

Successfully Implementing Enterprise Content Management: Lessons Learnt from a Financial Service Provider

Completed Research Paper

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Abstract

Information overload and content chaos are major challenges for organizations, as they have to deal with a high amount of unstructured content. With enterprise content management (ECM) systems, a technological solution is developed to deal with such challenges; however, these systems can only provide value to an organization if they are implemented in the context of an ECM strategy. In this paper the implementation of a new ECM strategy at a financial service provider is described to illustrate how organizations can on the one side design an ECM strategy that reduces information overload and content chaos and on the other side implement it successfully. The four keys for successfully implementing ECM based on the lessons learnt derived are an ECM team leading the change process, the acceptance of users by meeting the organization's business needs, a metadata taxonomy enabling dynamic content delivery, and an effective change management from the outset.

Keywords: Enterprise content management, change management, IS implementation, IT-enabled change, case study, action research

Content Chaos and Information Overload in Organizations

Eighty percent of enterprise content and information is unstructured (Alalwan 2012) and found in websites, textual documents, spreadsheets, presentation slides and many other forms (Beath et al. 2012). In order to access this information, organizations usually use static website-based intranet platforms designed to house enterprise content and enable employees to search for relevant information.

However, organizations indicate that employees searching for content and information often experience content chaos¹ and information overload (Cenfetelli and Schwarz 2011). This is one of the reasons why employees perform worse and customers become dissatisfied (Smith and McKeen 2003; Yang et al. 2005). In response to content chaos and information overload, enterprise content management (ECM) systems designed especially for unstructured content have become increasingly popular as an alternative to intranet platforms (Tyrväinen et al. 2006; Nordheim and Päiväranta 2006; Vom Brocke and Simons 2014). ECM systems are part of an overall ECM strategy, which encompasses such technologies, but also the strategies, processes, and methods related to ECM (Vom Brocke et al. 2011a; Laumer et al. 2013).

An ECM strategy can only provide value to an organization if it is implemented successfully, which entails employees actually using the ECM system (Vom Brocke et al. 2011b). However, a recent study indicates that 30 percent of ECM users surveyed prefer other means of managing unstructured content and develop workarounds to avoid using an ECM system (Koplowitz et al. 2013), which prevents an organization from reaping the benefits expected from implementing an ECM strategy. The benefits of effective ECM include among others consistency and timeliness of content, improved collaboration, cost savings, fewer errors in products and services, reduced search times, fulfillment of compliance requirements and maintainment of information quality (Tyrväinen et al. 2006; Vom Brocke et al. 2011a).

Hence, organizations need to understand how to implement an ECM strategy with all components successfully to eliminate content chaos and information overload so that employees can search for and use enterprise content easily in their daily work. This paper describes the case of an ECM strategy implementation at a financial service provider that successfully reduced employees' perception of content chaos and information overload. The case illustrates how an ECM strategy can be developed in alignment with employee requirements and implemented successfully.

The research team writing this paper was involved in the implementation process and supported the organization in developing and implementing its new ECM strategy. This paper thus reports the results of an action research project, provides some basic information about enterprise content and change management, describes the project and the major ECM strategy components, and summarizes our experience and the results of several empirical observations to propose lessons learnt.

Research Background

This section summarizes the research background of the reported research project in terms of enterprise content and change management.

Enterprise Content Management

ECM is considered a new class of information systems (IS), opening up a new field in research focusing on information technology in organizations (Grahlmann et al. 2011). It is defined as an “*integrated approach to managing all of an organization's information including paper documents, data, reports, web pages and digital assets [... and all ...] the strategies, tools, processes, and skills an organization needs to manage all its information assets over their lifecycle*” (Smith and McKeen 2003, p. 647). Since managing unstructured content is among the principle tasks of ECM (AIIM 2013), an ECM strategy should provide guidelines for semantics, structuring and organization as well as creating and using enterprise content (Laumer et al. 2013; Herbst et al. 2014; Smits and O'Callaghan 2014). As part of an ECM strategy an ECM

¹ By content chaos we refer to situations in which organizations have neglected their information assets and employees have to search for information extensively as it is not known which information is provided, where information is provided and which information is consistent, actual and correct.

system can be implemented. ECM can be viewed as the evolution of document management, records management, workflow management, business process management, and web content management (Alalwan 2012). As such, it allows organizations to better organize and process especially unstructured content for employees searching and using content in their daily work.

To perform work that ultimately provides a product or service to a customer ECM users rely mainly on ECM systems as the core component of an ECM strategy. ECM systems provide “(technical) solutions for the organization-wide management of all types of content” (Grahlmann et al. 2011, p. 269). This includes the necessary technical functionality to support the creation of unstructured content effectively, to integrate structured content from other sources, and to support general content use as part of an employee’s work (Grahlmann et al. 2011; Laumer et al. 2013). The market for ECM systems is complex (Böhn 2014). According to a classification of ECM systems provided by Gartner (Gilbert et al. 2013), the leading vendors of holistic ECM systems are Microsoft (Microsoft SharePoint) and IBM (IBM Content Navigator, Content Foundation, Connections), but several additional solutions support one or more partial aspects of ECM (Böhn 2014).

As the reported action research project describes the design and implementation of the different components of an ECM strategy, including an ECM system, at a financial service provider, the following section introduces the basic theories of change management as applicable to implementing a new information system.

Change Management Process

Change management involves all activities to manage an organizational change. A pioneer work in this area was Kotter (1995), who describes the general process of organizational change in eight phases (see Figure 1, right side). First, one needs to establish a sense of urgency so that everybody in the organization is convinced that a change is necessary. Second, a powerful guiding coalition needs to be formed to lead the change process. Third, a vision needs to be created and fourth, the vision needs to be communicated. Fifth, measures needs to be implemented to empower others to act on the vision. Sixth, it is important to plan for and create short-term wins. Seventh, it is necessary to consolidate improvements and to produce still more change. Finally, the new approach in the organization is institutionalized (Kotter 1995). Also for the implementation of an IS in general (Cooper and Zmud 1990; Bala and Venkatesh 2013) and ECM systems in particular (Scheepers 2006) research highlights that Kotter’s eight phases (1995) are relevant for an IS implementation.

Hence, in the following the development and the implementation of a new ECM strategy will be described based on the change management process suggested by Kotter (1995).

Development and implementation of a new ECM strategy

The overall objective of the ECM project is best described in a statement by the CEO of the financial service provider at the beginning of the project:

“A holistic focus on content and its life cycle, from capture and creation to long-term retention or deletion, as a core characteristic of the new ECM is necessary. All sales people need to get all necessary information and we need to focus on the ECM system as the main medium of information delivery.”

The project followed the eight phases suggested by Kotter (1995) and was structured into four phases. Before the project started, the organization itself established a sense of urgency. As part of this process the organization asked us to join the organization as researchers to help them develop a new ECM strategy. Hence, a powerful coalition was established consisting of the external research team and internal employees from the CEO office, the HR, sales and IT department. We will describe these efforts as phase 0 (pre-project) in the following. The objective of the official phase 1 (analysis) of the project was to identify the requirements of a new ECM strategy and lasted about four months. In phase 2 (development) a new strategy was developed and a new ECM system was selected which took additional four months. The first two phases correspond to the Kotter phase of creating a vision. In parallel, the new vision was communicated. In phase 3 (implementation) the new ECM strategy and system were implemented such that employees were able to improve their daily work and to reduce content chaos and information overload. This phase corresponds to Kotter’s phase of empowering others to act on the vision and of

creating and planning for short-term wins and lasted about four months. Finally, in phase 4 (institutionalization), post-implementation efforts were made to evaluate the success of the implementation and to institutionalize the new ECM strategy. This took up to additional four months. In this phase, follow-up projects were initiated to improve some areas (e.g. using forms), which were outside the focus of the initial strategy and which were focused after the ECM project ended. Phase 4 corresponds to Kotter's phases of consolidating improvements and producing more change as well as institutionalizing the new approach. The overall project lasted about one and a half year.

Figure 1 aligns Kotter's (1995) eight change management phases with the project phases. Each project phase will be described in more detail in the following, including what was done in each phase, the results of each phase, and the lessons learnt in each phase.

Phase 0: Pre-project

Our research focused on an ECM strategy implemented by a financial service provider with approximately 900 employees and total assets of EUR 3.2 billion. Since 1999, the financial service provider has used a static intranet system to support its employees with relevant information. The intranet system is a web application and delivers rudimentary functionality and basic web technology to represent websites and provide links to documents.

The system is used by various employees throughout the organization. Salespeople use the system to search for content they need to consult customers. Backoffice employees use the system to search for information they need about financial products or administrative issues. In addition, process employees use the system to document business processes and to provide information about the business process tasks. Moreover, product employees, who are responsible for several financial service products, use the system to provide information about the products. Hence, two groups of users can be identified. First, those employees providing content for other employees (ECM authors) and second, those employees only consuming content (ECM users).

Before the official project started, the organization itself already felt a sense of urgency and the CEO appointed an ECM project team to develop and implement a new ECM strategy.

Establishing a sense of urgency

The organization's intranet system had not changed or been adapted to meet changing requirements since 1999. However, the environment surrounding the intranet system had been changed by external events like the adoption of the Basel II guidelines for financial institutions in Europe and periodically changing legal requirements and by internal events like the merger with another financial service provider in 2000 and the introduction of a new core banking system in 2008. These external and internal events led to a sense of urgency to develop a new ECM strategy as employees reported information overload, content chaos and dissatisfaction with the current situation.

One of the main goals of a new ECM strategy at the financial service provider was to increase employee satisfaction, as employees frequently expressed their dissatisfaction with the information chaos in the organization and demanded change. This dissatisfaction was one of the main issues observed in annual employee surveys and regular employee meetings. In 2011, the CEO established an ECM team to develop and implement a new ECM strategy.

Forming a powerful coalition

In response to the demands by dissatisfied employees for a new ECM strategy, the CEO appointed two members of the CEO office to form an ECM team in 2011. They were joined by employees from the IT department, as they would be responsible for managing the technical infrastructure, the HR department, as they have a good overview of employees' concerns and provide a lot of content, and the sales department, as they are the main users of content. Finally, the financial service provider asked our research team to join the effort and support the organization in developing and implementing the new ECM strategy. After the ECM team, which comprises a technical, an ECM author's, an ECM user's and an external perspective on ECM and hence was considered a powerful one to guide the change, was set up, we started phase 1 of the project.

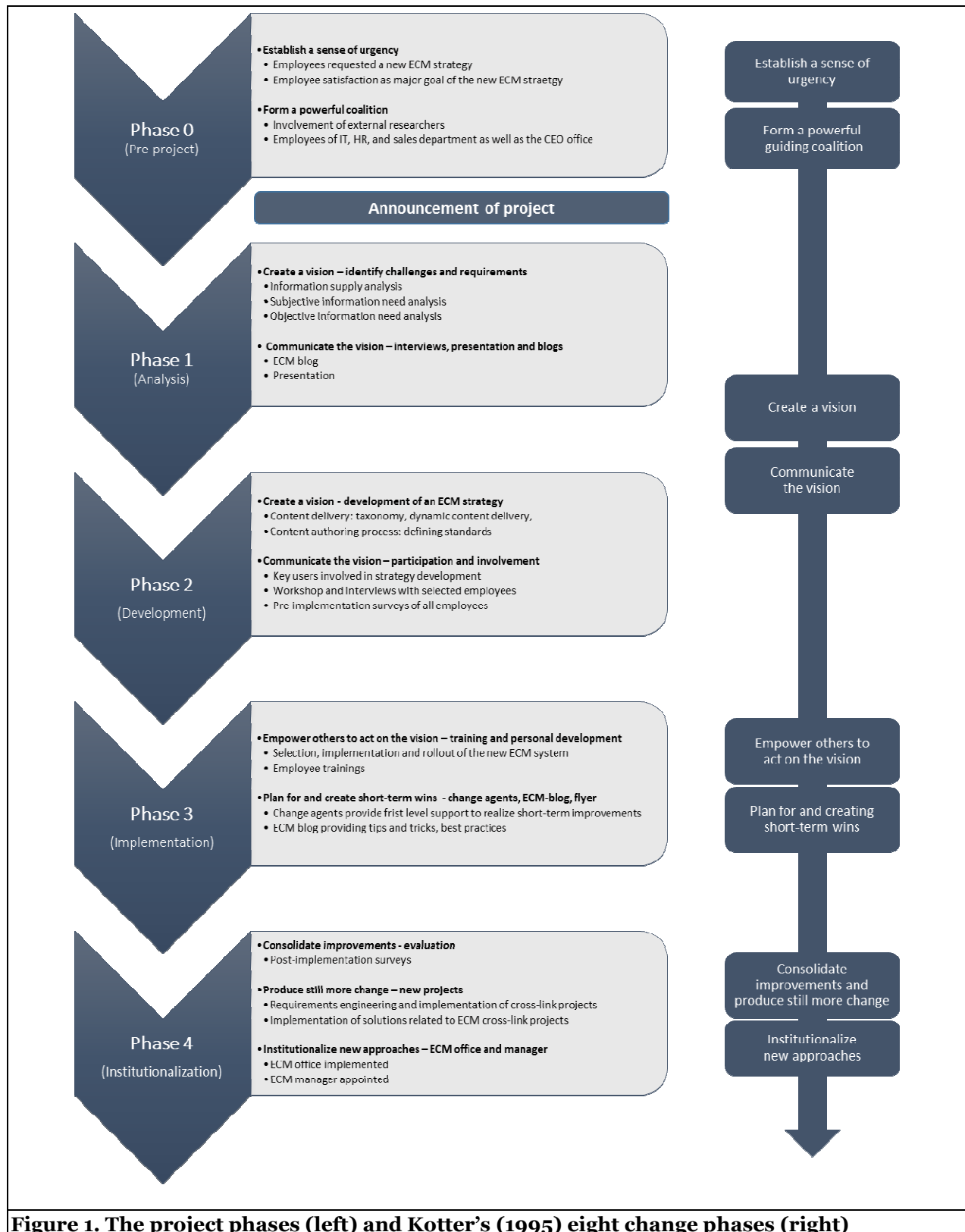


Figure 1. The project phases (left) and Kotter's (1995) eight change phases (right)

Phase 1: Analysis

The first phase, “Analysis”, focused on identifying information needs and information supplies as a basis for setting an ECM strategy and choosing a system. Some of the results of the analysis as well as initial thoughts on the new ECM strategy were communicated to the employees of the financial service provider.

Creating a vision – Identifying challenges and requirements

The first step in developing a new ECM strategy was to understand the status quo, identify the challenges of the current situation, and determine the requirements for the new ECM strategy. We assessed the information provided to employees, employees’ subjective information needs, and objective information needs for various tasks. Hence, three measures were used in the analysis phase:

Information supply analysis: We first analyzed how well the content available meets objective and subjective information needs, documenting all content objects provided by the old static intranet platform and assigning them to specific products, processes or themes.

Subjective information need analysis: We then interviewed ECM users and ECM authors to determine their subjective information needs. By the beginning of 2012, we interviewed 34 employees including the CEO, members of the board of directors, managers, 15 sales employees and 2-3 employees from every other department. We also conducted workshops with the CEO office, with sales teams, with process teams and with product teams to discuss their information needs, the shortcomings of the old ECM system and the requirements for a new ECM strategy. We also interviewed ECM authors to understand the design and challenges of the authoring process.

Objective information needs analysis: Finally, we observed employees at four branches of the financial service provider providing their service to external customers to understand how they use content objects in various business processes. The goal of objectively assessing information use was to reduce the level of subjectivity of users’ self-assessment of their information needs.

Based on these three different analysis measures, the ECM team assessed the status quo and started defining the requirements of a new ECM system. The following describes the results of the information supply analysis (i.e. content) and the results of the subjective and objective information needs analyses (i.e. challenges and requirements).

Content

The information supply analysis identified the content objects provided for different work processes at the financial service provider, dividing them into the categories of information and instructions. Information includes event information, event documentation, legal information, manuals, applications and software manuals as well as product information. Instructions include work instructions and circulars, which are instructions employees have to follow, as well as recommended forms and templates, the conditions that apply to various financial products, information about sales campaigns, and sales support materials employees have to use when working with customers. During the information supply analysis we also documented what website in the static intranet platform contains what content objects.

Challenges and requirements

In assessing the subjective and objective information needs, the following challenges of the current situation and requirements for the new solution were identified.

The first challenge is an ***inconsistent amount of information and a lack of standardization***. For example, different conditions can be found that apply to the same product and diverse media and websites provide the same type of information, which varies in terms of content. This is a typical example of content chaos in an organization. In addition, there are no known standards for how to provide content objects, which leads to an inconsistent authoring process. For example, work instructions are designed and written in various styles and containing various levels of detail. In general, the content is not written with the appropriate level of detail to meet the needs of the users. Sometimes there is too much content provided in greater detail than required for daily business, and sometimes the content is too vague to enable users to accomplish their tasks. This phenomenon is also known as information overload.

The second challenge is a ***lack of awareness and a lack of communication*** between sales and process employees as well as among ECM authors. Sales employees often call process employees instead of using published content because such content is often inconsistent and requires follow-up communications, which increases the time needed to find information. ECM authors report that they are not aware of what gets published by other departments on the same topic because content is not organized. This is one driver of the perception of content chaos at the financial service provider.

The third challenge is related to ***the search for information***. Employees are unable to find content, even when it exists, in part because there is so much information that they do not know where to search for it. Employees generally search for content on websites structured by department, but they are not always sure whether they have found all information available about a topic. Hence, searching for information is time consuming and employees have no guarantee that they have searched all potential information sources. Hence, they are threatened by content chaos and to some extent by information overload as they are not able to find relevant among irrelevant information.

The fourth challenge is related to the ***technology*** used. The system in use since 1998 does not meet complex authoring needs and only allows basic publishing. It is slow and does not facilitate interaction among different authoring tools. ECM users also report that searching for information is slow using the current technology.

During the analysis phase, the requirements for a new solution were identified to meet three goals. The overarching goal of the new ECM strategy was employee satisfaction. The second goal was to reduce the time required to find information, which means avoiding having to gather pieces of information from several different websites and being sure that search has yielded all relevant content available. The third goal was help the sales department increase the quality of customer support and advisory services. Also in the first phase we started to communicate about the new vision as it is described in the following.

Communicating the vision – Interviews, presentations, and blog

The implementation team communicated the vision in the first phase using presentations and an ECM blog. In addition, the workshops and interviews conducted to analyze the status quo and to identify requirements for a new ECM strategy were also part of the overall communication strategy of the project.

Presentations at various meetings and events were used to provide an overview of the project, the ongoing work, tasks completed, and the timeline of the project. At the beginning of the project its overall objective was introduced at senior manager and employee meetings. The employee meeting at the very begin of the project was the official kickoff, as the CEO officially announced the project and explained the reasons for implementing a new ECM strategy. Presentations were held on an ongoing basis as the ECM team spoke extensively with employees to inform them about the status of the project. As one employee put it:

“The ECM team did a great job of keeping us up-to-date about the progress of the project. From the very beginning we had a clear understanding of what they were doing and what their overall vision was”. [female, 35-40, salesperson]

The ECM blog was implemented at the beginning of the project and used to provide information about the status of the project. In the first phase the blog entries described the current situation and the results of the interviews to underscore the urgent need to change the ECM strategy. Afterwards the blog entries focused on the ECM strategy and were part of the strategy to communicate the vision of the change. It also provides updates on the implementation project, ongoing trainings, tricks and tips for using the ECM system, and the results of the evaluation phase. The blog was used in each phase of the implementation project to provide information about the progress of the project, and was received positively. One employee pointed out:

“The ECM blog always provided interesting information. I understood why this project was necessary and the blog provided me with everything I needed to know about its progress”. [male, 25, back office]

All employees interesting in contributing to the project were able to provide feedback on the intranet system used and to express ideas how to improve the system to better meet their needs. A pre-implementation survey was conducted to provide all employees the chance to express their opinions. This approach was appreciated by the employees. One employee [male, 22, salesperson] reported:

“I got the impression that every colleague interested in participating had the chance to voice his or her opinion. The ECM team did a great job of providing ample opportunities”.

Lessons learnt from Phase 1: Analysis

From our efforts in this phase we can derive the following lessons learnt.

Lesson learnt 1: Analysis should focus on subjective and objective information needs as well as information supply. When analyzing the status quo one should focus on the subjective information needs by interviewing employees, on the objective information needs by observing information usage when working in business processes, and on the information supply by analyzing the content provided by the organization. This combination underscores possible gaps in information supply and differences between subjectively and objectively perceived information needs. When supply is not meeting demand, efforts should focus on improving the information supply. At the same time, when subjective information differ from objective information needs, efforts should focus on changing the users’ perceived information needs. Both of these situations were identified and rectified in the case of the financial service provider.

Lesson learnt 2: Interviews with ECM users and authors are critical. Interviews with ECM users are critical in understanding how content is accessed and used, what changes should be made to facilitate this process, how similar groups of people need similar types of information, whether content contains the information needed, and which format users prefer to receive information. These interviews can also be used to establish a sense of urgency and to give employees initial insights into the new ECM strategy. Likewise, interviews with authors about the authoring processes are critical in understanding issues related to the writing and management of content-objects that may make the documents less useful, such as their timeliness and their overlap with other documents. These interviews can help identify requirements and challenges and are also part of the overall change management strategy, in that they establish a sense of urgency and facilitate communications with change recipients.

Lesson learnt 3: Start to communicate about the new vision early in the project. We communicated early starting in the first phase of the project using the ECM blog and presentations. We learnt from the interviews conducted at various stages of the project that such early communications were very well received among the employees. For example, one employee [female, 34, back office] mentioned:

“I felt very well informed about the project early on and why it is necessary. The ECM team provided various channels to provide information about the project, which is not the case with other projects”. Hence, to implement an ECM strategy successfully one needs to start communicating early in the project.

Phase 2: Development of an ECM strategy

The second phase involved developing a new ECM strategy based on the insights obtained from the analysis. First, we focused on content delivery gaps. We discussed a first draft of a new content delivery model with selected users, refined the model based on their suggestions and finally agreed with the selected key users on the new model for content delivery. Second, we focused on the authoring process to develop standards for providing information in workshops with ECM authors to analyze feedback from and requirements of information consumers.

Creating a vision - Development of an ECM strategy

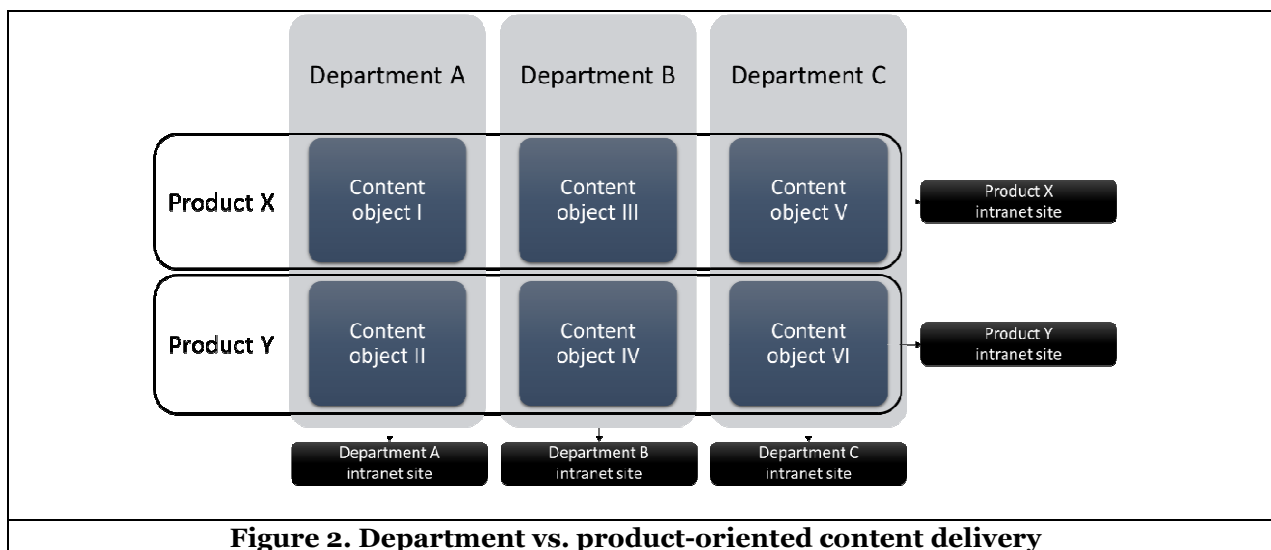
Content delivery

The new content delivery model overcomes the constraints of the old intranet system that has structured the content objects by department. As illustrated in Figure 2, each department provided content objects on its own website on the intranet system. For example, department A, which is responsible for content objects I and II, published these content objects on its department’s intranet website. In the same way department B and C published their own content objects on their own intranet website. Hence, if an ECM user like salesperson required content objects I, III and V related to product X, she or he had to look in each department intranet site for current content for their task. This was a time consuming process and ECM users were unsure whether they have found all relevant content. One employee put it this way:

“In preparing for a meeting with a customer, you had to visit several websites to see whether anything had changed or new information was available. This is always a time consuming process and I was always unsure whether I had visited all related websites”. [male, 45, salesperson]

The new ECM strategy focuses on a new content delivery model which structures content in two ways. First, it is still structured according to organization department so that employees in these departments can easily access the required content for their work when browsing the department intranet site. In addition, product intranet sites were implemented that contain all content objects related to a product. For example, the intranet site for product X contains content objects I, III and V, and the site of product Y contains content objects II, IV, and VI (see Figure 2). As a consequence, salespersons can find all relevant content on the product site, which contains all relevant information published by different departments. This ensures that employees have to look at only one site per product could be sure that all relevant information is delivered through this site. Hence, the gap between information supply and subjective and objective information needs could be reduced as the product website now meets all objective information needs and employees started to realize that these are all the content objects they need for their daily work. One employee put it this way:

“From my point of view the real innovation of the new ECM system are the product websites. These websites contain all the information I used to have to search for on different websites. Now, all information is provided on one website. This is really improving my daily work as the search process is not time consuming anymore”. [female, 54, salesperson]



From a technical perspective, the most important feature of the new content delivery model (see Figure 2) is metadata. Metadata is information about information. Metadata includes labeling, cataloging, and descriptive information that enables an ECM system to properly process and search content. Although metadata has been a buzz word in the information technology and data warehousing business for some time, it has recently emerged as an important concept for those who are developing search and retrieval strategies for enterprise content management systems. In this context, a taxonomy of terms used in an organization needs to be developed to enable content to be retrieved, tracked, systematically reused, and assembled automatically.

At the financial service provider four steps were followed to develop a metadata taxonomy that enables the implementation of the new content delivery model.

In a **first step**, it is important when developing a content taxonomy to understand ECM users and how they receive content. Therefore, the different tasks ECM users are trying to accomplish with content objects and especially the different terms they use when retrieving or searching for content need to be identified. In this step, it is also important to identify and describe user groups that have similar

information requirements. At the financial service provider, we used the results of the objective information needs analysis to define the different tasks and search terms.

In a **second step**, content needs to be categorized. Similar content is grouped together into categories described by individual terms. We used the results of the information supply analysis to generate a list of content objects which we divided into several categories at a workshop with selected employees. At the financial service provider we categorized the content into three main categories: First, products, which is content related to products offered by the organization; second, processes, which is content related to processes implemented at the organization; and third, themes, which is content that is neither related to a particular product or process, but which fits a particular theme relevant to the organization (e.g. legal requirements).

In a **third step**, the taxonomy is created by grouping content terms that describe the respective content groups. Each term identified becomes metadata that can be used to classify and describe content objects. At the financial service provider the three main categories process, products, and themes were used. For each category different terms were included that describe the different products, processes, and themes of the organization. Furthermore, the taxonomy also includes categories for describing the type of the respective content object (e.g. manual, instruction, circular).

In a **fourth step**, business rules need to be developed to connect content objects and employees. Each content object and employee needs to be assigned to at least one of the elements of at least one taxonomy category such that the taxonomy provides the connection between content objects and employees. Therefore, user profiles need to be defined that describe employees with similar information needs. At the financial service provider, user profiles were defined for salespersons, process employees, product employees, and backoffice employees. For each user profile, the relationships among the different terms describing content objects were determined. Hence, each user profile was assigned to at least one element of at least one taxonomy category. For example, user profiles of salespersons were assigned to products, profiles of process and backoffice employees were assigned to processes, and all user profiles were assigned to themes.

In a **fifth step** the taxonomy needs to be tested for usability to ensure the taxonomy is appropriate. At the financial service provider we tested the taxonomy in a workshop with selected users. Moreover, the ECM system pilot including the taxonomy was tested by several employees of the organization.

One of the main application areas of the developed taxonomy is to enable dynamic content so the same content objects can be displayed at different sites simultaneously. For example, content object I (see Figure 2) exists only once and can only be edited by authors with editing rights. According to the content taxonomy (see Figure 2), content object I is associated with product X and department A. Hence, both the product X website and the department A website can display content object X and users who have access to these two sites can access content object I. Using the taxonomy makes the intranet sites dynamic, rather than static. When a user requests an intranet site containing content objects, the page is constructed on demand using all content objects related to the request and the user profile. Hence, only those content objects related to the user profile are displayed, resulting in websites built for each individual request. One employee put it this way:

“When looking for information at a process website I only see relevant information. All the irrelevant information that used to lead to information overload is not visible anymore. To some extent, I believe that the webpage was built just for me”. [female, 32, process employee]

In summary, the new ECM strategy focused on the content delivery model to eliminate the identified gaps between information supply and information needs. The taxonomy developed and the dynamic content delivery model is the lever to improve satisfaction of those employees using content objects. On the other side it is also important to focus on employees providing content objects. This approach is described in the following section.

Content Authoring Process

Besides content delivery, the authoring process is another important aspect of successfully implementing a new ECM strategy. A well-defined process and content standards were designed in response to ECM authors' requests for a standardized process of content creation and publishing and also content users' need for a better structured process and well-defined standards to reduce content chaos and information

overload. The major steps of the new authoring process are content creation, content review and approval, content publishing, content retention, and content preservation.

Content creation: The new process provides standards for how information should be provided. It defines templates and outlets for each type of information. This process step should be supported by ECM system features such as check-in/check-out that enables more than one author to work on the same content object and manages different versions of the same content object.

Content review and approval: The new process involves a review and approval step. Each content object needs to be reviewed and approved before it can be published. First, content users ensure the understandability of the content. Second, a professional qualified reviewer guarantees the quality of the information. Hence, the new ECM system should provide a user management and access control system that enables authors to create content, whereas reviewers can only provide feedback.

Content publishing: The first task in the publishing step is to capture, organize and classify the content in the new ECM system by assigning it at least one metadata element from the taxonomy. Moreover, each type of content is assigned final publishing permissions. For example, work instructions may only be published by the CEO office, whereas other types of information can be published by the authors themselves.

Content retention: Each content object receives a retention date. At the financial service provider, for example, content objects are automatically “de-published” after one year and the responsible author decides whether to re-publish the content object if it is still up-to-date, to modify the content as needed, or to preserve it if it is outdated. This process ensures that each object is focused on at least once a year, keeping consistent and relevant content online while removing inconsistent or outdated content. An ECM system should provide a retention strategy feature if content is modified, such as version management that tracks all changes, and a preservation strategy if content objects are deleted.

Content preservation: When a content object is removed, it is preserved in an ECM archive and cannot be further edited. This enables the CEO office and anyone else involved in compliance processes to comprehend when a content object was published and what kind of information was available to employees when making decisions. Hence, the ECM system needs a version management and a preservation feature that supports these compliance efforts.

Based on the defined requirements for the new ECM system, an ECM vendor (here: Microsoft and its ECM system Microsoft SharePoint) was selected and the new ECM strategy and system were implemented in phase 3 of the project. In this phase, the new ECM strategy was further communicated as will be described in the following section.

Communicating the vision – Participation and involvement

Additional change management measures were used to communicate the new ECM strategy in this phase. First of all, the ECM blog was used on an ongoing basis to provide information about the strategy behind and progress in implementing the new ECM. In addition, presentations were held whenever possible to provide employees with information and answer their questions. However, the most important aspect of communicating the vision focused on involving employees in the development of the new ECM strategy.

We met with key users from several departments to introduce the ideas of the ECM strategy and to discuss potential solutions. At the first key users meeting after the initial details of the new content delivery model were developed, the general idea was presented and discussed. Their feedback was used to refine the content delivery model. At the second key user meeting after the new ECM system was selected and a first prototype of the content delivery model was implemented, key users were invited to test the prototype and provide feedback, which was used in designing the final content delivery model. The concept of key user involvement in the development phase was received positively by employees:

“I was a key user for the project. I really like the approach of involving people who have to use the new systems. I always had the opportunity to raise concerns, and I believe that these concerns were addressed in the design of the final version. To some extent I think this is my system, as I was part of developing it”. [male, 42, salesperson]

Key user meetings were also held to develop the authoring process. Employees proving content were invited to give feedback on the proposed process and were also involved when selecting the ECM system to ensure that the new system met all authoring requirements.

We also involved users to participate in workshops and interviews to develop the content taxonomy described above. This gave several more employees the opportunity to participate in the development process.

In addition, meetings were held with various stakeholders to discuss the overall approach, the ECM strategy and the ECM system. For example, the ECM team reported to a steering committee comprised of senior and middle managers which decided on all implementation measures. Top management (C-level) was informed during regular meetings where major decisions were made about how to implement the new ECM strategy. Employees noticed and approved of the involvement of top management and senior managers:

“Since the ECM team worked closely together with managers from other departments, the suggested solution was very practical”. [female, 56, process employee]

In summary, several employees were invited to participate in developing the new ECM strategy. As a result, the new ECM strategy fits employees’ requirements well and is well received by employees. We can conclude several lessons learnt from this phase, which will be summarized in the next section.

Lessons learnt from Phase 2: Development of an ECM strategy

The following lessons learnt can be derived from Phase 2.

Lesson learnt 4: Use a single source of content. To avoid inconsistent information, it is important to have a single source of content and to reuse this content whenever possible. The same content object should be only stored in one place and all changes of a content object should be tracked.

Lesson learnt 5: Implement a dynamic content deliver model based on a content taxonomy. A content deliver model should enable a single source for content and dynamic content delivery using a content taxonomy and metadata. The same content object should be viewable at different sites and based on different content structures defined for different stakeholders (e.g. department-oriented for ECM authors and product-oriented for ECM users).

Lesson learnt 6: Align content with work tasks. Content should be aligned with business processes based on the content taxonomy. ECM users working in business processes will more easily find the content they need to perform tasks if the content and the search terms are closely aligned with their work tasks.

Lesson learnt 7: Establish a content management process and standards. It is important to establish a content management process and to define content management standards so that ECM authors are able to provide content using the ECM tools.

Phase 3: Implementation of the ECM strategy

After having developed the ECM strategy and having selected Microsoft SharePoint as the ECM system, employees were empowered to act on the new ECM strategy through training and personal development measures and change agents were motivated to ensure short-term wins. The new system itself was implemented in big-bang style and went live the day the old system was shut down. Before that day, ECM authors were required to decide whether each content object needed to be published, and to migrate current content from the old to the new system.

Empowering others to act on the vision – Training and personal development

In implementing the ECM system, several measures were used to train employees in using the new ECM system that empowered them to act on the new ECM strategy.

First, half-day trainings were conducted to introduce the new ECM system to ECM authors that focused on the motivation for and details of the new content authoring process and the new authoring tools.

Second, quarter-day trainings were conducted with employees searching for and using content, including an introduction to the new content delivery model and tips and tricks for how to use the new system effectively. All employees were encouraged to participate in a training unit. In parallel, manuals and on-page flyers were distributed that summarized the main features of the new ECM system and how content can best be found. Fourth, a hotline was provided during the implementation period to help employees having difficulties using the new ECM system. These measures used to empower employees to act on the new ECM strategy were well received:

“The ECM team did a great job in offering training, which helped me a lot in using the new ECM system”. [female, 23, salesperson]

Planning for and creating short-term wins - Change agents, ECM blog, flyer

According to Kotter (1995), one of the major ways to enable a successful change implementation is to plan for and to create short-term wins. Employees need to see improvements to positively evaluate the change. During the implementation we focused on three different measures to enable short-term wins.

First, change agents were selected and trained to provide first-level support to ECM users and to talk positively about the new ECM system. Importantly, change agents were taught tips and tricks they could use to create short-term wins in their department. Change agents were selected from among the peer group from each unit or department to create a low threshold for asking questions. When change agents created short-term wins, employees evaluate the new ECM system more positive:

“At the beginning I was rather skeptical. I had some issues using the new system. But when my colleague, who was what they call a change agent, showed me some tricks how to use the new system, I realized that it is indeed easier to search for content in the new system”. [male, 44, salesperson]

Second, tricks and tips on using the new ECM system were posted to the ECM blog. Each week a particular tip was published to illustrate innovative ways to use the new system. Best practices were also occasionally published to illustrate how different departments have used the new system to initiate their own projects. These tips helped employees see the benefits of the new system and inspired them to create different ways to use it:

“I look forward to each tip. They always provide useful hints on how to use the new system more efficiently. This helps me a lot in integrating the new system into my daily work.” [female, 45, process employee]

Third, a one page flyer illustrating the main features and the new structure of the ECM system was developed and distributed among ECM users to give them immediate help if they were unsure how to use the new system or where to find information:

“I put the flyer next to my monitor and looked at it a lot in the beginning because it was a good overview on where to click and where to search for information.” [female, 31, salesperson]

This support and these tips and best practices helped create short-term wins for employees and helped them reap the benefits of the new system. The lessons learnt from this phase are described in the following section.

Lesson Learnt from Phase 3: Implementation of the ECM strategy

Lesson learnt 8: Focus on change management from the outset. As described in this and the previous phase, change management start well before a new ECM system or strategy is implemented. Change management starts at the beginning of the project when a sense of urgency is established, when a vision is developed and communicated, and when employees are empowered to act on the new vision and they have to realize short-term benefits when the new system is implemented.

Lesson learnt 9: Engage change agents to create short-term wins. To create short-term wins, it is important that support is available as soon as a question arises. Change agents selected from the immediate peer group are able to provide this instant support. Provide them with tricks and tips they can show to their colleagues to generate short-term by employees getting trained in using the system and experiencing the benefits of the system directly.

Lesson learnt 10: Provide a summary of best practices. Support short-term wins by summarizing best practices and tips for users. At the financial service provider, the ECM blog was used for this purpose during and after implementation to illustrate innovative ways users found to use the new system to benefit their work and their customers.

Phase 4: Post-implementation efforts

In the final phase, the success of new ECM strategy was evaluated and institutionalized in interviews and in four empirical studies. Based on the feedback received, the ECM strategy was further modified and new projects were initiated to change the ECM as required in the future, including an ECM manager and an ECM office responsible for continuously developing the ECM strategy.

Consolidating improvements – Evaluation

The evaluation of the new ECM strategy was part of the change management strategy. Several pre- and post-implementation surveys were conducted to evaluate the new ECM strategy and we interviewed employees from several units and departments about the new ECM strategy. These evaluations indicated that implementing the new ECM strategy led to the following improvements.

First, the new ECM has become an integral part of the organization. The surveys indicate steadily increasing satisfaction with the new ECM strategy. The overall satisfaction with ECM among users increased from 3.3 to 4.1 within the first 3 months after the new ECM strategy was implemented².

The surveys also indicate higher usage of the ECM system and fewer workarounds, and process employees report fewer employees calling to ask questions. Users report that the new ECM strategy provides good support for organizational processes (sales talks) and for using other enterprise systems, so the need to call colleagues decreased. According to the surveys, the overall satisfaction with the support of sales tasks increased from 4.0 to 5.9 within the first 3 months. Hence, the search for information could be improved and employees also reported that they are more aware of information than they were using the old ECM-system. It was also mentioned that communication within the organization improved as well, so that the new ECM strategy addressed the identified challenges of lack of awareness, lack of communication and search for information.

The new ECM strategy also improved the content. According to the surveys, users consider the quality of information to be higher in the new ECM system than in the old ECM system and the new content delivery model to be significantly better than the old model. The overall information quality index increased from 4.4 to 5.2 and the information search satisfaction index increases from 3.6 to 4.4 within the first 3 months. Employees reported that there is less inconsistent amount of information and more standardization within the new ECM system such that the information quality has increased when implementing the new ECM strategy such that these identified challenges could be addressed by the new ECM strategy.

The surveys also indicate that users consider the new ECM system technologically superior to the old system even though several employees complained that it takes too many clicks to navigate the new system. Nevertheless, the system quality index increased from 3.6 to 4.0 within the first three months such that employees do not report any major technological challenge.

Finally, the fact that the ECM team was awarded with the organization's service award in 2012 is a strong indication of service success.

Producing still more change – New projects

In addition to the core ECM system project, areas of improvement were identified that were not part of the core project (i.e. not necessary to implement the ECM strategy), but still related to ECM because they would provide additional benefits to ECM users. After the ECM strategy was implemented, a new ECM

² All items were based on prior research (e.g. IS Success Model, Delone and McLean 2003) and a seven point Likert scale was used.

office was established to coordinate managers appointed to lead these projects. One project focused on implementing business process management measures to resolve process issues identified during the analysis phase. These projects resulted in improvements to the new ECM strategy and greater benefits for ECM users. One employee reported:

“My concern was that we would stop improving after the implementation. However, I soon realized that the ECM team has so many ideas about what else could be improved and started to make these improvements as soon as the ECM strategy was implemented. I consider this a way to continuously improve our daily work, which I like”. [male, 36, process employee]

Institutionalizing new approaches – ECM office and manager

Part of the ECM strategy at the financial service provider was to set up an ECM office (as part of the CEO office) and to appoint an ECM manager (part-time employee of the CEO office) in the second half of the project to support overall ECM activities, institutionalize new approaches and provide the basis for ongoing development of the ECM strategy. The CEO supported this idea from the outset:

“Setting up an ECM office is a very good idea and will enable us to improve our ECM strategy constantly and provide employees with ongoing support”.

Employees also assessed the ECM office favorably, giving the ECM team the service award and calling the ECM office a guarantee for a successful ECM strategy:

“The ECM manager is the right person to improve our content chaos continuously. I view the ECM office as an indication that our management is really interested in improving our situation”. [female, 61, salesperson]

Lessons learnt from Phase 4: Post-implementation efforts

We derive the following lessons learnt from the final phase of the project.

Lessons learnt 11: Be able to show the business value and improvements induced by the ECM strategy. It is important to show the impact of ECM on the organization. The pre- and post-implementation surveys illustrate how the new ECM strategy has positively impacted the organization and especially how employee satisfaction improved as a result. Such evidence of the value of implementing the new ECM strategy should be planned from the beginning. It is less powerful to show the business value in the final phase without reference values from the old strategy.

Lessons learnt 12: Look for additional ways to improve the ECM strategy continuously. In order to improve the ECM strategy continuously, additional opportunities should be identified during the project lifecycle. As Kotter (1995) points out, successful change implementation requires more change and continuous improvement.

Lessons learnt 13: ECM strategy is not a project and needs to be institutionalized in the culture of the organization. Developing an ECM strategy is not a single project. The environment is constantly changing and new information requirements are constantly emerging, so the ECM strategy has to change constantly, too. The financial service provider developed an ECM strategy over ten years ago but failed to change it in response to new information requirements (e.g., Basel II). Hence, employees were dissatisfied and reported content chaos and information overload. To avoid making this mistake again, an ECM office was set up to institutionalize the ECM project, to continuously improve the ECM strategy, and to address the new and changing information needs of the future.

Research Contributions

Also in terms of contributions to research our action research project provides several lessons learnt that are useful for research in this area.

For the newly evolving field of ECM research (Grahlmann et al. 2011) our objective was to investigate the different components of an ECM strategy to enable an effective and efficient use of enterprise content. With our approach we extend existing ECM research by analyzing the design and effects of a dynamic content that enables that the same content objects can be displayed at different sites simultaneously.

From a research perspective the effective and efficient delivery of content has been discussed and analyzed (Tyrväinen et al. 2006, Alalwan 2012). With this paper we contribute to this stream of research by discussing the design and appropriateness of a dynamic content delivery model. The artefact analyzed in this paper is an ECM system that uses a metadata taxonomy that enables an organization to retrieve, track, systematically reuse and assemble content automatically. This dynamic content delivery enables that employees have to look at only one site and that they can be sure that all relevant information is delivered through this site. Based on the evaluation of the new approach we can conclude that the dynamic content delivery model is one of the main components of the new ECM strategy that increased employees' satisfaction and reduced the content chaos and information overload reported. Thus, the paper adds to the IS body of knowledge a dynamic content delivery model that enables effective and efficient usage of enterprise content (Tyrväinen et al. 2006, Alalwan 2012). Future research can further elaborate the design of content delivery models in different contexts. In this study a content delivery model was designed with the focus on products; however, there might be different contexts where different foci might be more appropriate. For example, in a process-oriented organization a process-oriented content delivery model might be more appropriate such that the appropriateness of different content delivery models in different contexts needs to be analyzed.

In terms of change management our objective was to investigate how an ECM strategy can be implemented in an organization such that employees accept the new strategy and start using the new ECM system. With the research project reported the effectiveness of several change management interventions in relation to user satisfaction as the variable capturing overall employees' acceptance is analyzed and the implementation of each intervention in the different phases of the ECM project is discussed. Therefore, this research is in the tradition of user satisfaction and IS implementation research (DeLone and McLean 2003, Petter et al. 2012). The evaluation of the overall project indicates the implemented interventions were successful. Employees are more satisfied with the new system than they were with the old one. In the case described interventions that focus on both the system and the strategy or other aspects of an IT-induced change were implemented. The success of the project illustrates that both the new strategy and the new system need to be focused when implementing ECM in an organization. These lessons learnt contribute to the IS body of knowledge as Venkatesh and Bala (2008) call for investigating interventions that positively influence user satisfaction. Investigations focusing on change management interventions have mainly revealed the positive effects of technology focused interventions (Venkatesh and Bala 2008), whereas our research highlights the even more positive one of a combined focus on both the strategy and the system. Some research approaches have already pointed in this direction (Dwivedi et al. 2015) and with this study we are able to discuss the use of different interventions and their long term effects for user satisfaction. Hence, research has provided rich insights into the different reasons for user satisfaction (Gable et al. 2008, Laumer et al. 2015, Petter et al. 2012), whereas it has neglected an analysis of interventions to positively influence it. Thus, our research approach provides first indications which change management interventions has a positive effect and future research can further elaborate on the different effects of change management interventions not only on user satisfaction as an overall variable, but also on the distinct characteristics of in IS including information, system, and service quality.

Conclusion

There are four keys to implementing a new ECM strategy successfully and eliminating content chaos and information overload. First, an ECM team should provide strong leadership and lead the changes induced by the new ECM strategy. Second, successfully implementing an ECM strategy requires the acceptance and approval of users by meeting the organization's business needs in the least disruptive manner possible. The needs of an organization can only be understood by understanding the current state, which requires substantial contributions from the user community as well as an environmental inventory. Third, without evolving metadata taxonomy constantly, the best ECM technology is useless. Finally, effective change management from the outset, during the implementation phase, and after implementation is crucial to motivating users to do their job differently. The case of the financial service provider illustrates that focusing on these four elements leads to successful ECM strategy implementation. As the CEO said to employees at the end of the project:

"We used to have chaos, but we now have a new ECM strategy that helps us all do our work well."

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