

The Market for ECM Software

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Abstract The market for enterprise content management (ECM) systems is difficult to understand. ECM systems provide an information backbone for an entire organization, but the areas of application and how the systems are used and handled vary between enterprises. Technical standards and functional enhancements have further blurred the borders between the software sections, and the segmentation of the ECM market is complicated by the many different terms used. This paper demonstrates a way to classify ECM software systems and highlights substantial developments within the market. In an effort to enhance our understanding of how the term “ECM” is used today, this paper uses several approaches to specify the ECM market’s segments. The focus points are the software offering/vendor, the area of application, and the customers’ point of view. The evaluation is based on 10 years of market analysis of ECM software in the BARC laboratory, consulting customers in ECM projects, and doing market research on ECM solutions. By providing detailed information on the segments of the ECM market and market trends, this paper provides a theoretical approach to ECM market analysis and some practical tools with which to evaluate software solutions for their applicability in a specific project.

ECM: Market of Buzzwords

A fundamental problem for ECM is the lack of generally accepted, broadly used terms. The name of a product seldom says much about its potential uses because the same terms are often used to describe different kinds of software solutions with particular areas of application, while highly similar solutions are given different

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names. Vendors try to differentiate themselves from their competitors by making up new buzzwords in order to give their own portfolios the impression of being unique and innovative. Thus, the problem of a lack of a common understanding is increasing.

Some examples of terms with unclear meanings are:

- Document management (DM): DM is a small subsection of the common American definition of ECM provided by AIIM (formerly the Association for Information and Image Management, and now AIIM: The Enterprise Content Management Association). In the German market, DM is usually used as a synonym for ECM, covering much of its functionality (including process management). Depending on where a software vendor has its headquarters, the terms DM and ECM are used differently in the market.
- Records management (RM): This term is used to describe the management of information within folder structures (used to organize content for ease of access) or to characterize the long-term storage of content (including retention management).
- Archive: While most users agree that archiving describes the long-term storage of content, others associate archiving with the general safekeeping of content against unlawful access or loss. The associated retention periods also differ; in the public sector, an archive can imply permanent, “eternal” storage, while documents kept for as long as 40 years still fall under “mid-term storage.” Commercial users use other storage terms.

As a result, prospective buyers and customers are unsettled and unsure of what to make of ECM, and many projects are cancelled, postponed, or reduced to small areas of application. Initiatives to implement ECM systems often fail from the start when the project team cannot agree on the targets or the associated terms. It is difficult to estimate the potential of new ECM software since the functionality and the achievable potential do not necessarily coincide with the names applied by the software vendors. The foundation for a classification of software as a segment of the software market can be established only by evaluating the possible fields of application, not by looking at buzzwords.

Approaches to Structuring the ECM Market

Market segments can be identified based on how the term “ECM” is used and on the various software offerings. Segmentation can be done by looking at the available functionality, the size of the vendor, or the focus of the offering. The approaches to classification can be combined in order to provide the specific segments, which will be analyzed more closely in later sections of the chapter.

Using segmentation by functionality, the analysis of the market shows that “ECM” is used to describe software solutions that cover various areas of application. The major software segments are:

- ECM as process-oriented DM: This approach, which covers all sorts of content along the information life-cycle, is the broadest approach.
- ECM as web content management (WCM): The focus of these solutions is on the generation, administration, and publication of content for the intranet or internet.
- Adjoining market segments: The functionality provided by these solutions supplements the classic ECM solutions. Vendor and customer projects usually focus on these partial solutions, which have to be included into a broader ECM strategy as a second step.

The segmentation by functionality is the most important and purposeful way to classify ECM software and is the foundation of this paper.

Segmentation by size or geographical pervasiveness divides the market into international, multinational, national, and regional software vendors. It is important to know whether the product is offered in a specific market by the vendor itself or by a partner and to know the partner's qualifications. Partners' understanding of the basic conditions of a market and the particular circumstances of a class of customers is usually better than that of the vendor, while the vendor often possesses a deeper technical knowledge and more experience in implementing, customizing, and maintaining the product.

Even though size and geographical pervasiveness are often proposed as requirements in software selection projects, they cannot be used to judge the quality of service or the range of possible uses. Small and medium-sized vendors can certainly offer high-quality software solutions, while some large vendors weaken their position with vague product development, obscure product portfolios, and cumbersome support.

Segmentation by focus concerns the area and scope of application, so it concerns the target customer base. While some software vendors offer general, broad solutions (suites), others specialize in certain functions, industries, or ranges of application. This form of segmentation is complementary to segmentation by functionality.

There are some limits to how the market can be segmented. The market is constantly in motion, with customer requirements changing and vendors trying to penetrate new market segments. Big vendors in particular try to close functional gaps through acquisitions (like Open Text and IBM have shown in recent years), while small vendors often engage in strategic alliances to broaden their functional offering or get into new markets. Many vendors also try to build a partner network in order to gain access to a workforce and knowledge about a particular region or line of business.

ECM as Process-Oriented Document Management

One has to examine the document lifecycle to understand the focus of these solutions. The document lifecycle covers all tasks and functions concerned with the capturing (creation or import), indexing, storing, searching, handling and

adaption, and distributing (collaboration, workflow, publishing), up and including to the long-term archiving and ultimate destruction of documents (Munkvold et al. 2006). A matrix can be developed along this lifecycle to determine which document sources (e.g., scanned paper, office documents, e-mail) and document types (e.g., contracts, invoices, meeting minutes, offers) are covered to what degree in which business areas (department/entire enterprise/several enterprises generally or specific to a line of business).

This matrix is completed by general aspects of information management like user and rights management or compliance (Böhn 2007). The key elements of ECM software used here are status-driven information management and workflow functionalities. In recent years, the offering of collaboration functionalities has increased to provide support for project-oriented, only slightly structured processes.

The development toward modern ECM started small, with the simple electronic storage of content, and more and more functionality was added. The focus moved away from storage to searching and then to the use of information. Business process became the focal point—first only small, sequential workflows, and then complex processes and project support through collaboration. No longer were single departments the goal of projects; the goal became the entire company, which was emphasized in the “enterprise” of ECM. The next step is to support more cross-company processes to connect customers and partners closely.

Within the ECM market are vendors based in other software segments that have gradually expanded their products. Collaboration software vendors in particular try to enhance their products with search, process management, and archiving.

Classification by Area of Application

The market for ECM solutions that cover process-oriented DM is characterized by vendors of software suites and specialists who provide a functionality or a service that is not available from an ECM suite or that has higher quality, lower cost, or a better customer experience (e.g., a better-suited interface). An overview of suites and specialists is given in Fig. 1 using a slightly modified document lifecycle as a structure.

ECM suites provide comprehensive solutions for the entire document lifecycle, sometimes by (secretly) using third-party products to strengthen their product offerings. Typical vendors of ECM suites in this segment are EMC Documentum, IBM, Open Text on a global level, and Allgeier, Ceyoniq, COI, d.velop, Easy, ELO, Fabasoft, H&S, iworxs, Optimal Systems, SAPERION, SER, and windream on a multi-national level (Böhn et al. 2009a).

Specialists for lines of business have created for business sectors offerings that include specialized functionality or pre-defined document classes, folder structures, workflows, and user interfaces. In addition, these specialists usually provide interfaces to the applications common in these industries. Typical markets are the public sector, engineering, and the pharmaceutical industry.

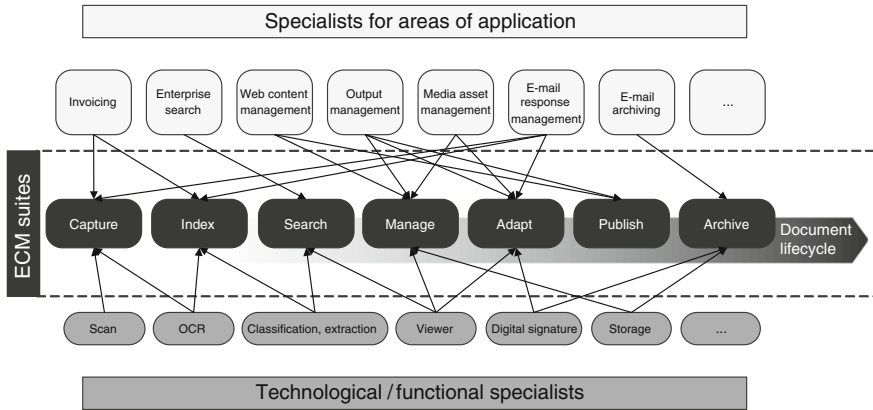


Fig. 1 ECM suites and specialists

Aside from the technical and functional features of the software, these vendors usually have the advantage of speaking their customers' language, using the right terms, and having a detailed knowledge of common problems in a particular field. Thus, they can address the prospective buyers effectively and provide a clear picture of the uses and potential benefits of their software.

Specialists in areas of application have created solutions that are only a part of an overall ECM strategy. These specialists make up for the lack of general functionality by providing specialized solutions that can be implemented quickly, along with specific support offers and attractive pricing. Not all of these solutions could be integrated into a comprehensive ECM scenario. Typical sub-markets are:

- **Invoicing:** Complete packages and specialized vendors for the capture, classification/extraction of invoice data and the distribution and checking are often used by ECM suites as well (Schiklang et al. 2010).
- **E-mail archiving:** To relieve e-mail servers and comply with regulations, vendors offer software and bundles of software and hardware (Gantner et al. 2008).
- **Contract management, digital personnel file, etc.:** Small vendors have created specialized solutions for some minor scenarios. The available functionality to capture, manage, and edit content is usually matched to the particular task, but the ability of the solution to be expanded to other areas is limited.

While some specialists have developed new solutions, others have stripped down existing ECM suites, used only certain modules, and added small parts.

Specialists for functions or technologies focus their development on clearly defined parts of the ECM spectrum. These systems are often used as enhancements of ECM suites that offer improved functionality or usability (Böhn et al. 2009a). These sub-segments include:

- **(Enterprise) Search:** These systems can include information sources in a combined search and automatically index the content. Access management is highly

important since most systems included in the search use individual access rights that have to be incorporated when providing search results. There are specialists for displaying search results and relationships between documents as well. These correlations can be visualized, such as in semantic webs.

- Document distribution (collaboration, workflow): Here specialists provide additional functionality to define, execute, administer, and monitor processes or project environments. Other advantages can be in access management, rules management, or integration into third-party applications.
- Display (viewer): The number of document formats that can be displayed and the available functionality (comments, annotations, measurements, etc.) characterize these systems.
- Archiving: Specialized solutions are available to access archive solutions and manage multiple storage devices. These solutions allow logical content management to be abstracted from the physical storage and offer centralized access and retention management.
- Digital signature: Almost all ECM solutions use specialized products to create new digital signatures for documents and folders and to check existing digital signatures. These vendors also provide functions to manage signatures and expiration of the validity.

Most of the technical infrastructure of an ECM system is also provided by third-party software; examples are databases and application servers.

Specialized software is available for certain business software, especially SAP ERP, Lotus Notes, and Microsoft SharePoint. These (mostly smaller) vendors integrate their software into these existing systems and thereby provide additional ECM functionality, such as archiving and advanced search. Most of the projects are done by companies that have defined this business software as a strategic product and where most of the employees use the product daily. Usually, several of these offerings have to be combined in order to realize a comprehensive ECM strategy, which makes the projects harder to manage.

Integrating ECM solutions into standardized applications and tools throughout the content life cycle is a key requirement in creating a common information platform and easy access to information (Päivärinta and Munkvold 2005), thereby offering significant added value to the user.

With the exception of technical specialists, there is significant competition between specialists and ECM suites in all of these segments. The suite vendors try to adapt their product and service offerings to bridge the gap between their offerings and their customers' needs. Much of the market development in recent years has been the result of developing new solutions or finding additional partners to improve their offering.

Many projects in many lines of business of many sizes have shown that, from a customer point of view, who has developed what functionality is not as important as who can provide training, technical support, and functional service. Therefore, prime contractor-ship is usually a highly rated requirement in software selection projects. During the evaluation, the contractor has to guarantee that he or she can

provide answers to all questions concerning the selection, implementation, and operation of the software so the contractor must either have extensive training in the third-party products used or ensure quick access to appropriate experts.

The differences between best-of-breed (combinations of specialists) and suites are often smaller than expected. Simply because a suite vendor can offer many solutions from a common price list does not automatically imply that these modules are truly integrated and can operate well together. Especially after mergers, it often takes years to get to a common codebase and metadata model. Here, as with the issue of terms and buzzwords, only a thorough functional evaluation can be the grounds for a decision; words and phrases don't mean much.

Classification by Client or Access Type

Because most ECM suites offer similar levels of functionality, the philosophy for handling documents becomes more important. Four segments can be identified based on the user group's requirements (Böhn 2008), as shown in Fig. 2.

- ECM as the leading application (the user's front end): Here the ECM system operates using a separate user interface (desktop or web client). Broad functionality is usually available. The functional gap between desktop clients (installed on the individual user's computer) and web clients (running in a web browser) has decreased in recent years as a result of technical developments like AJAX. The target audience for this kind of application is users who spend the majority of their working hours editing and managing documents and dealing with associated tasks and processes. Offline clients can access content and tasks without a connection to the content server. Mobile applications for use with smartphones and tablets are also available.

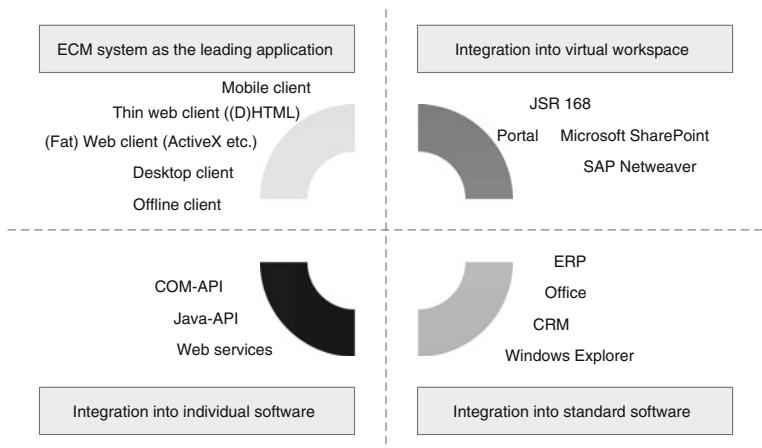


Fig. 2 ECM clients and access types

- **Integration into existing standard software solutions:** These integrations are focused on users who only occasionally use ECM functionality or who use only a few functions. By integrating the essential aspects of ECM into existing applications, the user can remain within his or her realm of knowledge and maintain his or her accustomed way of working. These users usually spend most of their working hours using one type of software (e.g., an ERP (enterprise resource planning) system, an e-mail solution, an office program, or the Windows Explorer), the necessary ECM functions are integrated into the existing interface. For search, document display, and so on new windows usually appear to display the content.
- **Integration into individual solutions:** Since interfaces are not available for all existing software products and since many proprietary, self-developed software solutions are used, linking these systems to the ECM software requires programming. Through the technical developments of recent years (component-oriented software based on Java or .Net languages; web services), it has become easier to exchange information (metadata and documents, as well as tasks, processes, and functions).
- **Portals as virtual workplace:** In this scenario, existing applications, including the ECM system, are combined in a new interface. Data and functions from several software systems are displayed in a common frame.

There is a trend in the ECM market to support a variety of ways to work with a system. Where vendors used to force a certain philosophy on the user (the technology of the client as well as the usability of the interface), the increasing competition has broadened offerings. Vendors have finally acknowledged that the usability of an ECM system is central to potential users' acceptance and that the user groups within an enterprise differ.

ECM as Web Content Management

Systems for the creation, administration, and publication of content in a company's intranet or on the internet are summed up in the term "web content management" (Smith and McKeen 2003). Depending on how it is defined, WCM is either a part of a comprehensive ECM solution or a synonym for ECM. This unclear use of terms is the result of many years of calling systems for managing web sites "content management" software. "Enterprise" wasn't added to broaden the focus (e.g., on scanned paper, office documents, e-mails) but to point out that more people and more information in the enterprise could be incorporated. Not only technically skilled users but also employees from different operating departments should be included in creating and editing content. Only a few vendors of ECM suites offer real WCM functionality, usually using third-party products.

Modern WCM systems are characterized by the organizational separation of tasks according to responsibility and the technical separation of content and

structure (presentation). The range of activities at least distinguishes between authors (often topic experts from business departments), editors, and administrators.

Current developments toward the much-discussed web 2.0 have also changed user demands and user behavior. There is an expectation for more dynamism, so information offerings must be changed faster and users should have the opportunity to keep informed automatically through subscriptions and messaging services (e.g., RSS feeds). Another issue is the clear movement toward an interactive, collaborative web where users participate in the creation and evaluation of content. Wikis, blogs, and forums transfer the tasks of creating and evaluating content to the user, while the platform provider, often simply another author or editor, provides technical services.

Related Market Segments

Based on the comprehensive definition of ECM, several functions should be part of a widespread ECM philosophy. However, because of the specific functional and technical aspects and nature of the corresponding projects, separate market segments have developed (like the WCM segment has). These segments are sometimes referred to as “ECM” as well, but specific terms are used on occasion. The most prominent are:

- **Output management (OM):** The term “Output management” in itself is not used coherently. OM describes solutions to mass-produce documents while achieving a maximum of personalization for the recipient, but the term is also used to characterize solutions for managing large amounts of printing or distributing content electronically. Most vendors have focused on one or the other of these aspects of the term, but some products cover both areas (Böhn et al. 2009b).
- **Media asset management (MAM):** The management of multimedia data is rudimentary in classic ECM systems; the metadata is used primarily to classify the content. MAM systems can also make use of the information in pictures, video, or audio files and can offer additional functionality like editors and converters. Term and rights management have also been extended to improve accounting, such as that with external agencies.
- **E-mail response management (ERM):** While the focus of e-mail management is on the storage of e-mails and their combination with other content, ERM supports the ability to react to incoming messages. E-mails received are automatically classified and answers are proposed using a knowledge base and templates (Gantner et al. 2008).

Only a few vendors can offer solutions in these specific markets in addition to general ECM functionality, and even these are usually not the result of a joint development effort but of either acquisitions or efforts by business units. Both vendors and customers usually choose to focus on a specific sub-segment so these subsections will not be integrated into classic ECM solutions in the near future.

Market Trends

In the past few years, the development of software solutions and their accompanying services have been driven by a range of factors. Sometimes vendors try to define new areas of application or ways of working to win additional customers, and sometimes customers provide the requirements for specific projects. Technical developments have also shaped the market.

Vendor View

The core drivers from a vendor point of view are the design of solution packages and mergers or partnerships. To obtain additional customers and to position themselves against specialists, vendors of ECM suites have increased their focus on building solution packages. This “ECM in a box” solution is used to reduce the implementation effort and make it easier for potential customers to start ECM projects. Large vendors in particular still have problems with the large market of medium-sized enterprises, as they still need to define practicable packages—clearly defined functional modules, application areas, and process models for implementing and operating ECM—for this market.

Mergers and acquisitions as well as strategic partnerships have increased many vendors’ functional portfolios and manpower. Partner networks are used to distribute the software or support the individual projects, but they also influence product development. In particular, usability enhancements and interfaces to third-party systems are often the result of input from the partner channel.

The largest functional advancements have been made in collaboration and in data analysis. With the impact of Microsoft SharePoint, some vendors have shifted their development activities away from engineering new products and toward integrations into SharePoint to cover the collaboration requirements. The analysis of document content and content structures, as well as the control and supervision of processes, have been business drivers of the combination of ECM and business intelligence (BI) products. With business activity monitoring, real-time governance of workflows is available to facilitate the ability to react directly to delays and other problems.

Customer View

ECM customers have become more ambitious concerning their projects and more challenging for vendors. For some time now, the customers have increased the pressure on vendors to provide business solutions and real support in daily work, not just technical platforms (Andersen 2008). Capture, management, and search

are seen as given while complex processes and a structured exchange of information across enterprises have become the focus.

Process management is evolving from a simple transactional workflow to complete user support through consultative information processing (Böhn 2009). The systems are used not only to control a sequence of tasks (including business rules management), but also to provide the user with additional information. An additional requirement is for the systems to act proactively, such as by registering and analyzing incoming documents and starting the appropriate processes or (at least) informing an authorized user. Roles are assigned to users that characterize them as processors or experts on certain topics, allowing the system to use steering knowledge (assign tasks, identifying the next steps), support knowledge (provide additional information to the user, such as examples, explanations, and corresponding documents), and control knowledge (control completeness of processing, checking for contradictions and plausibility of user input against other available data). Users no longer have to keep rules or standard operating procedures in mind since the system can automatically ensure compliance with these rules. The rules can also be documented in the document history and in the workflow protocol. An overview is given in Fig. 3.

In addition, the importance of the organizational aspects of ECM projects is recognized more often than was once the case. Current projects focus not only on the storage and management of content but also on the regulation of information supply and information quality within the enterprise and with partners. Aspects of ECM like quality management, document responsibility, and the definition of and compliance with guidelines in the form of an ECM etiquette are highly significant.

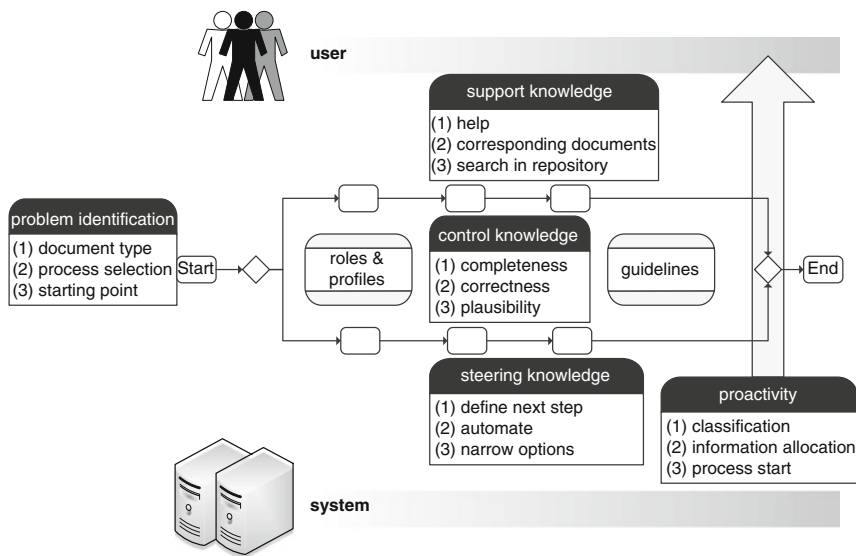


Fig. 3 Advanced customer requirements: comprehensive process support

Technical Developments and Standards

The interoperability of systems has always been a key issue. With the work on the interoperability standard CMIS (Content Management Interoperability Services), a new approach has been developed to ensure that content can be exchanged between repositories. The broader use of web services eases the task of combining software solutions.

The new software standards of component-oriented solutions and service-oriented architectures have forced vendors to re-engineer their software. This process is far from finished, as some vendors made the transition a year or more ago while others are still in development. However, just as standard databases have displaced vendor-specific solutions, there is no alternative to change; the benefits of implementing, adapting, and interconnecting the software are so significant that refusal to change would result in a massive competitive disadvantage.

Open Source and ECM

Currently, only a few open-source projects can address a large section of ECM functionality (e.g., Alfresco and Nuxeo). Projects are usually handled by partners who offer consulting and support; since ECM projects have a great impact on organizations, few initiatives are handled without external help. Open-source ECM products usually require a large amount of customization and even additional programming so expenses for external support or internal manpower are often higher than they would be using commercial software. Smaller organizations rarely use open-source ECM suites since considerable internal effort is required to address the complexity of installing, adapting, and supporting the system.

Open-source alternatives are widely used for functional components. Examples include full text databases (Apache Lucene) (web) application servers (JBoss, Apache Tomcat), OCR (OCROpus) and components for WCM (TYPO 3). Vendors of commercial software try to lower project costs by providing inexpensive or free alternatives to commercial third-party software. Open-source software is also used to close functional gaps, such as by providing basic WCM functionality through integration with TYPO 3.

Future of the ECM Market

Reports regularly predict the demise of the ECM software segment based on functional enhancements of large software platforms (most importantly, Microsoft Windows, Microsoft SharePoint, Lotus Notes, and SAP Business Suite) or on the fear that market consolidation could lead to only a handful of vendors. Reality has shown the opposite to be true.

While consolidation through mergers and acquisitions has been made on a global level, regional markets have developed new competitors. By having specific knowledge about a certain customer base and offering corresponding software and services, these new vendors can hold their own against the larger competitors. In addition, the functional enhancements of large software platforms have not crowded out classic ECM vendors but have led to closer cooperation with new business opportunities. Almost all large and medium-sized vendors have strategic partnerships, especially with SAP and Microsoft. The platform vendors offer a large customer base, and the ECM vendors provide additional functionality and knowledge about the functional and organizational aspects of ECM projects.

The ECM business volume of large software vendors will grow, but since the number of enterprises that use ECM software is increasing and the focus of current installations is widening, the market is growing as a whole. There will be some shifts in the market since basic content management functionality can be provided by software platforms, and small products with little functionality can become obsolete. With comprehensive ECM projects the classic ECM vendors still have more to offer to the customer than these general solutions; in addition, specialists can provide a technical advantage or improved customer focus with their products. The ERP market has shown that there is a demand for more than five vendors worldwide—there will not be a strong consolidation in the ECM market.

Summary

The market for ECM software is characterized by the technical maturity and the high standard of functionality available. Therefore, customers' software selection is less focused on the plain functionality than on a clear ECM philosophy of fitting vendors and products to the requirements. The focus on customers and clearly defined solutions determines the level of success in the market. Vendors are facing increasing pressure to provide a variety of user interfaces, support various ways of working, and comply with technical standards.

There is still room for improvement in addressing the customers' real problems. The systems are becoming easier to use, such as by providing better workflow definitions and graphical editors for user interfaces. However, the inconsistent use of terms and approaches has slowed market development, as many customers remain uncertain about the solutions and the benefits, about how to define their requirements, and about how to get the software that best fits their needs and budget.

From a customer point of view, the shift in their projects' focus has increased in importance as more companies have recognized the need for a clearly defined ECM strategy. This clarity helps companies get more benefit out of existing projects, which improves the return on investment and employee satisfaction. The political aspect of ECM must not be underestimated, as ECM projects lead to enduring changes in how they deal with documents, tasks, and responsibilities.

These changes must be communicated openly from the beginning to facilitate change management.

ECM is an important topic for enterprises of all sizes and industries. The market volume has not been fully exploited since many companies run no solutions or only small, isolated ones. This has been confirmed in the current economic crisis, since ECM has been one of the few software markets to show growth (Karlstetter 2010). Therefore, ECM is an important subject for any company to consider, and it provides a chance for the prospective project manager to develop an important position for himself or herself in the company. The question concerning ECM isn't "should we?" or "if we?"; it's "now, but how?"

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