The Micro and Macro of ECM / BPM Technologies

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ABSTRACT

Enterprise Content Management and Business Process Management Technologies have emerged as solutions to address various information management challenges of organizations. Commonly referred to as Content Management technologies, these technologies are witnessing a lot of attention in the information technology industry with many mergers and acquisitions taking place over the recent past. In this paper, we describe ECM/BPM technologies, discuss the differences between ERP and ECM/BPM technologies and develop a typology of content-and process management technologies, applications and tasks based on their concentration-mix on content and process management. In the end, based on various mergers and acquisitions, we also discuss the shift of organizations focus towards high content as well as high process management. The data implies that organizations are moving towards providing a one-stop shop for all the data processing needs.

INTRODUCTION

An I.T system well entrenched in the management decision processes has the potential for competitive advantage (Barney 1991). ECM/BPM technologies, which cover technologies like

image management, document management, file management, email management and knowledge management, have the same potential. ECM/BPMs offer an efficient solution to managing data and processes in an organization as well as compliance tools. Currently, successfully being deployed by local Governments and companies, these technologies largely deal with an integrated approach to managing information. In this paper, we explain ECM/BPM technologies, talk about the differences between ERP and ECM/BPM technologies and develop a typology of content-and process management technologies, applications and tasks based on their focus on content and process management. Finally, based on various mergers and acquisitions, we also discuss the shift of various providers towards high content as well as high process management. The data implies that organizations are moving towards providing a one-stop shop for all the data processing requirements.

CONTENT MANAGEMENT SYSTEMS

While Content Management Systems is considered a new concept, content and processing of computing have been used since the advent of computers in some form or another (Pullman et al. 2008). However the processes were either a matter of policy in the department with the processes disorganized. The documents would go through email, by hand etc. While the final document would be available, it was difficult to know the "story" of the document. By story, we mean the changes made to the document, the people who made the changes, the steps the document went through etc. With BPM technologies, one can create and save processes. At times, the processes don't even need a document. Using simple drag and drop tools with arrows, boxes and circles, an administrator can create a process with starting and ending points, steps along the process, rules and the content (documents) related to the process (Fig 1). ECM is "the technologies, tools, and methods used to capture, manage, store, preserve, and deliver content across an enterprise." (Blair 2004).

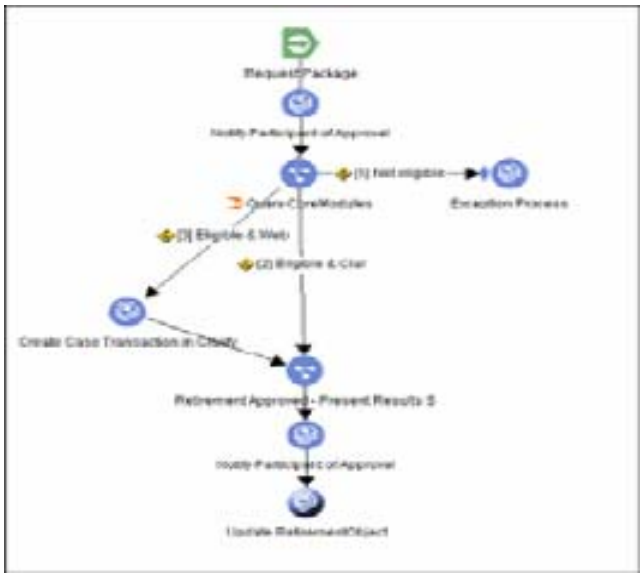

Figure 1: Illustration of Analysis of workflow creation

With the primary drivers of compliance and attaining competitive advantage, companies have invested in ECM/ BPM software. As IT professional it is imperative on our part to understand this phenomenon from both technical as well as theoretical angles. From the technical viewpoint ECM/BPM software's generally follow the same design principals as object oriented concepts albeit with different terminology.
The remaining part of the paper is divided into four sections. In the first section we discuss the drivers involved in the emergence of content management systems. In the second and third sections we discuss benefits and the nuances of the Content Management. In the fourth we compare Content Management technologies with related technologies. Finally we classify Content Management Systems based on various criteria.

DRIVERS

Government Regulations:

Congress reinforced laws by passing the Sarbanes-Oxley (SARBOX) Act. This new law demands that C-suite executives confirm their confidence in the quality and integrity of information generated by information systems by signing the figures off personally. Under SARBOX, the Securities and Exchange Commission holds executives accountable for reliable internal controls, record retention, and fraud detection. In turn, executives are looking to information systems and to IS auditors to help them meet their regulatory responsibilities (Volonino et al. 2004).
Producing Documents on demand (EDiscovery) : On December 1, several amendments to the Federal Rules of Civil Procedure regarding a company's duty to preserve and produce electronically stored information (ESI) in the face of litigation — or pending litigation — are scheduled to take effect. The rules (specifically Civil Rules 16, 26, 33, 34 and 37) have already been adopted in some states, like New Jersey, and other states, including Texas and California, have already implemented some of the new rules.

Industry Self Regulation

Industries have implemented ISO 9000 in order to either be compliant or competitive advantage (Wise et al. 1993). The AACSB in our own field stands out as an illustration. In addressing the requirements of AACSB, many universities have deployed software like Digital-measures related to managing research of their faculty.

Fear of litigation

In a lawsuit, the related documents must be produced on demand making document management a high management priority (Shukla 2004). This has prompted organizations to "steam-line" their procedures in terms of data management.

Best Practice – quest for competitive advantage

Just like the implementation of ERP, Balanced score card, TQM, JIT etc, software related to ECM/BPM are being implemented to be more efficient with the ultimate purpose of beating the market. With BPM, employees second in line gets the document the moment the first is done with it. Using such technologies, the manager can provide an employee a specific time to do a job, send him a reminder before certain time and send the work automatically to the next person. A system adhering to good management processes can be a source of sustained competitive advantage (Barney 1991; Simons 1990). In response to the above mentioned drivers, organizations have implemented ECM/software. With ECM/BPM an organization can see what was changed, who changed it, what was changed, how much time was used to do it, whether it was done on time, the version before and after each stage of change. Benefits of ECM/BPM technologies include Audits, corporate and institutional memory, compliance, efficient process and reduced duplication of information and cost savings. Implementation of an Enterprise Management Solution is also becoming more necessary with laws being defined regarding storage requirements.

MAJOR CONCEPTS

Basic Concepts

While the underlying functions of an ECM/BPM is just like those of any software, at a higher abstraction, the basic concepts of ECM/BPM differ in that they provide the business rules needed to come up with a effective work flow tool. Table 1 provides a representative list of the basic concepts in ECM/BPM with an example of Illustration of Analysis on workflow in Fig. 2

Basic Concepts in BPM	
Concepts	Details
Auditing	Availability of collecting and evaluating evidence
Annotation	Unstructured information (such as notes, comments, or messages) about a folder or document.
Analysis of workflows (Fig. 2)	Average and total time spent by workflow and work items in a workflow , Work throughput in a given time period Current status, Queues, Work item processing by queue dimensional hierarchy, Current status Work item processing by step dimensional hierarchy Current status Users Work item processing by user dimension Current status
Containment	The ability of a document to be virtually saved in different folders
Inheritable depth	The maximum number of levels through which a permission can be inherited. There are three possible settings: "This object only," "This object and immediate children," and "This

	object and all children."
Life Cycle Management	For example, a loan application's lifecycle is likely to have states that occur in the following order: 1. Application 2. Approval 3.Funding 4. Servicing 5.Closed
Milestones	Applicants can know what is the status of their document
Publishing	A rendition engine can automatically convert records into publishable content.
Process Tracker	Process Tracker provides at-a-glance status of a workflow that is currently in progress. With Process Tracker, you can tell what steps have been completed, when they were completed, and which steps are currently active
Process Administrator	With Process Administrator, you can search for and view workflows, edit workflow data and properties, and manage workflows. Process Administrator provides a wide variety of options so you can focus your search very precisely.
Rules Engine integration	Inculcating domain knowledge
Reminders	Managers can automate reminders to employees as the deadline to process units of work come closer
Task Reassignment	A task can be escalated to a manager
Tracker	A participant who is designated to monitor the progress of a workflow. If necessary, the tracker can modify various step and workflow property
Versions	Two-level Versioning on documents Major (1, 2, 3,..), Minor (1.1, 1.2,…) Each version of a document has a version status property - this property has 4 values: In-Process, Reservation, Released Superseded
XSL script	A script written in Extensible Style sheet Language. XML property mapping script objects contain XSL scripts to perform automatic document classification

Table 1: Basic Concepts in BPM

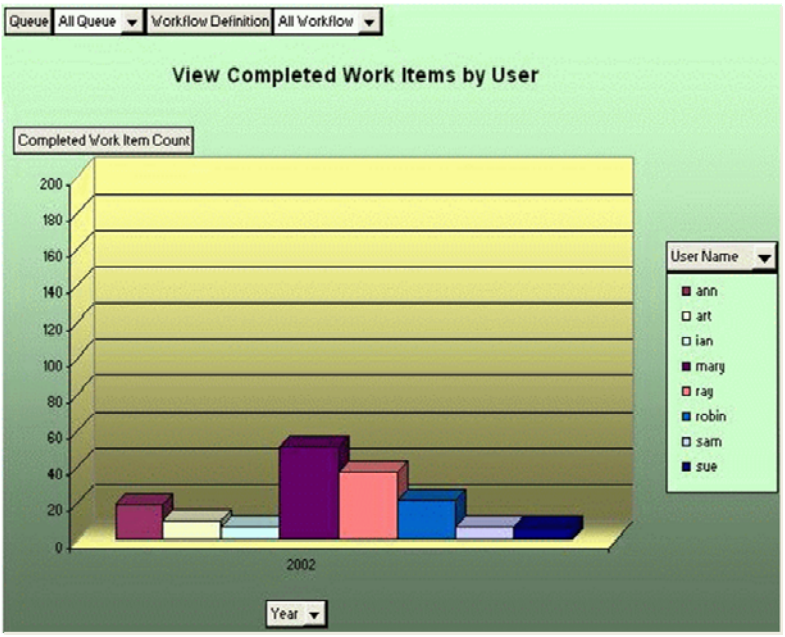

Figure 2: Illustration of Analysis on workflow

Roles in ECM/BPM development

When discussing ECM/BPM, it is imperative to talk about the various roles involved in ECM/BPM technologies. We briefly discuss the typical roles involved in ECM/BPM development in table 2.

Roles in ECM/BPM	**Details**
Developer:	The developer typically has programming capabilities, helps the administrator in tweaking the software to the needs of the client.
Administrator:	The administrator possesses installing and deployment knowledge along with Domain knowledge. Typically the administrator gets feedback from the users.
Super User:	The super user is one with good "content management skills" and will use the content management tool from the backend. Within the Super User group, you may have Process Managers, ECM Specialists, etc who make sure that the company policies are being conformed to. This may include company rules, any process changes in business, any change in document retention policy, etc. Then based on the application being used in the

	ECM/BPM environment, you may have ECM/BPM Supervisors, etc who ensure smooth and maximum usage of the ECM/BPM system (The distance education staff at the university).**Examples:** Professors using blackboard/WebCT.
User:	Upfront user. Basic computer skills required. **Examples:** Students

Table 2: Roles in ECM/BPM

ERP v/s ECM/BPM: PRIMARY DIFFERENCES

ERP is more data centric and BPM is more process centric. While ERP vendors claim to have processes along with management of data, ECM/BPM technologies are largely used from the process point of view. BPM technologies focus on concepts like deadlines, reminders, movement, balance the work in a team, escalate the work to supervisor etc. With the rise of ECM/BPM software market , ERP are refashioning to include aspects of BPM software (Hashmi 2004).
While all organizations can benefit from ECM/BPM implementation, process oriented organizations will benefit the most. Situations where documents change hands and go through decision making processes are good candidates. Good examples are insurance companies, government agencies etc.

RELAVENCE TO UNIVERSITIES

Universities will be affected in two ways. One via the compliance route, the second via the "need for efficiency route". E – discovery rules will apply to Universities too. Web Content Management has become an important issue. Some university get thousands of hits a day. So many hits from students and media. During the Tasering incident at FSU brought out the need to do so. Content Management Systems offer a solution by facilitating the creation of websites and providing content management. Many organizations are now using Management Content Systems. This increasing interest is apparent in the growing market of such systems and in the updates of existing systems (Vitari et al. 2006).

EXPLAINING MERGERS AND ACQUSITIONS

The race for standardization

The race to become the de-facto content management service provider will require organizations to be first movers in all the sub-disciplines of content management systems. Content Management providers are pursuing to be the "Microsoft" of content management. The consequent "standardization" provided exponentially effects the market via network effects, thereby locking out competitors.

Consolidation

Content management branch out into small niche services ranging from Optical character recognition, recognition, routing, invoice management to work flow. An organization on one hand, can find it challenging to focus on so many different fronts. On the other, the client organization may prefer to deal with one vendor for all the goods in contrast to many vendors. Figure 3 shows the typical positions of various applications based on their content or process concentration while Figure 4 shows the typical positions of various tasks based on their content or process concentration.

Survival

To remain competitive companies have to either acquire or be ready to be acquired. Being small and servicing only a niche area puts the organization under great risk of obsolescence from consolidated service providers. These one-stop shops may tend to be preferred by clients.

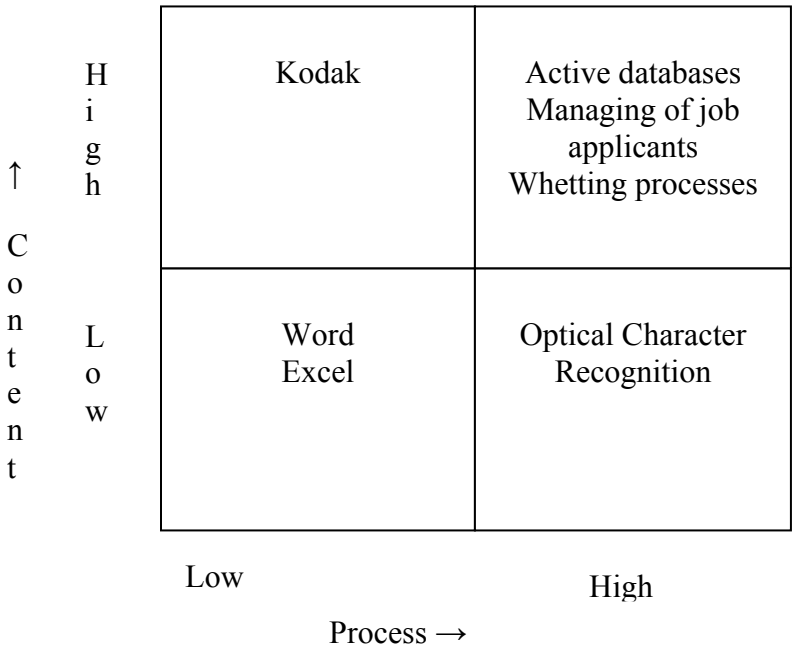

Figure 3 Typology of Applications based on content –process matrix

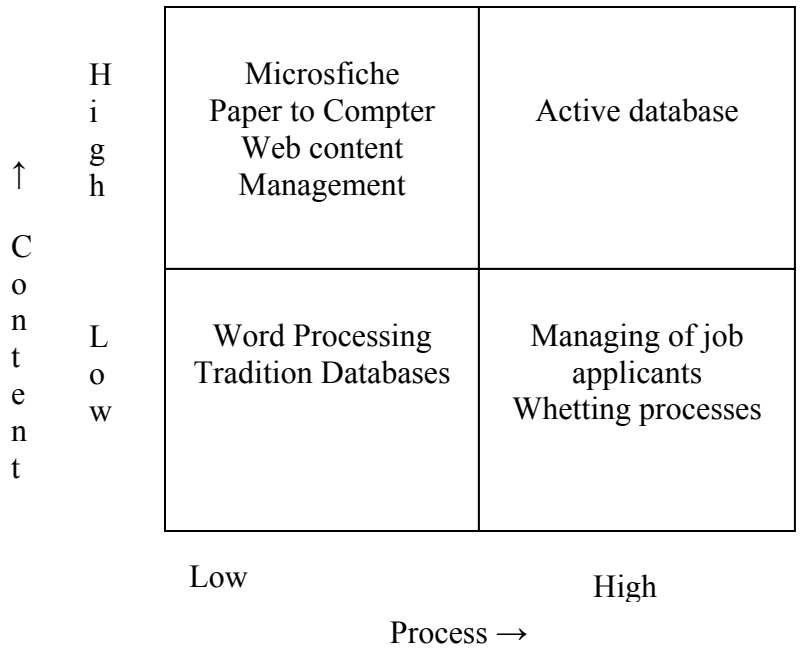

Figure 4: Typology of Tasks based on content –process matrix

FUTURE OF ECM/BPM

The data shows a trend towards more consolidations in the future. With big players like Microsoft, Sun and Oracle entering the market, we may witness more consolidations. Another factor is the emergence of open source alternatives. ECM / BPM software's now have Open Source alternatives to commercial packages: JackRabbit (Apache), Alfresco , Plone , Nuxeo , Jahia software to name a few. The catch lies in the support and customization.

CONCLUSION

After discussing ECM/BPM technologies, we explore and explain the mergers and acquisitions in the field. We identify antecedents to the needs of mergers and acquisitions and draw parallels with activities of mergers and acquisitions in other areas.

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