TV, this was not implemented.



Figure 5

As seen in Figure 5, Chroma Key Production can be used to produce video content that gives the viewer the impression that the content produced is made in a location other than the actual location it is produced. This kind of production is required when logistical, financial and/or time limitation does not allow for authentic production. [6]

## 5.2 Key Roles for Metro TV Production

Due to the nature of video production, there is a requirement for multiple people to work on the project sometimes simultaneously, sometimes individually. Due to the fact that there are very numerous roles required for professional production, only the key roles used in Metro TV will be explained in this thesis.

The Editor in Chief is the main managing role for a production. This person is responsible and held accountable for the entire publication which includes the operations and policies of the production. The editor in chief also manages all the different departments of the production organization and is in charge of delegating important roles and duties to the people working beneath him/her. [7]

The editor in chief would typically work closely with the producers and directors to ensure the publication goes as smoothly as possible as well as making sure the content is to the standard that is expected.

The Producers are responsible for preparing and then supervising the making of a production. Their role involves working closely with the editor in chief and production team, especially the directors, to ensure that the production is to the standard and expectation of the editor in chief. Producers might also be responsible for selling and/or marketing the production to distributors/networks that might be interested in purchasing the content created. [8]

The Directors are responsible for directing the physical making of a production. The director generally is in control of the production team and in effect, is the one who controls the vision of the production. The content that the producers and editor in chief require is what the director must achieve, and in some cases, the director has full authority to make his/her vision happen which the producer and editor in chief are then able to approve or recommend editing. [8]

In television style production, the director works with a ‘video mixer’ who follows the director’s orders. This might include adding/removing titles or effects, changing between multiple cameras, cutting to video inserts and many other possible production tasks. [8]

The Assistant Director is responsible for assisting the director in whatever instructions he/she might give. During live productions, there can be many unexpected things that happen which the director must be able to delegate to the assistant director to do. This allows the director to continue working with the production team ensuring the production goes as smoothly as possible with limited noticeability to the audience or any errors or anomalies. The assistant director must also be familiar with the script as well as understand all aspects of the production in the event that the director is not able to be

present to direct, in which case the assistant can fulfil the directors obligations without production failure. [8]

The Video Mixer is responsible for using the video mixing equipment. The director instructs the video mixer directly. The video mixer must know how to use the equipment, generally without making mistakes. In live television production, there might be multiple cameras being used which the video mixer must switch between depending on how the director instructs. There are also titles, effects, graphics and insert videos that can be added which the video mixer must familiarize themselves with in time for the production. The video mixer is also responsible for making sure all graphics, titles, images and video inserts are prepared and operational before the production begins. [8]

The Set Directors are responsible for the general communication and organization of the host and guests of the production. They are required to use hand signals and other forms of communication to keep the show running smoothly and are also connected to the director through a headset. [8]

The Camera Operators are responsible for the setting up and operation of the video camera. Their job involves understanding the cameras capabilities and technical aspects. They are required to follow the instructions of the director to achieve the required video for the production. In television style production, camera operators take their instructions directly from the director via a headset. This allows the director to communicate with them in real time which might be required for changing aspects such as the depth of field, focal point, video effects such as panning or even the position of the camera. [8]

The Sound Technician is responsible for the setting up and operation of the sound equipment. Generally this work is done in pre-production where microphone organization and sound testing is required. The sound engineer is responsible for how the production sounds and the general upkeep of the sound equipment. Sound engineers might also be responsible for the equalization of the sound, which the director may give advice as well as providing any effects that might be required such as sound noise removal, delay or compression. [8]

The Set-designer is responsible for the design of the set. The director usually has a vision for how the set might look, and will give comments or directions to the set de-

signer. The set designer works in pre-production to make sure the production can go ahead on schedule without having to wait for the set to be changed or set up. [8]

The Lighting Technician is responsible for setting up and maintaining the lighting for the production. Modern video production requires lighting that allows the cameras to capture the correct amount of light for the production. There are multiple types of lighting used in video production such as fluorescent, incandescent, natural and mixed lighting. In controlled sets, such as studios, the lighting can be controlled by the lighting technician. This allows the production to capture vibrant colours and have specific effects on such things as the host, guests or specific parts of the set. The type of lighting is usually set by the director from which the technician follows instructions. [8]

The Editors work in the post production phase. They are given the raw production footage and are in charge of selecting shots, checking quality, and overall editing of the film to the directors and producers requirements. The editor is responsible for being able to use the editing software and usually works with a prepared script, which allows them to edit the video without having to use their own opinions. Editors must be able to use the editing software which might include cutting video, colour enhancing, motion control and adding effects. They must also understand how to export the video to the specifications given which may vary depending on the intended delivery of the video. [8]

The Script Writers are required to work with the producer and director to achieve the script which will be used in the production. In some cases, the director or producer might write the initial script which a scriptwriter might be used to enhance or edit. They are generally creative thinkers who can bring ideas to the production which the producer or director might approve of. [8]

For Metro TV we required that a website be designed and implemented which meant we required a web development team also.

## 5.3 Pre-production

### 5.3.1 Planning Meetings

Pre-production is also known as the planning phase of the production [9]. This phase is critical for a smooth production with limited problems and the more work done in this phase, the easier the production should be for everyone working on it.

When planning the program of Metro TV, topics need to be researched and in some cases, contact with specific people relevant to the topic must be made, to discuss the topic.

The reason for this contact can be to get permission for possible interviews relevant to the topic, information about the topic and/or permission to use other peoples' work/ideas in relation to the topic. Due to the abundance or limitation of relative topics to the specific show being made, research is the key to planning what will be shown on the programme. During the pre-production of Metro TV, we had regular meetings (every week) with the team to discuss potential known topics and to brainstorm ideas for future topics. Once the topics were decided and the production teams were agreed upon for each topic, each team was then responsible for producing that specific content by the deadlines set during the meeting.

The meetings usually went for an hour or two depending on how much there was to discuss. Elisa (producer and secretary) would organize the meetings and have a planned agenda to be discussed. There was also the option for any Metro TV member present to bring up their own topics. When decisions needed to be made, for example on the Metro TV logo, we decided democratic voting was the best option. That way everyone would have a vote and hopefully the best outcome would be ascertained. Only members who were present could vote. This system worked quite well although in the real world, there is usually the editor in chief who decides the outcome of any contentious decisions as they also will take the responsibility for them.

### 5.3.2 Pre-production Arrangements

When certain topics are chosen for the show, there might be the possibility to source a person or persons who have a special insight into the topic for an interview. Interviews

can be done live on the show, or at a place and time at the convenience of the person/s being interviewed. Interviews are beneficial in this kind of video production and can add weight to certain topics or give extra information. [10]

Interviews must be planned out prior to the production phase to ensure smooth, coherent and relative information is obtained. The interviewee/s can be contacted prior to the production to ensure they are comfortable with the questions they might be asked and topics they might be talking about. [10]

Live interviews are more difficult as there is no chance of editing. Every mistake is noticeable to the audience during live interviews so it is important to make the interviewee as comfortable as possible before and during the show. Most people can become very nervous on camera so it is important to make the interview as pleasant as possible to get the best results. Speaking with the interviewee/s beforehand and going through the questions with them can give the interviewee/s a sense of comfort and confidence that allows them to speak more freely about the specific questions/topics they might be interviewed about.

When shooting on location, the locations must first be scouted for best possible results. In some cases, there might be several locations that might suit a specific video shoot, and the scouting allows the producer to ascertain important information that might help them to make the best choice. Variables such as lighting, background, noise and traffic might greatly affect the video shoot and scouting can allow these to be taken into consideration.

When planning video inserts, there is usually requirement for on-location production which might require multiple people and variable amounts of equipment depending on the location and size of the production. Lighting, cameras and production related equipment take up space, can be quite heavy and cumbersome and must be manually carried to the production sites.

When assembling the equipment, it can be beneficial to take notice of how much space is required so that transportation can be efficiently planned.

With professional productions, there are many deadlines that must be kept. Time management is very important so that the production can go ahead as planned. This includes having content ready, interviewee/s organized and material for the show final-

ized by specific times. The whole production process can be very time consuming depending on availability of equipment, guests, transportation and the team.

#### 5.4 Inserts production

##### 5.4.1 Filming and Editing

Once the planning phase has been completed, the insert production can then take place. This requires events and interviewees to be filmed and edited (only after permission is granted by the organizer/producer of the production being filmed) by the teams that have been agreed upon.

The production team usually meets at agreed locations to set up the equipment. The producer, when possible, would contact the event organizer/producer to discuss the filming. Once everything is agreed, the filming can then commence. Interviews can be taken before, during or after the event production.



Figure 6 Bella Kayumova filming on-location for an insert

For the news and introduction inserts, we used a different production device called the NewTek TriCaster 300. This media production device is capable of performing production tasks that allowed us to film with the schools chroma-key (green screen) studio.

As seen in Figure 4, the Tricaster 300 has a LiveMatte keyer (chroma-key) and integrated virtual sets built-in that can give many good options for filming inserts. There is also the ability to add titles, logos, graphics, images, audio and video to the built-in studio sets.



Figure 7 A still image of Metro TVs' 3rd episode Introduction

Once all the filming has been completed, the producer or delegated person responsible will take care to transfer all the video files to a secure location such as a server or hard drive that is secure. Editing can be then performed by the agreed editor, to meet the specifications of the required insert.

Post production is the phase after the video production has ceased. This mostly includes video and sound editing of the inserts and show, if required, as well as other aspects such as colour correction, converting/compressing video and audio for web streaming. [11]

Video Editing might be required if there are any production errors that are obvious to the viewer, or inappropriate comments or accidents. The final edit of the show will be the version that viewers can watch on demand.

Sound editing can enhance the audio content for the viewer. If any audio problems/anomalies are encountered during the live show, they can be corrected before being viewable on demand. [11]

Converting and compressing video for web streaming is required due specific factors that must be considered beforehand. The file size of the video, bit rate and bandwidth of the users are the main factors that must be taken into account when choosing formats and file sizes. There are also some issues such as the servers' ability to stream and storage capacity as well as the video players' ability to stream both 'Standard Definition' (480p) and 'High Definition' (720p) video.

For Metro TV, we knew already that many students lived in HOAS students' apartments which have included in the rent, a 2Mb internet connection, so this assisted with Metro TV in choosing the standard definition file size for smooth streaming of our content. We also decided to offer a high definition version for those in the target audience with faster than 10Mb internet connections.

#### 5.4.2 Media Storage

File sizes for video productions can be quite large, usually gigabytes. For this reason, a lot of media storage is required to store and access the video files. Files transfers from the video cards that are used in the video cameras usually take place once all the video production has been completed. Backing up these files is also a good idea for security, which means a second copy must be made in case some error or corruption occurs. Therefore more than one storage device is required for professional video productions.

Hard drives are now more economical than ever and are portable which makes them ideal for on-location media storage; however they are limited in their size and networking capabilities. Database storage such as the Metropolia Fibrejet system has a far greater storage capacity than portable hard drives and also can be accessed via a network of computers, allowing multiple editors to work simultaneously from the same media storage location.

Metro TV was given a dedicated hard drive with approximately 1000 GB capacity for our video productions. The data from the video cards was transferred to the Metro TV hard drive as soon as productions ceased, and then once all the equipment was returned to the school, the final task was to make another transfer of those video files to the Fibrejet database effectively making a backup of the original files.

As seen in Figure 8 [12], the video content is stored on the P2 cards which are then transferred to portable hard-drives before it can be stored to a database or server.

Once all the editing was completed on those video inserts, the completed edited versions would be transferred to the Metro TV hard drive, to be used in the live Metro TV magazine productions.

The NewTek Tricaster 300 has also a built-in media storage hard drive with a high capacity. All files that have been edited and ready for the live production would then be transferred to the Tricaster where they could then be used as inserts during the live production.

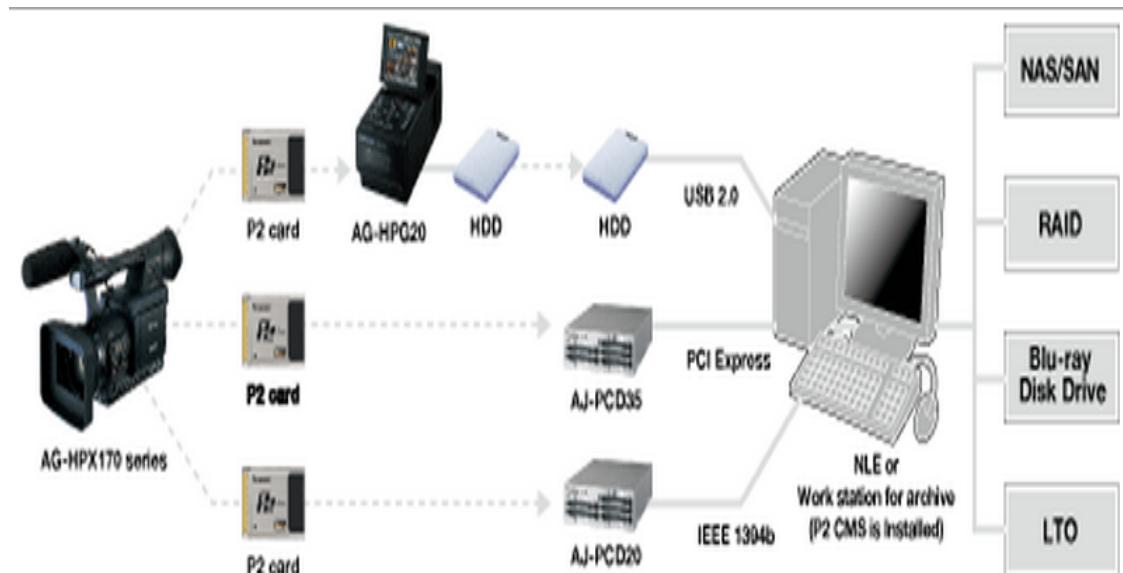


Figure 8 Here is a typical 'flow of content' diagram for professional video production [12]

## 5.5 Live multi-camera Studio Production

The live studio productions were planned in advance to be scheduled and advertised to the school and students. This meant that the insert productions had deadlines to be met so that they would be ready for the live show. We also had live interviews which meant that the interviewees had to be contacted in advance to discuss the questions and topics they would be talking about and to arrange a convenient time that they could come to the studio for the live production.



Figure 9 Live production video content flow diagram [12]

Figure 9 [12], shows the basic content flow of the live show video production. The cameras first film the show, and direct the content to the Live switcher (in Metro TV, we used the Tricaster) which is then recorded and transmitted at the same time.

During the live show, headsets were used to communicate between the live studio and the control room. These headsets allowed functional real time orders to be given and communication between the vital roles of the production.

The live studio had to also be set up in advance of each live production. This task was taken up by members of the team who had time to assist. The following is the most common Metro TV team setup for the first four live productions.

The live studio team were as follows.

Aleksandra was the set designer and was responsible of setting up the studio set.

Aarne Wallen was the lighting technician and was responsible of setting up and maintaining the lighting for the show.

Guzman Alvarez was the sound technician and was responsible for the sound equipment and testing.

Saray Renilla Lamas was the video mixer and was responsible of setting up the Tricaster and importing and setting up all the relevant media (video inserts, graphics, titles) for the upcoming production.

Bella Kayumova was the live production director and was responsible of the scheduling of the production as well as directing the video mixer, cameramen, studio director and assistant director.

Elisa Räkkolainen was the studio director and was responsible for the studio directing as well as leading the host with pre-discussed hand signals that would allow the host to perform fluently during the show.

Simon Boahen and Kaija Jin (Peter Griffin sometimes assisted) were responsible for the cameras and were directed by Bella during the live show.



Figure 10 Shows the Director (Bella) instructing the video mixer (Saray) during the live show. Notice the headsets that are used for communications between the team.

## 5.6 Production Equipment

Video production cameras come in a wide variety. The cameras we used for Metro TV were Metropolia's Panasonic HPX-170 P2 video cameras which are lightweight, easy to use and transport and have two P2 memory card slots which can record up to 128GB of video content. [12]



Figure 11 Panasonic AG-HPX170 video camera [12]

Panasonic HPX-170 P2 video cameras could also film to our specifications which were 720p at 25 frames per second (fps). 720p is a progressive HDTV signal format with 720 horizontal lines and an aspect ratio (AR) of 16:9 (1.78:1). All major HDTV broadcasting standards include a 720p format which has a resolution of 1280×720 [13].



Figure 12 P2 64GB memory card [12]

The video mixer is used for the live show and controls, streams and records the flow of all the video content. The NewTek Tricaster 300, as seen in Figure 13 [14], was used extensively for Metro TV and made the live multi-camera productions possible. The NewTek Tricaster 300 is designed to be a portable and easy to use production tool. It has an easy to learn intuitive interface, its small enough to be transported easily, has integrated virtual sets built-in and has a LiveMatte keyer (chroma-key) which allowed us to film some of our inserts with the virtual sets. [14]



Figure 13 NewTek Tricaster 300 [14]

Lighting is very important in video production. All cameras are light sensitive and require specific amounts of light for professional looking content. Sunlight is not always available, especially for indoor filming, and ambient lighting (lighting that comes from existent lights in near area, usually a mix of sunlight, fluorescent and/or incandescent bulbs) does not always yield the best results. For Metro TV film production, we used Par Can (Parabolic aluminized reflector light) lighting. These lights are easy to use, transportable and also powerful enough to control the lighting for our productions.

The sound recording equipment available to us for Metro TV was varied. We predominately used dynamic microphones as seen in Figure 14 [15], which are portable, can be handheld, plug straight into the camera(for on-location filming) or Tricaster and are good for getting quality audio for interviews and inserts. Dynamic microphones are also directional microphones so background noise is limited which can be very useful when filming with a lot of background noise, such as filming outside in busy areas with traffic.



Figure 14 Dynamic Microphone [15]

During the live Metro TV production, we used much smaller microphones which are attached to the host and guests by a clip and can be connected to a audio mixing desk which gives the ability to control the levels of the audio signal, before they are inputted to the Tricaster. This allows a sound technician to control the audio signal which means the video mixer can concentrate on the video mixing without having to also take care of the audio signal.

### 5.7 Workflows of multiple aspects of the Metro TV production

Due to the nature of this project, multiple people were required to perform the tasks which sometimes were required to be done simultaneously. The physical work done to perform the production must be carried out by multiple people. For this purpose, producing Metro TV required students to perform all the different tasks.

The insert production teams consisted of usually three or four people, however the live studio production required up to fifteen people all working together simultaneously.

The operating workflow for each type of production is generally controlled by the producer. This includes overseeing the operations of each different production task as well as delegating tasks to the subordinates. During Metro TV productions, this workflow was trial and error to begin with but after multiple practice runs, a workflow for each particular task was created and during the four initial episodes produced, each workflow became more streamlined and fluent. Improvements were seen in many aspects of the Metro TV production as a whole. The set-up times of the live studio were decreased considerably as well as the time it took from the completion of the insert production through to the inserts being ready for use in the live Metro TV production.

Metro TV was in effect, a useful training tool in video production for the students who worked on it, as everyone had a chance to try something new and learn something new every time they participated.

### 5.7.1 Web Development

Metro TVs' video content required that a website be designed and implemented so that the content could be delivered to the target audience. This posed a number of important issues that needed to be considered.

The Metro TV software engineering requirements meant that a web development team was also needed. Metro TV's software architecture was planned and implemented by Media Engineering students Allan Arriaga, Peter Griffin and Matti Lahtinen.

This included a Graphic User Interface (GUI) design for the website. Considerations that needed attention included that the audience must be able to navigate the website easily and intuitively. Allan Arriaga was predominately responsible for the Metro TV front-end development including the GUI as he had some good skills with web development and a keen eye for design.

The GUI design, once in the testing phase, had to ensure that the user has a comfortable intuitive experience and not be confused by complicated, difficult to understand navigation.



**Figure 15 Screenshot of the Metro TV Website GUI**

The final result can be seen in Figure 15, where the JW player is central to the page and the navigation bar and logo is situated at the top of the page. The player can easily be used as it has a control bar at the bottom which is intuitive to the user as it is similar to most popular web video players including YouTube and Vimeo. The HD button to the top right of the player easily indicated to the audience that there is an option for a HD version. There is also an orange banner above the player which indicated to the audience the up-coming productions which helps with advertising future productions.

The back-end development was mostly created and developed by Matti Lahtinen. He was able to develop a software architecture interface that allows updates to be made to the website via an admin GUI, which enabled admins to update, edit and delete any aspects of the website. This concept and implementation assisted the producers as it was now possible for the flow of content from upload to the streaming server to be automated.

Graphic Designers were also required to design the Metro TV logos and images for Metro TV. Allan Arriaga, Peter Griffin and Laura Meskenen were the most active people in the team for this purpose.

### 5.7.2 Different Kinds of Media and Distribution of Media

Since Metro TV content is delivered to the audience through a website, considerations about the platforms being used by the audience to browse our website had to be made. In today's technological climate, there have never been more devices available at reasonable prices to the public. Delivery platforms for Metro TV include hand held smart phones, tablets, laptops and personal computers.

Considerations had also to be made about which web browsers would be used by our target audience and on what devices those web browsers would be standardized. Some popular web browsers include Internet Explorer (IE), Google Chrome, Mozilla Firefox, Opera and Safari. The most innovative devices at the time we produced the initial episodes of Metro TV were the apple iPad and iPhone 4 which had recently been released. These devices required some testing of our content and website to ensure that our video content would work with their built in web browser (Safari).

Legalities and intellectual property rights were also a consideration that had to be made by the producers and editor in chief of Metro TV. Whenever other people's works were being considered for our show, in some cases other students works, all efforts had to be made to contact those responsible for the works and permission had to be given.

In the live Metro TV productions, all care was taken to produce closing credits that acknowledged all participating contributors and their role or work done in producing Metro TV.

## 6 Broadcasting and IP Infrastructure

### 6.1.1 Metro-TV Content Delivery

For this project we would film all material in high definition (720p). For on demand streaming we would convert video to various qualities so that students with slower internet connections can still stream smoothly and have “Watch in HD” as an option for faster connections.

In depth research and testing to find what video player works best for this project was required. JW Player was the video player that we decided on due to its usability interface and also that we could use it for free. Once embedded in our website, JW player was able to stream the live show as well as stream the recorded shows on demand.

### 6.1.2 Streaming, servers and database structure

Our content videos are stored on Metropolia’s Fibrejet database although during the live show, the Tricaster had the ability to stream the live show (in 720p at 25fps) using Metropolia’s streaming server system. With the assistance of Metropolia faculty (Ilkka Kylmaniemi) and our web development team, we were able to stream our live show through our website. Metropolia’s streaming servers have the ability to serve multiple streams simultaneously which is required for multiple students to watch the show at the same time.

## 7 Marketing

During the planning and development of Metro TV, a consideration that was made was financing the project. Metropolia was kind enough to supply our team with equipment, support and transport however with today’s advertising abilities, the idea of marketing our production and/or sourcing sponsors was a topic of discussion in some meetings. There was the possibility to approach several companies and organizations to discuss future advertising and sponsorship deals which might have made it possible to get some funding for Metro TV which would have created a budget for expenses and possible purchase of equipment.

Finally this was never implemented due to legal reasons, as Metropolia students are not permitted to use school equipment and campus locations to create a business venture for profit. However the concept of Metro TV is definitely open to future development into a similar or even larger project or perhaps even a business concept that could be marketed to employ students and graduates in the field of video production.

Advertising Metro TV to students was also considered in weekly meetings by the Metro TV team. Many different advertising techniques were discussed and finally posters were printed and distributed to all the Metropolia campuses in Helsinki. Also announcements were made through Metropolia's Tuubi portal which all Metropolia students and faculty had access to. This kind of advertising also gave the students and faculty a forum to comment on the production which was a side benefit.

## **8 Conclusions**

After four scheduled Metro TV episodes were produced, the results from the Metro TV team's perspective showed improvement with each episode as well as increased enthusiasm within the Metro TV Team. We also used Google's website statistics to see how many people were watching our live production and over the three months that these four shows were produced, we saw an increase in viewers with each episode.

The real world experience of working on Metro TV could also be considered a benefit, which allowed all the students participating to learn skills and gain experience that could lead to working opportunities in the real world of video production in the future. Some students also gained credits towards their degree which is a remarkable achievement.

As seen in Figure 14, the number of visits to our website spiked during the live show and also during a 24 hour period after the live show. We also had 2,198 unique visitors to our site and a total of 3,158 visits to our website from January 1, 2012 until March 28, 2012.



Figure 16 Screenshot of Google Website statistics for Metro TV Episodes

The Metro TV team also proved that Finnish students and foreign students from different countries could work together positively on this project and achieved something that everyone could be proud of, which was our regular scheduled streaming video production for the Metropolia students.

The real world experience of working on Metro TV could also be considered a benefit, which allowed all the students participating to learn skills and gain experience that could lead to working opportunities in the real world of video production in the future. Some students also gained credits towards their degree which is a remarkable achievement.

Metro TV was able to initiate collaboration between different campuses and degrees which can be seen with the combined video production of the flash mob in 2012 for Helsinki's 200th birthday, as well as many students insert videos that were made with the help of students and lecturers from other campuses.

The final benefit of this project that deserves mentioning is the improvement in communication that Metro TV was able to encourage between students and everything important to students of Metropolia. There were many good interviews and insert videos made for Metro TV that informed, entertained and educated the target audience with each episode created.

## **9 Discussion: Future operations of concept**

The Metro TV project is still being continued today, one year after the initial four episodes which indicates it is a project that students are willing to give their time and effort to. In my opinion, Metro TV has also the ability to be a blueprint for future similar projects that could be implemented in other schools, organizations, businesses and local area groups.

The educational benefits, for the students in this kind of project, provide training and experience in a field that is not easy to find employment. I also believe that with the right kind of guidance, this project could be a stepping stone to future careers in video production and future business opportunities in the field of technology.

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## Metro TV Episodes

### Metro TV Episode stills

The pilot episode was produced in mid-December 2012. The special guests included Metkas' (Metropolias student union) president and vice-president who came on the show to discuss all the latest Metka news.



Figure 17 Metka President and Vice-president being interviewed

Prepared questions and topics to discuss were given to Metka for consideration as well as a pre-interview meeting to clarify what Metka would like to say to the students watching Metro TV.



Figure 18 Insert Interview with exchange students in regards to winter in Finland.

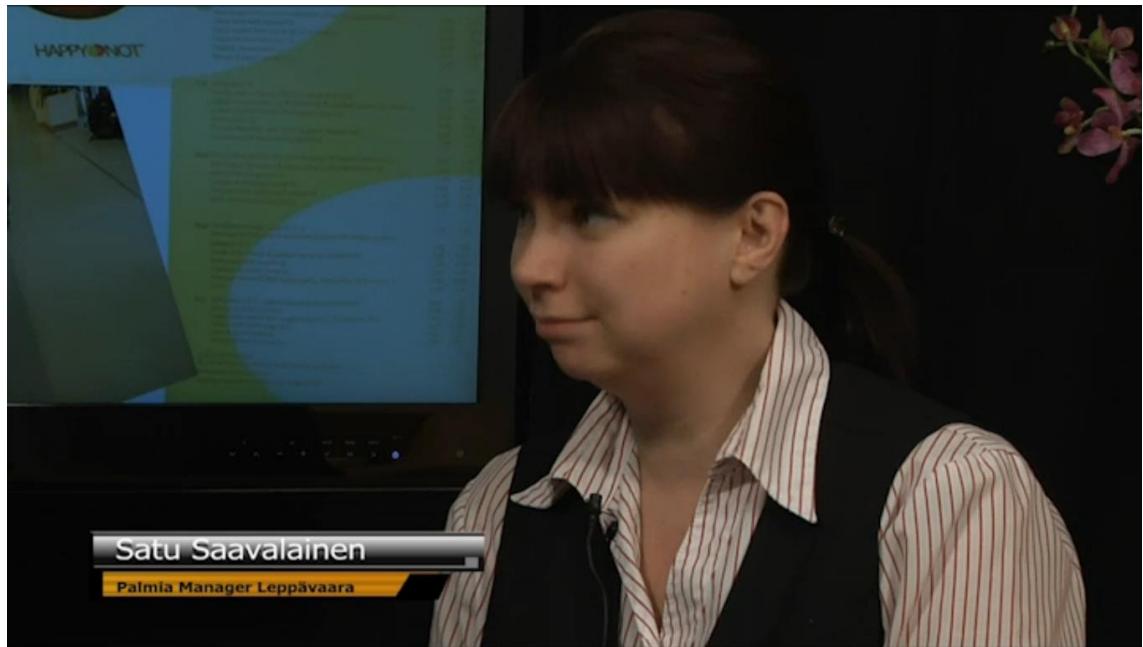


Figure 19 Interview with the manager of Palmia restaurant in Metropolia Leppävaara. Topics discussed included food options and considerations.



Figure 20 Interview with Director/President of Metropolia. Topics discussed included Metropolias four year history and future planning.



Figure 21 Representative of Samok (Student Unions' Union) discussing legal changes coming for students in Finland.



Figure 22 Sell Games representative discussing SELL student Games 2012



Figure 23 Student discussing floorball competition in Leppävaara 2012.



Figure 24 Student discussing Tipaton Tammikuu (dropless January) pro's and cons.



Figure 25 Students from the Käpylä campus interviewed in regards to the science degree student life.



Figure 26 Metropolia student interviewed after concert in Metropolias' Arabia campus.



Figure 27 Metropolia Students perform in an Opera at the Ruoholahti campus Theatre.



Figure 28 Metropolia lecturer being interviewed about a Flash Mob dance event being planned for Helsinki's 200 Birthday.



Figure 29 Metropolia students performing in the Metropolia Arabia campus theatre.



Figure 30 International Exchange organiser being interviewed about student exchanges.



Figure 31 Industrial Co-ordinator being interviewed about students industrial placement.

