

Preface

This book blends theory and practice to provide practical knowledge and guidelines to enterprises wishing to understand the importance of managing documents along with presenting document content to facilitate business planning and operations support. The book introduces strategies for Integrative Document and Content Management (IDCM).

OBJECTIVES

Our overall objectives are as follows:

- Enhance the understanding of systems that provide for the organization and management of business document collections, where the documents are a combination of digital and physical documents, and Web content collections that generally involve a combination of multimedia objects.
- Describe the characteristics of how documents and Web content are typically administered within enterprises, and review how the mismanagement of document and Web content collections impacts decision making. We also examine insights into how a well-managed document and Web content environment supports business planning.
- Address the potential benefits of a document and Web content management policy framework, which is a suggested prerequisite or corequisite to the implementation of IDCM, and the types of policy requirements that enterprises may wish to develop.
- Provide an information systems planning framework for the planning, specification, acquisition, development, and implementation of IDCM solutions.
- Offer insights into typical IDCM applications within enterprises and into how feasibility analyses are a suggested prerequisite for analyzing the operational, technical, and financial viability of IDCM.
- Provide a framework for determining and analyzing the functional and technical requirements for IDCM, and provide functionality checklists that enterprises may find helpful when discerning requirements.
- Show how related systems, such as drawing management and content management, may be embraced within IDCM.
- Review package selection and implementation strategies that enterprises may find useful when proceeding with the selection of an IDCM solution, and the subsequent implementation of a preferred solution.

BUSINESS CONTEXT

The setting for the themes addressed is a commercial and government business environment, of which the following can be said:

- Documents in some form are used to support virtually every business process in the enterprise, and they are prone to mismanagement due to the volumes of documents being processed and the diversity of document types and formats.
- Document mismanagement may have deleterious affects on efficient and effective business processes and may impact an organization's capabilities to deliver timely services to customers or business partners.
- Document mismanagement may impact an organization's capability to comply with legislative and administrative regulations, and it may expose the organization to the threat of litigation or brand damage.
- Email volume is increasing greatly, as organizations choose its convenience to interact with customers, business partners, and internal staff members, often without adequate management controls.
- Many organizations are publishing Web content to Internet and intranet sites without adequate management controls, potentially exposing the organization to risks, including litigation.
- Enterprises in many countries are faced with the challenge of implementing privacy legislation but have yet to implement an appropriate model of policies, practices, and systems to meet the requirements.
- Public enterprises that are required to satisfy Freedom of Information (FOI) legislation, or private enterprises with similar requirements to satisfy independent regulators, often have difficulty in finding, retrieving, and assembling relevant information, due to poorly managed document collections.
- Organizations that have not implemented adequate risk management strategies for securing important business documents and Web content may be vulnerable to exposures and threats that impact business continuity.
- Information systems professionals who enforce constraints to maintain the integrity of data in databases seem powerless to implement the same types of integrity controls over enterprise collections of digital documents.
- Governments may mandate information or recordkeeping standards and associated systems within public authorities. However, the authorities might not recognize the scope and extent of the project resources requirement or might not be funded adequately for implementation.
- Organizations may see the solution in relatively simplistic terms, like buying "off the shelf" software, without recognizing the need to develop a solution within an overall strategic management framework.
- Information disciples, who seek to implement document and content management solutions as part of recordkeeping practice, may encounter impediments when using "best practice" reasons to argue business cases.
- Project champions are often faced with the difficulties of obtaining funding for document and content management projects, because management may not have been given a full appreciation of the benefits. There will always be higher priorities if the requirement and solution options are not aligned with business planning imperatives.

- Organizations frequently develop completely inadequate specifications for document or Web content management solutions, then become frustrated when the solution fails to meet expectations, or the costs and time frame for implementation far exceed budget estimates.
- Document management systems (DMS), which have been available to implement management controls over digital document collections for over a decade, have not been taken up to the extent predicted by industry pundits.
- DMS projects and their rates of success in terms of operational, technical, or financial outcomes are open to conjecture, with documented evidence and a significant degree of anecdotal evidence of ineffective implementations.
- Organizations may simply not realize that they have a document problem, or if they do, they cannot understand it, see it as a priority, or identify a strategy to address it.
- Industry projections that were made for DMS are now being made for systems that manage Web content, although it is too early to assess the outcomes of the industry's performance against projections.

When these circumstances are recognizable in business environments, effective problem resolution may be hampered because of the following:

- Document and Web content management products generally only address a part of an enterprise's document and content management life-cycle and rely on integration with third-party suppliers to provide a holistic solution.
- Integration between products that might make up a holistic solution can be complex from a perspective of usability, functionality, or architectural integration. This can lead to time and cost blowouts, redundant functionality, and lack of transparency to the end user.

The problems can be intensified when:

- Information systems such as DMS and Web content management products are implemented without due regard to a management framework that encompasses planning, policies, procedures, standards, and guidelines.
- Enterprises fail to align their document or content strategies with key business planning imperatives, or fail to plan and implement solutions within the context of revitalizing business processes.
- Technology solutions are implemented without adequate attention to elements of organizational culture and behavior, such as workgroup dynamics, and fail to utilize adequate change management strategies.

Executives that fail to address the mismanagement of documents and Web content within their enterprises may be condoning an environment that:

- Exposes the organization to the risk of noncompliance with mandated regulatory requirements;
- Reduces the effectiveness of the organization case during litigation or fails to comply with required documents under discovery processes, which can be particularly embarrassing if the other party can produce the organization's documents;
- Risks damage to brand by applying inappropriate document and content management policies and practices and unsupported systems;

- Hampers strategic business initiatives such as e-business and other Web-enabled initiatives, such as Supply Chain Management (SCM) and Customer Relationship Management (CRM);
- Impacts the organization's capability to implement and sustain quality management processes; and
- Makes it difficult to improve productivity through business process redesign, due to the reliance on documents that may not be managed.

In effect, instead of understanding that information needs to be managed as a resource, executives that condone mismanaged document environments might be abrogating their responsibilities to shareholders (or the public, in the case of public agencies).

This book aims to address the problems that may be facing enterprises that are coming to terms with document and content management and tries to help business managers and information professionals develop and implement workable solutions for managing documents and Web content.

We propose an integrative planning model, which we call Integrative Document and Content Management (IDCM), for the development and implementation of solutions that embrace document and Web content management. The IDCM model offers a planned, methodical, and integrative approach that combines two themes:

- The development of an IDCM Management Framework that encompasses the following:
 - Strategies for aligning business and technology solutions with enterprise planning imperatives;
 - Development of relevant policies covering document management and Web content management to provide the governance framework for implementing business and technology solutions;
 - Review and development of procedures to give effect to the policies;
 - Adaptation and application of relevant information management principles, standards, and best practice;
 - Application of recordkeeping principles to relevant documents and Web content; and
 - Definition of Change Management Strategies and Communication Plans to assist with managing cultural changes within the enterprise.
- The definition, development, and implementation of information systems to support the overall document life-cycle and management of document content. This implies a holistic IDCM Systems Architecture, embracing subsystems that provide *management* of the following:
 - Digital office documents;
 - Email;
 - Physical office documents;
 - Drawings and technical documents;
 - Document images;
 - Document indexing, using recognition facilities, such as barcode and character recognition technologies;

- Business processes using automated workflow management systems for managing document and Web content life-cycles;
- Web content management (Internet and intranet), including multimedia objects;
- Reports output from business operational and support systems.

Support for recordkeeping requirements should be planned, specified and implemented as an integral component of IDCM systems and subsystems, as required.

The IDCM systems environment may include integration with strategic business systems, such as:

- E-business systems;
- Enterprise Resource Planning Systems;
- Supply Chain Management Systems;
- Asset Management Systems;
- Contract Management Systems;
- Other horizontal business applications; and
- Vertical applications relevant to the specific line of business.

The IDCM systems may also interface with technologies such as:

- Knowledge Portals;
- Geographical Information Systems; and
- Data Warehousing.

Given the extent of business and government operations, and the diverse range of applications, we do not attempt to cover every type of business purpose that may be applicable for IDCM projects. Our intention is to provide an overall management framework to facilitate successful implementation of practices and solutions for effective IDCM.

This book addresses the many types of issues that may arise during the development and implementation of an IDCM project. It discusses techniques derived from project management theory and practice that relate to implementation of IDCM solutions. Enterprises may find these techniques useful when embarking on document and Web content management projects and implementing IDCM solutions.

We exclude an evaluation of the functionality of specific products that may support IDCM. This is because of the extensive range of products and their rapidly changing functionality and integration capability that cause evaluations to quickly become out of date. It is also because suppliers may have alliances with other suppliers to provide functionality that may not be inherent within their own product set. Instead, we provide functionality checklists relevant for software that is contributing to IDCM solutions.

INSPIRATION

We were inspired to write this book because of the following:

- **The requirement to manage documents and their content is not going to magically disappear.**

Our ancestors captured information on a variety of recordable media, including cave walls, tortoise shells, and bark. We still do a bit of that but now have a tendency to use

digital mechanisms for recording documents and publishing their content onto Internet and intranet Web sites. New formats may emerge in the future, and they might not be referred to as “documents” or “content,” but the container, whatever it is called, will still need to be managed.

- **Mismanaged document and Web content collections represent a level of risk to the enterprise.**

The impact of mismanaged document collections on an organization’s performance might not have been immediately apparent to an external observer. However, enterprises now have the penchant for making documents available on internal or public Web sites, and content is typically not managed. The fact that content may have been derived from unmanaged or mismanaged digital document collections exacerbates the problem, and the staging process from document creation through to publication generally relies on manual processes that can be prone to error. Consequently, outdated or incorrect information on Web sites might be more easily detectable for external observers (like customers), and published content may indeed be subject to litigation processes.

- **Mismanaged document and Web content collections may impact the success of quality management programs.**

The delivery of timely products and services within a quality management program is becoming increasingly important in the present competitive environment. Customers not only want *timely* products and services, but they also require *quality* products and services. The ISO 9000 series provides a framework for quality management systems. Document control is a vital component of seeking and maintaining quality accreditation and providing products and services within an acceptable quality management system. Mismanaged document collections can have dangerous implications for an enterprise’s quality management program, and have been known to lead to an enterprise’s cessation of trading until document control systems are managed.

- **Document and Web content management is an integral part of an enterprise’s capacity to develop knowledge management strategies.**

The increasing awareness of the importance of information as an organizational asset has led to many commentaries on information resource management as a discipline. In the last decade, these have been associated to some extent with the embryonic notions of knowledge management, which concerns itself with knowledge in intangible and documented forms. The requirement for document and Web content management should play a pivotal role during the development of an organization’s knowledge management strategies. Document and Web content management solutions provide the foundation by which organizations are better able to manage, share, and retrieve information held in document repositories or published on Internet or intranet sites.

- **Document and Web content management systems integrated with workflow collectively provide an integrative environment for business process redesign.**

The use of workflow management software, combined with document and Web content management systems, provide management controls over all stages of a business process, and the information elements relating to that process. The use of an integrated solution for automating processes, while maintaining controls over information, may offer a compelling environment for business process redesign, and may help organizations make better use of corporate knowledge.

- **Threats to business continuity may represent a high risk.**
Much of today's business documentation continues to be managed in paper form, where it is exposed to physical security threats, including fire, theft, loss, replication, or unintentional misplacement. As more documentation becomes digital and is used for business decision making, the same security threats apply, and they can be actioned with ease. There is high potential for vast quantities of digital documentation to be lost maliciously or unintentionally. For example, the equivalent amount of paper that could fill a number of pantechicon trucks can now be held on executives' laptop computers. Given the mobility of laptops, there are risks such as loss or theft, easy transfer of company information to unauthorized parties, or just plain mismanagement of documented information, such as lack of synchronization of files with enterprise file systems.
- **Project failures represent a social cost.**
We observed that many DMS projects, though initiated and developed by well intentioned document or records management enthusiasts, have undesired outcomes or are terminated for reasons such as lack of project ownership or failure to align the project with business objectives. We mentioned that documented evidence supports the view that DMS projects have not always been effective. Anecdotal evidence would suggest that the overall success rate of DMS is not very high, based on evaluation of outcomes against stated objectives. There is a deprivation of shareholder value if projects are not successfully implemented in the commercial sector, and there is a direct cost to taxpayers if document or content management projects are not successful in the public sector.
- **A collaborative approach to managing document and Web content is important.**
We wanted to bring together principles from a number of disciplines within a business management framework to address the requirements for document and content management. The framework provides an organized reference for improving the management of documents and Web content. We wished to provide guidance for those enterprises introducing systems where professional expertise, though convergent from a number of areas, is yet to be expressed within an overall framework.

APPLICATION CONTEXT

For our purposes, any documented knowledge is information. A document is effectively a container for information, and the document or container may be represented in multiple file formats and may be stored on multiple types of storage media from paper to disk. We are concerned with the processes for recording the information, particularly digitization, the management of document-based information including Web content files, and the application of relevant recordkeeping requirements.

Electronic systems for organizing and retrieving information have been developed in a variety of communities. Disciplines such as records management, archives administration, librarianship, business analysis, Web site architecture, and data administration have made contributions to their evolution.

A range of information management systems has emerged. Instances can be summarized as follows:

- *Records Management Systems* were developed as processes and finding aids for systematization of physical (hard-copy) documents.

- *Document Management Systems* emerged to address the requirements for managing digital documents.
- *Web Content Management Systems* emerged to manage published (Internet/intranet) Web content.
- *Electronic Records Management Systems* offer functionality for managing digital documents and physical documents as records.
- *Email Management Systems* offer management of digital email.
- *Drawing Management Systems* offer management controls over collections that involve drawings and technical documents.
- *Document Imaging Systems* provide repository management for storage of digital images, or film-based collections.

Many enterprises have implemented these types of systems as “point solutions” to a specific business problem with varying degrees of effectiveness. If these systems have been implemented without an integrated information architecture, they may exist as “information silos,” and not support knowledge-sharing strategies.

An organization’s document and content management requirements must be considered within the range of an enterprise’s document production and publication programs. Consequently, today’s requirements are for integrated solutions, which must now accommodate hybrid collections of physical and digital documents (including multimedia), and implement recordkeeping practices that satisfy relevant requirements.

The types of products available to assist enterprises in implementing solutions for managing all types of documents and content are emerging as part of the gradual evolution of these systems. However, the challenge is only partially addressed by software, and the overall requirements need to be addressed within the context of an integrative planning model, which we term IDCM.



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The IDCM planning model offers an integrative methodology incorporating a management framework and systems approach to planning and implementing document and Web content management solutions and meeting recordkeeping requirements. The scope and requirement for IDCM solutions must be aligned with business planning imperatives and must be viewed within the context of how documents are used to support business processes.

We are concerned with optimizing the management of documents and Web content within an enterprise so that the corporate memory remains readily accessible to authorized users who may require it for foreseen and unforeseen purposes. The implementation of effective IDCM solutions for managing documents and Web content will support business decision making and enable information sharing and reuse. IDCM is a key to achieving excellence in business administration and provides the foundation for enterprise knowledge management strategies.

INTENDED AUDIENCE

We see this book as being useful to the following readership.

Business Managers

- Managers of vital business documents, such as tenders, contracts, leases, awards, minutes of meetings, and regulatory compliance reports, who require a method of storing and quickly retrieving relevant information.
- Engineering managers, engineering services personnel, and draftspersons who are required to improve the management of engineering drawings, specifications, manuals, and similar technical documentation as part of engineering processes.
- Quality assurance, safety, and risk managers required to manage ISO document collections and meet the documentation requirements for an integrated management system.
- Managers responsible for accountability, who must ensure that there is documentation of decisions and actions and an associated framework of accessibility.
- Managers of legal practices and investigators required to better manage document collections as part of the process of assembling document exhibits for litigation purposes.
- Web content managers required to better manage content in the form of digital objects (e.g., images, viewable and downloadable files) and HTML/XML Web pages and associate Web content with other publication programs in an enterprise.
- E-commerce project managers required to improve the management of back-office processes to support e-commerce initiatives.
- Project managers in business and government sectors who are seeking an appreciation of an overall framework for scoping, specifying, selecting, and implementing IDCM solutions.

Information Professionals

- Information managers (including document controllers, records managers, librarians, and archivists) within enterprises who are responsible for implementing and managing systems for organizing and disseminating documents to facilitate knowledge-sharing,

for managing content on Web interfaces, and for ensuring that documents are managed in a way that meets regulatory requirements.

- Information systems auditors who are responsible for reviewing organizational effectiveness and accountable management.
- Vendors who wish to gain a wider appreciation of document management requirements and issues within enterprises and confirm the value of an information systems life-cycle approach to the implementation of IDCM applications in business and government sectors.

Students

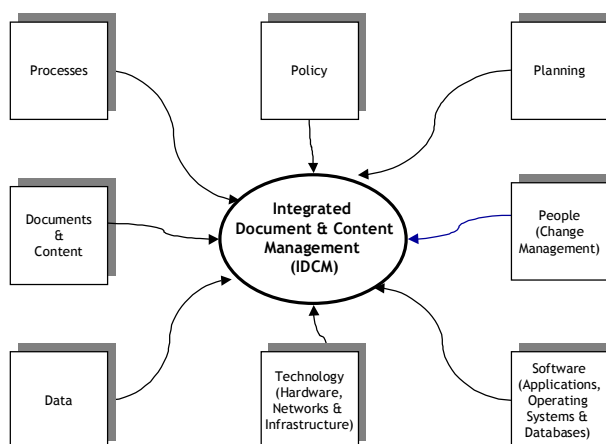
- Students in information management or information technology courses who have had an introduction to information management and systems work and are now examining specific business applications.

ORGANIZATION OF CONTENT

The book is structured in four parts, followed by a part devoted to appendices:

- Part 1: “Business Context” assists business and government enterprises in gaining an appreciation of the role of documents within the context of business planning and operations. It reviews the evolution of documents from antiquity through to today’s document paradigm and the emergence of document technologies. It considers typical business planning imperatives, and provides scenarios representative of a current enterprise document environment. It provides a conceptual overview of characteristics of IDCM systems and typical applications within enterprises that can help reduce the negative impacts on business planning that occur due to fragmented and mismanaged document environments.
- Part 2: “Preliminaries” assists business and project managers in applying information systems life-cycle planning techniques when initiating and progressing an IDCM project. It emphasizes the importance of change management and the need to develop a change management strategy at project initiation and implement the strategy throughout the project life-cycle. It introduces the requirement for a document management policy as a key subset of an information policy and recommends the rigor of the feasibility study approach to determine operational, technical, and financial feasibility of an IDCM opportunity. The feasibility study helps clarify the project scope and is a logical precursor to a full requirements analysis study. It is also a useful prerequisite to building the business case, which is another vital aspect of the project life-cycle that is detailed in this part.
- Part 3: “Requirements Analysis and Definition” reviews the necessity to analyze and define the requirements for IDCM and provides insights into the types of analysis and definition required. It provides a specification framework to help enterprises focus their analytical efforts and resources for document management applications and produce specification deliverables within a structured context. The framework incorporates user and system requirements and examines the functional requirements for an IDCM solution in terms of the standard range of document authoring tools within organizations. The functional analysis also includes a series of checklists to assist with compilation of Requirements Specifications.

Figure: IDCM Framework.



- Part 4: “Package Selection and Implementation Strategies” covers the processes involved in acquiring software to support an IDCM solution and methodologies for conducting evaluations of various solutions and making a selection. We include tips that enterprises may find useful during contract negotiations with shortlisted suppliers or a single supplier. This part also covers the implementation planning phase of an IDCM project, including suggestions for project execution planning, the importance of well-defined design, development, and testing regimes, and system changeover and migration strategies. We reemphasize the importance of change management, which is key to the successful implementation of IDCM.

In Chapter 4, we explain some discrete differences between general information systems and document and Web content technologies, primarily the document-centric nature of the requirements analysis and systems environment involved. However, IDCM involves the same types of components featured within any information system, and these are represented in the figure above, titled *IDCM Framework*.

We structured this book to deal with each of these aspects within the overall IDCM framework, but we do so within the context of a system-based project life-cycle approach to the management of an IDCM project. This approach includes understanding the overall requirement within a business context, the planning process involved in initiating and progressing an IDCM project, the focus on detailed requirements analysis and specification, and the strategies for package selection and implementation. During the life-cycle context, we will examine how each of these key components is relevant to the implementation of successful IDCM. The discrete parts of the book include component chapters as follows:

Part 1: Business Context

In Chapter 1, “**Introduction**,” a brief historical perspective on the evolution of document types is provided. In it, a new document paradigm that has emerged with digitization is introduced, and the overall context of documents in organizations is considered. A review of the contributions made by various disciplines to our understanding of DMS is then pro-

vided. Other conceptual approaches to document management that are expressed in terms such as content management, are also introduced.

In Chapter 2, “**Business Planning Frameworks and IDCM**,” a synopsis of the contemporary business environment is provided and some internal and external factors that influence enterprise planning are reviewed, with particular reference to document role. Several business sectors are considered. Some of the information systems and technologies available on the market to support planning initiatives are examined. The relevance of managing documents and their content is discussed in the context of planning, taking into account matters such as regulatory compliance and commercial processes.

In Chapter 3, “**Characteristics of Enterprise Document Environments**,” a review of how business and government enterprises that have yet to embark upon IDCM may be managing processing of different document types is provided. A generic description of functionality and limitations is provided based on the assumption that organizations can apply relevant elements to their specific environments. Specific sections are devoted to digital documents in general, as well as email, physical documents, drawings, and technical documentation and Web content.

In Chapter 4, “**Characteristics of IDCM Systems**,” the subsystems available as elements of IDCM solutions, and the types of functionality available to support an enterprise’s information management strategy by improving the management of documents, are examined. The characteristics of contributing subsystems (including workflow) are described to enable an appreciation of how the management of documents can be improved by using IDCM.

In Chapter 5, “**Business Systems Interfaces and IDCM Opportunities**,” the appraisal of the characteristics of IDCM systems is concluded. In the beginning of the chapter, IDCM opportunities in the context of their capability to interface with business operational and administrative systems are reviewed. We relate these to document and Web content management in order to illustrate how IDCM can support other lines of business systems and their applications.

Part 2: Preliminaries

The information presented in Chapter 6, “**Project Life-Cycle Planning and Methodologies**,” deals with the planning aspects of a document or content management project, including scope, feasibility, and life-cycle development of the project. The typical project deliverables that may be used during the planning and subsequent phases of a project are reviewed.

The information presented in Chapter 7, “**Policy Framework for IDCM**,” deals with the development of a framework that enables an enterprise to articulate its policy for managing documents and content, the general principles that support the policy, and the strategies for effective implementation of the policy.

In Chapter 8, “**Feasibility Study**,” the relevance of the feasibility study as a key component of life-cycle management that may be used when embarking on an IDCM project is examined. It may be used to conduct a preliminary investigation of requirements and to determine the operational, technical, and financial feasibility of such a project.

In Chapter 9, “**Building the Business Case**,” the development of a business case for the implementation of an IDCM strategy is developed. It provides insights to assist managers faced with having to acquire executive management commitment and budget funding for IDCM.

Part 3: Requirements Analysis and Definition

In Chapter 10, “**Requirements Analysis and Definition Framework**,” a framework for requirements analysis to assist enterprises when conducting IDCM projects is discussed. It examines the types of analytical processes and specifications used to capture the overall requirements of IDCM, as a strategy to reduce the risks of acquiring a solution that does not meet requirements.

In Chapter 11, “**User Requirements**,” the type of structure and content of a user requirements specification that might be suitable for an IDCM project within an enterprise is examined. It includes system changeover, backfile conversion of hard-copy documents, and migration of data and documents from existing files and repositories to an IDCM system, along with material on archival management, preservation, security, and storage requirements.

Chapter 12, “**Functional Requirements — Digital Office Documents**,” is the first of several chapters in which requirements analysis and definition for functional requirements are reviewed. In this chapter, aspects that may be applied to digital office documents in general, are reviewed.

In Chapter 13, “**Functional Requirements — Email Management**,” functional requirements engineering that may be appropriate when compiling a specification for managing email using either the direct capture method or save to DMS are examined.

In Chapter 14, “**Functional Requirements — Physical Office Documents**,” the functionality of managing physical office documents using IDCM technology is addressed.

In Chapter 15, “**Functional Requirements — Document Imaging and Recognition Technologies**,” requirements for scanning and conversion of physical documents to image format are considered, and requirements for recognition technologies, such as barcodes and character recognition, are included.

In Chapter 16, “**Functional Requirements — Workflow**,” the discussion of workflow that was introduced in Chapter 4 is extended in order to review functional requirements when integrating workflow with document repositories in an IDCM context.

In Chapter 17, “**Functional Requirements — Engineering and Technical Drawings**,” the functional requirements for using the capabilities of IDCM solutions for managing engineering and technical drawings and automating engineering change management processes, are examined.

In Chapter 18, “**Functional Requirements — Web Content Management**,” functional requirements for integrating document management and Web publishing and workflow tools to provide end-to-end automation of processes for distributed development of Web content and a managed Web content environment that is cohesive, are considered.

In Chapter 19, “**Nonfunctional and Domain Requirements**,” a requirements determination and analysis is provided that is useful for defining the nonfunctional requirements for enterprise IDCM, including system sizing, architecture, and performance requirements. We also include in this chapter a discussion on system administration requirements and domain requirements, such as the information technology environment.

Part 4: Package Selection and Implementation Strategies

In Chapter 20, “**Package Selection**,” the typical procurement processes for selecting an IDCM solution are covered, and useful techniques for validating various solutions against requirements and negotiating a contract with a supplier are provided.

In Chapter 21, “**Implementation Planning**,” guidelines for implementation planning are provided, along with techniques that can be used during the implementation process to facilitate a successful project outcome. This includes satisfying the operational, technical, and financial objectives of the project, and providing guidelines for postimplementation review.

In Chapter 22, “**Conclusion**,” the main themes of the book are summarized and the challenges facing business and government enterprises with managing document collections and Web content are recapitulated.

Part 5: Appendices

The appendices start with a glossary (Appendix 1), followed by a complete list of text and sources referenced in this book (Appendix 2). Useful Internet sites are then provided (Appendix 3), followed by a representative list of software solution providers (Appendix 4). A final appendix (Appendix 5) provides a brief overview of digital storage hardware.