Implementation of the Document Management System as an audit for sustainability of procedures within the university

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Abstract

Document Management is a contemporary term for the paperwork that is as old as paper and literacy. The implementation of the renewed Document Management System in the University of Tartu in 2004 brought forth critical aspects in three areas: project management, definition of system users and shortcomings of the document management processes. In this paper each of these aspects will be discussed further in detail.

We conclude that renewing of an existing information system makes it possible for managers from time to time to think from the very beginning through all the processes concerned. That is a constructive and impelling force for all organisations.

Keywords: document management, project management, Livelink.

1 Introduction

Document Management is a contemporary term for the paperwork that is as old as paper and literacy. It is common for all universities and other institutions as well. Nowadays the electronic document management systems (DMS) are used for that purpose.

The University of Tartu (UT) is the oldest university in Estonia, founded in 1632. It is the largest of the 6 public universities in Estonia. The UT is a member of the European University Association[1] and the Coimbra Group[2].

In spite of that long history we have now reached the Information Era, where most of the information is created and shared digitally.

The objective of the current paper is to sum up the lessons learned from the renewal of the DMS in our university in 2004.

The first chapter of the paper gives an overview of the implementation process of the DMS. The following chapters include discussion on the critical aspects in three areas: project management, definition of the users of the DMS and shortcomings in the document management processes. In each chapter the description of the current situation is followed by some conclusive ideas. The last chapters of the paper highlight the main obstacles and the further development needs.

2 Implementation of the DMS in the University of Tartu

From 1999 the University of Tartu has used a document management system based on Livelink software [2] by Open Text Ltd. for automatization and humanization of the existing “bureaucracy” that is done on paper nowadays.

Our experience with that software has been mostly positive so far. Users have become familiar with the DMS but are using it only as an electronic document index. This almost minimal functionality satisfied the needs of the university for years despite lots of the other features packed into the software out of the box. In the middle of 2003 the requirements for the functionality of the new DMS were clear within the university and the strategic decision had to be made – whether to stick with current software or not.

2.1 Strategic decision

The main problem that made us deliberate whether to stick or change the software was the number of licences that limited the use of some of the functionality of the current software. The other criteria were the 4-years user experience and doubtful sustainability of the other DMS software on the market.

[1] The European University Association, as the representative organization of both the European universities and the national rectors' conferences, is the main voice of the higher education community in Europe. EUA's mission is to promote the development of a coherent system of European higher education and research.

[2] The Coimbra Group unites reputable European research universities

As it was decided to move on with the same software it had to be upgraded to the latest version and tailored to our specific needs that were not available out of the box. The key objective of the renewal of the system was to move on to the personalized, therefore more secure, self-service supportive and paperless document management.

2.2 Partners and division of labour

There were 3 partners in the implementation process of the renewed DMS in 2004: chosen strategic partner (vendor of the software), Department of IT Services and Administrative Department of UT.

The strategic partner ensured us with some manuals and training, helped in technical aspects and developed basic functionality that gives serial numbers to the documents according to the Estonian laws.

Administrative Department defined problems of the existing system, added value of the user experience to the implementation process and gave a broad view about the design of the renewed system. Its personnel took also responsibility of maintenance of both, the existing and developed system.

Department of IT Services designed and implemented the structure of the renewed system, created users and user groups to the system and tied the DMS users with the central user account system of the UT. The structure included the folder tree, metadata of documents, classifications etc.

The real workload in the implementation process can be roughly divided as follows: Department of IT Services 60%, Administrative Department 37%, and strategic partner 3%.

2.3 Other issues

There were some other factors that had an impact to the implementation process as well. The official document management procedure year that affects the numbering and archiving of documents in Estonia, matches the calendar year. So it was possible to start with the renewed system either from the beginning of the 2005 or 2006.

The quite critical decision of the project group to implement the system with a minimal set of premises from the beginning of 2005 was made as late as in November 2004. We forego the workflow implementation for example and concentrated to the most important things – structure, permissions and users. The other prerequisites were planned to be implemented during 2005 in order to incorporate these from the beginning of 2006.

2.4 Implementation schedule

The actual schedule of the whole implementation process of the renewed DMS in 2004 was following:

December 2003	Decision was made to increase the number of licences to 2500 from the year 2004.
January 2004	Initial implementation schema was designed
May 2004	Project manager changed
Summer 2004	Groundwork on structure of the document depository, document categories and classifications, descriptions of the first workflow, trainings for project group members etc
August 2004	First workflow design
September 2004	Manuals of the software modules arrive, strategic decision was made that we need our own developer as the only developer of the strategic partner was very busy completing other customers orders
November 2004	Minimum requirements to start with the renewed system from January 2005 was set
December 2004	Realisation of the design and structure of DMS in the software environment
January 2005	On Jan 5th 2005 the system was opened to the 2500 users, followed by the first wave of computer-class training
March 2005	Second round of end-user training was implemented

2.5 Lessons learned

Within the context of the objectives and dates we can say that the project has been successful so far. The main success factor was concentrating on the most important things in the crucial moment. However in this paper we do not want to tell the success story. Life is too short to learn only from someone's own mistakes. Therefore this paper is about what we have learned of the analysis of the implementation or business needs that revealed unexpected features of the bureaucratic reality.

Our implementation experience is unique at least in Estonia because there are quite a few institutions using the same software as we do and none of them has implemented it with the number of users we have.

The implementation of the renewed DMS brought forth some critical aspects in three main areas: project management, definition of system users and shortcomings of the document management processes. Each of these aspects will be discussed further in detail followed by some conclusive ideas.

3 Project Management

3.1 Management support

The projects that affect the business processes of the whole university need support from the higher-level management.

It is inevitable to state the clear vision for managers how the concrete project contributes to the realization of the strategic plan of the university development. It's also important for team members to recognize how their own work and personal responsibility will help to attain the joint objectives.

3.2 Teamwork and sharing of responsibilities

Effectiveness of teamwork depends on the common group objectives and values that are understood and committed to by all team members, clear roles and rules, good communication.

It is quite hard to make a team and expect synergy from the project group which members are working in the different departments under a different chain of order and do it all in addition to their everyday work.

Such project group acts well until it is working out the plan how to do something. In the maintenance phase the need for a clear vision about sharing of the responsibilities among departments becomes crucial. It can be said that if more than one unit is responsible then it is as good as if nobody is responsible.

In our case for example it has to be clearly stated that Department of IT Services is responsible for development and Administrative Department for maintenance cases. It is also useful to even put down the list of cases and divide the responsibilities on paper.

3.3 Project manager, objectives and deadlines

Usually the project team has a real task to fulfil and a firm deadline. The team leader/project manager takes the full responsibility for achieving these objectives.

Sometimes the team leader has no real power in regard to the chain of order. There are two controversial options for a project manager to complete the project in such a situation by the due date.

The most productive way to fulfil the task is only through personal charm and contacts. Even then the team leader has to do most of the groundwork by him or her. By this way the only person, who really gets an experience as a benefit from the process, is the project manager. And there is at least one risk. If the implementation becomes "a solo performance" of the project manager, the sustainability of the outcomes is doubtful.

Another way to complete the tasks is to organize the work of the project group i.e. manage the project. If the team leader/project manager has not real power it is possible to do it through the vertical chain of order as well. Project manager reports about the tasks, problems and solutions to her boss, who will forward these to his boss etc. Then two directors (chief executives) will discuss the problem areas and the manager of the other department gives tasks to the project group members from his department. On the worst case the chain of the communication may be even longer. This is complicated and really time-wasting way, that kills quite quickly any motivation or self-thinking of the project manager.

3.4 Lessons learned

The roots of the problem may lie in the fact that due to the longstanding academic legacy old universities usually have a deep-rooted hierarchical structure. This makes horizontal communication between different departments difficult. That fact amplifies the quite usual problem of nowadays organisations where the project manager or the leader of the group has responsibilities but no full authority to implement the task.

Good way to manage successfully the cooperative project within the old university that affects different departments is to agree on the higher level management upon the project objectives, task, dates, project leaders' responsibilities and also the chain of order before to start.

Then complete the group of people within the institution to fulfil concrete task through the project due date and communicate the agreements to the group members.

Our experience is that the chain of order has to be as short as possible if you want to be flexible, find quickly solutions to real problems and put changes into practise.

It is also important that both, the team members and the bosses have to accept that project tasks have priority before the daily work of the group members as the results will affect the work of the whole institution. Otherwise the project tasks are kept in background because the every-day tasks take most of the time.

4 Users of the system

4.1 Facts to take into account

In order to make the system user-friendlier it is inevitable to know the users of the system. Their previous experience, expectations, business roles and training needs have to be seen as a whole. Employees of UT mostly use MS Windows and MS Office for "paperwork".

It is also important to take into account the current hard- and software in use within the institution and possible needs for changes in that field. Within the context of the DMS it means for example that every user needs a computer and access to internet to initiate the workflow within the system, even these users who did usually not have it.

4.2 Definition of users

Actually the problem about defining the groups of people who become the users of DMS is more complicated and wider than it seems. The number of users is limited by acquired licences. Every user can access to the system with a unique username. Every active username uses one licence.

In UT the DMS based on Livelink software is used in two purposes: for sharing inner information among university staff and for document management.

It is quite important to pay enough attention to the clear description of the user groups, define reasons and sort of data they need to access.

The table gives an overview about the user activities in the DMS of UT and percent of users who perform these tasks.

Activities the users perform or is planned to perform (*) in the DMS	% of overall users
Use inner information	100
Insert information to Enterprise Workspace (intranet)	5
Search for information from the system	75
Read documents	75
Add documents/items to the system	10-20
Edit Categories of the documents	10-20
Use the project workspaces* – add documents to the project workspace, participate in discussions etc	50
Use of project workspaces* – participate in discussions, collaborative work with documents	20
Setting up the project workspaces*– adding participants to the workgroup, create the roles, assign tasks, set up notifications, initialize discussions	10
Use of workflows*	100

Table 1: Activities the users of DMS perform in the system.

At the beginning of 2005 we opened the DMS to all users. There immediately arose an unexpected need that also these people who had not real employment relationship with the institution can have an access to the information through the DMS as it were defined to be a channel of information sharing too. These people were emeritus professors, visiting lectures, interns etc.

4.3 Licences

Utilization of commercial software products usually arise the question about software licences. The procurement of licences incurs costs. The yearly maintenance costs are also connected with the number of licences used or bought. Therefore licences limit the number of system users.

There are nearly 3000 staff members and nearly 20 000 students at UT. Most of the DMS users are the staff members. The students are not included to the DMS, they use Study Information System.

We have acquired 2600 DMS software licences as of May 2005 to ensure the access to the system. There were total of 2468 DMS users as of January 2005. The number of the DMS users is strongly related to the number of employees. The forecast increase of the number of users is about 100 users per year.

4.4 Optimal number of licences

The software we use allows two possibilities to make a user inactive in the system - to disable the user or to delete the user. The specific problem of our software is how the system behaves with the disabled or deleted user. If you disable or delete a user, the person cannot access the system, documents and workflows stay still connected to that user. In case of disabling the licence is engaged, while by deleting the licence will be free.

Disabling the user in the DMS is usually the case if the employment relationship will be suspended for some period. While the employment relationship will end, the user will be deleted. Problems may arise at once or later when the concrete person continues or comes back to the work in the university.

Disabling engages the licence. Deleting frees the licence, but does not allow using the same username once again.

In both cases – by disabling or deleting - the unique username is occupied. The other side of the problem of usernames is that the unique DMS usernames are the same as the central university network usernames. Therefore if you cannot add the person with the same username to the DMS, you cannot give any person the same username that once have been used in the DMS.

4.5 Lessons learned

Simple math allows us say that if an institution defines that the DMS users are all the staff members, they need as much licences for the DMS software, as the institutions has employees. But the real life is a bit different. There are about 30 persons who will be employed by UT or leave the university, change the position or department or pause their employment relationship with UT each month. Such cases have to take into account while acquiring licences.

5 Bottlenecks of the document management processes

5.1 Analysis of processes in 2003

In 2003 there was carried out a mapping of information sharing processes within our university. Andres Salu presented it also at the EUNIS 2004 conference [1]. The study was initiated by the Department of IT Services and addressed processing management needs of the institution to plan the cross-usage strategy of the information systems.

The analysis of the information sharing processes captured the situation in the field of document management in 2003 as well. It gave a basis for the design of changes into the existing DMS. Alas, the university management put the description of these processes aside. Therefore the renewal of the DMS in 2004 actually stumbled upon several shortcomings in the business processes, mapped already in the 2003 analysis.

5.2 Unregulated areas

The project team encountered a number of times to the problem of unregulated areas in the document management procedures. This hindered working out of the organisational workflow charts, implement unified document categories etc.

The main difficulty was connected to the substitution of staff, but there were other indistinctly regulated areas in the organisation of the document management too.

In the workflow chart the steps had to be completed in order and there may be different executives. During the design of the workflow the question arise what happens if the executive is absent (i.e. is ill, on holidays etc)? How the process will be continued in such case? The substitution of staff was almost unregulated area.

The general document management procedures have been regulated by the Document Procedure Regulation of UT, but there were lots of unregulated details needed for the design of the DMS.

Actually the document management procedures were not thought completely through. For example who has to register what documents in which way? Is a specific document basis to formulate next one? Who has to enter personal data to the information systems etc?

In one hand the designers had to find solutions to the problems, they did not know completely. In the other hand most of the needed information about important details was in these peoples' minds who were working on the existing system, not on the paper. It was quite complicated to get information about these details.

Planning changes to the existing system gives the management possibility to think once more through all the processes concerned and make changes if needed. It is their choice to use this opportunity or not.

5.3 Digital filing and pdf format

Digital filing and digital archiving is a new issue for all institutions in Estonia. Working out the national strategy in that field is in process at the moment.

The project team consulted with the Estonian National Archive about the metadata and accepted file formats for digital archiving of documents during the implementation process. Their suggestion was to use pdf format for final documents that have to be archived.

The project group made a decision at the end of 2004 that the only permitted file format for documents added to the DMS are Portable Document Format (pdf) or Plain Text (txt). The other important decision was made that all the incoming mail has to be scanned.

Actually the validating of the pdf format and order to scan documents leaded to the unexpected bureaucratic reality. The users added to the DMS pdf files as digital pictures i.e. without OCR in one hand. On the other hand there appeared an "easier" way for document processes. The electronically created documents were printed out, signed on paper and scanned to add the "real document" i.e. signed document to the DMS.

If the users add to the DMS scanned documents without OCR, those are not searchable by content and one cannot use the original text to compose answers or other documents based on it. The problem was noticed after some months of usage of the renewed system and partially solved by additional training of users.

The procurement of scanners and order to scan documents without concrete instructions what kind of documents they have to scan caused confusion among users as well. They had to use their common sense and we got the result that we can say is a step backward.

Last year most of the documents that were created electronically, live their life electronically and were kept as files in html format in the DMS. There was planned that only incoming mail will be scanned, but this message was not very clearly forwarded to the users. Therefore the best and most correct secretaries started to scan even electronically created and on paper signed documents with signatures. We got the procedure, that is three steps longer and make twice as much work for secretary.

5.4 Lessons learned

As the implemented system assists the existing regulations without exceptions it points well to the out-of-date or expired regulations. These regulations actually differ from real life and cause a lot of confusion among the users.

The need for training and support turned out to be more severe than expected. It refers to the fact that these issues were not addressed thoroughly from the beginning of planning the changes to the existing DMS.

It has to be stated (regulated) clearly that the original versions of documents are these added to the DMS, not any other files. So, if one wants to get a document signed, it has to be printed out only from the DMS and not the other way around.

There is another important issue that have to be solved in the DMS. The public institutions have an obligation to accept digitally signed documents. From the university management the project team has a need to be able to send out digitally signed papers as well. The problem is that there is no support in this field from the software vendor at the moment. The design of the module for the Estonian market that supports digital signature is at the development phase as far as we know. That question will be certainly considered to the future development plans as the use of ID card is increasing rapidly.

6 Conclusion/discussion

The best way to find out shortcomings in some area is to flirt with the idea. There are several possibilities for that purpose – role-plays, prototyping, and analysis of the situation as it is understood.

Unfortunately the management of the university was not interested in the results of the analysis of the information sharing processes in 2003. So the implementation of the changes in the DMS is therefore a digitalisation of the status quo of the existing document management processes. We got a working system with some benefits but also with real shortcomings of the legacy system as an added bonus.

If the only objective is to find out shortcomings in the current situation in some areas there are a lot of easier and more cost-effective possibilities than to implement a Document Management System that costs a lot of money.

On the other hand renewing an existing or designing a new information system makes it possible for managers from time to time to think from the very beginning through all the processes concerned. That is a constructive and impelling force for all organisations.

References

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