Helsinki Metropolia University of Applied Sciences
Degree Programme in Media Engineering

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Visualizing Change Management as Academic Competence of Customer

Bachelor's Thesis. 12 December 2010
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Helsinki Metropolia University of Applied Sciences **Abstract**

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The goal of this final year project was visualizing the Master's Degree research in Change Management done by Remco Meisner and Roelof van Cleef at the VU University Amsterdam. The main goal of the project was to use a model called MINCE which is meant for evaluating the maturity level of organizations and to suggest ways to achieve a desired state.

A short film was created. The target group consisted of students of the change management department at the VU University Amsterdam and the staff of three organizations participating in the study.

The official premier of the film took place during the Master Dissertation presentation at the VU University Amsterdam. It was also shown in Andarr, an independent company based in Utrecht with more than sixty consultants in the field of ICT and management, (comma) in which Remco Meisner worked as a consultant at the time. The film can also be watched on YouTube and on the MINCE foundation website.

There might be need for continuation, since interest in studies in change management and in the MINCE model in particular is growing. The film can be developed further with voice over or subtitles in different languages.

Keywords	video production, video editing, multimedia, visualizing, abstract information

Contents

Abbreviations and Terms

MINCE	Maturity Increments In Controlled Environments (MINCE) is a framework that has been developed to allow an organization to assess its level of organizational and project maturity by showing how efficiently and effectively it deals with change.
Multimedia	Any combination of text, graphic art, sound, animation and video delivered to users by computer or other electronic means.
Visualization	The process that includes encoding the original data in a visual format by using different visual attributes, such as shape, size, position, orientation, colour and decoding or transforming the visual attributes into a mental representation in the brain of the viewer. Further, the patterns perceived in this representation are combined with knowledge stored in the long-term memory to finally construct the interpretation of the image.
HKU	Utrecht School of the Arts, Utrecht, the Netherlands
AVI	Audio Video Interleave (AVI, also Audio Video Interleaved) is a multimedia container format. AVI files can contain both audio and video data in a file container that allows synchronous audio-with-video playback. Like the DVD video format, the AVI files support multiple streaming audio and video.
Data	A body of facts, information.
CCD	Charge-Coupled Device (CCD) is a miniature photometer that detects light intensity and represents the intensity with an analogue voltage. A CCD array is made up of CCD elements, the smallest discrete CCD. CCDs are used in many digital cameras, video cameras and scanners.
PAL	Phase Alternate Line (PAL) is an analogue television encoding system used in broadcast television systems in many countries.
Change Management	A structured approach to transitioning individuals, teams and organizations from a current state to a desired future state. It is an organizational process aimed at empowering employees to accept and embrace changes in their current business environment.
Project maturity	An indicator of how an organization deals efficiently and effectively with change.

1 Introduction

The project started in January 2008 and lasted for three months. Remco Meisner and Roelof van Cleef were completing their Master Dissertation in the change management program at the VU University Amsterdam and were expected to graduate in April 2008. By that time Remco Meisner was already working in the field of change management. He was the creator of a framework called MINCE (the acronym stands for Maturity Increments In Controlled Environments) that helps to improve the ability to deal with changes in organizations. Roelof van Cleef was an Independent Military Professional who had graduated from the Royal Netherlands Naval College. He was working together with Remco Meisner on the studies in three different organizations aiming to find out how effective the MINCE framework is in analyzing the level of organizational maturity and suggesting the ways to achieve a desired state.

Remco Meisner and Roelof van Cleef decided to present the results of their research in the form of a film. Remco Meisner initiated a visualization format for their Master Dissertation presentation and he became a customer of Manon Bruininga. The visualization that he required had to be done in such a way that it could create an interest and clarify the main points of the studies in change management and the maturity of three organizations which participated in the research. Remco Meisner asked for permission to do this and material support from their supervisor and got an agreement. Professor Anton Cozijnsen agreed that the final assignment would be visualizing the results of change management research in the form of the film and that the VU University Amsterdam would provide funding for making the film.

The contract on visualizing was offered to a Nijmegen-based self-employed photographer called Manon Bruininga whose responsibility was to find a specialist or trainee for working with the multimedia. It was expected that the combination of text, graphics, sound, animation and video would be used in the visualization. The final product could be used for academic purposes only and stored in digital format. Remco Meisner's name as a contact person was mentioned in the contract signed between the

VU University Amsterdam and Manon Bruininga. In reality Remco Meisner was the customer and willing to participate in creating the film and to approve every stage. He also had meetings with Roelof van Cleef discussing the workflow of the film.

The aim of the visualizing project was to produce a 10–15-minute film presenting the research on change management in close cooperation with the customer. This thesis discusses the principles of abstract information visualization and how these principles can be taken into account when creating a video production visualizing management as academic competence. It also specifies how the project was created and which steps were taken to make it happen.

2 Art of Visualization

2.1 History of Visualization

Visualization is not a new phenomenon. It has been used in maps, scientific drawings, and data plots for over a thousand years. Examples of this are the map of China, shown in figure 1, and Jacque Minard's famous map of Napoleon's invasion of Russia in 1812, shown in figure 2. [1,2; 5,7]

Figure 1. Map of China 1137 A.D.

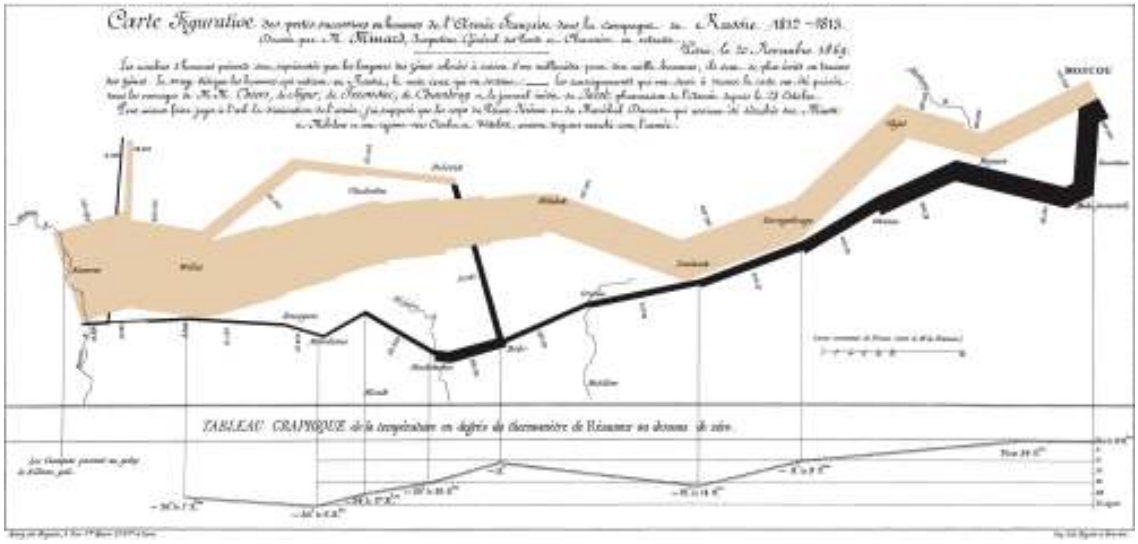

Figure 2. Map of Napoleon's invasion of Russia in 1812

Another example is much older. The map shown in figure 3 was painted on a wall and measures more than 2.5 meters in width. The Catal Hoyuk map from Turkey, dating back to 6,200 BC, represents one of the oldest cities of the Neolithic era.

Figure 3. Catal Hoyuk map, Turkey, c. 6,200 BC [2]

The recreation of the original map in which the structure of the city and an erupting volcano can be seen more clearly is represented in figure 4.

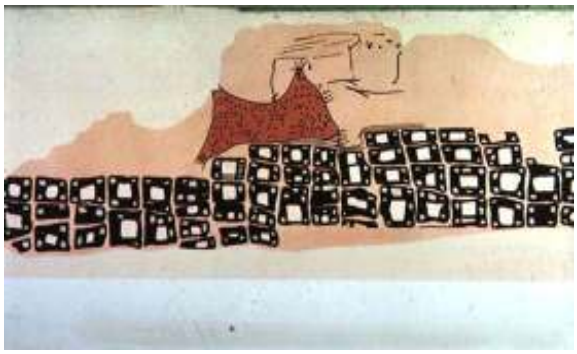

Figure 4. Recreation of the original plan [2]

These examples show that good visualization can present information in such way that it can be understood by anyone many years after the maps were created. They also indicate that visualizing has a very long history and that it is very natural to the human nature because people have always been doing it.

2.2 Converting Data to Knowledge

Stuart K. Card et al. define information visualization as “the use of computer-supported, interactive, visual representations of abstract data to amplify cognition” [3, 6]. Visualization improves the ability to learn since working memory is expanded and, on the other hand, search is minimized because large data is represented in small space. This effect is based on the ability of people “to scan, recognise, and recall images rapidly and also to rapidly and automatically detect patterns and changes in size, colour, shape, movement, or texture” [4, 3]. However, not everything is as simple as it looks. The main challenge comes with making a decision about the way of visualizing. To be more exact, information visualization begins with realizing what would be “suitable visual mapping on the information connecting unstructured data which would lead to increasing understanding” [5, 479].

There are several arguments about what the best way to visualize information is. There is also discussion about people’s involvement in the process of visualization. Three dimensional displays, virtual reality as well as other recently created visualization tools are available for advanced visualization. However, the lack of systematic testing and evaluation make it difficult to find out how effective those tools are in “knowledge understanding and decision making” [6, 1]. An online document called “Cognitive Engineering Research Methodology: A Proposed Study of Visualization Analysis Techniques” provides an overview on this problem [6].

With increasing of sensing capabilities and the ability to access a great amount of data, not enough attention is given to assimilation and understanding the data. In other words, users are “drowning in a sea of data” but “thirsting for knowledge” [6, 2]. In addition, a group of analysts might share work on the same process and have no interaction. Traditionally, it is expected that automated systems should be able to process all incoming data and represent it for human understanding. An illustration of this concept is in figure 5.

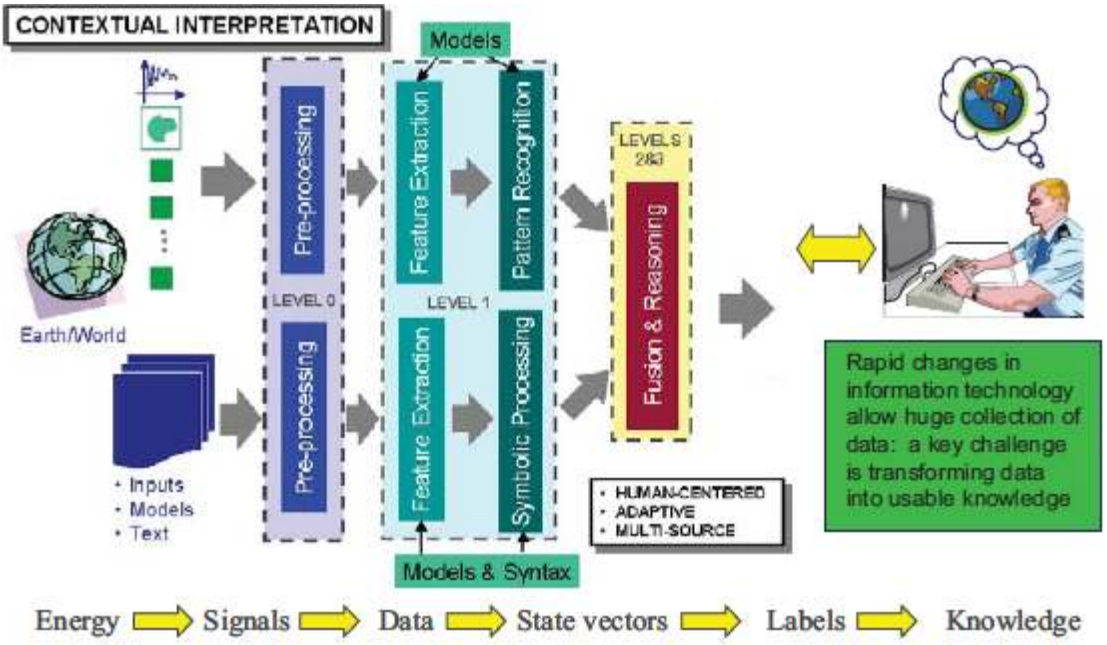

Figure 5. The Transformation from data to knowledge [6]

As seen in figure 5, the data comes from different sources and is processed via three levels of data fusion to provide results for user viewing and analyzing. Since progress in collecting data and the first two levels of fusion processing exceeded the ability to support automated analyses, a great amount of data is analysed by a limited number of analysts. However, data mining techniques suggested by some researchers might not be the best solution.

As result, it is suggested that focusing efforts on "visualization methods to assist analysts in creative interpretation and analysis" is better for understanding data instead of aiming for complete automate data processing (for example with the help of machine learning or data mining techniques) [6, 3].

The idea that colors and shapes can be used not only for aesthetic purposes but also for supporting better understanding is also brought up in the studies. Research in the area of cognitive psychology offers information about an impact on how knowledge is understood. It is suggested that individuals perceive red as negative and tense but blue is described as calm and cool. There are more factors which influence the understanding of information and decision making. A number of visualization theories discuss if the role of position, color, form and luminance are equal operations in attentional selection.

There is also one more factor which should be considered. Research in social psychology suggests that individuals are affected by the mood of other people and, furthermore, their interpretation of “non-descript physiological arousal” [6, 7].

In this thesis it is suggested that a video production for a Master Dissertation as abstract data visualization should support knowledge creation and decision making. Further, tools and techniques for creating a video production presenting complex abstract information are discussed in this thesis.

3 Project Workflow

3.1 Preparation for the Project

3.1.1 Target Group

The VU University Amsterdam specified the subject and what kind of a product was expected. The aim of the visualization was to clarify to a target group in a visually attractive manner the current situation in the organizations concerning organizational maturity, make suggestions on how to get to a desired state and, on the other hand, point out limitations in improvements that can be reached in a short period of time. The visualization of the problems in the companies resulted in a film. Changes carried out in the companies were also shown in the film. The subjects of the film were the employees of three companies who took part in the studies and volunteered to participate in the visualization project. The organizations' approval was necessary before the material could be used. In other words, the realization of the visualization was to be done with contributions from the same target group.

Visualization had to be done in the form of a film with sound prerecording in which anonymous subjects presented their opinion about the present and future situation. The first idea concerning the form was to do this in a professional setting (for example at the workplace), in an unrecognizable setting (for example behind a screen, so that the silhouette of the subject is only visible) or in a private setting (for example while cooking at home or walking the dog).

In a preliminary agreement it was specified that the film can only be shown to students at the university who study change management and to the staff of the three organizations that participated in the project. It was not really easy to get a more detailed description of the target group from the customer. Finally, it was thought that the average watcher would be a 35–45-year old man, most likely a top manager in the organization and willing to evaluate and improve management in the company. The MINCE studies offered appropriate tools for testing, planning and supporting changes in the organizations which were all different.

3.1.2 Restrictions and Responsibilities

With the assignment Manon Bruininga and I got freedom of creation. The name of the film, “De Verbeelding”, means resource, resourcefulness, imagination or the ability to deal with unusual problems resourcefully. However, the customer’s involvement was part of the agreement. Responsibilities were divided as follows: Roelof van Cleef and Remco Meisner were responsible for organizing everything and Manon Bruininga had to take care of capturing. She had no experience in working with video, as she is an artist and a photographer. She started looking for someone who could help with design, video editing and animation. The last year students of the Utrecht School of the Arts (HKU) were planned to be invited to take care of the design and animation. The last participant was replaced. I was suggested as a suitable person without much experience but enough knowledge and willingness to work. Appendix 1 presents a figure illustrating the participation of the people mentioned above in the project.

In a contract signed with the VU University Amsterdam, it was specified that my participation would start after the shooting was completed. However, dates had to be changed because the project began before the actual shooting. There were also plans to be made about what to shoot and how much to shoot. It was also mentioned that a script had to be written in collaboration with Manon Bruininga and the film would be most likely presented on 25 April in 2008.

In addition to the above conditions, the three organizations were not to be named in the film. This also applied to the individuals. The VU insisted that the visualization can only be used for research. The visualization cannot be used as an advertisement for the MINCE model, the VU, the HKU or others. The footage of the subjects can only be used within the framework of this particular study and not in propagating MINCE, the VU, the HKU or change management training.

3.1.3 MINCE Studies

The first and the most important stage of visualizing studies is to understand what the main ideas are and what the message that an author wants to get across is.

The MINCE model is a framework that has been developed to allow an organization to assess its level of organization and project maturity which is an indicator of how an organization deals with change efficiently and effectively. The MINCE model takes the approach that maturity is the sum total of a corporation expressed in terms of the people within it and how they work – regardless of whether working in technical services, energy sector or governance.

As soon as an organization starts using the MINCE measurement toolset, its management will gain insights in the maturity of the organization. Examples of this are listed below:

- skills of the staff
- abilities of the organization's customer chain
- effectiveness of the organization's projects
- the way the organization benefits from past lessons
- the organization's ability to adapt to change [7]

A book called "Mince: A Framework for Organizational Maturity. How fast can your organization adapt to the ever changing environments?" detailing the MINCE model was published in English in August 2007 and has been translated into Dutch, Spanish, French, German, Russian and Chinese. This book provides a comprehensive overview of the MINCE framework that has been developed "to allow organizations to assess the level of the maturity of their projects" [8, 4]. Project maturity within an organization is seen as an indicator of how an organization deals with change efficiently and effectively. Thus, it also provides an indication of organizational maturity.

The MINCE model allows determining the maturity level of organizations and facilitates improving until the desired condition is achieved. The MINCE model hastowers which represent organizational aspects relating to change. A novel kind of lookout function is used in the MINCE model to check out the view from each tower to the landscape and to the other towers. This outlook during a full circle is done according to five criteria (Leadership, Staff, Policy, Means and Instructions). The routine is to

stand inside the tower, look out and decide about the maturity level of the organization on the basis of a couple of straightforward questions. Then, the idea is to turn further until the next criterion is reached. After that, it is necessary to focus again and decide about the maturity level from this perspective. Figure 6 illustrates the lookout function used in the MINCE studies.

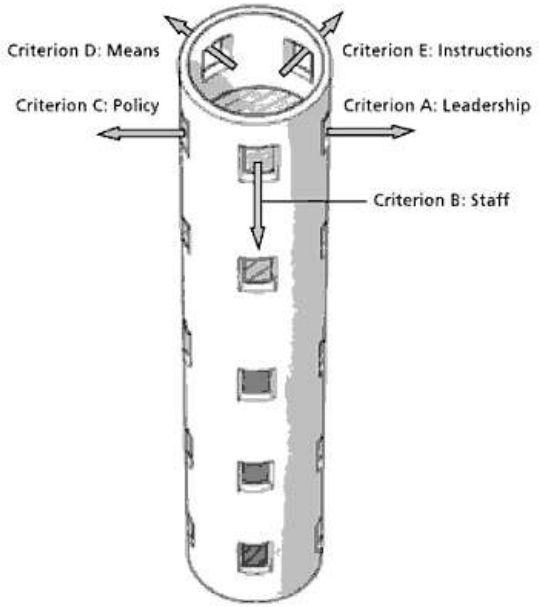

Figure 6. Physical position of the MINCE criteria [8]

The MINCE model has six towers. Each of six the MINCE towers, shown in figure 7.

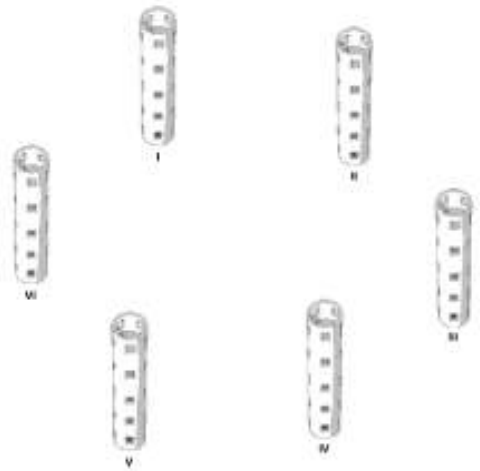

Figure 7. Six MINCE towers [8]

Towers represent crucial organizational aspects connected to organizational maturity and each one has a Roman number attached to it:

I. People
II. Methods and Techniques
III. Customer
IV. Realisation
V. Knowledge
VI. Supporting Services

These towers determine the main aspects of organizations with regards to the maturity level. Organizations can choose one or a few from the six MINCE towers and focus on the chosen towers.

There are also three different price, benefit and drawback sets of metrics – Bronze, Silver and Gold. Appendix 2 illustrates the structure of a typical MINCE Bronze planning sequence. There are three milestones – initialization, sequence 1 and the final sequence - which are divided into deliverables and products. The initialization milestone sets up the maturity improvement project. After this stage the project is ready to begin. The sequence 1 milestone is used to collect respondents' feedback. The next milestone – the final sequence is realized a couple of times and the final sequence is similar to the previous one. The only difference is that it is the final lap, and when the stage is over, the project is considered to be finished.

The existing promotion material was done with PowerPoint and before the research was completed, some information had become outdated. The customer had a clear vision of what he expected from the new visualization and was willing to take part in the creation process.

3.4 Stages of Production: Theory and Practice

3.4.1 Pre-production in Theory

It is essential to invest enough time into writing, scripting, storyboarding and planning shots and locations for shooting. A good start for a project is clarifying the concept and deciding goals to work towards. These ideas summarize the purpose of the video, its plot and style. It is also good to think about different ways to attract and hold the viewers' attention. You can choose if it is comedy, shock, self interest or visual stimulation.

There are different ways to write scripts. For a documentary and industrial video, very often visual information is supported by audio or voice over. A split-format (audio/video) script is a good choice and can be done in a form of a table. In this case, explanation of visual information is written in the left column and the audio goes in the right.

The production schedule is the next step. It is done by breaking the script into shots and planning what every shot requires. The shooting schedule is almost the same as the production schedule except that shots are organized by location. It can be a good idea to write the shooting schedule first, explaining the shot order. For example, the first shot could be a close-up and the second shot could show two people talking. Subsequently, this can be turned into a production schedule in which the time given for each shot is planned. It usually takes 15 to 30 minutes to capture a shot. The first shot of the day and the first shot on a new location usually take the longest. Close-ups take a shorter time than wide shots. [11]

A storyboard should be created when a script is completed. It looks like a comic. There are some acronyms for standard shot sizes:

- Extremely Long Shot (ELS): The object is small and near or far but with a fair amount of space around it.
- Long Shot (LS): Head to toe.

- Medium Long Shot (MLS): Head to knee.
- Medium Shot (MS): Head to waist. This is the ‘newsreader’ shot which is very common on television; it allows the subject to use their hands.
- Medium Close-Up (MCU): Head and shoulders.
- Close-Up (CU): Head.
- Big Close-Up (BCU): Eyes and nose.
- Extreme Close-Up (ECU): Eyes or anything very close. [11]

With the help of the storyboard, it is cheaper to test setups. In addition, camera movements and rhythm can be planned. Further, it helps to plan special effects. Two ways to do the storyboarding are to draw them on paper or build them on a computer. On paper, 6-12 rectangles can be prepared with the ratio of 4:3 or 16:9 for widescreen. The space under each frame can be used for writing the frame number, camera instructions, dialog and audio or visual effects.

Since it is easier to have a list of shots based on the storyboard rather than using the storyboard itself while shooting, it is good to plan the amount of shots and to work out the amount of lighting set-ups needed when the storyboard is completed. Lighting set-ups determine how long it is necessary to stay in one location. Every new location asks for lighting adjustment. At the pre-production stage it is also good to think about the hardware and software equipment which is needed. This will be discussed in the next chapter.

Legal aspects must not be forgotten. While planning locations, it is always good to check for permission. The most public places are free for filming, but sometimes for security reasons there are difficulties in shooting.

“Copyright is exclusive rights granted to the author or creator of an original work, including the right to copy, distribute and adapt the work.” [10] A copyright period usually extends for a certain period of time after which the work enters the public domain. It is possible to use works without permission from the copyright owner in a case with copyright limitations and exceptions. Today copyright covers not only books

but also maps, paintings, photos, recordings, video and software. The Berne Convention and European copyright directives partly standardized copyright laws through global and national agreements. [10]

3.4.2 Pre-production in the Visualization Project

It is unlikely that someone who makes video can start shooting without studying the topic or at least investing some time into getting familiar with the expertise area it belongs to. One should know, at least in principle, the subject to be covered, what the video is going to be used for and who it is for. It is also important to know how long the video is going to be. The idea was specified by the VU University Amsterdam for the project discussed in this thesis, and the target group was specified by the client.

The complicity of the subject created certain difficulties in the project. The final work in the Master level studies had to be presented and the customer was really supportive. He was willing to clarify the idea and provided material such as three MP3 files with interviews, eight pages of MINCE description and 31 slides of PowerPoint presentation. All parties understood that while making a video presenting studies it is difficult to avoid struggling with selecting the right content.

The customer expected that material which would be good for presenting was selected. He also expected to use interviews which were recorded in the three organizations which participated in the studies. Managers described the present situation, difficulties and expectations. The quality was poor, the recordings were made on a minidisk and later transferred to MP3. In the situation the customer explained a lot and also suggested different forms for the presentation. He suggested animating the tower which is a symbol of maturity growth in the organizations. The choice of background music for the end credits was one of Remco Meisner's favourite jazz compositions, Suck Your Mama, by Messy Four, taken from their album JESS. The end credits are presented in Appendix 3.

The combination of complex material and time limitations forced starting to shoot before finishing planning. The empirical method of approaching video production allows it [11]. The idea was to shoot everything which would visualize the present

situation in the organizations and illustrate their managers' awareness. For perspective development or solution, we decided to use sketches and if possible to role-play the same idea with the staff.

It was decided that grey background would not get too much attention and black frames around the video would contrast the background and get the viewers' attention. First the still image of the last frame was shown, then moved up the screen, zoomed out and stayed there to help memorizing what was said. It can be compared to a television standing next to the wall and photos of favorite programs are hanging in the frames above as a reminder. Solutions to problems were visualized as drawings. The last episode before the drawing also presented the same solution done as a roleplay by the staff of the companies. It is a good way to try the suggested way of thinking. This role-play helps in achieving the feeling that nothing is too difficult and in becoming more comfortable with changes.

There are also other ways of supporting people during changes. It was decided that a color video would help in presenting ways to change more realistically compared to a black and white video. Planning, interacting, awarding and analyzing are different stages of changes. Artists supporting roleplays of situations involving interacting with colleagues and prizes, made by Nico Bodewes, a saxophone repairer from Amsterdam, are shown in color. Logos had to be visible all the time and the animated towers representing MINCE were planned as a host helping viewers to go through the presentation. In other words, they replaced the presenter.

In addition to the above-mentioned decisions, the shoots were planned in connection to the content for every organization. Table 1 shows the list of shoots. In addition to the table, Appendix 4 shows visualizing the solution sketches drawn by Manon Bruininga.

Table 1 List of shots in connection to the content

Number of organizations and short descriptions	1st organization governance, bureaucracy, several branches	2nd organization energy sector plans for the future development	3rd organization technology, technical services overdoing
Problem statement	Little interaction between different departments	Not enough activities, relaxed	Staying one step ahead of competitors, employees should know about technique, many new ideas
Problem visualizing	Hands, nerves	Drinking coffee, walking away	Walking, standing, shooting legs
Visualizing of managers' awareness	Eyes		
Solution	Coming together, agreeing on improvement in IT sector, following the agreement	Proactive thinking, open for new solutions, aiming for the future, confidence with employees, checking new ideas	Need to be focused, cooperating and structure important, technology and ideas combined, no need to spend time on something which is already invented
Solution visualizing	Sketch: turning towards each other	Sketch: manager accepts papers from employees	Sketch: the same picture is seen on a computer screen and on the board

The short descriptions in table 1 show the difference between the three different companies participating in the research. The first organization belonged to governance, and as most companies of that, it kind had many difficulties in accepting the changes because of a very strict bureaucratic system. Another problem was that different branches worked separately and people from different departments never met. Hands playing with a pencil or drumming the table symbolized the lack of belief that anything could ever be improved. That visualized the problem. The solution was to start with bringing different departments together, discussing which changes should be made and followed and coming to an agreement and following it.

The second organization belonged to the energy sector and had to aim for the future. This means that companies providing energy supplies cannot wait for environmental changes. Instead, they should try to predict them and react before something happens.

There should always be research in saving energy, looking for alternative ways to get energy or preventing pollution. There were not enough activities in the second company and one of the solutions was to listen to the employees more, because several ideas came from them during the research.

The last organization belonged to the technology sector, and the staff of the company was really proactive. This organization had the highest level of maturity, but it also had some problems. The description in table 1 says 'overdo' which means that sometimes too much effort was put into making something instead of accepting what was already done by someone else. The problem was visualized by too many movements - a person was walking from one room to another and the legs of the subject were shot.

The managers' awareness was shown through zooming in and through close-ups of the eyes of the managers. All these ideas for visualization came up during discussions with the customer and in brainstorming sessions with Manon Bruininga.

3.4.3 Production

Theoretically speaking, production is the shortest stage. The only things that happen are shots and re-shots. When everything is well planned and all necessary arrangements are done, capturing should go really smoothly. In case something is missing, it is good to have a list and write down all that is needed.

It is also good to know what the camera is capable of. It is possible to film but as with everything in video production, it is good to plan in advance where a camera is going to be at different moments and what the camera does. Some of the camera movements are listed below:

- Pan - Spinning the camera left or right on a stand.
- Tilt - Moving the camera backward or forward so that it looks up or down.
- Track - Physically moving the camera backwards or forwards.
- Crab Tracking - Physically moving the camera sideways.
- Zoom - Using a zoom lens to get closer to or further from a subject.

Even when every shot is planned, it might be useful to have a good selection of shots to experiment with and then shoot the ‘coverage’. The selection includes the following:

- A wide master shot from beginning to end when everything is in.
- Singles on every character shooting everything they do.
- Cutaways details on actions like fingers tapping or making tea. [11]

During the project, zoom was used for parts showing the managers’ awareness. Cutaways were used most during the film: there were hands playing with a pen symbolizing the problem statement of the first company and legs walking visualizing the problem statement of the third company. Further, there were a few shots from an artist’s workshop with him making a prize. A wide master shot was used only for some parts of actors training an employee and part of the third organization showing the solution (people moving behind the window). A wide master shot was used more during the visualizing project if the second camera was available. Then there were more possibilities for an empirical approach to production.

The following ideas were used during the visualization project: Tapes were chosen for filming, it was a good idea to use a different tape for every location and label it with the name of the location and the length of the tape. Later, it helped to simplify editing by saving search time. Theoretically speaking the estimated time for editing is about one hour for every minute. If special effects are used, the time is doubled, and for experimenting the time taken can triple. It is better to do only what is necessary. Otherwise attention can be taken away from the story by tricks and transitions. In addition, too many dissolves, wipes or a brief fade to black between scenes can become tiresome. [11]

For the project, shooting was planned by the customer. He contacted the subjects – three organizations – and made all the arrangements. It was allowed to take a camera and a tripod. Ambient light was used but no special microphones. Managers agreed to participate in the shooting, and there had to be as little interference in the process as

possible. We could not make any special set ups. Only the working environment was used.

This stage of production was completed by the end of the first working month. Three companies and also an artist who makes prize were filmed. No special set ups were made, only working environment was used.

The three organizations participating in the studies were filmed. Not more than one hour of every company was decided to be shot. The shots were meant to visualize the different aspects of all the organizational problems and the managers' awareness of problem existence. Solutions were planned during the preproduction phase. However, we were open for any suitable main idea shots that came up during shooting. After every shooting the part which would be used for visualizing was selected. DVDs with chosen footage were sent to every company for approval. In two weeks' time agreement was received from all the organizations on using the chosen footage.

We came up with the idea to present the three companies in a similar way. Appendix 5 shows the storyboard which explained what should be seen on the screen. The first row of the figure illustrating the storyboard presents how a situation should be shown rather than illustrating the managers' awareness and the last solution. The customer suggested that all three stages should be visible during the whole episode showing the situation in the company. Based on these conditions, the layout was made. The first idea was to have three frames on grey background as shown in figure 8.

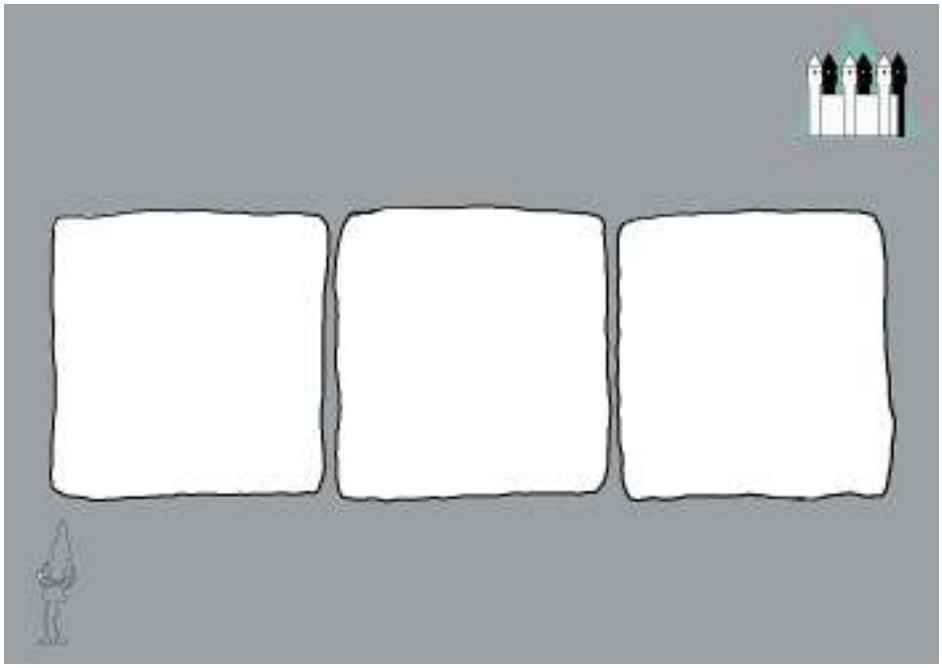

Figure 8. Preliminary layout

This way we could show footage presenting the current situation in organizations in the first frame. After that in the second frame the footage presenting managers' awareness would be seen and at the end possible solution would be visualised in the last frame.

However, it was decided that four frames were needed: one bigger for showing the video and three smaller for the last frame of every video as in figure 9. This way three vital moments were visible during the whole episode as it was required by the customer. In other words, all the information about one company would stay on the same screen and help watchers to make connections between the different stages of the improving maturity process.

Here is a more detailed description of the storyboard: The first row of the frames presents the beginning and the end of the film. It starts with a black screen. Then the title and the introduction voice over appeared. The logos of the VU University and the MINCE foundation were first presented in the centre of the screen and then they moved to the top right corner. It also suggested where animation had to be used. It was decided that the tower had to appear from the MINCE logo (climbing out) at the beginning. After that the tower was used for transitions between companies (walking into the screen from left and walking out from right) and also for presenting information about

companies (standing and pointing up). The second row shows how each company was introduced: there were three stages which were problem, awareness and suggestions to development. No special set ups were used, only the working environment. The first was shown in a big frame in the centre and than moved up. The drawings with solution, rolled into the screen from the top right corner in which the MINCE logo stays for the whole film. Later it was decided to show logos only during the introduction. Otherwise, there would have been too many information areas on the screen; there would have been four windows of different size, an animated tower and logos.

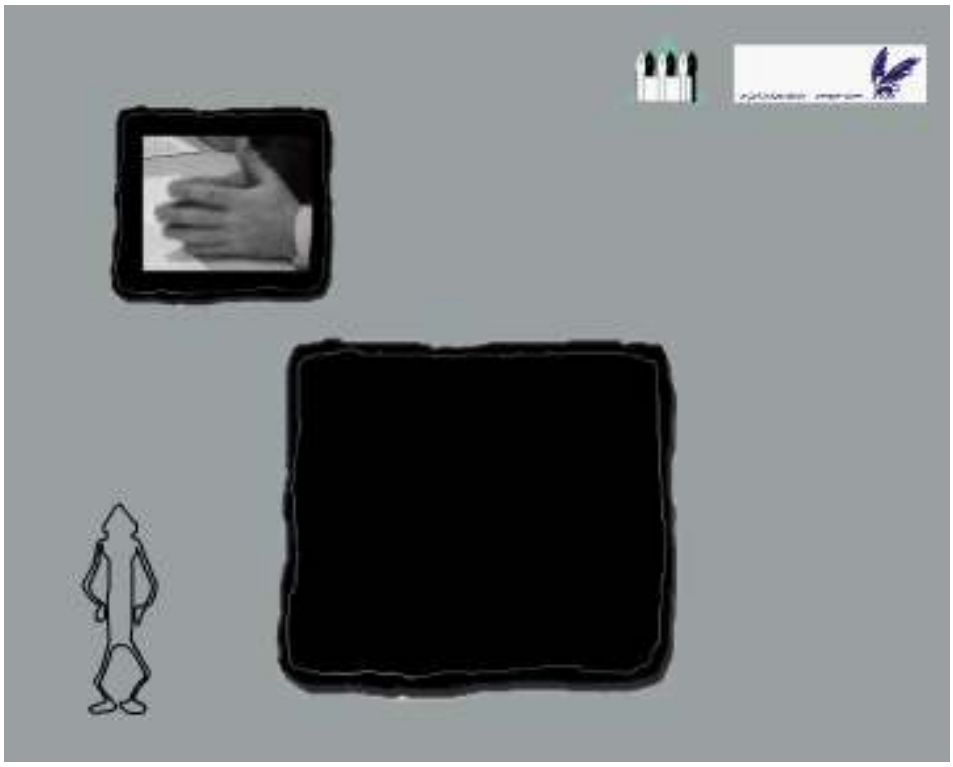

Figure 9. Final layout

Because of the poor quality of the MP3 interviews, it was decided that the customer should prepare text for the voice over. It took a while before an appropriate material was ready. By the end of February 2008 the first versions of the end credits and voice over were written. Appendix 6 contains the last version in Dutch of the voice over.

The contracts with the VU University Amsterdam were signed. Before the first bills were accepted, the VU University Amsterdam asked for a small stage report in the form of an oral presentation supported by some visuals. A layout, a 30-second-video with the

title at the beginning, and some footage were shown. A storyboard seen in Appendix 5 was the main presentation source.

3.4.4 Post-production

According to theory, after everything is shot it, the footage should be scanned into a computer and edited. Advance planning of what footage should be captured is a good practice. This way fewer cuts are done and less computer memory is used. The choice of video editing software varies from free to very expensive and from simple to more complicated. It is possible to determine which program best suits a person's needs. In the next chapter, different video software is examined.

When visuals are edited, sound has to be added. It can be voice over, music and sound effects. Ensuring a good quality sound is important because not everything can be improved later. That is why special microphones should be used while filming – most of the time internal camera mixes are not enough. 15-30 seconds is enough for the end credits.

The last stage is distribution. From the beginning of making a video it can be decided which audience might be interested in the video. It can be a starting point for choosing ways to reach the audience – television, cinema, festivals and the Internet being usual channels. More people can be reached through the Internet which is also the easiest way to get to the audience. One disadvantage is the long downloading time, so the Internet is a good medium for short films. New broadcast companies and portals are appearing and films can be uploaded into their databases. Some companies provide information about popularity so it is clear how successful film is. To make a deal, a customer might be asked to sign over non-exclusive Internet rights. For television, films have to be delivered on broadcast quality videotape – transferring and encoding will be done by the company. [12]

3.5 Equipment, Hardware and Software for Video Production

3.5.1 Hardware

Which camera is the best depends on what the camera is needed for. There are four main recording formats for digital video cameras. MiniDV is good, because up to 60 minutes can be recorded on a tape. Mostly, cameras have fire wire or USB 2.0 port which are compatible with desktop editing systems. More expensive cameras with the best lenses and professional XLR audio connections suitable for external links are especially good for broadcasting.

DVD cameras are not the best choice if the video has to be edited later because of the amount of time needed to process DVDs. Another inconvenience is that mini DVDs might fall out if the DVD player is loaded vertically. On the other hand, discs can be played back on DVD players straight after recording. All major formats, DVD-R/-RW/+RW and +R DL (Dual Layer), can be recorded. Up to 45 minutes can be recorded. HDD cameras can record 30-60 GB or 450 – 900 minutes of footage. Arranging footage is not difficult – it can be reviewed, re-ordered and erased in the majority of HDD cameras. SD cameras are small, quiet and light. The prices of SD cards are coming down but the capacity is not that great. Together with HDD cameras, SD is a good option for shooting for the Internet, because small frame sizes (320x240 pixels), which are used by web video, can be shot with most of them. It might save a lot of time. [11]

Lenses can be plastic or glass. Glass gives better results. It is important to check the optical zoom number. A charge-coupled device (CCD) converts analogue light into digital video. It comes in two sizes which are 1/3 of an inch and 1/6 of an inch. The bigger the number, the more light is captured. The best result comes with three CCDs – one CCD is needed for each of the primary colours. A professional microphone is needed if voice or sounds is going to be recorded, because no cameras have a good enough internal microphone.

When it comes to batteries, it is good to buy a couple of extra long life batteries with a separate charger. A tripod might be needed, even though cameras have stabilizers. The

kind of tripod depends again on the purpose. In general, a tripod's purpose can be described in three S-initial words: steady, straight and smooth. [11]

In our case, Canon MD 150 Mini DV Camcorder, shown in figure 10, was available and did all the work. The technical specifications of the camcorder are shown in Appendix 7. [20]

While preparing the camcorder for shooting, it is important to think about the environment and the assignment. For example, we had to decide which light would first be used during the process, what the desirable outcome is (widescreen or normal TV) and whether to use an image stabilizer and some other points. The list of the camera settings we used for shooting is presented below:

Camera setup

Shutter Speed	1/50 (for general recordings)
A.SL shutter	on
D.zoom	off
zoom speed	var
img stab	on
widescreen	off

VCR setup

Rec mode	SP (STD play)
TV type	4:3 (normal TV)

Audio setup

Windscreen	A (auto)
Audio mode	16 bits (highest quality)

Display setup

Backlight	normal
TV screen	on

Markers off

Mode

P - recording programs

MF Manual Focus

White balance: tungsten, daylight

Theoretically speaking, after all the shooting is done, footage has to be transferred to a desktop for editing. A FireWire connection is mostly used for transferring video. The camera which was chosen for the visualization project had a DV Terminal and a 4 pin (IEEE1394 standard) for output only. IEEE 1394 FireWire has a high speed way of transferring digital signals. It is the serial data protocol number 1394 approved by the IEEE (Institute of Electricians and Electronic Engineers). FireWire connectors are of two types: the six pin connector from the mid 1990s and the four-pin connector which is mainly used on digital video cameras and VCRs. The FireWires are interchangeable, which means it is possible to have both connectors, one at either end. One limitation is that the cable length should be no more than 15 meters. Figure 10 shows FireWire connectors.

Figure 10. Four-circuit (left) and six-circuit (right) FireWire 400 alpha connectors [13]

Figure 11 also shows a six-circuit connector but on expansion card.

Figure 11. A pair of 6-circuit alpha connectors on the edge of an expansion card [13]

Both six-pin and four-pin connectors are interchangeable, which means it is possible to have both connectors, one at either end, as can be seen in figure 11.

While working on the visualization project another thing to plan appeared: where to store ready video. Some computers are usually used for editing and different for storage, because the amount of memory which is needed for editing and rendering is quite large. What kind of storage should be chosen depends on the purpose. If video is made for a customer, the customer should specify the storage type. In our case the customer was not aware of different possibilities, so a range of different possibilities was given to him. It was mentioned that films could be transferred to a tape, DVD, external hard drive, USB, CD or BD. “De Verbelding” was made for presentation purposes and it was important to consider a secure and convenient way to transport, plug and play files. An external hard drive with a USB connector or a USB of the right size was a good choice. This way more files than just a video could be stored in the device.

Figure 12 shows a hard drive chosen for the project. Fujitsu Siemens STORAGEBIRD SOLO 20-U is a portable bus powered storage device compatible with USB 1.1 and USB 2.0. The hard drive provides driverless support for Microsoft Windows XP and Microsoft Windows Vista.

Figure 12. Fujitsu Siemens STORAGEBIRD SOLO 20-U

This light hard drive came with a small bag and the size made it possible to carry it in the pocket.

The technical characteristics of Fujitsu Siemens STORAGEBIRD are presented in table 2.

Table 2. Technical charasteristics of Fujitsu Siemens STORAGEBIRD [21]

Physical specifications

Dimensions	127 x 79 x 16 mm
Weight	~ 250 g (bus powered) ~ 350 g incl. power supply and cable

Technical specifications

Supports	USB 1.1, USB 2.0
Max. transfer rates	up to 480 Mbit/s with USB 2.0 up to 12 Mbit/s with USB 1.1
Supports power saving mode on host computer (depending on operating system)	
LED indicator:	blue during data transfer
Hot plug & play	
Hard disk	SATA, 2.5-inch drive
Capacity	80 (capacity indicated by software or operating system can be less due to operating system restrictions and formatting)
Operating temperature	0°C ~ 35°C
Low power consumption	Read/write up to 500 mA (spin-up current might exceed 500 mA during the first seconds of operation)
Input	typ. 7 W
Safety compliance	CE

Operating systems supported	driverless for Microsoft Windows XP and Microsoft Windows Vista

The customer was satisfied with our choice. The hard drive is easy to carry, and it is still used at the VU University Amsterdam during change management courses.

3.5.2 Software

Microsoft Word was used during the visualizing project for writing documents, handouts and the script. Notepad was useful for writing end credits and importing them into the editing program. Browsers such as Mozilla and Internet Explorer were used for communication purposes.

While working with video on Non Linea Editing systems, we had access to different software. A piece of software was used for manipulating still images, another for video and another for working with animation. “Video editing software is application software which handles the editing of video sequences on a computer” [14]. Timeline is essential for placing and playing back sets of clips. It was possible to trim, split, cut and rearrange clips along the timeline. Visual effects and color manipulation are also some of the offered features. In addition, a chance to edit audio and combine it with the image is also offered.

Adobe Premiere Pro chosen for the project provides a powerful toolset for editing video. Its 64-bit, GPU-accelerated Mercury Playback Engine allows working with big projects in real time. Furthermore, it is possible to use different formats and add a great variety of effects directly to the timeline. Adobe Premiere also offers full native support for the standard- and high-definition formats used by different cameras. For Canon cameras they are DV, HDV and AVCHD as well as the new Canon XF MPEG-2 codec. Native format support refers to the process of rewrapping the footage in an intermediate codec, so the footage can be used after importing it into the project. [15]

Adobe Premier supports the unguarded capture of numbers of clips from cameras or tape decks. In other words, it supports batch capture. Once a new project is created in Adobe Premier, the set of logged clips appear in the project panel or in the bin. After the project is complete, the video can be output to DVD or a Blue-ray Disc. Adobe Media Encoder, separate software included with Adobe Premiere Pro CSS, allows to deliver a project online, on air, on a device and on film. It is possible to encode to FLV and F4V, Windows Media, MPEG-2, H.264, QuickTime, AVC-Intra, DPX and others. [15]

Graphics software or image editing software makes it possible to manipulate images on a computer. Software often gives a possibility to work both with bitmap and vector graphics. Mostly, it is possible to transfer vector to bitmap graphics and sometimes inverse. Adobe Photoshop 6 was used during the visualization project for working with still images.

A number of programs support animation which means it is possible to create a set of still images producing the illusion of movement. This ability comes with transformations that are applied to one or more shapes in a scene. The the latest versions of bitmap editors like Adobe Photoshop or GIMP support some vector tools (e.g. editable paths). Vector editors such as CorelDraw, Adobe Illustrator, Xara Xtreme, Adobe Fireworks, Inkscape or SK1 can perform some of the bitmap effects (e.g. blurring). There is also software specially designed for working with animation. One of such software, Macromedia Flash, was used during the project of visualization. This software manipulates vector and raster graphics in order to create the animation of text, drawings and still images. Flash supports capturing input via mouse, keyboard, microphone and camera.

3.6 Methods and Techniques

When it comes to editing, two types of editing are known: linear and non-linear. The linear system has more limitations. While two machines are used to copy from one tape to another, later adjustments are complicated. Nothing can be added in the middle without overwriting what was there before.

The non-linear system used during the visualization project was more flexible. When footage is transferred to a computer, it can be manipulated as much as necessary. Everything is done on a timeline. Shots can be seen, and sound is manipulated in the same way as pictures. It is also possible to play back and render the video before complicated effects are added. With many systems, the following effects are possible:

- Fading
- Making a still image out of a single frame of a clip or importing an image
- Titles
- With colorization the amount of colours can be changed, or footage can become black, white or sepia.
- It is also possible to speed up or slow down the footage; however, slowing down becomes more difficult because the computer must add frames to extend the footage. [16]

Working with sound can improve visuals, create tension when it is needed, bring life into silence and create a certain rhythm or emotion. However, it should be balanced. Equalisation (EQ) allows for different frequencies within a track to be more or less loud. With EQ it is possible to control pre-selected frequencies. It is good to remember that sound can be heard well if frequencies are in the range of 80 Hz to 12 Hz. Soprano voice can range between 250 Hz and 1 kHz, and a trumpet goes from 200 Hz to 800 Hz. There are some tricks which can be done, for example, to simulate a telephone call. Everything lower than 150Hz and higher than 3.6 kHz should be cut off. [16]

During the visualizing project we had to combine different sound sources and visuals. Voice over, background music, sound effects (people meeting and talking) and music to go along with the end credits were used for improving the visuals. With Adobe Premiere as video editing software we could also take care of sound quality, though the voice over was recorded in a professional studio.

3.7 Digital Video, File Formats/Extensions

Theoretically speaking, "video is the technology of electronically capturing, recording, processing, storing, transmitting, and reconstructing a sequence of still images representing scenes in motion" [17]. There are groups of formats for different layers of video transmission and storage. Video format or video codec refer to the video file that can be displayed by a device.

The amount of video file formats is great, and it is confusing when a certain file cannot be played or has to be changed to a different format. There are advantages and limitations with different formats, but compatibility is the main topic while working with video. If we talk about media players, such as RealPlayer, they can play almost all types of video. Playing DVDs on a PC can sometimes be problematic. If only Windows Media Player is on, it needs a decoder add-on to get full functionality. [18]

Some of the mostly used formats are the AVI video format (Audio Video Interleave), the MPEG (Moving Pictures Expert Group) video format, the MP4 format, Windows Media Player Video, QuickTime Video, the Real Video format and SWF Flash Video (Shockwave Flash Video). All of them can be used on the Internet. However, there are

some specifications. The best choice for broadcasting is MP4. It is possible to use RealVideo on Internet TV for streaming of video with low bandwidths. Extra components are needed to play some video formats such as SWF and QuickTime.

AVI is a container format. In other words, it allows containing video and audio compressed with a number of combinations of codecs. These combinations include Full Frames (Uncompressed), Intel Real Time Video, Indeo, Cinepak, Motion JPEG, Editable MPEG, VDOWave, ClearVideo / RealVideo, QPEG and MPEG-4. Since it was released in 1992, AVI has become the standard for audio and video formats. There are some properties missing in AVI comparing to MP4 or MPEG that appeared later. Nevertheless, due to its simple architecture the AVI video format runs on Windows, Mac, Linux and UNIX and is supported by the most popular web-browsers. [17]

A great variety of video codec formats and container formats are supported by YouTube. Some of them are listed below:

- WebM files (Vp8 video codec and Vorbis Audio codec)
- MPEG4, 3GPP and MOV files – (typically supporting h264 and mpeg4 video codecs and AAC audio codec)
- AVI (many cameras output this format – typically the video codec is MJPEG and the audio is PCM)
- MPEGPS (typically supporting MPEG2 video codec and MP2 audio)
- WMV
- FLV (Adobe – FLV1 video codec, MP3 audio) [19]

AVI was the output format used for the film in the visualizing project. The reason was that it was not highly compressed, and it could be shown without quality loss on big screens during lectures. The customer was aware that in case of compressing video for other purposes, he should think about the decoding system. He had a plan to publish the film on a video-sharing website on YouTube which offers a great variety of formats and no complications in uploading without thinking about compressing or decompressing video.

4 Results

“De Verbelding” or the English title “Imagination” was shown and accepted in Remco Meisner’s personal interview with professor Anton Cozijnsen at the end of his studies. It was also shown on Meisner’s graduation day at the VU University Amsterdam and in Andarr, an international, private company in Utrecht, the Netherlands, employing 60 professional consultants working in the area of ITC and management and specialising in service, identity, security and project management. We got positive feedback from the audience and the customer. The film is now used in the change management studies at the VU University Amsterdam. The customer decided to publish a copy on YouTube [22]. He also embedded it into the MINCE website [23].

With the help of animation, the MINCE studies were introduced in a less formal way. Similar principles were used for visualizing the three different organizations participating in the research. The present level of maturity, the problems in maturity growth and solutions for the problems in the organizations were visualized which suggested that the desired level of maturity had been achieved. To visualize this, a layout was made reminding the criteria of the MINCE towers through which it is possible to observe the current situation, problems and solutions in a company. That gave a clearer picture of the different levels of maturity in the three organizations which participated in the study.

However, not everything went as expected. Some complications were connected to technology: DVDs for the pilot version did not always work and one of the DVDs had to be burned a couple of extra times, as rendering stopped at the very last moment and the computer had to be re-started. Having a backup of every complete stage made it possible that it was not necessary to start from the beginning every time something went wrong. Other difficulties were connected to bureaucracy: when we needed the VU University Amsterdam logo, it took four working days and the involvement of five people. It took even longer to get approval from the three organizations on using the footage selected for the film. It was necessary to wait for one reply for nine days. This means the footage could not be used before the official reply from the company.

However, the biggest problem was human related. People were involved in more than one project at the same time and meeting times were occasionally rescheduled. The involvement of the customer in the creating process was very productive until he wanted to change something that had been agreed on previously. Even so we tried to follow the customer's wishes, which was not always possible because of deadlines. Then, we explained the customer about limitations and showed the memo of the meeting in which we had come to a certain agreement.

The visualising was considered a success. The project was done in time and all the deadlines were met. People with different areas of expertise, the MINCE model creator, an artist and a media engineering student, were involved in the process of visualizing the study. This allowed creating a multimedia product with informative and accurate content and an appropriate layout. The product had its own style which fit the customer's vision.

5. Discussion

The result shows that the project was organized in an appropriate way. The combination of planning, cooperation, access to all necessary sources, hardware, software and the experience of people who participated in the creating process made it possible to do everything well and in time. However, it would have been better to have more time for the planning. In our case, we had to use an empirical approach during the production stage, which allowed shooting everything that would fit the content. There was a shotlist and a storyboard, but if we had had more time for planning, we would have shot less and would have saved time. A simple technique was used for selecting the footage that was liked: watching, general selecting, watching again, pausing and recording the beginning and the ending time of every chosen part. The following is an example of time selection for the part in the film with actors. There are also two comments. “Lichter” means the footage was a bit dark and needed more light and exposure. “Deur” means that a door was shown and that this was the starting point.

Einde acteurs (End actors)
1.47
4.29-5.13 lichter
14.42-15.36
19.23-19.50 deur
20.45-20.47 20.53

It is important to talk about the preparation phase and especially brainstorming ideas for the visualization. Nowadays, the main problem is too much data including not having enough methods to analyze and present it in a way that would amplify cognition. There are different ways for presenting information such as simple charts and graphs and three-dimensional and virtual reality. The cognitive engineering research methodology, in more detail a study of visualization analysis techniques, speaks for the importance of human involvement in the process of analyzing and visualization [6]. A conclusion was drawn that the role of the human in the process of visualizing information becomes

more significant if the information is abstract. The quality of the visualization is better when people with different background knowledge are involved in the process.

In the MINCE model, the towers represent organizational aspects relating to change. A novel kind of lookout function described earlier in chapter 3.1.3 was used to check out the view from each tower to the landscape and to the other towers. We did not present the MINCE model, the studies on how effective the MINCE studies are in evaluating the level of organizational maturity and suggesting the ways of improvement to a desired state. However, a decision was made on using the idea of looking out and multiple windows in creating the layout. This way, the voice over and the visuals presented the information and the outlook suggested the way the data were collected. This also speaks for the importance of concentrated observation of different processes separately and in connection with each other. Figure 13 illustrates the lookout function used in the MINCE studies and the final layout for the visualization.

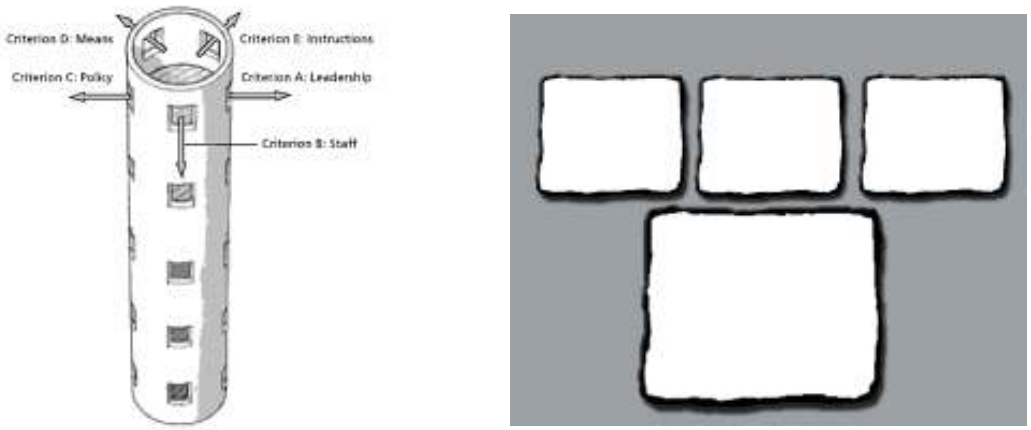

Figure 13. Look-out function realised in a layout

When people watch what happens in the biggest frame, it reminds the situation when employee were looking out of the window in a castle. Detailed explanation of how look-out function works was given earlier in chapter 3.

In our case, all raw data was analysed by the customer and presented as research results. Our main task was to find appropriate visuals for supporting the understanding, because the primary presentation was done with PowerPoint and, therefore, the study was completed. The customer suggested presenting information in a less formal way compared to the PowerPoint presentation that had already been done.

The tower itself as a symbol of maturity growth was transformed into an animated character presenting the study and guiding through the film. It was interesting to experience working with the character. First, we decided that it should appear from the logo at the beginning of the film and point out to some pictures or visuals. Later, another role, turning pages between different organizations, was added. At that point, the character was "alive" and so attached to the film that another idea appeared: the tower charachter should wave to the audience at the end. It worked really well and people who watched the film enjoyed the appearance of not-a-businesslike character.

Eventhough it did not look like a very difficult animation, there were some problems in making it. The artist sent me sketches and I was supposed to make them move. It took a lot of time. The skills I acquired during my studies were enough to create animation and combine it with visuals, but the lack of experience and being responsible for other tasks at the same time made the process of animating very time consuming though pleasant. The original tower and the character for animation can be seen in figure 14.

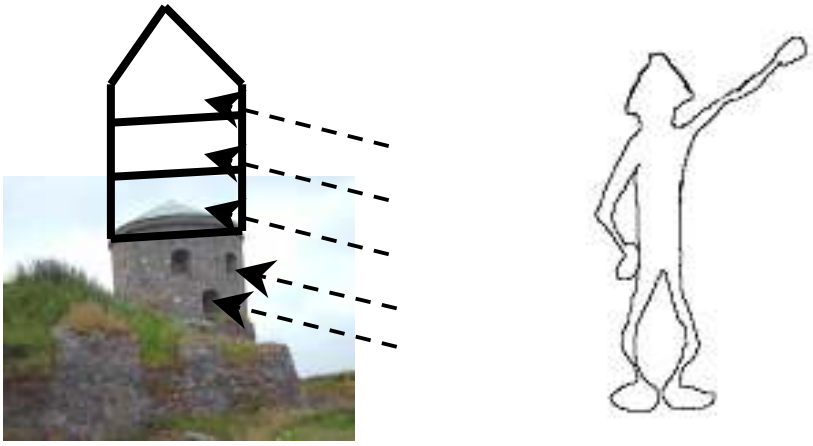

Figure 14. Tower: the source and the animation character

The sourst tower was chosen by Remco as an image of a tower for MINCE model. The animation character was created by Manon Bruininga.

The length of the film was almost nine minutes, which is shorter than the planned 10–15 minutes. The reason was that the recording of voice over was not long enough and a nine-minute film was accepted as appropriate.

6. Conclusion

The goal of this final year project was visualizing the Master Degree research by Remco Meisner and Roelof van Cleef at the VU University Amsterdam. It had to be done in such a way that it could create interest and clarify the main points of the studies in change management and the maturity of three organizations participating in the research carried out during Remco Meisner and Roelof van Cleef Master Degree studies. The main goal of their research was to use the MINCE model for evaluating the maturity level of the three organizations and suggest ways to achieve the desired state of maturity or ability to change according to environmental changes.

A nine minute long multimedia product was created combining video, animation, still images and sound consisting of music and voice over. When it comes to presenting study results or academic competence, people often use PowerPoint, so we had to be creative both in planning and actually in making the product. The project had very strict deadlines for different stages of approval and for the final presentation.

We got positive feedback from the audience and the customer. A copy of the video is used at the VU University Amsterdam for studying change management. It was also published by the customer on YouTube and embedded onto the MINCE website [22, 23].

There might be a need for continuation, since an interest for the studies is growing. The MINCE site is translated into three languages: Dutch, English and Spanish. However, it is only possible to use the website which is in Dutch. This means there might be a need for further improvement. It is possible to record voice over in a different language or add subtitles in English or Spanish. Besides that Remco Meisner is doing his doctoral studies on the same topic and improving the current version of the MINCE model adding more functionality.

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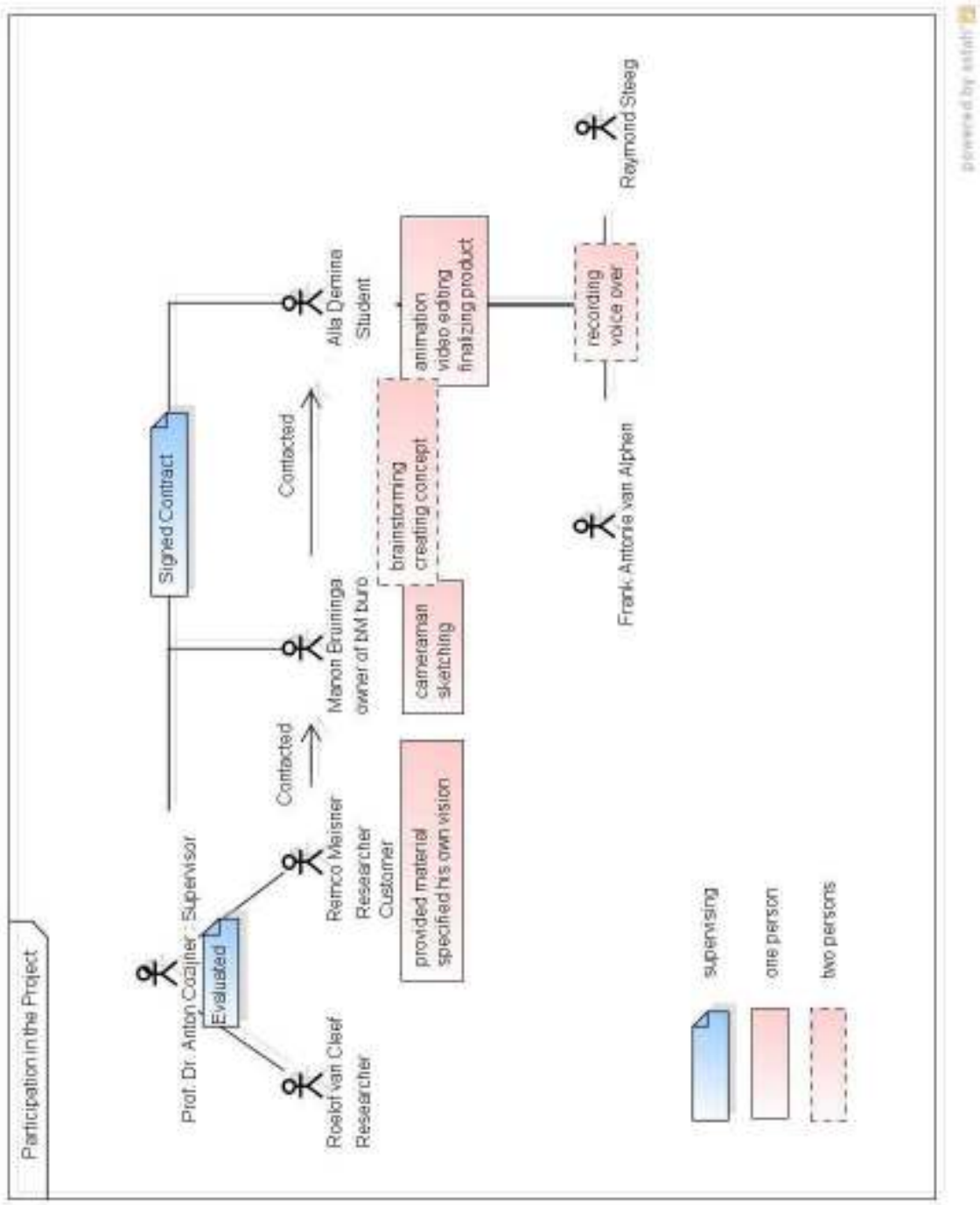
Appendix 1:

Involvement in the Project



Appendix 2:

Example of MINCE Planning Sequence [8]

	Deliverable	Product
initialization	prepared organization	certified MINCE staff
		prepared management
		prepared staff
		project manager
	prepared MINCE set	questionnaire
		prepared report set
		prepared respondents desk
	project set	project plan
		time planning
		budget
		quality requirements
		scope specification
		business case
sequence 1	(adjusted) MINCE set	questionnaire
		prepared report set
		(historical MINCE reports)
	(adjusted) project set	actualized project plan
		actualized time planning
		actualized budget details
		actualized quality requirements
		actualized scope specifications
		checked business case
	obtain questionnaire results	published questionnaire
		spread of invitations
		respondents aid desk
		receipt of results
	interpreted questionnaires	completed report
		lessons learned session
	follow-up	training & education
		processes & procedures
		sets of actions
		projects
		programmes
final sequence	(adjusted) MINCE set	questionnaire
		prepared report set
		previous MINCE report
	(adjusted) project set	lessons learned reports
		actualized project plan
		actualized time planning
		actualized budget details
		actualized quality requirements
		actualized scope specifications
		checked business case
	obtain questionnaire results	published questionnaire
		spread of invitations
		respondents aid desk
		receipt of results
	interpreted questionnaires	completed final report
		final lessons learned session
	follow-up	final trainings & education
		final processes & procedures
		final set of actions

Appendix 3:

End Credits of the Film

De Verbeelding

een film gemaakt door bM | Manon Bruininga

geproduceerd door de Vrije Universiteit, Amsterdam, 2008

in samenwerking met Roelof van Cleef en Remco Meisner

als onderdeel van hun CCMM-afstudeeropdracht *MINCE in de praktijk*

idee: MINCE2 Foundation, Nieuw Vennep

visualisatie: bM | Manon Bruininga, Nijmegen

voice-over: Frank Antonie van Alphen, stemacteur, Nijmegen

editing: Alla Demina, Nijmegen

muziek: ©2001 by Messy Four, *Suck Your Mama*, taken of their album *JESS*

met dank aan:
Nuon Consultancy Group, Amsterdam
T-Systems, afdeling Project & Service Management, Vianen
Jeroen Bosch Ziekenhuis, afdeling Projecten, Den Bosch
Dienst Justitiële Inrichtingen, Afdeling Informatie Management, Den Haag
Nico Bodewes, saxofoonreparateur, Amsterdam
Salsaparille, The Gaming Company, Utrecht
Andarr, MINCE Gold Partner, Utrecht
Vrije Universiteit, PostDoctoraal Opleiding Verandermanagement, Amsterdam
enkele deelnemers aan de MINCE certificering

vertoning van deze film is uitsluitend toegestaan in het kader van de opleiding Verandermanagement

Appendix 4:

Solutions visualizing

Organization 1

Solution: different departments should start working together, come and sit at the same table to discuss and come to an agreement.

Organization 2

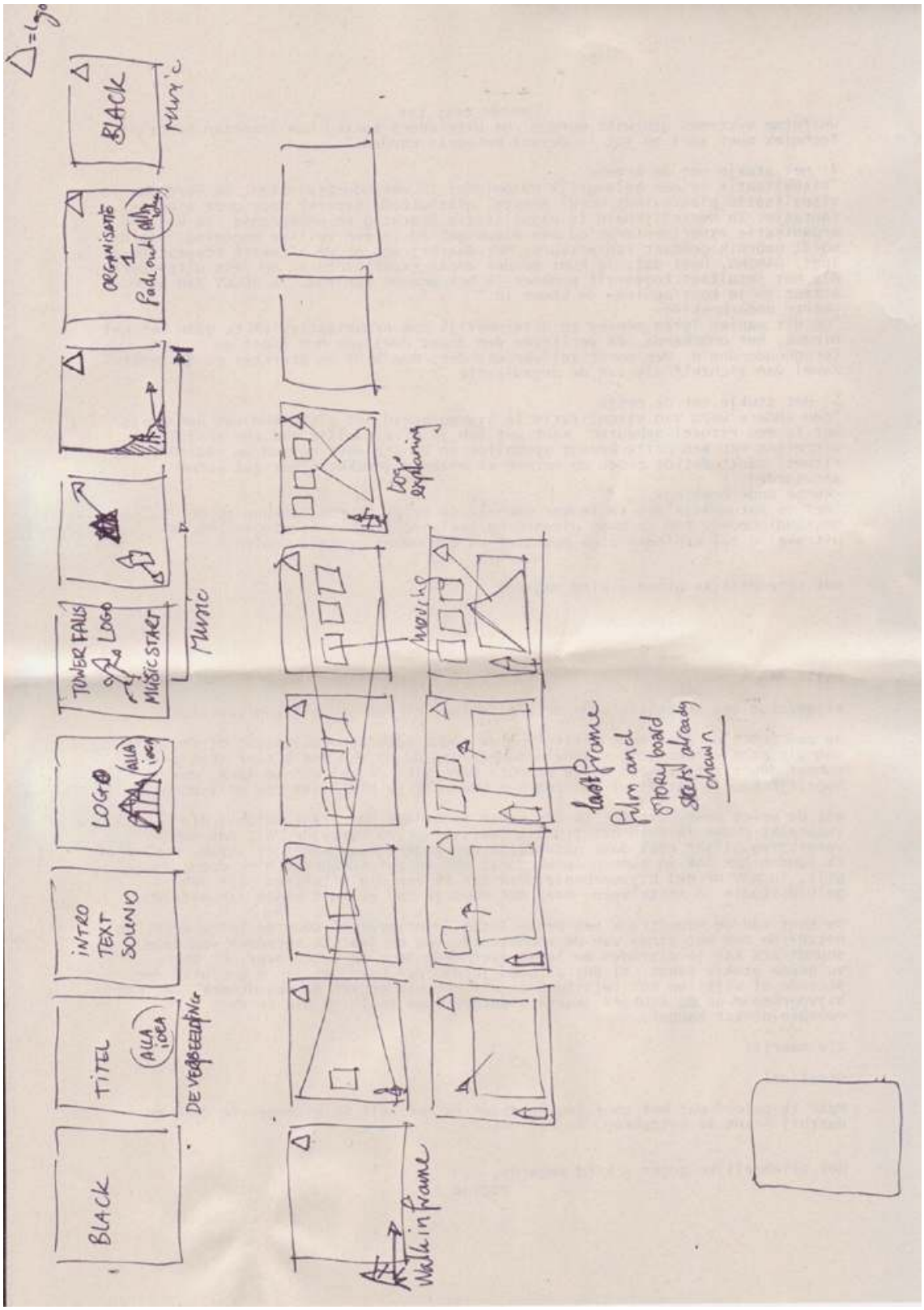
Solution: manager should be open for new solutions and new ideas especially if they are coming from employees.

Organization 3

Solution: cooperating is important. There is no need to spend time on something which is already invented.

Appendix 5:

Storyboard



Appendix 6:

Voice over: Final Version in Dutch

Bij de aanvang van *De Verbeelding*:

Bij de Vrije Universiteit is een postdoctorale opleiding Verandermanagement ontwikkeld. Deze parttime opleiding is in twee varianten beschikbaar: De Basisopleiding en de Professional opleiding. Beide opleidingen gaan ervan uit dat verandertrajecten bij organisaties integraal plaats moeten vinden. Met de aanduiding integraal wordt bedoeld dat rekening wordt gehouden met de drie-eenheid Gedrag, Materie en Organisatie. De Basisopleiding behandelt in korte tijd de allerbelangrijkste veranderkundige aspecten. De Professional opleiding is breder en er wordt meer tijd genomen. Daardoor ontstaat veel meer diepgang.
<korte onderbreking>
In het kader van de zevende jaargang van de Professional opleiding Verandermanagement hebben de studenten Roelof van Cleef en Remco Meisner in nauwe samenwerking met het bureau bM van Manon Bruininga dit filmpje geproduceerd. Dit gebeurde in opdracht van de Vrije Universiteit en als onderdeel van hun afstudeeropdracht. Het filmpje vormt de visualisatie van drie van de vier verandertrajecten waarmee zij bij hun afstuderen bezig waren. In eerste instantie visualiseren wij de onwenselijke actuele situatie. Vervolgens is verbeeld hoe de betrokken organisatie tot inzicht komt en tot verandering besluit. Tenslotte wordt de wenselijke eindsituatie gevisualiseerd.

Vervolgens:

1: Het stukje bij Justitie
"Het hoofdkantoor van een overheidsorganisatie constateert dat er in toenemende mate behoefte ontstaat aan samenwerking. Veranderingen vergen vandaag de dag zorgvuldige afstemming tussen belangengroepen. Vooral in de automatiseringssystemen neemt de complexiteit snel toe. Deze toename is het gevolg van het feit dat ICT op steeds meer plekken wordt gebruikt. Bovendien worden alle bedrijven steeds afhankelijker van computers. Dat geldt ook voor de overheid. De afhankelijkheid in combinatie met de complexiteit vereisen zorgvuldige invoering. Alle partijen moeten het met elkaar eens zijn over een nieuw systeem. Pas daarna kan het ontwikkeld en ingevoerd worden."
<korte onderbreking>
"De klassieke overheidsorganen passen zich moeizaam aan op deze gewijzigde omstandigheden. Afdelingen moeten elkaar opzoeken en de werkwijze op elkaar afstemmen. Dat gebeurt niet vanzelf. Door externe ingrepen is daarin veel verbetering mogelijk. Maar er is wel een helpende hand nodig."

2: Het stukje bij Nuon
"Aan de levering van gas en elektriciteit zijn grote belangen verbonden. De hele natie is in rep en roer wanneer die voorziening ergens onverhoopt hapert. Een adequate bedrijfsvoering is noodzakelijk teneinde de levering nu en in de toekomst te waarborgen. Een leverancier dient gereed te zijn voor de nieuwste ontwikkelingen. Men mag zich niet afwachtend opstellen. Men dient pro-actief activiteiten te ondernemen die zekerheden

voor de toekomst opleveren. Daarvoor is een effectieve en efficiente veranderorganisatie nodig. Eentje die in staat is op basis van een ingeschat toekomstbeeld de juiste veranderingen vast te stellen en te implementeren."
<korte onderbreking>
"De organisatie kan de technische systemen zonder haperingen uitrollen. Maar ze doen dat wel in lijn met de toekomstvisie. Ze zorgen ervoor dat de realisatie overeenkomstig het plan verloopt. Dat de kosten en baten niet te ver af liggen van wat was afgesproken. Om dat te kunnen moeten de medewerkers zich zelfverzekerd voelen. Er is bovendien geen behoefte aan enthousiaste bijdragen, indien daaraan uiteindelijk toch de benodigde structuur blijkt te ontbreken. Integendeel. Het juiste focus is vereist. Samenwerking is van het grootste belang. En, zoals gesteld, voldoende zelfvertrouwen, individueel en als groep."

3: Het stukje bij T-Systems
"Telco's zijn snel opererende organisaties. Concurrenten liggen achter elke straathoek te wachten. Even niet opletten kan het einde inluiden. De markt is daarentegen beweeglijk. Dat vraagt veel verandercapaciteit en een organisatie die snel inspeelt op wat er in haar omgeving gebeurt. De meeste van dergelijke veranderingen zijn niet te voorspellen. En de belangen zijn groot. De vraagstukken zijn grensoverschrijdend. De techniek is vooruitstrevend en vraagt dus erg veel van de medewerkers."
<korte onderbreking>
"Mensen zijn zeer ondernemend en ze rennen met goede ideeen rond. Het is zaak al die ideeen te kanaliseren en te richten. Dat moet integraal gebeuren. Met medeneming van de gedragsinvloed van de klantengroep, de nieuwste technologie, cultuur en sentimenten in de telco, en alles dat de knappe koppen hebben vastgelegd. Samenwerking en het structureren van het proces is van levensbelang. Niet adequaat reageren zou heel snel het eind kunnen inluiden. Daarom moeten uniforme systemen gebruikt worden. De uitvinders moeten hun krachten bundelen. Techniek moet snel en tot in detail beheerst worden."

4: Het stukje met de acteur
"Visualisatie is een belangrijk hulpmiddel in verandertrajecten. De vorm waarin visualisatie plaatsvindt wordt meestal uitsluitend beperkt door onze eigen fantasie. In werkelijkheid is visualisatie krachtig en onbegrensd. Zo kan een organisatie experimenteren op een nieuw gebied in een veilige omgeving. Daarbij wordt gebruik gemaakt van acteurs. Met daarbij een op de situatie toegeschreven spel. GAMING, heet dat. Je kunt zonder angst experimenteren en iets uitproberen. Als het resultaat tegenvalt probeer je het gewoon opnieuw. Je RESET dan even de acteur en je komt opnieuw de kamer in."
<korte onderbreking>
"Op dit manier leren mensen en uiteindelijk ook organisaties om te gaan met het nieuwe, het onbekende. Ze verliezen een groot deel van hun angst en terughoudendheid. Men wordt zelfverzekerder. Men kent de sterktes en de zwaktes. Zowel van zichzelf als van de organisatie."

5: Het stukje met de prijs
"Een andere vorm van visualisatie is bijvoorbeeld het uitreiken van een prijs. Het is een ritueel gebeuren. Want wat heb je uiteindelijk aan een prijs? Het uitreiken van een prijs brengt symboliek in en etaleert normen en waarden. Het ritueel maakt dat de groep de normen en waarden gemakkelijker zal kunnen aanvaarden."

<korte onderbreking>
"Het is natuurlijk des te leuker wanneer de prijs is toegesneden op de omstandigheden. Dan is haar uitwerking veel groter en effectiever. Na de uitreiking zal eenieder zich positief en opbouwend gestemd voelen."

Op de plek van <korte onderbreking> kan eventueel de soundtrack gebruikt worden die werd aangeleverd.

Appendix 7:

Technical Specifications Canon MD 150 Mini DV Camcorder [20]

System	
Video Recording System	2 rotary heads, helical scanning DV system (consumer digital VCR SD system), digital component recording
Audio Recording System	PCM digital sound: 16 bit (48 kHz/2 channels); 12 bit (32 kHz)
Television System	CCIR standard (625 lines, 50 fields) PAL colour signal
Image Sensor	1/6-inch CCD, approx. 1,070,000 pixels approx. 800,000 pixels Effective pixels 16:9 Movies (Image stabilizer [ON]) approx. 550,000 pixels 16:9 Movies (Image stabilizer [OFF]) approx. 710,000 pixels 4:3 Movies approx. 690,000 pixels Still images approx. 800,000 pixels
Compatible Tapes	Videocassettes bearing the MiniDV mark
Tape Speed SP	18.83 mm/s; LP: 12.57 mm/s
Maximum Recording Time (60 min. tape)	SP: 60 minutes; LP: 90 minutes
LCD Screen	2.7 in., wide, TFT colour, approx. 112,000 pixels
Viewfinder	0.35 in., wide, TFT colour, approx. 114,000 pixels
Microphone	Stereo electret condenser microphone
Lens	f=2.6–91 mm, F/2.0–5.0, 35x power zoom 35 mm equivalent: 16:9 Movies (Image stabilizer [ON]) 47.1–1,649 16:9 Movies (Image stabilizer [OFF]) 41.7–1,460 4:3 Movies 44.6–1,561 Still images 41.5–1,453
Lens Configuration	10 elements in 8 groups
AF system	TTL autofocus, manual focus available
White Balance	Auto white balance, preset white balance (DAYLIGHT, TUNGSTEN) or custom white balance
Minimum Illumination	2 lx ([NIGHT] recording program, Shutter speed at 1/6) 8 lx (Easy recording mode, Auto slow shutter [ON], Shutter speed at 1/25)
Recommended Illumination	More than 100 lx
Image Stabilization	Electronic
Memory Card	
Recording Media	SDHC (SD High Capacity) memory card, SD memory card, Multimedia Card (MMC)*
Size of Still Images	1,152 x 864

Size of Movie Clips	320 x 240, 160 x 120 pixels; 12.5 frames/sec.
File Format	Design rule for Camera File system (DCF), Exif 2.2** compliant, DPOF compliant
Image Compression Method	Still images: JPEG (compression: Super Fine, Fine, Normal) Movie clips: Video - Motion JPEG, Audio - WAVE (monaural)
* This camcorder has been tested with SD memory cards up to 2 GB. Performance cannot be guaranteed for all memory cards. ** This camcorder supports Exif 2.2 (also called "Exif Print"). Exif Print is a standard for enhancing the communication between camcorders and printers. By connecting to an Exif Print-compliant printer, the camcorder's image data at the time of shooting is used and optimized, yielding extremely high quality prints.	
Input/Output Terminals	
AV Terminal	3.5 mm minijack, output only Video: 1 Vp-p/75 ohms unbalanced Audio output: -10 dBV (47 kohms load/3 kohms or less)
DV Terminal	4 pin (IEEE1394 standard), output only
USB Terminal	mini-B
Power/Others	
Power supply (rated)	7.4 V DC (battery pack), 8.4 V DC (compact power adapter)
Power consumption (AF on)	2.3 W
Operating temperature	0 – 40 °C
Dimensions (W x H x D)	57 x 92 x 119 mm excluding the grip belt
Weight (camcorder body only)	380 g
CA-590E Compact Power Adapter	
Power input	100 – 240 V AC, 50/60 Hz, 0.14 – 0.08 A
Rated output	8.4 V DC, 0.6 A
Operating temperature	0 – 40 °C
Dimensions	46 x 26 x 70 mm
Weight	93 g
BP-2L5 Battery Pack	
Battery type	Rechargeable Lithium Ion Battery
Rated voltage	7.4 V DC
Operating temperature	0 – 40 °C
Battery capacity	530 mAh
Dimensions	33.3 x 16.2 x 45.2 mm
Weight	40 g