Implementing an Integrated Document Management Strategy

Management Summary

This *Strategic Analysis Report* focuses on the practical aspects of implementing an enterprisewide integrated document management (IDM) strategy.

IDM has emerged as a vital class of middleware services that integrates document creation, storage and transfer with critical business process applications. Gartner recommends that enterprises plan IDM on an enterprisewide scale, even if enterprisewide implementation is not possible. A coherent strategy and clear-cut goals will prevent costly re-engineering efforts later on.

To establish such a long-term blueprint, Gartner recommends taking following steps, each of which is discussed in detail in this report:

- Establish a first-year agenda

- Justify the cost of the IDM project

- Understand the keys to successful IDM implementation

- Create an IDM project team

- Conduct a document inventory

- Implement the IDM plan

The following Strategic Planning Assumptions are presented in this report:

- Through 2005, more than 75 percent of enterprises that establish an enterprise IDM strategic plan will use a steering committee as the vehicle for IDM planning and implementation decision making (0.8 probability).

- Planning and development will account for at least 65 percent of the start-up costs for a typical enterprise IDM system (0.8 probability).

- Within enterprises that do not bring internal and external content under control, the percentage of work time wasted by the average knowledge worker on document-related, non-value-added tasks will increase to between 30 percent and 40 percent by 2003 (0.8 probability).

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1.0   Introduction

IDM has emerged as a vital class of middleware services that integrates document creation, storage and transfer with critical business process applications. It transforms document management from an end-user activity — in which the user creates, distributes, files and revises a document as needed — into a network-based service. This service allows documents to be integrated with a full complement of end-user personal-productivity and custom-developed applications from a central virtual repository. It also facilitates collaborative creation, easy retrieval and quick repurposing of documents. Ultimately, IDM increases individual productivity and helps the enterprise manage the ever-increasing flow of information.

Gartner recommends that enterprises plan IDM on an enterprisewide scale, even if enterprisewide implementation is not possible. A coherent strategy and clear-cut goals will prevent costly re-engineering efforts later on. To establish such a long-term blueprint, we recommend that enterprises follow the process presented in this report, which contains the following six steps:

- *Establish a first-year agenda*. Establish an IDM agenda structure that provides a framework for future growth and a record of the enterprise's collective knowledge about its document management practices. This record will be crucial for passing on the experience of early IDM adopters to future generations of managers, developers and users.

- *Justify the cost of the IDM project*. Individuals and groups within enterprises often have a "gut feeling" that IDM is a good idea, but need hard numbers to justify costs. Gartner estimates that office workers waste at least 10 hours each week managing documents, and reductions in this waste can save millions of dollars annually in large enterprises.

- *Understand the key to a successful IDM implementation.* The key to successful IDM implementation is planning coupled with an understanding of the components that comprise the proposed system. Gartner has identified five key implementation components: document structure, business processes, roles and responsibilities, database design, and desktop and server infrastructures.

- *Create an IDM project team*. Implementing IDM systems requires a project team that focuses on the business and technical aspects of the project, in addition to gaining a commitment from senior management and users.

- *Conduct a document inventory*. A document inventory is essential to developing an IDM architecture. This inventory identifies the flow of documents, retrieval and access patterns, volume, and other important variables that help define the type and scale of the IDM system that will be required.

- *Implement the IDM plan.* While IDM implementation is similar to the implementation of any other departmental or enterprise IT project, it has unique attributes.

2.0   Creating the First-Year Agenda

Strategic Planning Assumptions:

- *Through 2005, more than 75 percent of organizations that establish an enterprise IDM strategic plan will use a steering committee as the vehicle for IDM planning and implementation decision making (0.8 probability).*

- *Planning and development will account for at least 65 percent of the start-up costs for a typical enterprise IDM system (0.8 probability).*

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The first step in implementing an enterprisewide IDM strategy is to set up an enterprisewide steering committee. Made up of representatives from the enterprise's senior management team, the steering committee is the project sponsor. It serves as the overall decision-maker and governing body for the project. This group monitors project progress and makes global strategic decisions, usually concerning process or organizational changes.

Feedback from Gartner clients indicates that planning and development account for at least 65 percent of the start-up costs for a typical enterprise IDM system. An enterprise steering committee provides a proven means of coordinating and managing that investment.

Once the steering committee is established, it should undertake the following 10-step agenda:

- *Identify all IDM projects under way.* The typical "bottom-up" approach that has historically prevailed in IDM deployment leads to the introduction of multiple systems. It is a rare enterprise that has full knowledge of all the resources involved in these departmental systems.

- *Identify overlapping functional and technical requirements.* An extension of Step 1, this helps prevent redundant and wasteful practices.

- *Evaluate the feasibility of deploying a single-enterprise IDM system.* A single-enterprise vendor is an increasingly viable option, as IDM vendors have added-functionality-bundling options at varying costs. A single system makes volume discounts available for software licenses, software maintenance fees and training expenses, thereby enabling better management of IS department resources.

- *Identify integration requirements among IDM systems.* Typically, a department will state that it never needs to share work-in-process documents with other departments; however, this is true only until the next enterprise reorganization takes place. Enterprises must anticipate IDM system integration issues and establish an integration game plan.

- *Establish a methodology and sponsor for document inventories.* A document inventory can be used to identify document flow, retrieval and access patterns, volumes, and other important document population attributes, which help define the type and scale of the IDM system that will be required.

- *Establish a dialogue with business process re-engineering (BPR) personnel to ensure recognition of IDM's value in BPR projects.* Those in charge of enterprise BPR efforts may not have recognized IDM as an enabling technology for a departmental application. A major aspect of the IDM adoption campaign will be establishing IDM as part of the BPR toolkit.

- *Develop a document index data dictionary to facilitate information sharing and retrieval among IDM systems.* Like a database application data dictionary, enterprises need a document index data dictionary — which establishes and maintains index fields and their values — to ensure IDM system integrity and interoperability. This requires the involvement of a large number of users and IS staff but can be maintained through the steering committee.

- *Establish a clearinghouse of information on IDM and related technologies.* The steering committee can serve as a leverage point that minimizes the cost of information collection and retention.

- *Coordinate with internal technology committees to integrate other document and output management technology and architecture planning issues.* IDM requires significant integration with related technologies, such as imaging, workflow, records management, information retrieval and publishing systems.

- *Sponsor and establish an enterprise IDM laboratory.* An IDM laboratory provides a proven approach to defining and maintaining architectural integrity and application interoperability. Enterprises can use the IDM lab to carry out the initial evaluation of different software products, and as a focal point for all document-management-related activities.

3.0   Justifying the Cost of the IDM Plan

Strategic Planning Assumption: Within enterprises that do not bring internal and external content under control, the percentage of work time wasted by the average knowledge worker on document-related, non-value-added tasks will increase to between 30 percent and 40 percent by 2003 (0.8 probability).

One question enterprises often ask about IDM systems is how they can they be cost-justified. Managers often have a "gut feeling" that IDM is a good idea, but need hard numbers to justify costs.

Investment in IDM will typically pay for itself within two or three years. Information "hyperflow" is making this outlay almost mandatory for many document-intensive enterprises. This section presents the case for justifying the investment.

3.1   Document-Related Costs

In 1997, Gartner forecast that the amount of time wasted on document-management-related tasks would continue to rise. At that time, we estimated that knowledge workers were spending about eight hours a week — or 20 percent of their work time — on document management tasks. Today, we estimate that this time ranges from 20 percent to 30 percent, and we expect this range to increase to 30 percent to 40 percent by 2003.

The cost-savings impact of IDM in a hypothetical enterprise of 1,000 users is therefore potentially huge. Assuming an average knowledge worker compensation of $55,000 per year, the eight hours per week we estimated in 1997 would work out to $11,000 per year — or $11 million per year for 1,000 users. As the volume and velocity of document-based information has increased, the problem has become even more severe.

In addition to human-resource costs associated with manual document processing, other costs are associated with paper-based and electronic documents when they are managed outside an IDM system. Document management industry data, confirmed by Gartner research, indicates that:

- The average document is copied, either physically or electronically, nine to 11 times at a cost of about $18.

- Documents cost about $20 each to file.

- Retrieving a misfiled document costs about $120.

Unmanaged documents pose many additional hidden — and not-so-hidden — costs, including those associated with on-site and off-site storage, electronic media, physical facilities (e.g., filing cabinets and floor space), and postal and other distribution costs.

Electronic documents and document management are not the same thing. Multiple documents that reside on individual hard drives and shared storage systems, and multiple versions of the same documents, pose additional costs in terms of time and resources. Without IDM, electronic documents are problems, rather than solutions.

3.2   Calculating ROI and Benefits

Following an assessment of the costs associated with the manual document operations, enterprises can begin to calculate IDM benefits and return on investment (ROI). Below is a checklist for maximizing ROI from IDM:

- What is the current volume of documentation?

- At what rate is this volume increasing?

- How are the documents created?

- How are the documents delivered?

- How many people must access, edit or view the document, and at what intervals?

- How often are the documents updated, and by whom?

- What is the role of the documentation in any compliance or quality assurance processes?

- What is the business value of the document?

- What are the document's workflow requirements?

- How is it used, or could it be used, across business processes?

Investigating these questions will point the enterprise to high-value areas of application for IDM. They can also be used as benchmarks for measuring system performance and cost savings.

To understand whether benefits have been achieved, benchmarking must be performed prior to starting a project. A surprising number of enterprises fail to do this. Because IDM systems tend to require heavy capital investment — typically more than $1 million — failure to prove ROI can be a career-limiting mistake.

4.0   Understanding the Keys to Successful IDM Implementation

Gartner has defined a core set of the services provided by all IDM applications. These services include:

- Document check-in/check-out

- Version control

- Document-level security

- Attribute and full-text indexing, search and retrieval

The key to a successful IDM implementation is up-front planning for — and a thorough understanding of — the five components that comprise the proposed system (see Figure 1).

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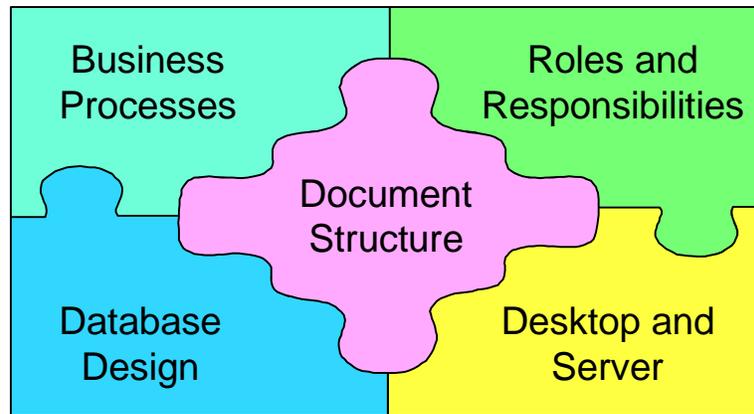
Source: Gartner Research

Figure 1. The Five Components of a Document Management System

A document management system, as shown above, is like a puzzle. A successful document management system implementation should begin with a requirements exercise based on each piece of the puzzle. This involves the following five steps:

- *Create a document structure.* The central element of a document management system is the document structure, which must be designed first. This structure defines all of the document types, attributes and relationships with other documents.

- *Analyze business processes.* Enterprises should evaluate established business processes in light of the benefits that they expect to achieve by implementing the document management system. Merely automating inefficient, paper-based processes will result in even greater inefficiencies.

- *Define roles and responsibilities.* A role is the complete set of knowledge, skills and tasks needed for one person to execute a given process. Define roles and responsibilities for each aspect of the document management system (e.g., system administrators, authors, reviewers and system users).

- *Design the database.* The database design addresses the content, structure, relationships and business data rules surrounding the documents.

- *Describe the desktop and server infrastructure.* This is the technical infrastructure required to support the implementation of the system. This infrastructure must be capable of meeting the needs of all the releases of the project.

Of these five components, only the final two — database design and technical infrastructure requirements — can be completely described through standard IT methods such as formal requirements documents. They can also be implemented somewhat in isolation from the rest of the business. The other three must be executed within the context of their relationship with, and impact on, the overall enterprise.

Step 1, the creation of a document structure, is not a technical exercise, although the output should be captured in a formal document. It requires the input and cooperation of the all of the creators and users of the document sets. The document structure is the user-defined view of the document database, reflecting the means by which administrators, authors, reviewers and users do their daily work. Defining the document structure should include definitions of established documents, and should also take future requirements into account. It is important to obtain the widest possible view across the organization. Similarly, Step 2, defining roles and responsibilities, must be accomplished in cooperation with the proposed users of the system and their managers.

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Enterprises should accomplish these two steps in the context of established business processes and organizational roles and responsibilities. The steering committee can use document structure evaluation as a vehicle to examine, redefine and optimize these processes. In fact, it is necessary to do so given that, as noted previously, simply automating inefficient processes often results in even greater organizational inefficiency.

5.0   Creating a Successful IDM Project Team

Implementing enterprisewide IDM requires a project team, which focuses on the business and technical aspects of the project and gains a commitment from senior management and users. In addition to the steering committee, Gartner recommends that enterprises form a "core team" and an "extended team" (see Figure 2).
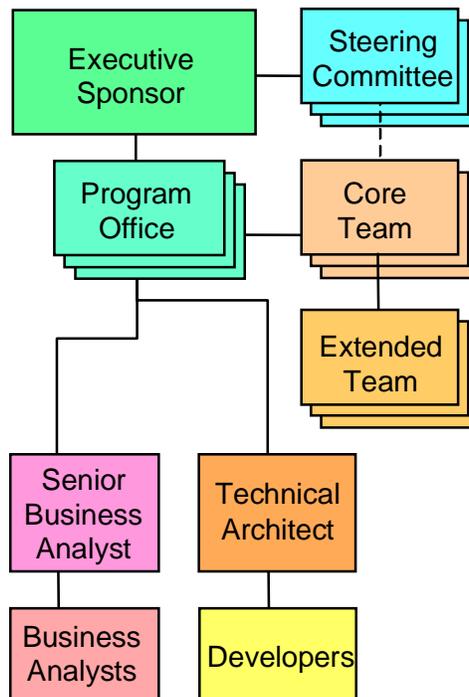
Source: Gartner Research

Figure 2. The IDM Project Team

- *The core team* is composed of representatives from each of the business areas involved in the project, along with individuals from the IS organization. The business representatives decide on new processes, document architecture and workflow. The IS members are responsible for validating the feasibility of the system requirements the team has developed. All team members participate in workshops over the course of the project, gathering necessary information and providing follow-up to workshop questions. The core team will need to dedicate at least 60 percent of its time to the project.

- *The extended team* members are typically end users of the system. They are usually from the same functional areas as the members of the core team. They are used to supplement the core team during the prototyping activity. The extended team provides the system usability and functionality input and feedback necessary to develop a system the full user community will accept. The extended team needs to allocate 100 percent of its time during user acceptance testing.

Other components of the IDM project team include:

- *The project management office* reports on status and raises issues, as appropriate, to the steering committee. Made up of personnel from the business and technical areas, the project management office is responsible for planning tasks, reporting project status, assigning resources, monitoring the progress against the project plan and managing multiple teams. This role will identify and resolve issues independently and with the project leaders. It is also responsible for delivering products on time, within budget and in a way that meets user expectations. A critical competence for the members of the project management office is prior experience or training in the management of complex enterprise systems development. Ideally, the project management office will have already been established. Many Gartner clients have found that their past year 2000 remediation efforts have helped them gain experience in formally running large projects. The enterprise may be able to leverage this experience in implementing its IDM strategy.

- *The technical architect* is responsible for ensuring that the technical solution satisfies the enterprise's present and future business requirements. This role sets the direction and establishes the approach for a technical solution. The technical architect provides insight into selecting technical platforms, network architecture and system software. This role leads the effort in designing the project's conceptual architecture, data model, repository structure and database performance metrics.

- *The senior business analyst* is responsible for identifying and solving business issues and problems, designing business systems that meet the enterprise's needs, and identifying and developing business models. He or she facilitates workshops and provides guidance in the development of required work products.

- *The business analysts* are responsible for the design and delivery of business system components. They build strong relationships with enterprise business personnel and drive requirements, propose alternatives and suggest best practices. They demonstrate the beginnings of team leadership, facilitation skills and methodology.

- *The developers* support the senior members of the technical team in managing and implementing technical applications. They implement the customizations needed to meet the business requirements for the document management system.

6.0   Conducting the Document Inventory

A document inventory is an integral step in developing an IDM architecture. This inventory can be used to identify document flow, retrieval and access patterns, volumes, and other important document population attributes that help define the type and scale of the required IDM system.

The writer-reviewer-approver-viewer (WRAV) model provides a simple technique for creating a document inventory that captures essential information related to the document life cycle (see Figure 3).

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Document Type	HR	IS	Regulatory	Manufacturing
Benefits	WRAV	V	V	V
Policies	WRAV	V	V	V
SOP		V	WRAV	V
MSDS			V	WRAV
Guidelines			WRA	RV
System Document		WRAV		

W = Writer
R = Reviewer
A = Approver
V = Viewer

HR   Human resources
MSDS Material safety data sheet
SOP   Standard operating procedures

Source: Gartner Research

Figure 3. The WRAV Model

Enterprise workers have four types of interaction with documents:

- *Writers* create or revise documents. They use the check-in/check-out and versioning functionality in their daily work activities. Writers are also responsible for assigning or updating key aspects of the document. The interface to the IDM system may be through a vendor-specific interface or the authoring package (e.g., Microsoft Word).

- *Reviewers* participate in the review cycle of draft documents. They annotate the documents and route them back to the writer. Annotations can be made using tools provided by the authoring packages (e.g., Microsoft Word's change-tracking capability) or other reviewing tools (e.g., Adobe Acrobat). Reviewers also use the workflow tools that drive the distribution of documents. A work queue view into the IDM system alerts these users to the latest documents they must review.

- *Approvers* promote the draft documents to a next level of review or final status, depending on the rules defined for the review cycle. They use the workflow and sign-off capabilities of the IDM system.

- *Viewers* use the final documents in the execution of their job functions. They search the document repository and attributes for a particular document or set of documents. Once the documents are found, they open them in a view-only mode. Viewers can locate documents by navigating the repository tree structure, or by using the IDM system's search capabilities. In the latter case, they may perform an attribute-based or full-text search to find the document or information they need.

Using the WRAV model to create a simple document inventory is an essential starting point for the enterprise in an IDM implementation. Without creating this inventory, enterprises may never fully realize the benefits of IDM and could incur added costs associated with rework when implementing the system.

Creating a complete inventory of documents (see Figure 4) is critical to the success of an enterprise document management implementation. It enables enterprises to define the life cycle for each document and the actions taken at each stage of this cycle, and to develop an overall set of architectural principles, preliminary workflow definitions, and a set of common attributes that can be used to describe all documents.

	Document inventory component	HR policy and procedures manual
Basic	Document purpose	Embodies the business rules and practices for HR
	Creator	HR manager
	Frequency and complexity of updates	At least annually, simple updates
	File format	Created in Microsoft Word
	Volume	15 chapters, total of 200 pages
	Primary storage medium	Departmental binders
	Security	Confidential company material
In-Process Use	Version control	Current version must always be displayed
	Key users	All employees
	Search-and-retrieval traffic	Low concurrent access, average of one search per day per employee
	Significant ownership changes	From manager to vice president of HR
	External distribution	None
Records Management	Retention/purging requirements	Five years
	Reporting	Usage, viewing statistics
	Audit trail (change and viewing)	All employees must view current version, and changes must be documented

Source: Gartner Research

Figure 4. Document Inventory

Completing the document inventory before starting an IDM implementation helps ensure that the system architecture, document definitions and document relationships are developed correctly the first time. As documents and functionality are added to the system, rework can be avoided. With the WRAV model, enterprises can plot document creation and consumption (internally and externally with business partners). By following the document's life cycle, they can develop new workflow rules and optimize business processes to attain the greatest possible benefits from the document management system.

7.0   Defining an Enterprise Repository

A document inventory is just the first step toward gathering the information required to create the enterprise document management repository. Enterprise architectures are essential to providing organizations with the ability to find and manage documents that may be stored in separate document management systems.

Initially, enterprises made many document management system implementations with a departmental or application focus. Enterprisewide implementations require that this focus be expanded to include the whole value chain, from suppliers through employees to customers. Scaling a departmental system to the needs of the enterprise often leads to a system that fails to meet its objectives. It is not an issue of scalability, but rather one of design.

Document hierarchies and indexing are not only important starting points for creating an effective enterprise document management system, but also can be essential steps to creating a foundation for both content management and knowledge management strategies. Creating a common way to describe all documents, whether it be the repository structure or a set of metadata assigned to all documents, provides the means for searching and using documents no matter where they are stored in the repository.

7.1   The Document Hierarchy

A document hierarchy takes the form of a repository architecture, represented in a cabinet/folder metaphor (see Figure 5). The final result of a document hierarchy schema is a visual representation of the repository, which enables easy and intuitive navigation. Documents can be organized around any of the following types of structures: organizational structures (e.g., departments or workgroups); business functions or processes; or physical locations.
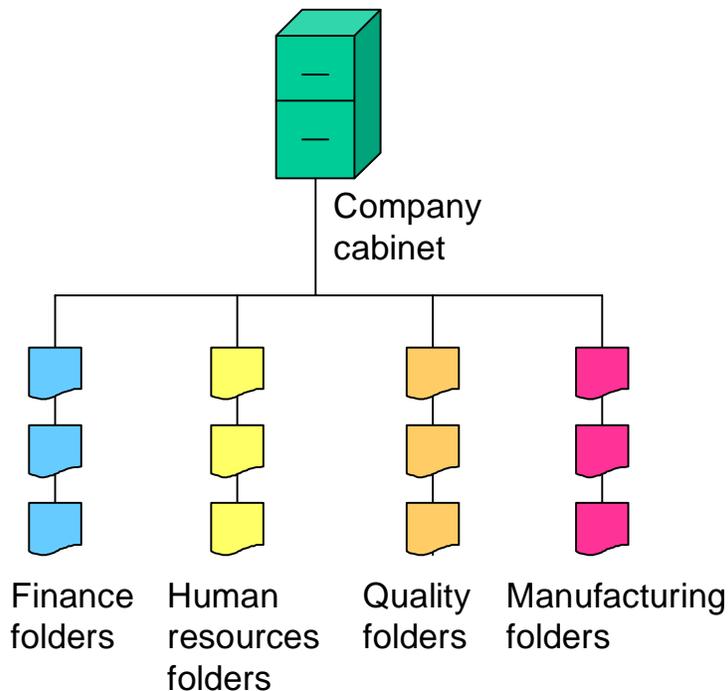
Source: Gartner Research

Figure 5. Repository Architecture

All hierarchy definitions should be designed first with people in mind. Document management systems, unlike some information systems, must be easy to understand and navigate. It follows from this that hierarchies should not be too deeply nested. Information buried four or five layers deep is likely to be difficult to find. Enterprises must assume that what they are storing is for people to find and read, rather than for machines to process. Another problem with creating a multiple-level hierarchy is the expense, since each level of a repository hierarchy must be created and maintained.

Questions about who uses the documents, what are they used for, the logical organization of the information, and whether a casual user can intuitively navigate the hierarchy are answered by the document inventory. Completing the document inventory before starting a document management implementation helps ensure that the system architecture, document definitions and document relationships are developed correctly the first time.

7.2   Completing an Indexing Schema

Indexing deals with individual documents and how to search for information within them. An enterprise indexing schema defines metadata associated with each document, and is used as a starting point for finding documents no matter where they are stored in the repository. This enterprise indexing schema should include no more than five metadata fields that are common across all of the enterprise's document types.

Enterprises should:

- Create a list of terms or a glossary, department by department.

- Enter the terms in an electronic glossary and define them.

- Define the document types required by each application.

- Define the set of metadata, from the glossary terms, that will be associated with each document type.

7.3   Complexity vs. Ease of Use

Document hierarchies and indexing need not be complex — in fact, complexity often makes documents harder, rather than easier, to find. Instead, hierarchies and indexing should reflect the working nature of the documents and be easy to use.

A complex or incomplete hierarchy results in lost time finding the appropriate information. Sometimes more serious problems arise (e.g., when documents cannot be located or are difficult to find). Effective document hierarchies and indexing are thus ways of managing risks.

8.0   Implementing the IDM Plan

While IDM implementation is similar to the implementation of any other departmental or enterprise IT project, it has unique attributes to consider. Here are the steps of the process:

- *Produce a request for proposal (RFP).* The RFP should include sufficient detail to describe: the business objectives of the anticipated purchase; the number of users and job categories; hardware and infrastructure requirements; document types, volumes, life cycle and workflow; metadata; and document creation issues. The RFP should not require the vendors to expend an exorbitant amount of time to answer it. Enterprises should send the document to a wide range of vendors (e.g., 10 to 12). Respondents will probably number between five and seven, and the short list can be created from this group. The document that is returned from the vendor should have detailed cost estimates, proposed

system architectures and an implementation schedule with resource estimates. Cost estimates should not just focus on hardware and software, but should also include maintenance and implementation services costs, which are typically twice the cost of the software.

- *Vendor demonstration and selection.* Upon review of the vendor proposal, enterprises should select two or three vendors that best meet the evaluation criteria. With mutual nondisclosure agreements in place, enterprises should then request that the finalists deliver an on-site presentation that describes their solution, and that they execute a scripted demonstration that shows the solution working in the specified environment. The script for the demonstration should be developed using a sampling of the requirements and some hypothetical business cases.

- *Create the project plan.* Many vendors are now reporting that low- to medium-complexity document management implementations are taking between three and six months. This is optimistic. Gartner estimates that most IDM projects will take between nine and 18 months. The project plan should be created with releases scheduled no more than six months apart, to show value and test ROI. If the project goes on longer than that, without at least an initial rollout, the enterprise should stop and reassess its plans.

Below is a partial list of discrete project elements that enterprises should consider for their IDM projects:

- Create user and system requirements documents

- Analyze business processes

- Define desktop and server infrastructure

- Review requirements documents

- Meet vendors

- Make management presentations

- Determine roles and responsibilities

- Purchase hardware

- Purchase software

- Create corporate records retention policy

- Complete corporate records retention schedule

- Publish and implement retention schedule

- Physically reorganize records

- Create document structure

- Create document indexing scheme

- Design database

- Select candidate document set for testing

- Test indexing scheme

- Install hardware

- Install software

- Test hardware and software

- Provide training for hardware and software

- Test candidate document set

- Write scanning procedures

- Test scanning procedures

- Provide training on scanning procedures

- Begin day-ahead scanning

- Begin back-file conversion

9.0   Conclusion

The potential cost-savings impact of IDM is rising as information hyperflow increases. Knowledge workers now use 20 percent to 30 percent of their working hours managing document-based information outside automated systems, and we expect this percentage to grow. Within enterprises that do not bring internal and external content under control, the percentage of work time wasted by the average knowledge worker on document-related, non-value-added tasks will increase to between 30 percent and 40 percent by 2003 (0.8 probability).

By implementing an enterprisewide document management system, enterprises can save at least half of the time and money now spent on nonautomated document management. IDM can thus provide ample ROI, paying for itself within two to three years.

By following the guidelines presented in this *Strategic Analysis Report,* many IDM projects that would otherwise be destined to failure can be turned into successes. Gartner recommends that enterprises use this report as a blueprint as they begin to create the IDM project plan.