



Information Life-Cycle Management and Enterprise Content Management: The Confluence of Technology and Business

Content & Collaboration Strategies, Infrastructure Strategies, Server Infrastructure Strategies

Phil Goodwin

FOCAL POINT

Through 2004-06, IT organizations (ITOs) will increasingly connect the technical elements of storage management with the business requirements of content management. Enterprise content management (ECM) is emerging as a critical infrastructure requirement, and storage continues to grow in importance as it grows in capacity, functionality, and management. They come together in the nascent yet compelling vision of information life-cycle management (ILM). Here, we help IT managers understand the elements and value of ILM, where content management fits into the equation, and how to communicate the value of integration to senior managers.

CONTEXT

The following three recent phenomena have combined to create the “perfect storm” for information management:

- Ubiquitous and nearly impossible-to-control growth and access to enterprise and World Wide Web information
- Security, compliance, and data integrity driven by requirements for financial transparency and new regulatory schemes such as Sarbanes-Oxley Act, HIPAA, and various US and European regulatory agencies
- Information and disaster recovery heightened by the September 11, 2001, terrorist attacks and August 2003 power-grid blackouts

Taken together, these matters, once the sole domain of IT, are now of direct and immediate importance to lines of business (LOBs) and the entire organization.

Defining ILM

We define information (or data) life-cycle management as follows: “ILM is the process by which information is moved through a continuum of storage media to ensure business-required service-level delivery at the lowest unit cost, based on the content of the data element. ILM also includes progressively maturing and automating storage management processes that result in year-over-year personnel efficiency improvement, all without sacrificing rapid response to changing business requirements.”

The key element of this definition is “process.” Certainly, information can be managed manually throughout its life cycle, as was done prior to the advent of computer technology. For an ILM project to be effective, it must automate the process of managing information. Automation should yield lower risk by minimizing the opportunity for human error or interference (e.g., more accountability) as well as creating higher personnel efficiency, both within and outside the IT group. Automation should also optimize the storage tier and manage the movement, replication, and other aspects of storage infrastructure.

META Trend: Storage management automation, standards, and process will remain immature through 2006. Net annual storage growth will average 35%-40% for enterprise (monolithic), 45%-50% for midrange (modular), and 80%-85% for capacity-based (SATA/ATA). Like-for-like price/capacity will improve 35%/year. Through 2007, storage hardware will be rendered a tiered commodity by software-based information life-cycle functionality (e.g., storage resource management, data protection/recoverability, integration, data movement, interoperability), which will become the primary enterprise storage differentiators.

To implement ILM effectively, the storage infrastructure must have knowledge of the informational content, and visa versa. To illustrate, one should consider that, prior to computer automation, the document owner determined whether the document should be placed in a desk-side file (perhaps with the security of lock and key), in a publicly accessible file, or in long-term storage, or should be destroyed. These determinations were made based on the document's content and its importance to the business. Of course, others might have made different judgments, and access was time-consuming and resource-intensive. But computers did not solve these issues; they simply moved them about.

From the storage perspective, information was moved from disk to tape to an off-site vault based almost exclusively on a single criterion, the age of the information, without regard to the value of that information to the business. However, current business and regulatory environments require more sophisticated treatment of the information, and new technologies are evolving to meet this need.

Content, not age, is a more valid determinant of data/item disposition. For example, ITOs cannot simply purge e-mail files after a certain period of time. "Junk" e-mails, of course, can be deleted, but those pertaining to business transactions, human resources, finance, and the like might need to be retained, cataloged, stored, accessed, and protected for extended (often specific) periods of time. Moreover, it is not as simple as moving the data to off-site storage, because the records must be accessible within a reasonable period of time and cost. The result is the integration of specialized storage systems with content management and e-mail archiving systems (a subset of ECM; e.g., EMC EmailXtender, IXOS-eCONserver).

Tongue in cheek, we say that, to date, storage has been managed on a two-tier model: disk and tape. With rapidly improving storage management technology, however, ITOs have a much broader range of infrastructure deployment options that enable them to better match business requirements (e.g., data access, retention, security) with infrastructure choices (e.g., enterprise storage, midrange storage, ATA/SATA, tape). Currently, the industry is on the cusp of robust heterogeneous storage management capabilities that will enable ITOs to select best-of-breed storage systems and management.

ILM is not a silver bullet for managing data or storage, but a holistic program that begins with process refinement and rule definitions, then drives toward automation of those processes using repeatable methodologies. Properly implemented, ILM can yield not only intangible benefits, such as greater organizational efficiency and agility, but also hard-money savings as well.

Assessing the Information Management Problem

There are two basic aspects to ILM benefits, one of which is improvement of the organization, and the other is avoidance of negative consequences from continuing current practices; the latter is generally the more urgent course of action.

Determining how much an organization might benefit from an ILM project can be assessed initially by reviewing risk categories and deciding whether the organization has significant exposure. These risk categories are as follows:

- ***Regulated industries:*** Heavily regulated industries, such as financial, healthcare, and insurance.
- ***Special regulatory oversight:*** Although an organization might not be in a heavily regulated industry, it could have heavily regulated elements, such as business activities that are overseen by agencies that require specific record keeping (e.g., EPA, OSHA).
- ***Regulated activities:*** All companies have regulated activities to some degree, though some will have more than others. These activities will include, in essence, anything to do with people, personnel, and money (e.g., customer records such as identity/credit cards, product purchase histories, and personnel records).

Clearly, all organizations have some information management risks and exposures. Subsequent sections of this document describe practical ways to get started with an ILM project which can not only reduce organizational risk, but also permanently improve its operations as well.

The Role of Enterprise Content Management in ILM

Although time is an element of any document-management system, a system based solely or primarily on time has many deficiencies. First, a time-based system alone will usually result in some information being retained far longer than its useful life, thereby exposing the organization to the risk of court-directed discovery. Second, a time-based system does not consider the access requirements of the information. For example, some information that is infrequently accessed (e.g., individual medical records) might need to be accessed instantly on request.

ECM systems are integrated solutions designed primarily to capture, store, retrieve, and disseminate information. Decisions regarding purchasing and deploying ECM systems have been tactical ones until recently (i.e., they were designed for a specific business unit purpose, such as drug submissions, management of technical manuals, collateral for product releases). Increasingly, ECM is becoming a core component of conducting business. What was once a discretionary application is now a fundamental infrastructure component for many organizations. This dynamic is partly due to the broadening coverage of ECM to areas such as e-mail and record management that pervades the entire organization rather than a single department. Infrastructure decisions and content management decisions will increasingly be made together, rather than separately, as in the past.

The rapid nexus of e-mail archiving applications (a subset of ECM) and storage is one of the earliest examples of integration of ECM and infrastructure. A broader confluence between ECM infrastructure and storage infrastructure will evolve through 2004-06, whereby ECM applications provide the content knowledge and the metadata to enable a more intelligent and automated ILM.

Practical Steps to Getting Started With ILM

- **Step 1: Process maturity assessment.** META Group research indicates a high degree of correlation between processes that can be automated and the maturity of those processes. Therefore, we recommend organizations begin by assessing their existing process maturity (see Figure 1).
- **Step 2: Establish priorities.** We believe any given process must reach at least the third (“defined”) level of maturity before it can effectively be automated. The ITO should select the most critical applications and begin there.
- **Step 3: Define processes.** As organizations begin defining processes, the description should contain at least the following elements:
 - Data element category (e.g., regulated content, internal, unprotected)
 - Data element ownership (e.g., business unit, position title)
 - Trigger events that stimulate a given action
 - Description of action(s) required to manage content
 - Retention requirements
 - Access requirements
 - Security requirements
 - Disposal requirements

It is critically important that these elements be defined by the business owner of the data element. Information disposition should not become the ITO’s responsibility just because it is stored in a computer system. The document owner is still the most qualified individual to make a determination regarding the disposition of the document. Moreover, regulatory-driven determinations such as data retention and protection should be made with the assistance of legal counsel and corporate governance. This is all the more reason to connect ECM and its record-management capabilities to the storage infrastructure.

The last four items (retention, access, security, and disposal requirements) create the basis for the service levels necessary to support the business in its use of the data. It is this connection to business requirements, then, that becomes the most important component of ILM and the reason content management and storage management are two of the main tenets of ILM.

Figure 1 — Operational Maturity Model Descriptions

An Operations-Based Maturity Model	
Level 1	<p>Ad-Hoc Random</p> <p>Sometimes chaotic Few processes defined In emergency situations, planned processes are typically abandoned Operational processes are performed differently on different platforms Schedules, budgets, functionality, and quality are unpredictable Typically lacks sound management practices Success depends on the heroics of individual effort</p>
Level 2	<p>Repeatable</p> <p>Basic process essentials and management disciplines are in place</p> <p>Although processes may not be defined from an enterprise perspective, subject matter experts often have local process documentation/notes Success still depends largely on the heroics of individual effort Necessary process discipline is in place to repeat earlier process successes</p>
Level 3	<p>Defined</p> <p>Process management and operational activities are documented, standardized, and integrated within the organization Process definitions, flows, automation, integration points, and performance metrics have been identified Performance measures have been identified for the process, though ongoing measurement might not currently exist All processes use a standardized (though sometimes tailored) version of the approved operational processes</p>
Level 4	<p>Managed</p> <p>Process measures have been identified Process measures are routinely collected Process measurements have been proven to be correlated with the process in question Process performance measures are consistently reported to user constituencies Process integration points are known Information is shared between process integration points</p>
Level 5	<p>Optimized</p> <p>Continuous process improvement is enabled by quantitative feedback (via Level 4) Proactive capabilities are implemented Innovative process ideas are piloted and measured for feasibility, functionality, and return on investment</p>

Source: META Group

The Benefits of ILM

Fully implementing ILM is an extensive project, one which could take a year or more to fully exploit. Yet, despite the effort, a properly implemented ILM project has numerous significant benefits. These include greater organizational agility, reduced risk in many areas, and an optimized storage cost structure. ILM need not be a daunting “big bang” project, however, and can be implemented incrementally, starting with the one or two most impactful applications in the organization and expanding across the organization as benefits are realized.

- **Organizational agility:** ILM facilitates organizational agility primarily by establishing a set of processes that are routinely re-examined and refined. Because these processes are documented and repeatable, they become bigger than any individual person and as much a part of the infrastructure as any hardware or software componentry. By linking these process refinements to the business unit, the chance of a “blindside” event are reduced. Blindside events invariably cost the organization unduly, because emergency purchases are made at high cost, existing investments are sidelined, and current projects are shelved midprocess.
- **Reduced risk:** An automated, procedural solution to compliance ensures that the organization will not revert to old habits as the sense of urgency fades. Furthermore, an automated solution ensures continuity and compliance even as personnel inevitably turn over. Finally, an automated solution has checks and balances and can be made tamper-proof from both internal and external attacks while improving the organization’s legal credibility.

META Practice

- **Lower storage costs:** ILM can optimize the deployment of the assets, resulting in better asset utilization, improved access to information, and lower cost per unit stored. ILM enables ITOs to deploy storage tiers (e.g., premium storage for critical applications, entry-level storage for routine applications). The different tiers of storage available to an organization carry distinct and relative cost differences that will have varying net financial impact (due to the differing degrees that a group will leverage each tier); however, moving from a “one size fits all” approach will carry tangible, measurable financial benefits.

Bottom Line

Information life-cycle management is a concept that goes well beyond storage media selection. ILM meshes process refinement, data/content management, and infrastructure management into a holistic strategy where the sum is greater than the parts.

Business Impact: Properly implemented, ILM can yield not only intangibles such as greater organizational efficiency and agility, but also hard monetary savings as well.