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An Implementation Process for a Revised Document Management System

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I am very grateful to be writing this preface of my thesis. My previous studies ended 17 years ago and when I joined the program a year ago, I was a bit unsure of how will I manage through it. I also had no prior experience in academic writing and therefore did not really know what to expect. It turned out to be the most interesting and inspiring study experience that I have ever had. It was also a lot of work, especially toward the end of the program, but nothing that would be impossible to accomplish. I would recommend the program to anyone, who is interested in it.

I want to thank my company for giving me the opportunity to join the program and especially my boss, Heli Lehtonen, who has been very supportive since the very beginning and also during the implementation in the organization. I also want to thank everyone involved with giving CSA feedback and the pilot department employees, with whom we did the pilot together.

A big thank you belongs to the Metropolia instructors involved in Industrial Management Master's program. I want to express my special thanks to Dr Thomas Rohweder for being a clear and firm instructor to my thesis. I also want to thank my process instructors Zinaida Grabovskaia and Sonja Holappa for their great writing tips and big effort in checking correctness of the language. I also thank Dr Satu Teerikangas for her inspiring lectures and her radiant smile, while preparing us students to the thesis work. My thanks also go to all of my classmates. You are a very positive group and it was great to study together with you. We pushed each others to make it through in this tight one-year program.

And finally, I want to thank my family for your understanding that your husband and father often needed to focus on his study during the last year. Especially big thanks with a hug go to my wife for taking care of the family during this time.

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This thesis focuses on creating a revision and implementation process for M-Files Document Management System (DMS). The M-Files DMS was in poor condition in the case company. Its content was unorganized, the system was difficult to use and many had lost their belief in the benefits of document management because of that. Resources were wasted and therefore this problem needed to be corrected.

This thesis is based on the case study research approach. It collected data for the current state analysis through group interviews. Existing knowledge was researched to build a conceptual framework that could be used in solution building that followed. Solution building was co-created in workshops where CSA and CF results were combined to build a solution. Finally, the proposed solution was tested in a pilot project.

This study revealed that, although the M-Files DMS was in a poor state, it was possible to be re-organize it into a clear structure by using the implementation process created in this thesis. Difficulties from using the system were removed and the employee commitment to use the M-Files DMS was increased in the case organization.

Prior to this thesis, the case organization had problems with its DMS that reduced the benefits of using the DMS significantly. This challenge was mitigated by revising the DMS and implementing it to the organization. The revised M-Files DMS is now being used in the pilot department. The project continues to implement the process in the other departments as well and is expected to be finalized by Q2/2017.

Keywords	DMS, document management system, improving, revising, implementing, implementation process

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1 Introduction

Document management has an important role in organizations. Recent research indicates that nearly 10% of average worker's workload goes into finding existing documents or information. Time and effort is often spent on finding the last version of a particular document. Even worse, sometimes many "last" versions of the same document may exist and someone then compiles them into one, truly the last version of that particular document. This leads to waste of valuable resources, let alone mistakes in such documents.

Resources are easily wasted also in document deliveries. Emails are often used in companies to distribute documents to relevant stakeholders. PowerPoint presentation documents easily become 10 megabytes in size, especially, if a few images are added to the presentation. Distributing a 10-megabyte attachment in an email to 20 workers at the office will consume 200 megabytes space from the company's email server. Office workers easily receive dozens of emails per day, thus optimizing the way documents are distributed becomes also important.

At the same time, business practice suggests that effective document management practices can mitigate the challenges mentioned above. If employees know where to find necessary documents easily, they can immerse into productive work instead of looking for documents, as documents are agreed to be kept in certain predetermined locations in the organization. Document management systems also help to mitigate server management challenges related to hard drive space. When employees are guided to send links to the documents, instead to the documents themselves, it helps keep free space on the hard drives of servers.

These examples show a glimpse of best practice in Document Management that can improve effectiveness of the daily work of employees related to the use, storage, delivery and updating of documents. This Thesis looks deeper into document management challenges and proposes an implementation process for a new document management system to help the case company on its way to effective work.

1.1   Business Context

The case organization of this Thesis is a Finnish, a state-owned company specializing in maritime services. The case organization has approximately 270 employees and its turn-over is EUR 60 million annually. The case organization is located in Helsinki, Finland and it operates in the Baltic sea offering icebreaking services to state authorities and globally offering offshore services for example to shipping and oil industry. The case organization needs to manage documents, such as contracts, policies, instructions, safety documentation and many other types of documents.

The case unit of this thesis is the IT services. IT services is a small two employee unit, but the thesis effects the entire 30-person staff at the case organization's main office that are the internal customers of the IT services unit. IT services provide infrastructure, work-tools, support, security and mobile solutions among other services with its subcontrac-tors to the internal customers in the case organization.

The vision of case organization is to be knowledgeable, service minded and efficient organization. However, today's document management in the case company is not as efficient as the organization itself wants it to be, and thus it is not in alignment with its vision statement.

1.2   Business Challenge, Objective and Outcome

Presently, the case company plans to implement a revised version of the M-Files Docu-ment Management System (DMS). The current version of the M-Files DMS is poorly implemented. Current content is not defined anywhere, structure is complex and unor-ganized and working methods with the M-Files DMS vary. Currently, the M-Files DMS use is low, difficult, demotivating and the system potential is not utilized.

The M-Files DMS was first implemented in the case organization nearly ten years ago. The conclusion from the first implementation process was that all of the documentation is saved into the M-Files DMS. A crucial mistake at that time was made by deciding that every imaginable document had to have its own document class. It led to the unfortunate situation of users not using the M-Files DMS much, because it made the system use difficult.

Thus, the business challenge lies in the low utilization of the current M-Files DMS. Further challenges exist in the knowledge of employees on *how* to use the M-Files DMS. The project manager, who was behind the initial DMS project, left the company some years after the M-Files DMS was initially set up. Many other personnel changes have also occurred since that time, thus not many persons still work for the company who have had the original training for the system. As for the end users, IT services has given rudimentary training for using the M-Files DMS to all employees, but it does not seem to be sufficient to reach good user skills, nor motivate the employees to use the M-Files DMS. This situation needs to be corrected and this thesis aims to help the case organization to accomplish this.

Accordingly, this study aims to help the case company put the current M-Files DMS to a better use. Therefore, the thesis objective is *to create an implementation process that puts the revised version of M-Files DMS into use by the company employees.*

The outcome of the thesis is to propose the *implementation process that puts the revised version of M-Files DMS into use by the company employees.*

1.3   Thesis Outline

The scope of the thesis is limited to the documents, which are to be saved into the M-Files DMS. Currently, the M-Files DMS includes any type of document, with the exception of certain safety related documents that exist in the safety system. These safety related documents lie outside the scope of this thesis. The Implementation process is likely to define, which kinds of documents will be included to the M-Files DMS in the revised version.

This study aims to improve document management utilization by making it easier to use and by improving the skills of personnel in using it. The revised version, especially the content part of the document management system, is designed in collaboration with the office employees. This approach is chosen to ensure that, when the structure in which data is saved into the M-Files DMS is designed and co-created with the employees, it will become naturally easier to use for everyone. In the end, the outcome of the thesis also aims to change the organizational practice, namely to change the way employees use the document management software in the case organization.

This study is written in 7 sections. Section 1 is the introduction. Section 2 discusses what study methods and materials were used for this study. Section 3 is the current state analysis (CSA) focusing on the current state of the M-files DMS use and discussing the key findings there. Next, Section 4 discusses existing knowledge on document management, change management and Information System implementation best practice and selects the key elements into a conceptual framework (CF) for building the implementation process for the use of revised DMS. The findings of the CSA and CF are used in Section 5 to build the proposal for the implementation process for the revised Document Management system. Section 6 discusses the results of validation of the proposed implementation process done by piloting in the case organization. Finally, Section 7 presents the conclusions for this Thesis.

1.4 Key Concepts

Explanations for key concepts are listed below to help readers who are not familiar with them to better understand discussions later in this case study.

DMS	Document Management System. In the context of this study, it means an information system, where common documents (e.g Word, Excel, PowerPoint) are stored for later use.
M-Files MDS	Document Management System based on using M-Files database based information system, provided by M-Files Oy. In the context of this study, it means the Document Management System that is build into the M-Files platform uniquely by the case organization.
Revised M-Files DMS	When the M-Files MDS is implemented according to the implementation process this thesis proposes, it will then become the Revised M-Files DMS.
M-Files	M-Files (Oy) is a name of the company formerly known as Motive Systems Oy. It is also a name of their most important information system product. M-Files information system is document management system.

2   Method and Material

This section discusses the research approach, research design, and data collection of the study.

2.1   Research Approach

The research approach selected for this thesis is the case study. Case study as a research approach builds on a qualitative data collection method, participant observation and case study teaching and goes beyond the combination of these (Yin, 2003). Yin also suggests that case study suits for research cases, when the study tries to answer questions, such as "how", "why" or "what". It is also suitable to choose case study, when context from existing knowledge can contribute to the outcome of the research. Qualitative research was chosen over quantitative for this study. Qualitative research involves prolonged contact in the field, and aims to gain a holistic view to the study (Miles and Huberman, 1994). The researcher is enough of an insider to understand the problem at hand, and many interpretations exist to problems. Qualitative data and analysis is in text form, instead of numerical data in quantitative research or data collection. It is collected for example from interviews, workshops documents or written down experiences. A qualitative study is thus an in-depth study and it is good for studying people and organizations.

In this thesis, the study aims to provide a solution to a problem related to the use of a document management system, i.e. to provide improvement on a known problem and / or improve a current practice. This case study goes beyond trial and error, taking into account theoretical knowledge and best practice from this field. It was done following the logic of the case study that "empirical research advances only, when it is accompanied by theory and logical inquiry." (Zucker, 2009), which is the cornerstone of case study. Furthermore, the case study tries to make the improvement on the problem in one cycle, instead of possible many cycles, which is the normal practice in Action Research. In the end, it is noted that although this research is a case study, it has strong elements from Action research.

This study was conducted in a single case company in a single case issue, as opposed to multiple problem cases in one or more companies. For this case study, the empirical

data collection step is done and it is followed by a literature review. Empirical data and best practice from literature are merged to create a solution proposal to the existing problems. This approach includes literature, data collection and discussion that combines theory and practice ultimately leading into conclusion. This approach is best for the overall needs and purposes of this study.

2.2   Research Design

The research design for this study starts with setting the objective, namely creating an implementation process for revised M-Files DMS. It is followed by step 2, the current state analysis (CSA). Feedback is collected from co-workers in the organization (Data1) and it is compared to the goals the organization has for document management. The result or output of this comparison is an understanding of the gap between the current state and goals. Next, in Step 3 existing knowledge and best practice are studied. The conceptual framework is created based on existing knowledge. In step 4, the implementation process is drafted. Input for the draft version is received from workshops carried out in the organization – while simultaneously involving and educating co-workers to support the implementation process. Step 5, Validation is where the feasibility of the new implementation process is tested in a pilot project. Feedback is received from the organization to draw conclusions on how the process works. Figure 1 below shows the research design of this study.
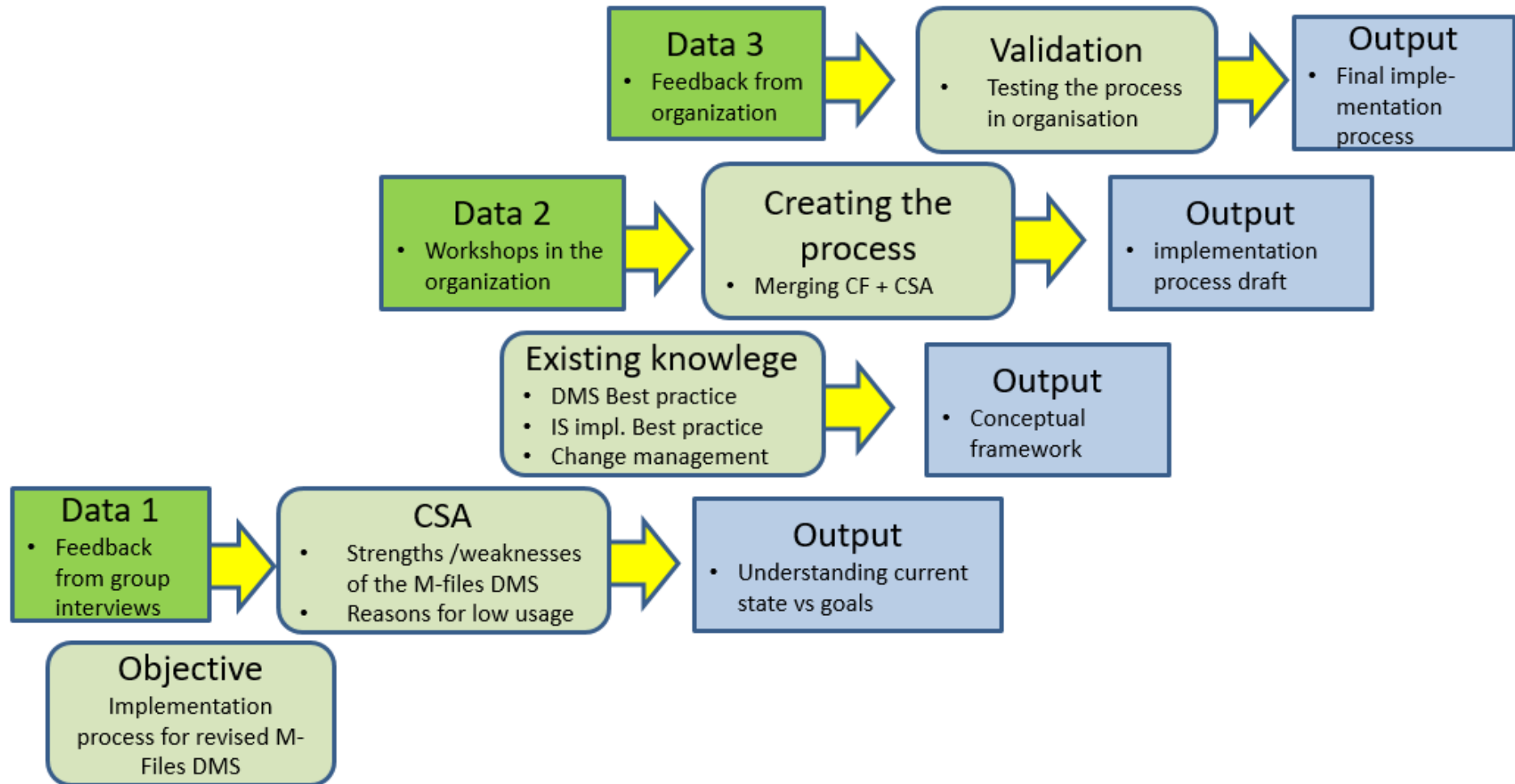
Figure 1. Research design in this study.

As we can see from Figure 1 above, the research design is made into a staircase model. Once one step is finished, the research can advance into the next step. The research design contains three data collection points that affect the step and its output. Each step has a clear objective and output.

2.3   Data Collection and Analysis

This study utilized three data collection rounds, Data 1, 2 and 3. Data 1 was collected for the current state analysis (CSA) to understanding the current state of document management usage in the case organization. Data 2 consists of meeting notes from the workshops conducted for the proposal co-creation. More accurately, Data 2 consists of new structure plan data. The gathered Data 2 was then used to develop the first draft of the implementation process for the revised use of the M-Files DMS. Data 3 was collected at the validation step, where the proposal for the implementation process was piloted in practice. Data 3 is feedback from group interview about the pilot experiences.

As for the selected participants in the data collection, eight departments were involved in data collection and included about 25 persons. In the case company, DMS is meant to be used by everyone, at least in the office / headquarters. Therefore, all office employees were chosen to give input at the CSA step. The case company has also maritime workers who do not physically work at the office. These workers have no access to the DMS, and were thus excluded from the project.

In this study, data collection methods were mostly qualitative and included interviews and workshops conducted in the organization. In addition to the case company interviewees, one key account manager from M-Files ltd was interviewed. This interview contributed to Data 1 collection by giving external view and enabled to identify possible gaps between current state of usage and M-Files DMS best practice. Table 1 below shows the data collection plan and data types.

Table 1. Data collection points, participants and data types.

Data step	Department	Number of participant(s)	Data type	Date and duration	Documented as
Data 1 CSA	1. Financial + IT	7	Introduction + discussion on feedback form questions.	21.12.2016, 15m	Feedback forms
	2. HR	6		28.12.2016, 15m	Feedback forms
	3. Icebreaking	2		2.1.2017, 15m	Feedback forms
	4. Technical	3		4.1.2017, 15m	Feedback forms
	5. Offshore	2		18.1.2017, 15m	Feedback forms
	6. Management	2		26.1.2017, 15m	Feedback forms
	Service provider (M-Files) Key Account manager	1	Interview	21.2.2017, 1h30m	Minutes of meeting
Data 2 Co-creating implementation plan	1. Financial + IT	7	Draft of new structure for the M-Files DMS. Lists for needed document classes + Meta Data structure.	20.2.17, 1h30m 27.2.17, 55m 7.3.17, 40m	PowerPoint + Excel sheets
	2. HR	8		1.3.17, 60m 30.3.17,55m 5.4.17, 47m	PowerPoint + Excel sheets
	3. Icebreaking	2		23.2.2017, 56m	PowerPoint + Excel sheets
	4. Technical	3		1.3.17, 50m 9.3.17, 60m	PowerPoint + Excel sheets
	5. Offshore	2		6.3.17, 45m	PowerPoint + Excel sheets
	6. Management	2		23.3.17, 1h08m	PowerPoint + Excel sheets
	7. Administration	2		1.3.17, 45m	PowerPoint + Excel sheets
Data 3 Feedback from testing the process	8. Group meeting with pilot department	7	Feedback from validation meeting.	4.4.17, 1h17m	Word document.

As we can see from Table 1 above, data for this thesis was mostly collected from numerous workshops and group interviews. In Data 1 collection, the interview sessions at the CSA step lasted approximately 15 minutes for each department. In the interview sessions, this thesis project and its purpose were introduced to office employees. Questions for group interviews were formulated to find out how and in what the M-Files DMS was currently used in each department. Group interview method assisted by feedback forms was selected, because every employee related to working with M-Files DMS was hoped to be reached. Research questions are listed in the Appendix 1. Interviewing almost 30 people individually would not be possible in the available timeframe. The feedback forms were summarised, and key findings about strengths and weaknesses of the current M-Files DMS state were arranged in themes. These themes were arranged in graphical illustrations and they are shown in the appendix 2.

Data 3 consists of feedback from validation, where the implementation process was tested in the organization. Possible next steps for the project were also discussed at that time. Summaries of field notes for Data collection 1 and 3 can be found in Appendix 2 and 4. Examples from Data 2 are found from appendices 3.1 to 3.4. All feedback forms, and Data 2 and Data 3 material are stored in the M-Files DMS in the case organization.

As for the data analysis method, the CSA data was analysed using the Thematic content analysis method. The collected data is analysed in Sections 3, 5 and 6. In Section 5, the new structure plan data from the workshops was used to build the new tree-structure for the revised M-Files DMS. These workshops at the head office included every department to the study, but the implementation process was validated completely with just one department (Financial department). Co-working in workshops with pilot department employees for the project was also needed to build the solution, at Data 2 step. This co-working lead to initial proposal for implementation process. In Section 6, the feedback from the pilot was analysed to determine, how the new implementation process worked with the pilot department.

3 Current State Analysis

This section discusses the current state of using the M-Files DMS in the case organization. It starts with the overview of the current state. Section 3.2 describes what the M-Files DMS is and discusses its strengths and weaknesses found in the current state analysis. Section 3.3 discusses findings from current user practice. Section 3.4 ends with the key findings from Current State Analysis.

3.1 Overview of Current State Analysis Stage

The CSA stage in this study comprises a number of steps/elements.

First, the current state analysis starts with a basic description of M-Files DMS to let the reader understand what the M-Files DMS includes and how it is structured. The section describes the process at the high level, how documents are saved into the system and how they expire from it.

Second, analysis of strengths and weaknesses about M-Files DMS content is conducted. It was initially evaluated that the M-Files content is unorganized and confusing. This presumption needed to be confirmed or ruled out in the analysis.

Third, an analysis of low usage rate was conducted. Again, it was presumed that the system was not used a lot. The presumed low usage rate was analyzed, and especially, the analysis tried to explain root causes behind the low usage rate. The strengths supporting the M-Files DMS use were also analyzed.

Fourth, this section tries to identify the gaps between the current work practices with the M-Files DMS used by the employees of the case organization and recommendations or best practice are defined by the M-Files service provider. Recommended practices are compared to current practice in sub-section 3.3. As an example to illustrate the use of the current M-Files DMS and current employee practices, one key account manager from M-Files ltd organization was interviewed and data received from that interview is analyzed.

Finally, the key findings are summarized in the last section of the current state analysis.

3.2   Description of M-Files Document Management System (DMS)

The M-Files DMS is used to store, edit, distribute and archive any type of electrical document format. The main purpose of the M-Files DMS is to help organization users to manage their documents through the document lifecycle.

Most often companies use documents such as Word, Excel and PowerPoint. Portable Document Formats (.pdf), AutoCad documents (.dwg), image files (.jpg, .gif, .bmp) and many other types of documents are also needed to use and manage in today's office work. These documents could contain contracts, drafts, quotations, plans, minutes of meetings and so on. Figure 2 below shows the DMS process that also describes document lifecycle in the case organization's DMS.
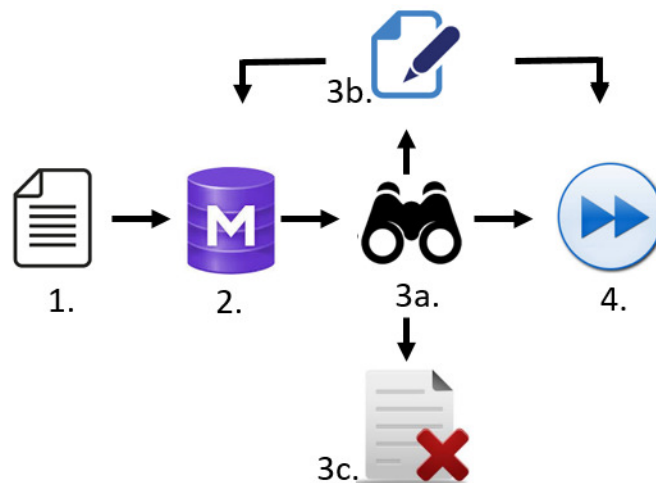
Figure 2. DMS process of a document lifecycle in a DMS.

As seen in Figure 2 above, the first step in the DMS process is the creation of a document. Second, this document is saved to the M-Files DMS. Third, a need rises for someone to review the document (3a). The review may lead into changing the document (3b) and usually the document is saved back to the M-Files DMS after editing. But the document can also be forwarded with or without editing it, for example, as an email link or email attachment. Document can also be forwarded by saving it to the user's hard drive, network drive or portable mass media. Forwarding in the process description means that the document is leaving outside the M-Files DMS and thus is no longer controlled by the M-Files DMS tool. Alternatively, in the review stage (3a), the user might also determine the document obsolete and may delete it from the M-Files DMS, ending the document life cycle.

The overall document management process that is used in the case company is this simple. There are no complicated document cycling or approval working functions applied, but only these basic steps. However, as the following sub-sections discuss, problems were identified from almost every sub-process of the described overall process.

3.2.1 Analysis of Strengths and Weaknesses of the M-Files DMS Content

Several themes raised up from analyzing Data1 feedback about the M-Files DMS content and structure. Content means all of the documents that are saved into the M-Files DMS. Structure in this context means how the stored documents are shown with M-Files DMS user interface. Main weaknesses about the M-Files DMS were identified as: a) complex, confusing and unorganized structure of the M-Files DMS content, b) the content that was stored in the M-Files DMS was not defined at all, anywhere c) the M-Files DMS was generally seen difficult to use and d) metadata is not clear and its use is difficult. Metadata means keywords that are linked to a document, for example 'document class', 'created by', 'contract type' or 'unit name'. These are a few examples used in the current version of the M-Files DMS in the case organization.

The M-Files DMS has 5 key sub-processes. These sub-processes are 1) Saving a document, 2) Finding a document, 3) Link creation, 4) View creation and 5) Access control management. Next, this section describes the identified weaknesses related to these sub-processes.

Sub-process 1, Saving a document
Figure 3 below shows the document saving sub-process.
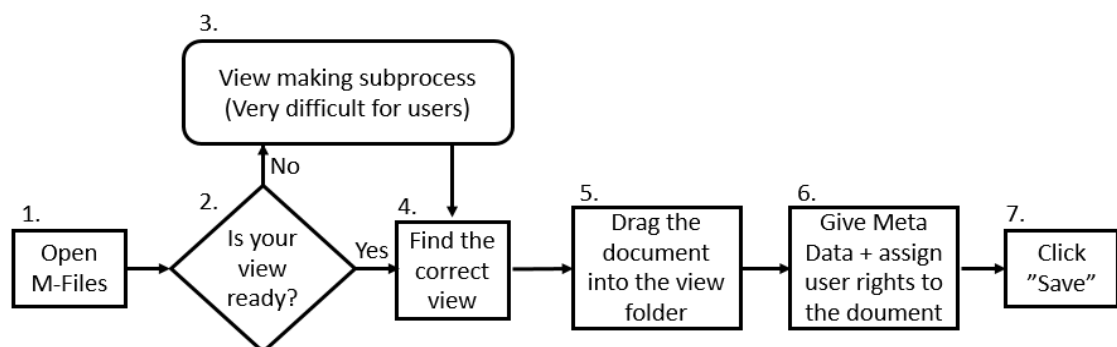
Figure 3. Sub-process 1, Saving a document.

As seen in Figure 3, the sub-process of 'Saving a document' includes seven steps. First, the M-Files DMS is opened (step 1). Second (step 2), the user has to think, where to

save the document in a similar way as the user would consider a tree structure of a network folder. In the M-Files DMS, views are used as folders, but they function differently from folders. This is a key problem with the M-Files DMS that confuses the users. Views are built with search parameters from a database. In other words, views are pre-saved search parameters or queries. They show the documents that match these search parameters. If the view is ready, it can be accessed similarly as the user would find a folder from network drive. Dragging a document to the view works the same way as it would with Windows resource manager. However, if the view is not made yet, the user faces very difficult challenge of creating one (step 3). Next, user has to find the view, where he or she wants the document to be saved (step 4).

Once the document is dragged into the view (step 5), it is not saved there yet as it would be in a network drive with Windows resource manager. Next (step 6), user gives meta data and assign user-rights to the document. Data 1 showed that both Meta Data and User right groups were found confusing and difficult to use. Finally, (step 7) the user is to click Save and that finally saves the document to the M-Files. However, if the user gives Meta Data that does not match the pre-saved search parameters of the view he or she was saving the document, the document does not show inside the view. The document is saved to the M-Files, but it is not shown on the user's view and it appears to the user as if the document vanishes after the saving step. As Data 1 shows, this creates very confusing user experience and is very demotivating.

Summing up, the Saving a document sub-process is not the same as saving it to the network drive or to the user's own computer hard drive. As described above, this process is a bit more complicated. A couple of interviewees referred to challenges with the saving process, when they were asked what is difficult in the M-Files:

> "For users, it is very difficult to save document under specific view, because one must inspect from view properties how the meta data should be input. If it is not input correctly, the file being saved vanishes." (Interviewee 1)

> "Saving the files as they should be saved. Searching the files (how and with what search words)." (Interviewee 3)

Sub-process 2, Finding a document
The sub-process of finding a document is often challenging in the M-Files DMS. Defining a policy, which documents are saved to the M-Files DMS, is important. There are certain

document types that are defined to be saved elsewhere. For example, safety related documentation is saved to the Safety system, Sertica, in the case organization. These documents clearly are stored in Sertica also in the future, as they are linked to other safety processes. This definition, i.e. what is saved to the M-Files DMS, is completely missing and because of this, employees do not know what can be found from the M-Files DMS. Furthermore, since the sub-process *saving a document* to the M-Files DMS is not easy and the policy of expected M-Files DMS content is missing, employees do not feel guided, ruled or ordered to save anything to the M-Files DMS. A guideline or policy would instruct the users on what they save to the M-Files DMS and at the same time would tell everyone what they will find from there. Following content and document searching feed-back was received from the users:

> *"First a clear, organized Table of Contents must be designed. After that using the M-Files would be easier." (Interviewee 4)*

> *"It needs simplicity and clarity – easiness of use." (Interviewee 5)*

> *"It is unnecessary to have hundreds of classes and other meta data properties, when less than ten classes and much less meta data would be sufficient." (Interviewee 6)*

Summing up the content related weaknesses from the feedback it became clear that the M-Files DMS has 'complex and unorganized structure' that hinders documents to be found (Figure 3, step 3a), especially since the content is not defined. Users do not know what to save to the M-Files DMS. If the documents are saved there, the users do not know where or how it can be found. Those, who have used the system, have built their views without clear or any guidance. That has led to a variety of views built in different ways. Access rights are given as the user feels right (shooting from the hip), or they are completely ignored by the user and default rights are used. The default user rights are not assigned well or carefully, leading into situations access to documents have been given to groups who should not have rights to access them. Furthermore, some default views are built-in to the system, but there is not much use for these. The result is one long arbitrary list of views when a user opens the M-Files DMS, instead of a clear, guided tree structure.

Another weakness relates to the document lifecycles that are not defined. When users search for documents, many old and obsolete documents are found. No-one is responsible for cleaning the expired documents out and the system does not do it automatically. The authors of some documents have left the case company a long time ago, but their obsolete documents exist in the M-Files DMS making the content further unusable. The document deletion function (Figure 3, step 3c) in itself is an easy task, but no-one is using this. This is related to the next subsection and motivation to use the system correctly.

Strengths about the content were scarce, but a few things emerged. If a document was already saved into the M-Files DMS, using and editing it was found easy. For example, there is a summer holiday excel sheet, where employees mark their next summer holiday plans. Everyone is asked to update their summer holiday plans to this one excel and save the changes into the document, at M-Files DMS. Users receive a link to the document from its author and find it easy to edit and save it back to the M-Files DMS. Users can access the document with a given link and save it without the whole process of saving a new document into the system and that makes its use very simple. Feedback on editing existing documents:

> *"It is easy to access, if you have a link to a specific document." (Interviewee 2)*

> *"It is easy, when common files such as the holiday list, can be shared for everyone to be edited." (Interviewee 4)*

An alternative explanation to why filling the summer vacation sheet was found a positive experience might be that employees were on a good mood when planning summer vacations. But the fact remains that this was required task for everyone and it was done over several years. Due to this the function was familiar to everyone and thus naturally an easier task to do.

Another strength related to the content was the keyword search, which was considered as an easy function to use. With the keyword search, users can type in any word, for example "Summer", and it would find the summer holiday Excel spreadsheet and every other document that had the word "Summer" in it. A statement below given by one of the interviewees illustrates some of the strengths of the M-Files DMS:

> *"If a document is updated, the M-Files is good solution, because of version management properties. It is also important in projects, when more than one person is updating the document." (Interviewee 2)*

Furthermore, the M-Files DMS was mainly used as contract archive and that was clearly seen as an important use of the system, even though users have difficulties to find all of the contracts from the system. The need for contract archive is clearly understood. Finally, the version management properties of the M-Files DMS were seen important.

3.2.2 Analysis of Root Causes Behind the Low Usage Rate

This subsection analyzes reasons that have led to the low usage of the current F-Files DMS. To summarise the weaknesses identified from Data 1 in one sentence, the barriers to begin using the M-Files DMS are high, and at the same time the user skills are at a low level.

Sub-process 3, Link creation
Users estimate that even the very basic functions such as 'sending a link to the document' at M-Files DMS is unknown to approximately half of the users. Figure 4 below shows the link creation sub-process.
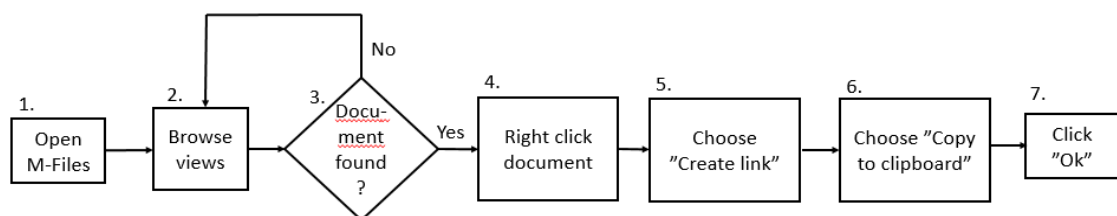
Figure 4. Sub-process 3, Link creation.

As Figure 4 above shows, the link creation sub-process is not very complicated. The user finds a document and with a couple of clicks a link to it is created. The link can then be pasted to any other application such as word document or outlook email. The problem is that the users are not aware of how the link to M-Files DMS document is created and used.

Other barriers for the use of M-Files DMS include massive challenges. 'Document saving' process and especially the view creating sub-process is very difficult and both need serious planning. This does not encourage the employees to use the system.

Sub-process 4, View creation

The sub-process of view creation is the most difficult part of M-Files DMS use. With unclear and complex content of M-Files, most of the users were unsure how a new view is made. Figure 5 below shows the view creation sub-process.
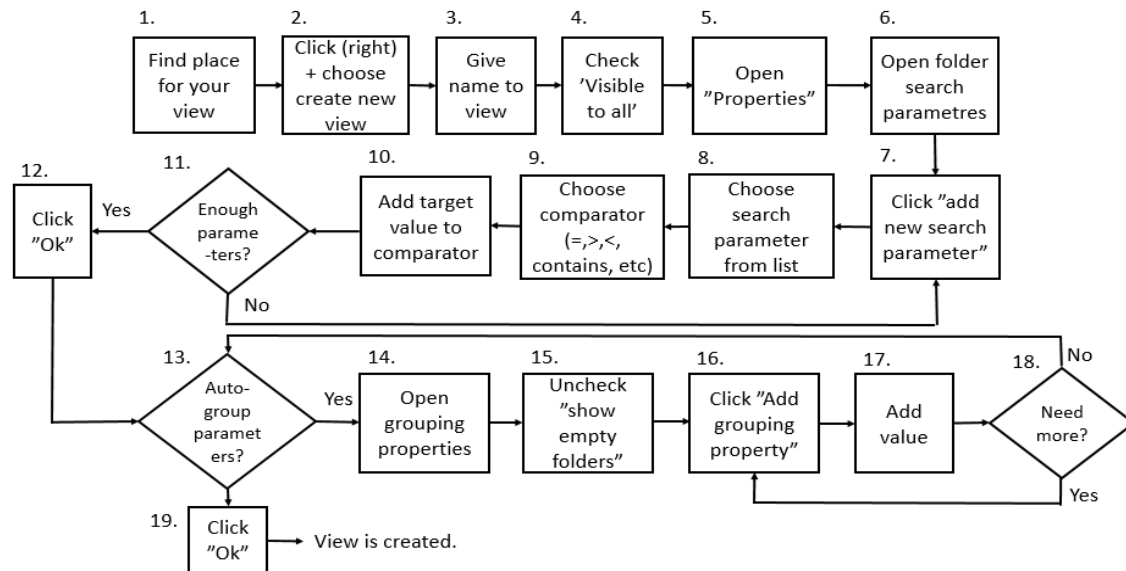
Figure 5. Sub-process 4, view creation.

As seen from Figure 5, the view creation sub-process could require dozens of steps, depending on several repetitive steps. Users are not only required to remember various steps behind the view creation sub-process, but they also need to understand the logic of how the views work. Understanding the logic is critical because it directly effects how the view is used now and later in its lifespan. Sometimes users create views inside other views. In those cases, search parameters from both (or all, if more than two views exist) views apply. This means that the more parameters are given, the more documents are excluded from a view. Only the documents that are not excluded are shown inside the view folder. When a view is built inside another, it becomes even more challenging for the random user to comprehend the view building logic. For example, a view structure may be mistakenly built in a way that a view has search parameter requiring its value to be 1, and second view under the main view may require this same value to be 0. This mistake will result in an empty view folder, because no parameter can be 0 and 1 at the same time. For common office employees this view building logic is difficult to understand and that easily leads into non-functional view folder structure. The following feedback is not surprising to the question what is difficult in the M-Files:

> *"Understanding how views work. I do not know how to make view folders."*
> *(Interviewee 2)*

View building logic was easier to understand, if the users had experience with database programming. However, most office users do not have any programming background and thus, view creation is too difficult for them.

Sub-process 5, Access control management

Access control management is strange to the users. In common network drives, access is controlled by predefined Active Directory settings. However, that is not the case when documents are saved to the M-Files DMS. The user decides on every document, who has access rights to read or write to the document. This creates extra work and requires more brainpower when documents are saved to the M-Files DMS, which, in turn, creates a further barrier to M-Files DMS use. Lack of manuals is a clear barrier and users wished for written guides to help the M-Files DMS use. The key account manager commented on this work practice related to access control as follows:

> *"It is not the user's task to decide access rights, when documents are saved to the M-Files. Instead, allocating the rights should be predetermined and automatic at that step."* *(Key account manager)*

Summing up the root causes behind the low usage rates, it can be concluded that commitment to use the system is low for a good reason. Users were asked what documents they need in their daily work and whether they can find them at the M-Files DMS. Very often, the documents were not saved to the M-Files DMS, but into the network drive, personal laptops or other systems. It was even commented that:

> *"No, we don't have the documents at the M-Files and we do not need to put them there. We do not need the M-Files".* *(Interviewee 10)*

This citation directly indicates the lack of commitment to use the system, but also indicates that the benefits of the M-Files DMS are unknown to some of the employees. Hence the use of M-Files DMS is considered more difficult and demanding than, for example, the use of network drives, and it is generally seen as difficult to use. That is demotivating and reduces commitment to use the M-Files DMS.

As mentioned in the previous subsection, there are a few strengths that support or moti-vate users to use the system. However, at least one motivator was identified:

"It is easy to open." (Interviewee 7)

"It is easy to use, if you got user rights to certain areas." (Interviewee 12)

The M-Files DMS is directly linked to the case company's Active Directory and thus does not need separate log-in procedure. The M-Files user is directly identified when the user logs in to his or her computer. If someone had taken the trouble of making common views, the use of those views was seen easier compared to everyone making views for themselves. Dragging documents to ready views was seen easy – at least in some cases, although there was the danger of document vanishing, when it was saved. Doc-ument vanishing after it is saved is often due to a poorly constructed view folder. The question what is easy in the M-Files DMS was answered positively by for example fol-lowing way:

"Dragging documents to ready view is easy." (Interviewee 11)

Dragging the document into ready view is part of the saving process, which was deter-mined difficult. However, this part of the saving process was familiar for working with traditional folders, and was probably found easy for that reason.

3.3   Findings from the Analysis of Current User Practice

One key account manager from M-Files ltd was interviewed in a phone conference. The purpose of this interview was to try to find gaps between the current state and recom-mendations or best practices from the M-Files ltd. Furthermore, possible new ways to use M-Files DMS was discussed. Table 2 below shows the findings from this interview.

Table 2. Listing of identified deviations from best practice.

Case company practice	Best practice	Gap exist

1	155 document classes are in use.	The number of document classes is kept between 5 to 10.	Yes
2	Every type of document has its own document class.	Only main group of documents have document class (such as contract or project documentation)	Yes
3	Some meta data, but not all, is mandatory to input, when documents are saved to the M-Files.	Avoid excessive requirements, when designing Meta data.	No
4	Keywords field is largely used as meta data and it is used to build views.	It is not recommended to use keyword field as view building parameter, because it is exposed to human error and personal habits.	Yes
5	Users have difficulty to find the documents that themselves have saved to the M-Files DMS.	"Created by me" view is recommended to help find own documents from the M-Files DMS.	Yes
6	User assigns user-rights for the documents, when the documents are saved to the M-Files DMS.	It is not recommended task for the user to assign user-rights at document saving step.	Yes
7	Many old, expired or obsolete documents are found in the case company M-Files DMS.	Document archive could be created. Automatic document archiving process could be applied.	Yes
8	The case company has M-Files version 2015.1 in use	Version 2015.3 exists and the latest version is recommended.	Yes

As seen in Table 2 above, the interview with the Key account manager revealed problems and opportunities from the case company version of the M-Files DMS. It was also discussed how the new structure for the M-Files DMS is constructed and what would be the technical steps for the M-Files DMS version changeover. For the view folders, the key account manager suggested that a structure that would be similar to the current network drive structure, can be built. Familiar structure mitigates change resistance. The key account manager also suggested some rules of thumb. First, in a good view folder structure, the user does not get lost. Secondly, view folders are not built too complex. Thirdly, the end users do not need to think who needs to have user access rights to any document, when the document is being saved to the M-Files DMS. Instead, the system

has these rules predetermined carefully. Finally, the key account manager strongly suggested special access control training for the main user before the new version of the M-Files DMS is constructed. Furthermore, service provider training for the M-Files DMS view building was also recommended to the main user.

The conclusion from service provider interview is that M-Files DMS is not used in an optimal way in the case organization. The M-Files DMS use can be turned into a user friendly system in many aspects. In fact, it seems that the problems with the M-Files DMS are related to compilation of the content, user skills, definitions, lack of policies or commitment and mostly not in the software itself. The M-Files DMS has all or most of the functions that are often needed from the Document Management System. As the system is already integrated in the case company IT system and user licences have been acquired to it, it is likely to be cheaper to re-implement the system, rather than change it completely over to another competing product.

Furthermore, the M-Files DMS is the main product of M-Files Oy organization. The M-Files organization has been growing rapidly, from a 50-employee company into over 300-employee company between 2009 - 2017. Their growth shows no signs of slowing down. Although it is not direct proof of high quality of the M-Files DMS software, it would seem to support the fact that M-Files is spreading into many organizations and thus considered an asset by other organizations. Therefore, it makes sense to continue using the M-Files DMS system itself, if the problems the case organization has with it are corrected.

3.4   Summary of Key Findings from the Current State Analysis

Strengths and weaknesses were analyzed from the current state of M-Files DMS in the case organization. Weaknesses included serious barriers that hinder the use of the M-Files DMS in the case organization. These barriers include difficult 'document saving' sub-process and very difficult 'view creation' sub-process. Using Meta data is confusing and it is directly related to 'document saving' and 'view creation' sub-processes, making these even more challenging to the users. System manuals or user guides do not exist to guide the M-Files DMS. Strengths of the M-Files DMS included easy access to the system, without the need of login procedures. Editing documents was also found easy, especially, if someone had saved the document into the M-Files DMS and sent the link to the document to other users.

The weaknesses revealed by the CSA are many. Commitment to use the M-Files DMS is low in the case organization. System use is perceived difficult and demotivating. A policy or definition does not exist to require employees to use the M-Files DMS. Thus, seemingly easier, traditional ways of saving and managing documents are often used. Potential benefits from the M-Files DMS are not utilized and they are often not even recognized due to poor user skills and lack of knowledge of the M-Files DMS. However, a clear signal was received from the interviews that something needs to be done to this problem. It was appreciated that the project of correcting the problems with M-Files DMS had started. Users do understand concepts such as version management and understand what benefit it rewards. As Data 1 showed, the users just do not know how version management works with the M-Files DMS. Users also recognized the need for more user training to the M-Files DMS and wished for company internal training for it. Furthermore, user manuals and self-practice was seen an important part of learning the M-Files DMS. The M-Files DMS system provider training was not believed to be as helpful as the other training methods listed before. A clear definition of what is expected to be saved into the M-Files was also wished for.

Based on the results, two key findings remain in the focus from now on. First, the focus is placed on revising the M-Files DMS. This part of the implementation process aims to remove the technical barriers that include complex, confusing, unorganized and non-defined current structure and Meta data. After all, it is now shown that many of the problems exist in the current M-Files DMS configuration and misuse of the system, but not in the M-Files DMS software itself.

Second, the focus is on change management. This part of the implementation process relates to the change that is needed in the organization. Change is needed in work practices how documents are managed, where they are saved and how they are found. Furthermore, raising the commitment to use the M-Files DMS is needed. Policy, definitions and manuals are needed for the M-Files DMS. Table 3 below lists the challenges that the current state analysis found.

Table 3. List of challenges for users.

1	Content is complex, confusing and unorganized.
2	Policy or definition does not exist on what is be saved into the M-Files DMS.
3	Meta data is not clear and it is difficult to use.
4	Saving documents to the M-Files DMS is difficult.
5	User skills are low (and the use of the system is perceived difficult).
6	Commitment to use the system is low.
7	Access control management is strange and difficult to the users.
8	No manuals or user guides exist to the system use in the case organization.
9	View creation is very difficult and not defined or guided.
10	Amount of document classes is excessive.
11	Keywords field is misused.
12	Users have difficulty to find documents from the system (sometimes even their own documents).
13	Obsolete documents exist in the system and archiving methods are not used.

As we can see in Table 3 above, many technical barriers exist for the use of M-Files DMS in the case organization. Some of them are challenging to correct fully, but it is likely that every challenge can at least be mitigated. Next, in chapter 4, existing knowledge is investigated to help tackle issues that have been identified in the current state analysis.

4   Existing Knowledge on Information System implementation

This section discusses existing knowledge on Information System Implementation. First Sub-section starts with best practice for Document Management Systems. Second sub-section discuss about existing knowledge on Information System Implementation. Third sub-section discusses stakeholder change management. Final sub-section summarizes existing knowledge into a Conceptual Framework of the thesis.

4.1   Document Management Best Practice

Best practice for Document Management starts with understanding what documents are and defining what a Document Management System (DMS) is. Understanding of these varies in organizations. Dr. Christine van Winkelen (2007) defines documents in a broad description, including audio files, video files, text-based files, spreadsheets, photographs, CAD drawings and PDF files. Documents in business also include non-digital media such as paper, film or videotapes, but the scope of this study is limited to document management of digital form documents.

When organizations start a Document Management project they are often unsure what they plan to accomplish with it (Elam, 1998). Justification is needed at early stage for the project and usually a DMS is justified with claims of reducing and avoiding costs, improving value or profitability and avoiding risks. Often organization's information is divided between structured information, typically in database solutions, and unstructured information such as file systems, e-mail servers etc. (Haug, 2012). Document Management Systems addresses information management tasks and more advanced DMS help to integrate structured and unstructured information of the organization.

It is noteworthy to mention here that Document Management Systems (DMS) is not be confused with Enterprise Content Management Systems (ECM). DMS commonly features workflows, audit trails, indexing and document versioning while ECM systems include everything from DMS, but also contains digital asset management, document collaboration, business process management, email management and Imaging (www.ne-docs.com). However, in some cases a DMS can have advanced features that link the DMS to email clients. Thus, dividing DMS and ECM into exact categories is challenging.

But, as a broad definition, ECM Systems manage organization's information on a wide scale, while DMS usually is limited to managing documents in electronic form.

Often the challenges with DMS's are in the lack of training or in poor processes. Problems are identified in the organizations and that often leads into reconsidering the document management projects. In most cases, the root cause for poor document management lies in improper implementation, inconsistent processes or bad product fit (Johnston, 2013). In numerous organizations, documentation is even managed on paper, because it is believed to be a faster document management process. According to Johnston (2013), organizations first define their needs for the DMS and then choose a DMS that has capabilities to cover these needs. Johnston (2013) continues that DMS capabilities often include automatic document naming, portals for document publishing, workflows, access from any device including mobile access, security for the documents, version control, integration into email and ability to storage any type of documents. These are important properties that a DMS has. Organizations vision the best way to do the DM process, to think about how to implement and train the users and then make this vision a reality. This means that implementation is not going to work without a carefully planned implementation process.

Collaboration is an important part of using the document management system in the organizations (Winkelen, 2007). When a document management system is incorporated in the work process that spans across different business units in the organization, the information flow and efficiency is improved across the organization. Getting the most from a document management system means that ways of working and thinking need to be changed for most people in the organization. This means that simply installing a DMS in the organization is not efficient or effective, but change management is also required in the organization. That change does not happen quickly or without effort, but it is well worth the effort. Collaborating, or working together with employees helps to make the needed change.

Challenges with designing Information System (IS) are found in mixing technology and human concerns or perspectives together (Hevner and Chatterjee, 2010). These two worlds often do not mix well together. In their book Hevner and Chatterjee refer to Internet search engine Google's philosophy in the IS design work. Three points from that philosophy also apply directly to designing a document management system and they are listed in Table 4 below.

Table 4. Relevant points from Google's philosophy.

1.	Focus on the user and all else will follow
2.	It is best to do one thing really, really well
3.	Fast is better than slow

As seen from Table 4 above, three points from Google's philosophy was found applicable to this study. The first point is critical as Google has established in their philosophy. User experience is either positive or the user will lose patience and interest to use the system very quickly. Users find unstructured and unusual ways to use information systems (Arant, 1998). Thus, the use of the system is made as easy and intuitive as possible. The second point from Google's philosophy supports the first. Information system is designed well and be made reliable.

Furthermore, it is not enough to make the Information System user friendly, but it is designed individually to any organization (Arant, 1998) for it to fit into the organization's needs. The same system and configuration that works well at the bank, is not likely to be good for a chemical plant. The third point from Google's philosophy may seem less important at first glance, but speed is essential in today's work. For example, a few second delay in different areas of using the system (especially if the task is repetitive), will result in loss of efficiency and is likely to annoy and affect the motivation of using the system. Thus, user friendliness, reliability and a smoothly working system are qualities to be ensured in a DMS project.

Often the challenges with document management are similar in organizations which leads to the presumption that solutions are likely to be similar as well. One case example is from a university hospital at France, where the document management was clearly not defined or strategically guided (François et al., 1997). In the example, case documents were originally kept in an unorganized way in loose-leaf folders. That hindered users who needed to find documents quickly. The organization then implemented an effective DMS. Their implementation process had elements, such as naming one person to be in charge of DMS, grouping the document by themes, document form standardization and document version management. It was also a requirement that the DMS is easy to use. These practices mentioned here are easily adopted in a DMS implementation project regardless of organization type and they all add value to a document management process. Table 5 below summarizes best practice gathered from existing knowledge for Document Management System implementation projects.

Table 5. Best practice in Document Management implementation.

1	Make it easy to use.
2	Enable collaboration in the document management process.
3	Name the documents automatically.
4	Enable portals for document publishing (e.g. links to organization intranet)
5	Enable workflows (e.g. document approval).
6	Enable the use of mobile or any devices.
7	Enable security controls for the documents.
8	Integrate DMS with email systems.
9	Enable version control features.
10	Enable ability to save any type of document.
11	Plan and realize the implementation project carefully (Vision, implementation, training and realizing the vision).
12	Make Document Management part of the work process.
13	Train the users.
14	Standardize document forms.
15	Group documents in themes.
16	Name the person in charge of the DMS.

As seen in Table 5 above, 16 elements were identified for best practice to be followed in a document management implementation project. Applying every best practice item presented in Table 4 in one project may not be possible. However, it is recommended to apply most of the items based on the needs that the organization has for the DMS. Especially the number one element is part of an effective implementation process: make it easy for the users.

Some of these are the same that are identified as best practice in the following subsections 4.2 and 4.3, for example element 12, train the users. Applying best practice elements into a document management implementation project depends on the project and partly on the selected DMS.

4.2   Information System Implementation Best Practice

An implementation project is built up like any other project (Minnock, 2004). A project includes elements such as plan, schedule, resources, commitments, budgets, tasks,

documentation and it is followed up. Information System (IS) implementation is a process, starting from application development and ending in evaluation after the system changeover has been implemented (Shelly and Rosenblatt, 2012). Figure 6 shows the steps of this process.

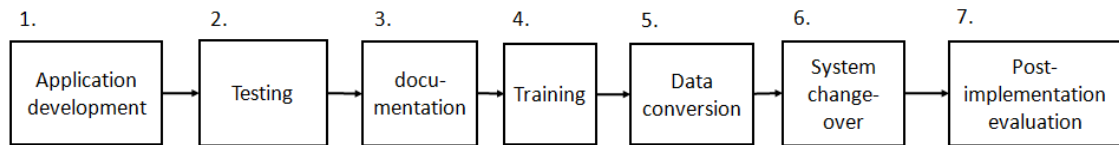| 1.	2.	3.	4.	5.	6.	7.
Application development	Testing	docu-mentation	Training	Data conversion	System change-over	Post-implementation evaluation

Figure 6. System implementation process (Shelly and Rosenblatt, 2012:511-547).

As Figure 6 above illustrates, IS implementation process has seven steps. However, not every implementation case needs to have every step exactly as described in the implementation process. For example, in cases where the Information System is re-implemented in the organization, a new application development process is not needed. On the other hand, in re-implementation projects, application parameters, functions or using methods may need changing and that can be considered application development. Thus, the process is valid for system re-implementation projects as well.

Second, the functions of the new or redefined application need to be tested in practice. Especially business critical applications are preferred to have separate testing environment, where all of the functions are tested prior to taking changes into operational environment. Documentation is made to describe the system and help the users, the main user(s) and IT to interact with the system. Parts of the documentation will later be used in system training sessions. Thus, the training is considered already when the documentation material is created. The users need proper training, or the Information System (IS) will not be successfully implemented. The need for data conversion depends on the project. Sometimes it can be vital for the success of the project, but sometimes, there may not even be old data that is needed for conversion. The system changeover has a few alternative methods, as can be seen from Figure 7 below.
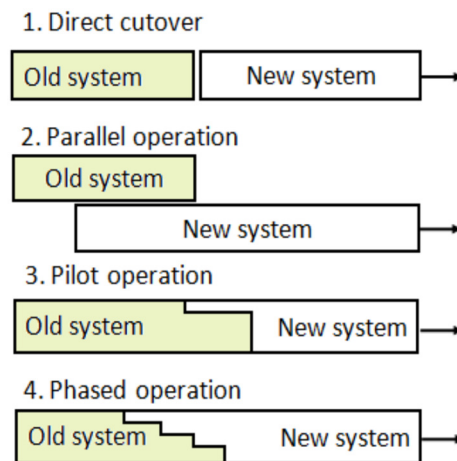
Figure 7. Information System changeover methods (Shelly and Rosenblatt, 2012:544).

As seen from Figure 7, a few methods exist to choose from, when system changeover is needed. Depending on the project, a suitable system changeover method is selected. A direct cutover is usually the cheapest and fastest, but also a bit risky as unexpected errors or difficulties can occur. Parallel operation of old and new system is the safest way, but it requires both old and new version to be operational at the same time and as such could be more expensive. In that alternative, Data is input into both systems and costs amount from two systems during the time period. Users have to use two systems, which is likely to cause extra work. Piloting and Phased operations are sort of compromises between direct cutover and parallel operation.

Power structures exist in Information System projects. Although many views exist on IT department's power in the organization, IT departments often have little impact on organizational decision making (Dhillon, 2004). Power in IS project can be seen divided between available resources, the process and the system. Success of an implementation project depends on how well technical and organizational issues melt together. Organizational power especially is very important to understand and also important to get behind the project (Dhillon, 2004). The implementation project needs to have support from high enough in the organization, for it to be possible to be implemented across the different departments. Implementation projects both enable and result in change. In the Information System Implementation projects, the change usually relates to the use of Information system. This change is trained and communicated, otherwise the users become confused and are unable to effectively use the system. The Information System

itself has also power. If the system is not flexible or not suitable to do the task it is supposed to do, the working process needs to be changed. Thus, efforts are invested to reduce the power of the Information System.

Careful planning and defining is critical for the Information System (IS) because the definition is done once in the beginning of the process and because the implementation process occurs only once. With the help of DMS best practice combined with IS implementation best practice these solutions can be found. Once planning is accepted, implementation can start with building the test database. The work then continues with testing and training. Documentation is kept through the process. Some amount of data may be needed for conversion from the old IS and proper system changeover method is chosen, when the system is ready to be changed over. Finally, feedback is asked from the users, when they have reached a fair amount of experience with the new Information System. A good Information System project does not skip any of the steps described above.

4.3 Stakeholder Change Management

Managing change in organizations may not be simple, but it starts with simple building blocks. Organizations are dynamic, non-linear systems, by nature and outcomes of their actions are unpredictable. If organizations are too stable, nothing changes and the system dies. But, if the organization is too chaotic, the system will be overwhelmed by change (Burnes, 2005). Thus, certain amount of change in the organization is needed simply for the organization to survive. The majority of change initiatives fail and indeed, the change initiatives need to be challenged and critically appraised (Dawson, 2003). Company employees have important knowledge and experience that is used to shape the change. Furthermore, empowering and involving the employees into the change process is likely to make them change agents that help in the change process.

Change resistance is related to breaking the continuity of the working environment (Dawson, 2003). Dawson describes that change resistance typically results from 1) major change in the work itself, 2) Threat to employment, 3) Psychological threat, either real or not realistic, 4) New work arrangements and 5) Lowering of status. Misunderstandings and expectations, whether realistic or not, easily contribute to change resistance and thus communicating facts and building trust becomes into an important role in managing change resistance.

According to Rowh (2005), technology has an important role in implementing DMS, but it accounts only for about one third of the implementation process. The rest is a challenging task of convincing employees that the process needs to be fixed, although it does not seem broken. Convincing occurs through communication, grounding the arguments and training. Concluding the building blocks of change the organization, the change starts with involving, empowering, convincing and managing change resistance and controlling the amount of change that is realized.

Kotter (2007) has defined an 8-step process for leading change (Kotter, 2007). These steps are shown in Figure 8 below.

1.	2.	3.	4.	5.	6.	7.	8.
Create sense of urgency	Build a coalition	Form a vision	Communicate the vision	Empower action	Create short term wins	Create more change	Instituti onalize change
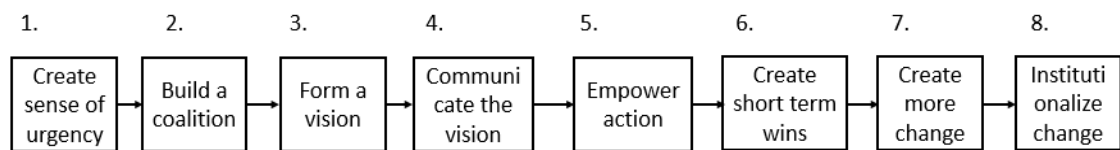
Figure 8. The 8-step process for leading change (Kotter, 2007:4).

As seen from Figure 8, Kotter's process for leading change first starts with creating a sense of urgency. The step acts as a kickstart for a change management process. It is important for an organization to understand the urgency, or the change is unnecessarily delayed or even never starts to occur.

Second step is putting together a group with sufficient power to lead the change. Enough key players are needed to be onboard to prevent blocking from those who are not. All relevant stakeholders are represented are represented to enable the core group to make intelligent decisions. The coalition has enough proven leaders to be able to steer the change process.

Third step is creating vision. The vision is made clear on how the future will be different from the past. A clear vision simplifies decisions, motivates people to take action and helps to co-ordinate actions efficiently.

The fourth step is communicating the vision. Communication ensures that as many people as possible understand and accept the vision. Clear communication has no jargon, but uses pictures and examples. Dialogue is more effective than one-way communication.

The fifth step is empowering action. Organizations often have barriers that resist the action for change. Depending on the change process, these barriers could be anything and many times they exist in the company's internal structure. For example, in a group work one strong minded change resistant person could affect many others, who otherwise would not be resistant to the change. Open and honest dialogue is often most efficient to solve such issues.

The sixth step is generating short term wins in the project. It is about creating visible success as soon as possible. Short term wins are likely to help to complete the change project successfully and they enable to sustain the change. The wins are made visible, clear and are related to the change project to show employees that change efforts are paying off.

The seventh step is creating more change and not giving up, even when change resistance or other obstacles come along. Setbacks can occur later during the process even if the beginning of the project is a success. Giving up means losing long term success and the momentum that the project has gained in the beginning. If the momentum is lost by giving up, it may be impossible to regain it back.

The final step is institutionalizing the new approaches. It can also be described as sustaining the change. Making things the new way takes time to become a standard way of working. Every new member of the organization is also trained into the new way of working. It is proven that the new way is superior to the old. Success needs to be visible and well communicated.

Implementation projects and especially project planning could benefit from existing checklists. Bartels (2005) has assembled a 12-step checklist that is shown below in Table 6.

Table 6. Checklist for implementation projects.

1	Build the business case
2	Ask for the money only once
3	Clarify your expectations
4	Pick the right vendor
5	Document every process
6	Pilot the program
7	Control customization
8	Elevate change management
9	Train and train again
10	Go for the quick win
11	Don't underestimate the data challenges
12	Don't underestimate upgrades challenges

As seen from Table 6 above, the checklist is in many ways parallel to previously de-scribed existing knowledge. For example, item 1 building the business case refers to the same thing that Kotter defines as creating a sense of urgency. Going for the quick win is obviously parallel to creating short term wins. However, checklist item 4, pick the right vendor, applies only to an implementation project that has the element of vendor chang-ing or acquiring. As such, item 4 does not apply to this thesis implementation process. But the list has also an important new aspect, i.e. item 8 elevating change management and in this context, this refers to change management within Information Systems.

Dr. Kotter's final step 8 in change management referred to sustaining the change, which means that when the change project reaches its goal, the new way of working is pre-served and protected. However, when Information Systems are involved, further devel-opment needs often arise. Keeping an Information System permanently at one and first version would not be flexible or beneficial in the long run. Of course, Kotter's sustaining step means to make the new process lasting, while it does not mean that the process is unflexible or not allowed to be further developed. Therefore, changes in an information system are welcome and change management for Information Systems is needed. For example, if every user of the Information System has power to make decisions and changes on how the Information System functions, the change requests could be coun-teractive and expensive. Possible new functions of the information system would be known only to the user who made or ordered the change and cost management would

not exist. Therefore, it is important to control and manage these changes to the Information System. To avoid confusion with other change management issues, this element of change management is called "IS change management" from now on.

A number of change management tools exist and often change management is depicted as a process flow. These tools describe change process elements with slightly different names, but they form a similar process flow starting from raising the awareness in the organization and ending to sustaining the change. Change Management tools are well aligned with IS best practice and some elements are directly overlapping. A couple of examples from overlapping elements from existing knowledge is user trainings and making quick wins in the project.

4.4   Conceptual Framework of This Thesis

The conceptual framework of this thesis is based on Document Management Systems (DMS) best practice and Information System (IS) implementation best practice combined with Change management literature. Together this existing knowledge builds the conceptual framework for this thesis. The conceptual framework is depicted in figure 9 below.

1. Initiation	2.Preparation	3.Communication	4. Action	5.Implementing	6.Sustaining
Motivate for change *) Kotter 2012	**Establish target stage of change** *)	**Communicate target status** *)	**Take action** *) **)	**Realize quick results** *) **)	**Sustain it** *)
Build coalition *)	**Define needs** ***)		**Testing** **) ***)	**Do not give up** *)	**Receive feedback** **)
	Ensure easiness ****)		**Training** **) ***)	**Make it part of work process**	**IS Change management** *****)
	Enable needed features ***)		**Make data conversion** **)		
	Develop the application **)		**System changeover** **)		
	Keep documentation **)		**Keep documentation** **)		

DMS best practice	
IS implementation best practice	
Change management	

*) Kotter, J. P. (2012). Leading Change. *Harvard Business Review Press*
**) Shelly, G. B. and Rosenblatt, H. J. (2012). Systems Analysis and Design, 9th edition.
) Johnston, R. (2012); François, et al (1997) *) Winkelen (2007); Hevner & Chatterjee (2010)
*****) Bartels, N. (2005). An implementation and upgrade checklist. *Manufacturing Business Technology*

Figure 9. Conceptual framework of this thesis.

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As seen from Figure 9 above, the conceptual framework is based on three cornerstones, in the bottom right-hand side corner that create the Conceptual Framework. The three cornerstones are color coded as follows: 1) DMS best practice with purple, 2) IS implementation best practice with darker blue and 3) Change management with light blue. DMS best practice and IS implementation best practice help solving technical barriers while existing knowledge from change management apply to commitment challenges.

The conceptual framework shows six steps that can be used as a template to build an implementation process in Section 5. The first step is *initiation*, creating the awareness of a problem and creating the sense of urgency that the problem needs to be solved. The *initiation* step also involves building a strong enough coalition that includes sufficient power in the organization to make the project possible.

The second step is *preparation*. At that step, a vision of target status of the project is constructed. The needs for the Information System are defined and carefully documented. It is often important to define the Information System as user friendly, therefore the definition part is critical for a successful outcome of the project. After the definition is accepted, the application development starts. However, in some IS projects, the actual application is not developed, but for example parameters for the Information system are implemented and this can be viewed as developing the application.

The third step is *communication.* At that step, the target stage of the project is communicated in the organization. Many project members have already been part of the implementation project at this stage, but they might have seen only a part of the project. The purpose of the *communication* step is to communicate the overall project and its goal in the organization.

The fourth step is *taking action*. This step includes setting up training version, data conversion (if needed), testing, training the users and the system changeover.

The fifth step is *implementation*. Since the system was changed over in the previous step, at this step it is implemented into the work process of employees. Quick wins are realized and made visible as soon as possible in the organization. This builds up momentum in the implementation that the process is moving forward and removes possible wrong misperceptions (for example, misperception that the implementation process has stopped).

It is likely that unforeseen problems, obstacles, change resistance or other issues occur to hinder the implementation process from moving forward. It is important not to give up, but instead important to find suitable workarounds to solve problems and keep the project going on.

Finally, the sixth step is *sustaining*, which aims to make the change permanent and lasting. This step is ongoing and its purpose is to continuously ensure that the new work process is the standard used in the organization. In the Information System projects, feedback is requested from the users. As further development of Information Systems is often necessary, IS Change management is elevated. This means that any changes in the Information System are made in a controlled and supervised way.

Next, in Section 5 the initial proposal for the implementation process for the revised version of M-Files DMS is constructed with the help of this conceptual framework. It will be later merged with findings from the current state analysis and co-created in workshops in the case organization.

5 Co-Creating Implementation Process for Revised Version of M-Files DMS

This section merges the results of the current state analysis and the conceptual framework towards the building of the proposal using Data 2. The goal of Section 5 is to create an initial implementation process for the case organization that can be used to tackle the business problem.

5.1 Overview of Proposal Building Stage and Input from Stakeholders (Data 2)

The proposal building was based on the conceptual framework that was constructed in Section 4.

First, the conceptual framework was used as a frame to build the proposal for an implementation process. This implementation process planning work was co-created together with the organization at workshops. The implementation process was refined and tested at the same time during and after the workshops.

Second, Data 2 for proposal building was gathered from co-creative work in the workshops. Data 2 consists of planning material for the new DMS. This planning material consists of depictions of the revised structure for the M-Files DMS. Table 7 below summarizes stakeholder input.

Table 7. Summary of Data 2 collected from stakeholders.

1.	PowerPoint presentation (11 slides), showing top view of the planned DMS structure as well as department internal view of the revised DMS structure. PowerPoint presentation is good for communicating the new structure in the organization eventhough it can only partially show the revised structure.
2.	Excel sheet (4 spreadsheets, approximately 370 rows), depicting detailed tree structure for financial department internal part of the M-Files DMS. Excel also contains list of new document classes and planned meta data. While the Excel spreadsheet is not best tool for communicating the new structure in the organization, it is the most accurate and detailed depiction of the planned revised structure.

As seen from Table 6 above, Data 2 was collected in Excel sheet and PowerPoint presentation. Examples and snippets from Data 2 can be seen in appendices 3.1 to 3.4.

Third, group work in the workshops also reviewed the findings from the current state analysis in section 3 and strived to find solutions for the problems identified. Best practices from section 4 were also reviewed to help find correct solutions for the problems. Making the revised M-Files DMS easy to use was emphasized in the discussions. Needs for the revised M-Files DMS and document management policy were also discussed.

As the conceptual framework has six steps, each of these steps became one step in the process and thus have one sub-section each in section 5. Furthermore, these steps are summarized in section 5.8 which shows the overview of the initial implementation process. The preparation and building stage of the implementation process in sub-section 5.3 discusses the co-creation work in the case organization.

5.2   Building the Draft Proposal for the Revised DMS Implementation Process

Next, sub-sections from 5.2.1 to 5.2.6 discuss each step of proposed the implementation process.

5.2.1   Initiating Implementation Process

The first stage of implementation process is initiating the project. A sense of urgency is raised in the organization that there is a problem and that a need for change exists. Table 8 below shows stage 1 tasks of the implementation process.

Table 8. Stage 1 tasks of the implementation process.

No	Task	Realization
1.	Project introduction	During group interviews and prior to that in discussion with case organization management.
2.	Gather CSA data	During group interviews (Data 1)

As seen from Table 8, the first step of the project consists of project introduction that includes motivating the organization and building the coalition to pull the project through

in the organization. The coalition needs to have sufficient power to be able to make decisions in the implementation project. Therefore, approval and support for the project is discussed early on with a director responsible for IT in the case company. Motivating for the change and building the coalition both begin in the group interviews. The second step is gathering CSA data (Data 1). During the group interviews, initial assumptions of the problems are discussed. It is also promised that everyone can contribute in the planning of the implementation process and their input will have effect on the outcome of the project. The simple goal of improving the use of the system is discussed, although the actual target status of the project is not yet visible. Gathering sufficient data from key stakeholders for analysis is critical to learn exactly what needs to be fixed.

5.2.2 Preparing the Implementation

The second stage of the implementation process is preparation. Preparation is a critical stage that consists of a lot of work in the organization. Despite of a big workload, the target stage is discussed comprehensively, because it has very big influence on what is the outcome of the project. The following Table 9 describes the tasks included in stage 2 of the implementation process.

Table 9. Stage 2 tasks of the implementation process.

No	Task	Realization (who, when, where)
1.	CSA review	Analyzed and later presented by project manager in the workshops.
2	Project plan overview	During Workshops (Data 2), initial project plan is shown by project manager and it is fine tuned together with the members.
3	Co-planning the content	During workshops (co-creative work), applying best practices, ensuring the easiness, planning the new structure and defining what belongs to the M-Files DMS.

As seen from Table 9 above, the second stage of the implementation process has three tasks. The first task is reviewing the CSA results. It is important to show an overview to project members of what is in most important need of fixing and what strengths the information system has. Next, the initial project plan prepared by the project manager is shown, discussed and fine tuned together. The third part is the most laborious one of the

process, i.e. co-planning the content. This part includes establishing the target stage of change. The target stage starts to formulate from the CSA results. For example, in this case the current state of the M-Files DMS content is complex and unorganized as Table 5 in section 3.4 lists. This has an effect on the target status, which is that the content is simplified and built in organized manner and structure.

Best practice from conceptual framework also has effect on the target state of the implementation process. For example, in this case the current state analysis reveals that the M-Files DMS at the case organization has 155 document classes while the best practice is that the maximum number for document classes is between 5-10. Therefore, the target status is defined that the number of document classes do not exceed 10. Easiness is also emphasized. If technically possible, users are not lead to think of meta data. It is also not users task to manage access control (user-rights of the documents) in the revised version. Furthermore, the target is defined that the use of the system and user skills are increased. The needs are defined for the M-Files DMS in the case organization. This work is done in the workshops in the organization. The findings from the CSA raised problem areas (Table 3 in section 3.4) from which some are transformed into the needs of the DMS. The list for the needs is defined in Table 10 below.

Table 10. Definition of the needs for the DMS and suggestion how to solve them.

1	The structure of revised M-Files DMS is made simple and clear.	Co-creative planning work resulting a documented structure and document types and categories about what is to be saved to the DMS.
2	Policy or definition need to be made on what is saved to the DMS.	Results from the co-creative work.
3	Basic functions, such as saving the documents is made easier.	Results from limiting number of document classes + meta data + simple view folder structure.
4	View folder structure is made as ready as possible. Rights to build views is restricted to keep the structure as it is planned.	IT will build the initial view folder structure after the co-creative planning work is finished.

5	Access management is removed from the users, at least as much as possible. Access rights come from the structure instead.	IT will take service provider training and apply best practice received from the training, into the view folder structure.
6	User manuals need to be made.	IT will create user manual, after initial view folder structure is ready.
7	Number of document classes and meta data is limited to best practice (5-10 classes, not excessive amount of meta data). Unwanted meta data is also limited (such as keywords).	Results from the co-creative work + guidance in the implementation project.

Table 10 above lists the definitions of the needs for the revised M-Files DMS. The list also address challenges found in the CSA and proposes work that meets the needs and tackles the problems in the DMS.

Easiness of the revised DMS is ensured in the workshops by defining a simple document storage structure. The planned structure will be gone through together with each of the department workers. Only the important and needed documents will be saved to the DMS. The new revised document storage structure plan is depicted in Excel sheets and PowerPoint presentations (Data 2). Appendices 3.1 to 3.4 show examples from Data 2, revised structure, constructed later in the workshops. Excel contains most of the actual raw data for new structure planning. PowerPoint presentations have much smaller views of the overall structure, but their purpose is in communicating the new structure in the organization in clear visual form. Excel data is not as easy to communicate as simplified PowerPoint presentations. The project manager guides the planning work and ensures that the desired structure is doable and easy to use in the revised M-Files DMS.

Enabling the needed features and developing the application are part of the planning work. This implementation process does not actually develop the Information System (IS) itself as the conceptual framework suggests, but its content and structure. The content designing work is considered application development part of this particular project. The same reasoning applies to enabling the needed features. As the application is not actually developed, the needed features are chosen from the existing ones.

The planned new structure, document classes, other meta data and any other project related data is documented with MS Office tools. Part of this documentation becomes Data 2 that is collected at the workshops.

5.2.3   Communicating the Implementation Process

Communicating the implementation process plan to the organization is the third stage of implementation process. This part of the implementation process occurs in the later workshops. A number of workshops that are organized with each department, depends on the amount of data and documents the department has and on what the departments plan to save to the revised M-Files DMS in the future. The last workshop for a department already has a good visual plan in Excel and PowerPoint to show how the new view folder structure will look like. This visual depiction is then communicated and accepted in the final workshop, after which constructing the new structure can start. The visual plan is also compared to the work other departments have planned and the overview of the entire structure of the M-Files DMS is presented.

5.2.4   Taking Action

The fourth stage of the implementation process is taking action. The fourth stage has 4 tasks that are listed in Table 11 below:

Table 11. Stage 4 implementation process tasks.

1	Platform installation (by IT)
2	Building the new structure (by IT)
3	Training the users
4	Enabling testing

As Table 11 above shows, the first task of stage 4 of the implementation process is to start taking action. In this project, this is the step when something visible starts to happen in the Information System. First, the DMS server version is upgraded to the newest. In the case organization, M-Files DMS is at version 2015.1. Two steps newer version, 2015.3, exist. After the application is upgraded to the newest version, a new document storage database is created with the help of the service provider. This new database acts as training database to the new M-Files DMS. Data conversion is done next, for a very small part only in this case. A useful part from the old version of M-Files DMS is

table of companies. That table is a list of companies and it is used as meta data. All the rest of the data in the old version of M-Files DMS is not converted into the new version database.

Upgrading the M-Files DMS version and creating a training database only happens once during the implementation process and is considered platform installation. Other parts of the implementation process will occur once for each department. After platform installation, IT department constructs the planned view folder structure for a pilot department (Building the new structure step). The users are then trained to use the revised M-Files DMS and access and permission is given to them to start the testing work. The revised structure of the M-Files DMS is tested by the pilot department employees during and after training sessions. Documentation is kept throughout the stage about building the new structure. When new structure is ready for the whole organization, a user manual will be created by IT department.

Once all of the departments have an existing view folder structure in the revised M-Files DMS and the users have been trained, the system changeover takes place. However, the first pilot department is already at this step given access to the new version of M-Files DMS and their users are trained to start using the new M-Files DMS. After every department is trained for the revised M-Files DMS, the old version of M-Files will be locked as read-only storage and the revised M-Files DMS document vault is elevated as active DMS. The system changeover method is parallel in that sense that old documents can still be accessed from the old M-Files DMS, but new documents cannot be stored there. New documents will be stored into the new version of M-Files DMS after the system changeover. In this thesis implementation project, it is recommended to use the parallel operation method, when the system is changed over, because of time limitations.

5.2.5 Implementing the Process

Step 5 of the implementation process is implementing. At this stage, quite a lot of actual implementation hands on work, such as training and structure building has already been done for the pilot department. Now it is time to support the pilot department to make the use of revised M-Files DMS part of their work process and keep the project going on in the organization. Possible positive initial comments and feelings from pilot users are immediately used in the organization to mitigate possible change resistance.

The new and significantly simplified saving sub-process is also used in discussions mitigating the change resistance. Figure 10 below depicts the new improved saving sub-process of revised M-Files DMS.
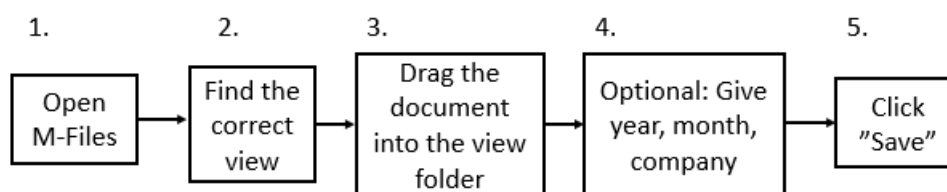
1.	2.	3.	4.	5.
Open M-Files	Find the correct view	Drag the document into the view folder	Optional: Give year, month, company	Click "Save"

Figure 10. Sub-process, document saving in the revised M-Files DMS.

As seen from Figure 10 above, the document saving sub-process is now much simpler than before. Although the user still needs to open the M-files DMS and browse to his or her view, the saving is basically drag, drop and click Save. This process is very close to saving a file to the network drive, with the exception that the user can give year, month and company as optional meta data. This meta data is only given, if the user wants to storage his or her file in automatic year/month/company structure in the M-Files DMS. Finding the correct view is now simple and familiar to everyone, because the new structure of M-Files DMS is depicted in PowerPoint presentations and communicated in the organization. Perhaps most importantly, the view folder creation sub-process is completely eliminated from the document saving sub-process.

The view folder creation sub-process was determined the most difficult part of the M-Files DMS use in the CSA section. The view folder structure is now predesigned and created into the M-Files DMS and it is maintained by the IT department if it needs changes in the future. Furthermore, access control is given based on the view folder structure, just as it is commonly given in the organization's network drive. The users do not need to think of access control at all, when they save a document into the M-Files DMS. User errors regarding access control are also eliminated, because the users can no longer change the access control settings, even if they want to do so. Access control management is maintained by the organization IT. All of the benefits that make the system easier to use are used to mitigate change resistance in the organization.

5.2.6 Sustaining Results

At this step, the revised M-Files DMS is promoted at the organization. The system changeover has been done and now the resulting success in that is communicated in the organization. Maintaining the system needs continuous support from the IT department, because the IT department assumes the role for view creation and access control management. It is also logically correct, because IT has this role with the network drive space as well. User manual and document saving policy is created and is shared in the organization.

A feedback interview is arranged with pilot department, after they have had a chance to test the revised M-Files DMS. Technically, the revised M-Files DMS is significantly easier to use than the old version, but the easiness need to be validated and confirmed by the users. Feedback interviews need to try to find out possible further development areas that could be taken into the Information System change management task list. One example is the automatic archiving function that is not yet developed for the revised M-Files DMS.

5.3 Summary of the Proposal for the Initial Implementation Process

The conceptual framework for the implementation plan was developed in section 4 and based on co-working in the organization, it was refined into an implementation project plan depicted in Figure 11 below.
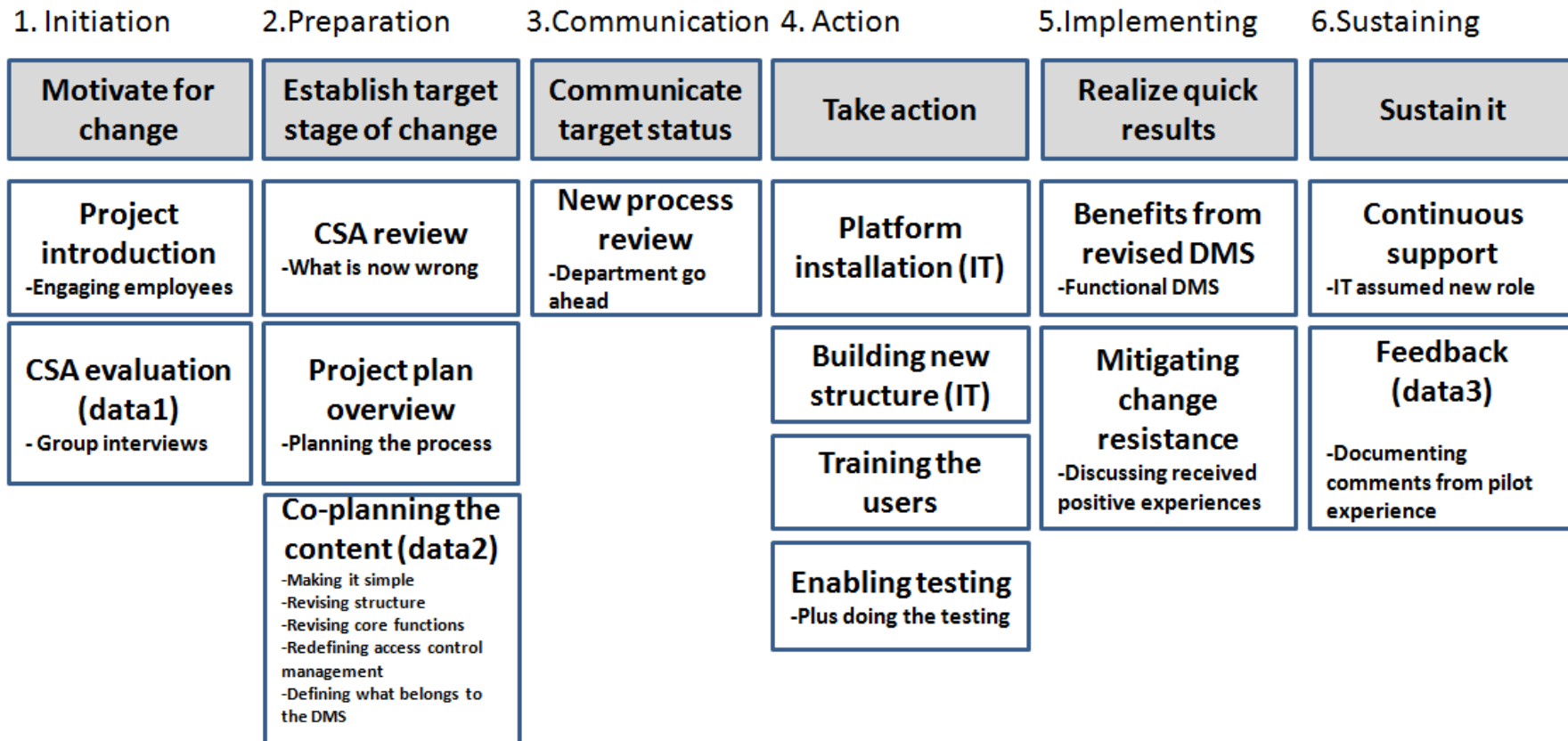
Figure 11. Initial implementation process.

As seen from Figure 11 above, the implementation process has six steps and each step has specific tasks to do. First, the implementation process is initiated. Awareness of the project is raised in the organization and coalition built for the project.

Second, the implementation process is prepared. This is a very critical step of the implementation process, because at this stage the target that the implementation process aims to reach is decided. In addition, preparation and planning reviews the CSA and tries to find solutions to the problems. The solution is co-created in the organization and best practices are drawn to it from existing knowledge.

Third, the new target status and project overview is communicated in the organization. Department internal "go ahead" is given to IT to create the planned new structure to the revised M-Files DMS.

Fourth, action step starts to make the planned steps into reality. In this project, it means changes in the Information system and its content. After Information System changes are ready, users are trained and encouraged to start using the system.

Fifth, quick results are realized from the new DMS. These results are benefits that the organization has for example from new centralized contract archive, but the benefits also include easier use of the revised M-Files DMS as well. Furthermore, positive experiences are used to mitigate change resistance when the next department will do the project tasks.

The sixth step is sustaining the revised M-Files DMS. Sustaining means both keeping the system in good operational shape and supporting the users to use the system continuously. Feedback is used to receive information on improvement needs and those needs are brought to the list for the Information System change management process.

This implementation process was refined while doing the process steps with the first pilot department. Doing the steps with a pilot department became the validation part of the project that is discussed in the next Section 6.

6   Validating the implementation process

The goal for validation is to test if the proposed implementation process works in practice. In this study, work at CSA stage and co-creation work in the workshops while building the proposal actually are part of the implementation process validation work.

Piloting is one of the strongest validation tool, therefore it was selected to be the validation method. There was just enough time to try out the whole implementation process with one department in the organization, therefore it made sense to pilot the implementation process.

6.1   Overview of Validation Phase

The implementation process was piloted in one department in the case organization. Working in the pilot project became the validation of the implementation process. Financial department was chosen to be the pilot department.

First step, motivating for change, was done by introducing the project in the case organization. CSA questions were made and answers were collected from group interviews at this step. Coalition building started in the organization as this first step was done with every department in the case organization.

Second step, establish the target stage of change, was done with financial department, followed by technical department and HR. CSA results were reviewed and overall project was planned. A lot of work was contributed into many workshops, where the revised M-Files new structure and content was being planned. During this time, Data 2 was also collected.

Third step, communication, followed after the plan for new structure was ready for the pilot department. In the last workshop for pilot department, the target status was reviewed and go-ahead was received to continue to taking action.

Fourth step, take action, was next. The M-Files DMS version was upgraded to the newest available. New platform and new data vault was prepared for the revised M-Files DMS.

IT department prepared the new structure for the pilot department and trained pilot department employees. Access was then granted for pilot department employees to start testing the revised M-Files DMS.

Fifth, realizing quick results started immediately after the pilot employees were trained to use the system by asking their initial feelings and comments of the revised M-Files DMS. Luckily, the comments and experiences were positive and they were then able to be used with the next department in mitigating some emerging change resistance.

Sixth step, sustaining, is ongoing and it started right after the revised M-Files DMS was included in the work processes of the pilot department. IT has been supporting the pilot department since that. Feedback round was also done with the pilot department employees of the pilot project. Feedback was collected from group interview with pilot department employees and answers from it became Data 3 collection of this thesis.

Data 3, shown in Appendix 4, consists of feedback received from the pilot project members in a group interview. It was received in the final workshop with pilot department employees, after the pilot was over. It makes sense to ask feedback from employees who were involved in the pilot project and who saw the outcome of the implementation process project. Table 12 below shows the summary from Data 3.

Table 12. Summary of Data 3 feedback.

1.	-A bit unclear, if user can create views in the revised version.
2.	-Unclear, what alternatives exist for drag & drop –method.
3.	-Some cases may have challenges, when the user cannot change access rights. Access groups may also change often.
4.	-Created by me –view does not yet exist.
5.	-Document archive is planned, but not yet implemented.
6.	-Roles of other information systems are unclear. More clarity is needed on what documents are saved and where.
7.	-User manuals are not yet finished.
8.	-More training is still needed.
9.	-Target timetable of the project should be visible for everyone.
10.	-Group view of the M-Files goals and purpose should be made visible.
11.	+The new structure looks much better.
12.	+Users cannot make views, which is very positive

	+Absolutely agree on that (second opinion)!
13.	+Structure remains solid for controlled maintenance.
14.	+Currently the revised structure is sufficient.
15.	+Create all –function is very useful (when saving the documents)
16.	+Dropdown menu is simple for company selection
17.	+Simplicity is great.
18.	+Now easier with less meta data to choose from.
19.	+Much clearer who has access rights to the documents.
20.	+Keyword field is now no longer used.
21.	+No obsolete documents in the revised DMS.
22.	+System version is now the latest.
23.	+Easier to commit to use the system, when the employees participate in creating it.
24.	+PM was committed and kept the tight timetable.
25.	+"I definitely intent to use in the future" – positivity received!

As seen from Table 12 above, many improvement suggestions were received, but also many positive experiences were raised from the pilot project. Overview of the initial implementation process was reviewed in the group interview and strengths and weaknesses listed in the Table 12 above were discussed. Furthermore, challenges that CSA revealed were reviewed and compared to the results that the pilot project had received. A final version of the implementation process was constructed based on the received feedback.

Sub-section 6.2 starts with evaluation on how the validating part validated the implementation process. Sub-section 6.2.1 discusses how the implementing work can be improved and sub-section 6.2.2 discuss improvements suggested to the implementation process. Sub-section 6.3 sums up the final implementation process.

6.2   Developments to the Proposal Based on Findings of Data 3 collection

The implementation process worked well with the pilot department. All of the technical problems that CSA section concluded, were able to be solved or significantly simplified. For example, sub-process saving the document became simple, because of two things. First, the use of meta data was significantly reduced making it easy for the users to select

only from three optional meta data, when desired. Second, the views were pre-constructed in such way that when the user saves a document into the view, it automatically suggest the needed meta data. This also helps to remove those cases, where a document vanishes when saving - those cases are related to giving wrong meta data to the document being saved.

Success in making the revised M-Files DMS easy seemed to make the users happy. The technical barriers of managing access control and view creation were both completely eliminated from the users tasks, making the system use much less difficult. Initial comments from the users were also even a bit surprisingly positive. Positive feedback was due to the good system operational result described above. However, the validation also has limitations. The system changeover has only recently taken place in the pilot department, the M-Files DMS has only a little content and the new way of using the system is recently trained for the pilot employees. Therefore, it is not yet possible to validate, how the revised version of M-Files DMS performs in the long term. Furthermore, as the revised version of M-Files DMS is only piloted with one department, it is not yet possible to validate, how the system performs between different departments.

Pilot department employees have been involved with several IS projects, and therefore they know what to expect from IS project. They also lacked change resistance in the pilot implementation project. But other departments have employees, who are not used to IS projects and clearly have more challenges to overcome their own change resistance issues. In the workshop with second department, some employees were glad to construct a new folder structure and plan for their future use in the revised M-Files DMS.

However, a few of the employees in other departments were a bit difficult to reach. Some of them missed a couple of the workshop meetings. When they finally joined the project, their initial view was that they did not want to save anything even to the revised M-Files DMS. When they were asked, why they choose to do so, the answer was, "Because the M-Files is so difficult to use". In fact, these employees correctly remembered CSA analysis but had not yet realized or understood the change in the M-Files DMS. Part of the implementation process is not to give up, when resistance occurs or obstacles appear. Thus, the quick results and positive comments from pilot department success was then discussed to mitigate change resistance. Workshops continue with the other departments and hopefully each department will take the revised M-Files DMS in use and benefit later on from it.

Significant part of the M-Files DMS is that documents are shared and easily found across the different departments in the organization and the pilot has tried the implementation with only one department. Therefore, it is recommended that feedback is asked again after all of the departments are using the revised version of M-Files DMS and only after the departments have had at least a few months of user experience from the system. After receiving feedback from revised M-Files DMS, it can be used for further development of the system.

6.2.1. Recommendations to Implementing the Proposed Implementation Process

First part of feedback discussion focused on technical challenges identified at CSA section. Remained weaknesses were considered regarding each challenge and also gained strengths and improvements were discussed. As a result, a list of improvements for the implementation work was listed. This list is shown in Table 13 below.

Table 13. Feedback from group interview about project work or revised system.

1	A bit unclear now, can the user create views (improve communication).
2	Still unclear, what alternatives to "drag&drop" method exist (improve manual + training)
3	In special cases, it may be bad, if users cannot change access rights (Further polish the goals, including why users are NOT allowed to manage access control)
4	Created by me -view missing (Finalize implementation work)
5	User manual does not exist (Finalize implementation work)
6	Roles unclear for separate IS systems (Finalize implementation work + policy)
7	More training rounds are needed (include training in sustaining part)

As seen from Table 13 above, there were several items identified that could be improved on the implementation work. However, they do not change the big picture of the implementation process. The process itself worked well and also a lot of gains was achieved. The positive comments and gains are listed in Table 14 below.

Table 14. Gains received with the implementation process.

1	Users do not have to create views, which is very positive. Even further positive is that the users cannot make views, because that keeps the structure sound and clear.
2	Save all is useful function.
3	Dropdown menus (for remaining 3 meta data) is simple.
4	Using meta data has been made really simple.
5	Number of document classes used to be excessive that is now simplified a lot.
6	Now we do not have to worry about managing access control.
7	Confusing keywords -field is now disabled. While disabled, it does not lead into problems with view folders.
8	The easier the IS is to use, the easier it is to commit to use it.
9	In our department, we were able to start quick.

As seen from Table 14 above, many positive comments were received regarding pilot implementation project. Especially, using the revised version of M-Files DMS was found much easier which enables the employees commit to use the revised version in the future. Thus, the implementation process seems to work.

Recommendations on actual implementation work did not result in need to change the implementation process itself. However, recommendations to the implementation process exist and they are reviewed in next sub-section 6.2.2.

6.2.2. Recommendations to Improving the Proposed Implementation Process

Initial implementation process was reviewed in the feedback group interview and possible strengths and weaknesses about the implementation process were discussed. Although the implementation project work went well with the pilot department, it was already clear from workshops with other departments that some employees have lost their faith to use the M-Files DMS. Clearly, strong change resistance exists with some of the departments. It was discussed that positive results from the experiences and comments from pilot department is being used to mitigate change resistance (Quick wins). However, one executive level interview suggested that although it is useful and important to do so, it is not enough. It was suggested that documentation is improved and communicated about what is the purpose of M-Files DMS in the case organization. Furthermore, it is

important to clarify to everyone why it is important to use the system and that the M-Files DMS is now the primary document management tool for the organization. Full timetable is also made visible for everyone. Presentation aimed to improve executive level employee commitment is planned and performed if approved. Feedback comments included suggestion that the M-Files DMS has lost its reputation and because of that, it is comprehensively resold to the organization. These suggestions all make sense, but they were missing in the initial implementation process at first. Now they are added in it.

The implementation process also received positive comments. It was commented that it was good to do this together. Project manager was considered very motivated to do the project according to feedback. It was also said that when project manager had tight schedule to push through the testing the implementation process, then the rest of the project members had to keep up and the project did not become slow to progress. A good pace was seen very positive way of implementation. Finally, interview asked comments for outcome of the project. Positive feedback was received to this, such as "I intent to use!", "It is self-evident that we will use this in the future" and "It's now or never". Clearly, the revised M-Files DMS was "sold" to the pilot department, which made ending the pilot a very satisfying result.

6.3   Summary of Final Proposal

The final proposal for implementation process is revised based on Data 3 feedback. Revised implementation process is depicted on Figure 12 below.

1. Initiation	2.Preparation	3.Communication	4. Action	5.Implementing	6.Sustaining
Motivate for change	**Establish target stage of change**	**Communicate target status**	**Take action**	**Realize quick results**	**Sustain it**
Project introduction -Engaging employees	**CSA review** -What is now wrong	**New process review** -Department go ahead	**Platform installation (IT)**	**Benefits from revised DMS** -Functional DMS	**Continuous support** -IT assumed new role
CSA evaluation (data1) - Group interviews	**Project plan overview** -Planning the process	**Sell the DMS again**	**Building new structure (IT)**	**Mitigating change resistance** -Discussing received positive experiences	**Feedback (data3)** -Documenting comments from pilot experience
	Co-planning the content (data2) -Making it simple -Revising structure -Revising core functions -Redefining access control management -Defining what belongs to the DMS		**Training the users**		
			Enabling testing -Plus doing the testing		

Figure 12. Final implementation process for revised DMS.

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As seen from Figure 12 above, the initial implementation process did not need much changing. However, what was missing and added was very critical part. Step 3, communication needed a new task: Sell the DMS again.

During the pilot project this sales work had already occurred, for example, 3 to 5 examples were given, why the employees use the M-Files DMS. Unfortunately, this was not sufficient to convince users that a DMS is needed, especially after the M-Files DMS project had already once failed. Therefore, a comprehensive "sales plan" with grounded arguments and presentation form documentation is really needed to explain why it is important for organization to use document management system and how and for what it is planned to use in the case organization. That addition finalizes the implementation process.

7 Conclusions

This section contains the summary of the thesis, presents the next steps and recommendations, and give the evaluation of the thesis according to the selected evaluation criteria.

7.1 Executive Summary

The case organization is using the M-Files Document Management System to fulfill its document management needs. However, the M-Files DMS in the case organization had insufficiencies. The system was difficult to use, partly due to its complex and confusing content. Furthermore, the commitment to use the M-Files DMS seemed to be low. It was unacceptable waste of resources to have poorly utilized Document Management System in use. Content and structure of the M-Files DMS needed to be revised and the system re-implemented in the case organization. Thus, the objective of this thesis was to create an implementation process for the revised M-Files DMS.

Case study was chosen for a research method for this study. The research is based on carrying out a current state analysis (CSA) and studying existing knowledge focusing on DMS best practice, Information System implementation best practice and change management. Data was collected from group interviews and workshops in three different stages: at the CSA, at workshops during co-creative work and from group interview in the validation step.

The current state analysis concluded that the M-Files DMS in the case organization was in a rather poor state. Its content was unorganized and its main functions were very difficult to use. Employees had various ways of using it, but not one universal way for everyone. This made the M-Files DMS confusing for the users, many of who had lost their fate in the M-Files DMS. The results from the CSA lead to researching existing knowledge about document management best practice, information system implementation best practice and change management. Mixing this existing knowledge together formed a conceptual framework that was later used to formulate a proposal for the implementation process.

The outcome of this study is a six-step implementation process. The first step is initiation where motivating for change starts by introducing the project in the organization and building a coalition for it starts. The CSA data collection is also done at the first step. The

second step is preparation, where the CSA results are reviewed and a target stage is established for the project. A lot of workshops occur at this step, where definitions are made and documented for the revised information system. Once the definitions are ready, the next step, communicating the target status in the organization takes place. The fourth step is taking action. This is when visible results and changes start to happen in the information system level. The new platform is installed and new structure is created for the M-Files DMS. Users are trained and access is enabled to them to the revised M-Files DMS. System testing also starts. The fifth step is implementing, which is when the revised DMS is taken in actual use. Quick wins, for example possible positive feedback, is used in the organization to create more change and to mitigate possibly emerging change resistance. Finally, step six is sustaining the change. It means continuous support and in this case, a new role for the IT to manage the revised M-Files DMS. Further changes to the revised M-Files DMS are done with Information System change management protocol. Feedback is asked from the users for possible improvement needs that are then transferred to be handled by the IS change management steering group.

The implementation process was then piloted in the case organization and feedback from the pilot helped to perfect the implementation process. Testing the implementation process with a pilot project in one department proved that the process has a significant effect on removing the technical difficulties from the M-Files DMS and to increase the system usage by motivating and making it easier to use. However, an important improvement was made to the implementation process: Step three, communication, was strengthened with task of selling the DMS again in the organization. Serious thought and strategy to this task is needed to remove change resistance that can easily surface with information systems that have lost their reputation at some point of their lifespan.

Many companies have inefficiencies with their information systems. These inefficiencies are often caused by technical barriers. If an information system is difficult to use, it often results in employees losing their motivation to use it. The case organization now has an implementation process in their toolkit that can be used to solve these kinds of problems with information systems. The implementation process is used to improve and implement existing or new information systems. The process also used to improve employee commitment to use an information system. The implementation process can also be adapted to correct challenges with other Information Systems, besides Document Management Systems. Therefore, it can be applied in a variety of different information systems and situations in organizations. Applying the implementation process aims to reduce ineffi-

ciencies related to information systems and their usage. When applied, the implementation process release employees from doing unnecessary and sometimes redundant work and lets them do other productive work instead.

7.2   Next Steps and Recommendations toward Implementation of the Proposal

The implementation process was piloted in one department in the case organization and next step is to finish the implementation with the rest of the case organization departments. Most of the other departments have also begun the implementation process workshops to plan for department internal part of the M-Files DMS. It is logical now to finalize the implementation process with the rest of the departments to get the most benefit from the revised M-Files DMS. Because the work has already been started with each department, it is recommended not to delay, but to continue with implementing the process immediately. It is doable by the beginning of Q2 / 2017 to finish implementation with every department of the case organization. Special effort is contributed to strategy on how to sell the DMS in the organization. That is vital part of the process, especially if change resistance occurs.

Second, the user manual needs to be finalized, when the new structure is ready for each department. The manual needs to have clear and illustrative print screen -style guides from actual live database to each department. It is not sufficient to have a general manual from the M-Files system provider, but instead it needs to be written according to actual use in the case organization. General manual cannot answer the questions on how the M-Files DMS is used in the case organization. Therefore, the manual is made to guide the use in the case organization with examples from live system database.

Third, a function for document archive has been discussed in the pilot implementation project. Clearly, need for it exists but it was not yet defined or implemented in the pilot project. Definition and implementation for document archive is done immediately after the implementation process has been implemented in each department, because it may have impact on how the documents are technically saved into the M-Files DMS.

Fourth, second round of feedback is asked and analyzed from the users after they have been using the system for at least 5-6 months. If needs for a change arise, they are handled with Information System change management process. Feedback is followed

by re-training sessions that help the users to use current version of M-Files DMS correctly. Re-training sessions are also good place to promote possible new features that IS change management may bring to the M-Files DMS.

Finally, IT department finishes the implementation process project on planned timetable and according to the new implementation process. Co-working is correct way for implementing the process for the remaining departments. IT department works together with employees from other departments in the workshops to create new structure to the revised M-Files DMS for each department. IT employees then create the new structure and train other department employees to use the revised M-Files DMS. Implementations is done in timely fashion. Estimated timetable for finishing the implementation process is depicted on Figure 13 below.
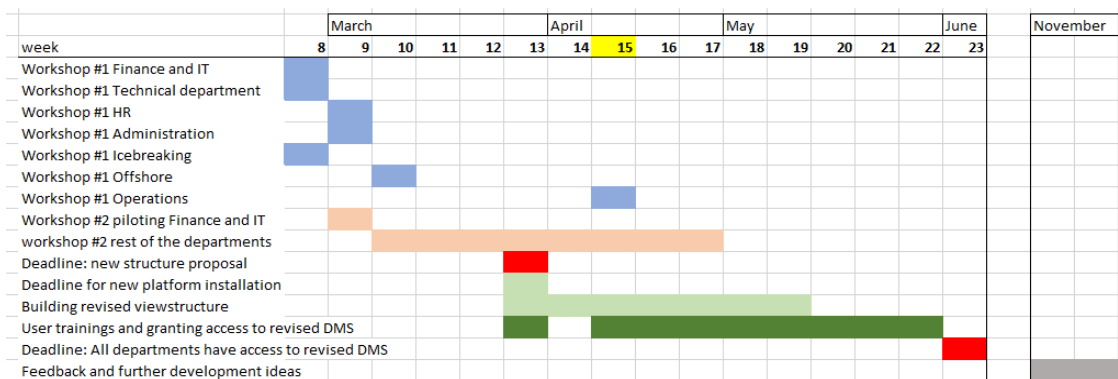
Figure 13. Timetable proposal for process implementation.

As seen from Figure 13 above, the process implementation work for every department occurs during April and May. The goal is that every department is using the revised M-Files DMS by the beginning of June. Department employees are given a few months to practice the new way of working with M-Files DMS after which feedback is asked in the end of the year from user experiences for possible further improvement suggestions.

7.3   Thesis Evaluation

To ensure quality of research, various criteria can be suggested. The most popular are validity and reliability, but often other criteria are also stress, especially for qualitative research, such as, for example, rigor, relevance, logic, etc. This study focuses on four criteria when taking steps to ensure quality of its research process, tool and outcomes.

7.3.1 Logic

Logic means cause-and-effect explanation of an action, decision, event, phenomenon or solution (www.businessdictionary.com). In this study, logic is ensured by finding out the current state of the problem, researching existing knowledge, building a solution proposal based on Co-creating, CSA and CF and finally testing the proposals validity with a pilot implementation of the process. Special attention to logic ensures that these steps are taken in this pre-planned, logical order.

7.3.2 Relevance

Relevance relates to the choice of tools, data collection and data analysis methods, which are applicable to the situation or problem at hand that can solve a problem or contribute to a solution (www.businessdictionary.com). In this study, relevance is ensured by including only end user employees to the project and using only applicable existing knowledge to build the proposal. Furthermore, the data collected is relevant to evaluation of current state (at CSA step), relevant to the solution building and finally relevant to depict how and what the testing of solution resulted. Finally, the problem itself that needed to be solved, was relevant. This thesis aimed to improve a clear business problem that was not working efficiently and was wasting resources.

7.3.3 Validity

Validity relates to the correctness and credibility of the study. Research is valid, when the description, conclusion(s), explanation(s) and data interpretation(s) are correct, proven and grounded. Alternative explanations are explored and researcher bias avoided (Maxwell, 1996). When considering validity, it is not only about the collected data, but also conclusions drawn from analyzing it (Creswell and Miller, 2000). In this study, to ensure validity, relevant employees who have first-hand experience about the problems are chosen to contribute to both data collection and building the solution. Researcher bias is challenging to eliminate completely, but conclusions, suggestions and actions are made as objectively as possible and they are based on collected relevant data and existing knowledge.

During the workshops, the validity of CSA results was questioned. Participants were asked if the conclusion analyzed from Data 1 feedbacks was matching the answers participants gave at CSA. Answers to validity question were mostly positive: yes. However, there was one exception. CSA concluded that for the M-Files DMS training, organization internal IT was hoped, instead of service provider training. Furthermore, CSA concluded that especially service provider training was not wanted. To contradict this, during the workshops following comment was received:

> *"I think that a good overview by service provider is needed to everyone, especially to brief users on possible new features in the DMS." (interviewee 12)*

This comment was received from executive level interviewee and of course, the comment has a correct argument, although it did not originally get raised up from CSA findings. This is just one example of how researcher objectivity was tried to be guaranteed in this case study.

7.3.4 Reliability

Reliability means trustworthiness and authenticity of the study and its results. Rich data, piloting, testing or auditing and comparing interpretations to existing knowledge will result reliable study (Guba and Lincoln, 1994). Authenticity is improved, when participation of all key stakeholders is secured in the study. Triangulation is a procedure to gather similarities from different sources to raise themes (Creswell and Miller, 2000). In this study, to ensure reliability, qualitative data collection method is used with triangulation procedure to raise themes while analyzing the collected data. All relevant stakeholders are included in the case study, including a stakeholder from the service provider side.

Reliability is improved when research data is collected in different points of time. Data for this study was collected in three different points of time. First, at CSA step to determine current state. Second, at solution building state, the data shows how the new content and structure was being designed (revision work). Third, from group interview about experiences and opinions of how the pilot implementation worked in the case organization.

The outcome of this thesis was an implementation process. The implementation process was tested in a pilot implementation project with financial department. Results showed that implementing the process was successful with the pilot department. However, employees in that department are used to Information System projects. They know what to expect from IS project, were motivated from the start and lacked change resistance. Initial workshops have been conducted with other departments. Some of the other department employees show strong change resistance. Pushing the implementation process through departments that have change resistance issues may give different results on how successful the process is in these departments. Furthermore, also the pilot department has only a few weeks of user experience with the revised M-Files DMS. Part of the implementation process is to sustain the M-Files DMS in the long run. Validating the sustainability on the long run was not possible within the timeframe of this thesis.

7.4   Final Words

Document management is often not considered a priority in companies. However, that does not mean that document management is not important. On the contrary, organization that manages its documentation well outperforms one that does not. When the DMS functions well and the users are well trained and motivated to use the system, the organization does not waste resources or efforts on finding and managing its documentation.

This implementation process made the employees life a bit easier in the case organization. Piloting the implementation process proved that the DMS used in the case company was possible to be significantly clarified and its use made very much easier. Pilot employees were glad to comment that they will be using this from now on – showing signs of increased commitment to use the M-Files DMS. The pilot project was conducted on very tight schedule and the implementation part can still be improved. For example, user manual was defined to be made during the project, but due to time restrictions, it was not yet ready.

The positive feedback from validation does give encouragement to me as well to finish the project from all planned aspects. I can honestly say here at the end that I was a bit surprised on how well the pilot project succeeded in the organization. Especially the technical solution exceeded my personal expectations. Improvements were also necessary as the M-Files DMS had lost reputation with many in the organization. If the project

had failed this time, it would probably have meant the end of the system use in the case organization. But now, it is really gratifying to see the end result in operation.

References

Arant, T. (1998). Document management in manufacturing firms: Industry trends. *Inform;* October, Vol. 12 (9), p. 32-34.

Bartels, N. (2005). An implementation and upgrade checklist. *Manufacturing Business Technology; Rockaway.* August, p. 24-26.

Burnes, B. (2005) Complexity theories and organizational change. *International Journal of Management Reviews.* Vol. 7 (2), p. 73-90.

BusinessDictionary (2017). Logic www.businessdictionary.com. (Accessed 8.3.2017). http://www.businessdictionary.com/definition/logic.html

BusinessDictionary (2017). Relevance www.businessdictionary.com. (Accessed 8.3.2017). http://www.businessdictionary.com/definition/relevant-information.html

Creswell, J. and Miller, D. (2000). Determining Validity in Qualitative inquiry. *College of Education, The Ohio State University.* Vol. 39 (3), p. 1-7.

Dawson, P. (2003) Understanding Organizational Change: The Contemporary Experience of People at Work. *The University of Adelaine, University of Aberdeen Business School.*

Dhillon, G. (2004). Information & Management: Dimensions of power and IS implementation. *IS Department, School of Business, Virginia Commonwealth University,* p. 635-644. Available online at www.sciencedirect.com.

Elam, D. (1998). The Hitchhiker's Guide to Document Management. Don't implement a technology solution without fully understanding your business process. *Inform; 12,6. ProQuest,* p.40-42.

François, P., Labarère, J., Bontemps, H., Weil, G. and Calop, J. (1997). Implementation of a document management system for quality assurance in a university hospital. *International Journal of Health Care Quality Assurance,* Vol 10, Issue 4, p. 156-160.

Guba, E. G., Lincoln, Y. S. (1994). Handbook of Qualitative Research. *SAGE Publications, International Educational and Professional Publisher,* p. 105-117.

Haug, A. (2012). The implementation of enterprise content management systems in SMEs. *Journal of Enterprise Information Management,* Vol. 25, Issue 4, p. 349-372.

Hevner, A. and Chatterjee, S. (2010). Design Research in Information Systems. *Springer.* Vol. 22, Chapter 7, p. 79-85.

Johnston, R. (2012). Document Management - Should You Think Again? *Technology Magazine: CPA Practice Advisor, From The Trenches column*, issue July 2013, p. 14-15.

Kotter, J. P. (2007). Leading Change. Why Transformation Efforts Fail. *Harvard Business Review.* January, p. 1-10.

Kotter, J. P. (2012). Leading Change. *Harvard Business Review Press.* October, p. 1-208

Maxwell, J. (1996). Qualitative Research Design: An Interactive Approach. *Sage publications.*

Miles, M., B. and Huberman, M., A. (1994). Qualitative Data Analysis. *Sage publications inc*. 3rd edition. p. 275-321.

Minnock, S. (2004). "Go Live"! Software Implementation. *Construction Accounting & Taxation.* Sep. 2004, p. 11-15.

New England DocumentSystems (2014). DMS VS ECM: The Difference Between Content & Document Management. *NE Docs July 2014.* (Accessed 13.mar 2017) Available online at: www.nedocs.com/dms-vs-ecm.

Rowh, Mark (2005). DOCUMENT MANAGEMENT in the digital age. *Office Solutions.* Sep/Oct 2005; 22,5; p. 22.

Shelly, G. B. and Rosenblatt, H. J. (2012). Systems Analysis and Design, 9th edition. *Course Technology, Cengage Learning.* Chapter 11, p. 505-567.

Winkelen, C. (2007). Encouraging "Intelligent" Document Management. *Knowledge Management Review.* Jan/Feb 2007; 9, 6; p. 28-33.

Yin, R. (2003). Case Study Research: Design and Methods. Vol. 5, 3rd edition. P. 1-200.

Zucker, D. (2009). How to Do Case Study Research. *University of Massachusetts – Amherst,* p. 1-17.

Appendix 1. Data 1 research questions

What do you use M-Files for today?	Do you know version management functions on M-Files?
What kind of documents have you saved to M-Files?	Would you find other functions useful that are not in use currently (such as scanning directly to M-Files or electrical document approval cycle)?
What would you wish to save to M-Files?	What kind of training would you find useful? Own practice/IT support near training / service provider training / other?
How do you share documents in your organization? Email attachments, links to M-Files or other?	Do you find extra training useful?
Does your unit have common documents? What are they?	What benefits would document management give over using regular network drive to save documents?
What documents do you need to find/use in your work? Do you find them from M-Files?	How often do you need to use document management system in your work? Daily / weekly / once a month / once annually / never?
Do you save documents outside M-Files? Why?	Do you know how to make view -folders in M-Files?
What are biggest problems with M-Files? Is there anything positive about it?	Do you know how to send a link to M-Files document?
Do you know about user groups and how to use them in M-Files? Easiness of giving user rights (1-10, where 1=difficult 10=easy)	Easiness of M-Files use (1-10)? (1=difficult, 10=easy)
Does M-Files serve your unit's goals for document management? What especially needs improving?	Other free feedback, comments, development ideas ?
What is difficult in M-Files? Is anything easy?	

Appendix 2. Analysing themes from Data 1

Current State Analysis (CSA) – Themes
Mika Maaranen, IM2016

Strengths
What is easy/good at M-Files?

Weaknesses
What is difficult at M-Files?
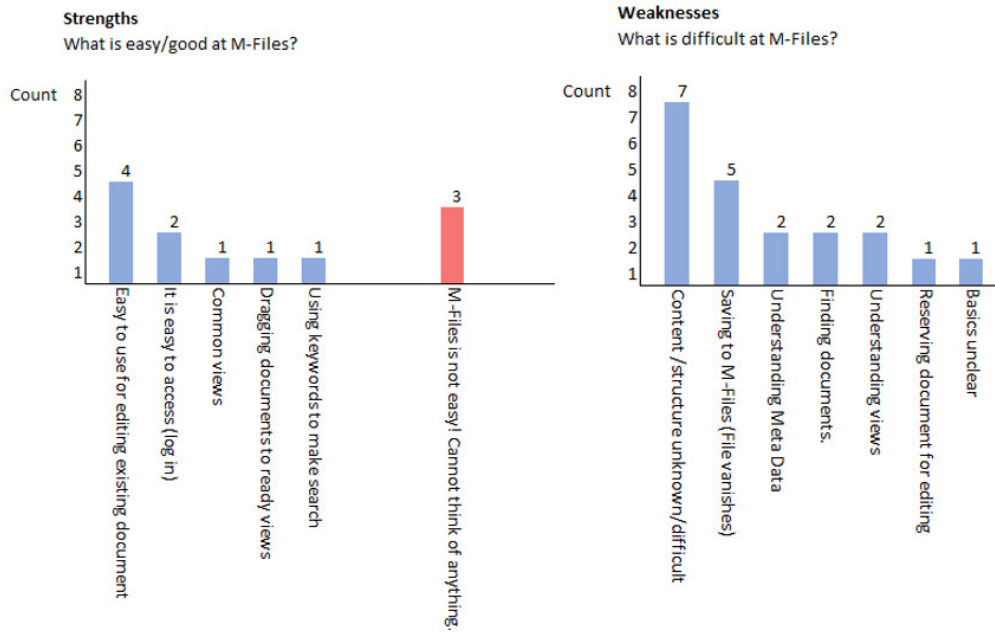
Current State Analysis (CSA) – Themes, slide 2
Mika Maaranen, IM2016

Evaluate easiness of user rights/access control at M-Files use (1 = difficult, 10 = easy)
54% Difficult - 46% easy.

Evaluate overall easiness of M-Files use (1 = difficult, 10 = easy)
73,3% Difficult - 26,7% easy

How often do you use M-Files ?

Do you know how
a) To create a view in M-Files
b) To send a link from M-Files
c) Version management works

Is additional training necessary?
83% Yes - 17% No

Training wishes:

Appendix 3.1. Planning the new structure for M-Files DMS (Data 2)
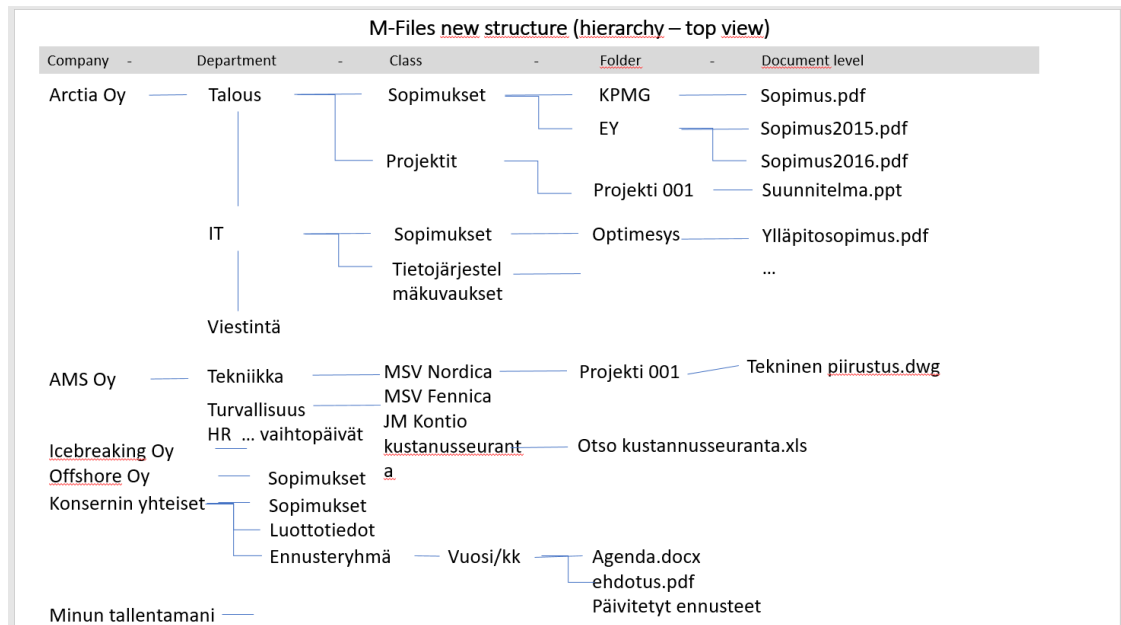
Appendix 3.2. Planning the new structure – inside Financial department view
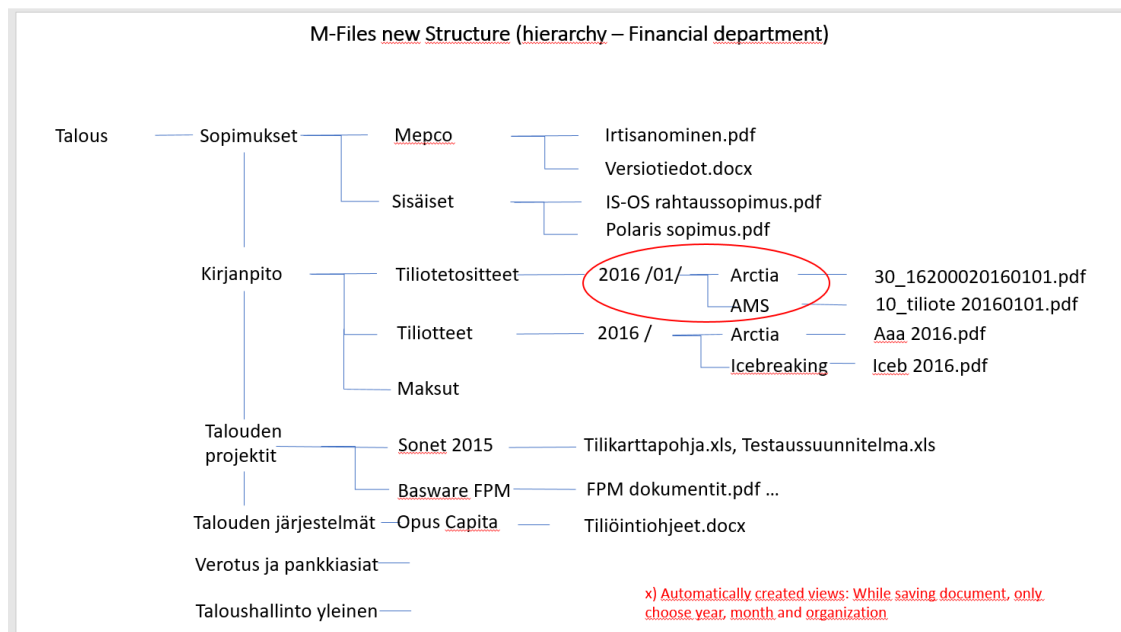
Appendix 3.3. Planning the new structure – inside Technical department view
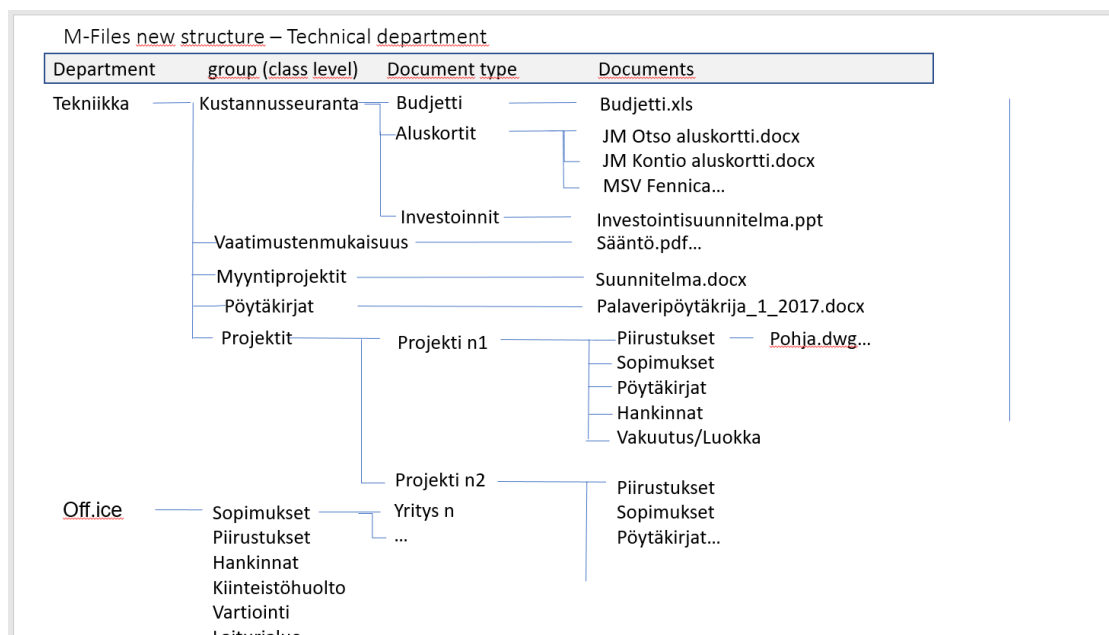
Appendix 3.4. Planning the new structure – snippet from excel data (data 2)

Excel contains most of the actual new structure planning data. PowerPoint presentations have much smaller views and their purpose is in communicating the new structure in the organization.

Appendix 4. Feedback after validation

Interview date and duration: 4.4.17, 1 hour 17 minutes.
Participants: Financial + IT (7 persons)

List of challenges / questions and comments to them:

Challenge / question	Remained weaknesses (-)	Gained improvements / strengths (+)
Structure of M-Files DMS is confusing & unorganized. Definition does not exist on what is expected to be saved to the M-Files DMS.	A: a bit unclear, if user can create views in the revised version. Also unclear, what from network drive should I take to the revised DMS.	A: The new structure looks much better. Filtering is done. M2: Users should not make views, which is positive. E: Absolutely agree on that. And user even cannot make them (when structure remains solid). T: we will get experiences after longer use. Currently the structure is sufficient.
System core functions, such as saving document is difficult.	E: a bit unclear, what alternatives exists for drag and dropping.	A: Create all -function is very useful.
Use of Meta data is difficult. For example, 155 Document classes exist.		T: Dropdown menu is simple for company selection. E:This is just the simplicity that not much meta data is needed and only a few things to select from. A: too much classes existed (compared to now). Now much easier with less to choose from. Additionally, now it is much clearer, who has access rights to the documents
Managing access control (user-rights) is difficult, strange and unclear for the users.	E: special cases may have challenges, if user access rights cannot be manually set. H: Furthermore, the user access groups may change often. managing combinations may be risky. A: Must carefully define how to assign user rights in a way that everyone understands how they should be used.	E: On the other hand, it is good that we do not have to worry about them.
Keywords -field is misused (For example in view creation)		M: keywords -field is now not used.

		H: logic for keywords was previously made personally, so others did not know how to use it (now this difficulty is removed). M2: at worst, there were many keywords (that made the view non-functional). A: Keywords field found too many documents to the access rights (there was a problem with assigning correct user rights before that is now eliminated)
Users have difficulty in finding documents, even those that are saved by themselves into the M-Files DMS.	M:Created by me -view does not yet exist.	A: in the old DMS, very old and obsolete documents existed.
Many old and obsolete documents exist in the M-Files DMS.	M: Document archive is planned, but not yet implemented.	A: in the old DMS, very old and obsolete documents existed. H: Document archive will help removing old documents.
Case organization has 2015.1 software version, when two steps newer version exist.		Mika: System version is updated to the newest.
User manuals do not exist guiding the M-Files DMS use in case organization.	M: User manuals are not yet finished. H: Does the service provider have manuals? (yes, but generic)	m2/m3: Generic manuals also exist on the system itself.
Creating views is very difficult to the users.		T: The use is much easier now that view creation is eliminated from the system.
Possibly re-evaluated after a few month period:		
Commitment to use the system is low	H: Still unclarity on the roles of different systems. More clarity is needed.	T: The easier to use, the easier it is to commit to use it. E:More easy to commit to use the system, when we have been part of creating it.
User skills need improving	M: training + practicing is still needed more. H: Worth to make training program and follow up. Essi: Plus the manual.	T: We were able to start quick with our department!

Strengths & weaknesses of the project plan?	H: Documentation should be made clearer, especially the message, what is the purpose of Document Management system. What are our goals for it? We should be able to tell the departments why this is important. E: different departments have different kind of material, which must be built from each department point of view. H: Target timetable should be visible for everyone. If does not exist, will take too long. Archive plan is missing, and should be done. T: And security: if someone throws away information that is needed that will cause irritation (and other problems) H: Company information should be in one location, not at P: drive. A: Goal for our department – revised version in use by date x. Should make policy clearer! H: Group view of the M-Files goals and purpose should be made visible.	H: Good that we started to do this together! T: PM has been rather committed (to finish this project). E: When PM has tight timetable, others had to commit to it and project did not become delayed.
What areas were less successful / need development?	H: Timetable and vision should be drafted that can be presented in management meeting. H: Could IT follow-up, how many departments have been successful in implementing the revised version? Follow-up for the departments. Increasing the documentation. H: Project was easy for Financial department, because the structure was clear. May not be so clear	

	for every department. Different departments need kickoff meeting. Suspicion exist (change resistance) towards the M-Files DMS. False beliefs, on what the system can do. The system must be resold to the organization, because it has lost its reputation. E: Agree, the reputation is lost. You can show departments, how Financial department managed the process. A: Every department has something to report on monthly basis. That can be used with the implementation process. T: Changing the way we think (about information managmenet)	
Comments of outcome of the project?		E: I intend to use it in the future! T: It is self evident that we will use it! A: It's now or never. H: Let other department ask comments from Financial department how it is now and how easy/difficult the project was.

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