White Paper

Defining The Document and Content Management Ecosystem

Butler Group ▶

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▶ MANAGEMENT SUMMARY

The explosion of unstructured content and business documents continues unabated, and as it does so, it becomes clear that we will need a new generation of tools to process, and to extract value from, this data. Document and Content Management (DCM) is arguably the premier challenge that organisations must address, if they are to succeed in delivering an IT strategy that supports their business, and indeed drives it forward.

The first 30 years of IT as a mainstream discipline, has been all about structured data – information that followed relatively rigid rules, and which we could capture, store, and process. For items such as letters, records, spreadsheets, images, and sound, we came up with tools to create and manipulate them, but paid insufficient attention to the issue of management. Now the problem has come home to roost – 80% of content within an organisation is unstructured, and yet we have a very limited ability to use the information contained within, to our advantage.

We are now seeing the convergence of a number of information management technologies, including document management, Web content management, enterprise portals, and knowledge management, to create a framework for managing unstructured information within the enterprise. This has led to the creation of a new category – Enterprise Content Management, that provides a broad range of capabilities to address this need.

There are two clear trends in the DCM market at the present time. One is the requirement to create a content infrastructure that integrates both structured and unstructured content, wherever it resides within the organisation, so that the value of this information can be realised in the context of core business processes. The second point is the benefit that can be obtained from content collaboration – enabling knowledge workers to cooperate on business documents, and information-centric projects.

This paper details the categories that make up the DCM ecosystem, examines the functionality that is available, and positions the leading vendors in this market. Despite the fact that some of the vendors have been in business for a relatively long period by computer industry standards, it is still in a phase of rapid development. There is a clear evolutionary line here, from the origins of document management and workflow, through the boom of Web content management during the dot.com era, and now to the focus on content infrastructures and collaboration.

We believe that there will be a significant period of market consolidation during the next two years, from 2002-2004, as the number of vendors in this space (over 150 in total) is not sustainable, particularly in the current economic climate. This consolidation will see the leading players building a broad portfolio of document and content management technologies, including knowledge management functionality, and offering comprehensive information management suites, founded on a strong integration layer.

▶ FUNDAMENTALS

Content and Business Processes

The first wave of content management products was associated primarily with the management of Web content, and it is unfortunate that this has muddied the waters of product terminology. Content, in its widest sense, is fundamental to almost every business process, as an input, an output, or more often as both:

- A sales order fulfilment process might include a customer order (as written document, Web order, fax, or e-mail), an order acknowledgement, a manufacturing requisition, and a despatch note.

- Creating a sales brochure might comprise written copy, some images, and a design template, and may be output in multiple formats, to print and Web site.

- Specifying a product design would take in specifications, engineering drawings, and costings, all of which must go through multiple iterations of development and verification.

The aim of content management technology should be to reduce the costs involved in handling content within these processes, to improve the processes themselves by enabling quicker throughput and greater visibility, and to facilitate the creation of value from information within the business.

The Document-Content Relationship

In an ideal world, we would be able to break all content down into its component parts, and handle it as discrete bundles of information. This would have benefits for storage, help to avoid duplication in processing, and allow content to be repurposed for publishing to different channels. This concept works well for Web content management, and is the model that is used for most of the products that address this area. In the real world, however, this concept does not reflect the way that we actually use content, the majority of which involves bundling up several of these discrete items into a larger unit, which we would term a document.

This is particularly true if one looks again at the process examples already presented – whilst we use the content for its information value, it will move through the business process as a document – the sales order, the product costing, or the brochure mock-up. Whilst our internal systems may be able to manage this dual approach, many of these processes have external components, and a document becomes the 'wrapper' used to pass content to these third parties. As a result, it is important that content management technology is capable of dealing both with the information within a document, and with the document itself.

▶ THE INFORMATION MANAGEMENT ECOSYSTEM

We are now seeing a convergence, not only of Document Management (DM) and Content Management (CM), but also of other information-centric technologies such as Enterprise Portals, Knowledge Management, and collaboration tools. This convergence reflects the overlap that exists between these areas, and the need to take a coherent approach to the management of information within the enterprise. The core functionality of each of these areas is as follows:

Enterprise Content Management (ECM)

ECM is a relatively recent term that is used to differentiate CM systems that adopt a broad definition of content, and which address the role of content within the extended enterprise. This type of system is able to handle all types of content, including business documents, Web-based content, electronic transactions (e.g. within ERP systems), e-mails, document images, and rich media. To support such a broad view, this type of system must typically implement a complete infrastructure to manage the storage, processing, and distribution of content, documents, and other media.

An ECM system requires a robust underlying repository, and the ability to provide access to multiple content sources via an integration layer. Other common features are strong XML-handling capabilities, support for portals, workflow and business process management tools, and the ability to search and categorise content wherever it is located within the organisation.

Web Content Management (WCM)

As the name suggests, a WCM system focuses primarily on Web-based content, although will not be limited solely to XML and HTML content. Whilst these formats are the most common storage and presentation formats for Web pages, the overall site will also include many other content formats, including images, audio, video, PDF files, and other specialised formats, including program code. WCM ranges from basic applications that are capable of handling a company intranet, up to full-blown systems that specialise in supporting the largest scale e-commerce initiatives, and the management of multiple Web properties, often on a global scale.

The fundamentals of WCM are the ability to separate content from its presentation, using templates to simplify the process of content creation and contribution, without the intervention of technical staff to publish the material to a Web site. High-level WCM systems will include the sophisticated workflow and administration tools that are required to manage complex Web sites, and large numbers of content contributors. Some will also support mass personalisation of Web content, suitable for large-scale e-commerce initiatives in both consumer and business-to-business environments.

Document Management (DM)

DM grew up as a discipline that dealt with the interface between printed document and computer system, but has now applied the strengths gained in this area to the requirements of managing electronic documents as an integral part of business processes. DM systems therefore include document storage, indexing and retrieval, strong workflow capabilities, document versioning, document check-in/check-out, document collaboration and distribution. These applications have a good understanding of the relationship between documents and business processes, and are capable of managing the entire document lifecycle.

The lifecycle issue is crucial, because there are many aspects of DM that require a document to be treated as a content 'container', particularly in sensitive areas such as government, in highly regulated industries such as healthcare and pharmaceuticals, and in specific disciplines like product design and engineering. For all of these fields, features such as auditing, security and authorisation, and document archiving, are as important, if not more so, than the content of the document itself.

Digital Asset Management (DAM) & Digital Rights Management (DRM)

Whilst having much in common with WCM and DM, DAM systems focus on content that generates revenue, or has a clear value. Most often, these digital assets are rich media files, such as images, video, or audio, and the DAM application helps to capture, catalogue, and secure these assets, and then to maximise value through assembly and publishing services.

DRM is an associated discipline that extends these capabilities to securing and managing the use of assets by third parties. This would include distribution of paid content over the Web, and through other channels, and helps an organisation to track and control the rights that it has granted to its digital assets.

Enterprise Information Portal (EIP)

The portal market has been one of the most active sectors over the past two years. The strength of a portal lies in its ability to draw together the information and applications, both internal and external, that are available to an organisation, and present a personalised view to employees to add value to their everyday work. The portal acts as a unifying layer that abstracts the user from the underlying applications, and from the complexities of diverse data sources. It simplifies the process of information discovery in support of business decisions, and is often used as the basis for the creation of a knowledge network, enabling collaboration on a wide range of projects. A portal does, however, rely on content, and there is an increasingly symbiotic relationship between these two areas.

Knowledge Management (KM) & Collaboration

KM tools cover a broad spectrum, but are designed to help an organisation maximise value from its intellectual or knowledge-based assets. Some applications in this category provide a platform for capturing, organising, and distributing organisational knowledge, whilst others focus on more specific areas such as searching, indexing, e-learning, data mining, and particularly collaboration.

Collaboration is regarded as part of the KM space, because facilitating collaboration between employees, and externally with partners, is essential both to information capture, and to exploiting that knowledge base. Collaboration technologies include instant messaging, interactive discussions, online meetings, peer-to-peer knowledge exchange, and project-based team working.

Software Configuration Management (SCM)

SCM applications are used to manage program code during the software development lifecycle. They include version control, check-in and check-out facilities, code repository, and auditing capabilities, and support the participation of geographically distributed teams in large-scale software projects. The entry of SCM vendors into the content management space has been prompted by two factors: firstly, many of the management facilities already described are also applicable to the wider definition of content, and secondly, as Web site development becomes more complex, it includes a mixture of program code and content. The reasonable assertion of the SCM vendors is that code and content must be managed together, to ensure that a Web site is properly synchronised.

It will be apparent from the description of these different disciplines, that a coherent information management strategy will require a combination of several applications. Vendors have addressed this requirement in one of two ways, either by building a suite of products that provide a broad range of functionality, or by partnering with other vendors to ensure that their products are capable of close integration. There are very few vendors, however, that can offer best-of-breed capabilities across all these different areas, so integration is a key issue for organisations to consider as they evaluate DCM solutions.

▶ PRODUCT FUNCTIONALITY

Product selection for a specific enterprise requires careful thought on where the 'hotspots' of information management exist, and which areas of the business can genuinely benefit from these applications. The major areas of functionality covered by DCM products are as follows:

Content Authoring. Facilities for content creation using either office applications, or built-in creation tools. Emphasis on ease of use and simple submission process.

Template Support. Allows separation of content from its presentation. A Web designer can create and edit templates, which are applied to content submitted by authors.

Document Capture. A range of techniques for adding existing documents into a repository. Includes document import and transformation, and document imaging.

Content Repository. A secure storage facility that is capable of handling a wide variety of content types, and enabling access to authorised users.

Workflow. Supports the routing of documents and content between individuals and processes. Enables features such as document approval.

Web Site Development. Facilities for the development of content-based Web applications, supporting both code and content elements.

Indexing and Searching. The ability to create indexes of document and content items, and to provide powerful search capabilities both at document and content levels.

Categorisation. Allows documents and content to be tagged and categorised within a taxonomy, either manually, or by tools that offer automatic categorisation.

Version Control. Enables the tracking of changes to documents and content, providing an audit trail, and the possibility of rollback to previous versions.

Personalisation. Allows content to be personalised to the needs of specific individuals or groups of individuals. A wide range of personalisation techniques exist, based on information such as user roles, user preferences, or user activity.

Web Publishing. Manages the publishing of content to a Web site, ensuring that the correct content appears on the correct site in the correct format. Also manages issues such as content expiry.

Content Delivery. Provides facilities for delivering document and content to users in the most efficient manner. Includes techniques such as caching of content, to reduce the load on the infrastructure.

Multi-Channel Publishing. Enables content to easily be reused or repurposed, and delivered to different channels. These could include mobile devices, PDAs, print, and interactive television.

Collaboration. Tools that allow users to collaborate on the creation, use, and distribution of documents and content.

Content Syndication. The ability to provide a content feed to a third party, often as a revenue-generating service.

Content Aggregation. Enables different elements of content to be collected together and presented to the user in a single, unified view.

Digital Asset Security. Technologies for ensuring that digital assets are used only as authorised, particularly when they are delivered outside the company firewall.

Content Lifecycle Management. Facilities to administer documents and content from creation through to expiry and archival, providing complete visibility of status at any point during this process.

Records Management. Specific facilities for the management of static records within regulated environments, covering creation, use, storage, retention, and disposal.

Multiple Web Site Management. Tools that address the needs of multiple Web site deployments, simplifying issues such as synchronisation, localisation, branding, and content delivery.

Application Integration. The ability to integrate with bespoke, packaged, and legacy applications, to extract information for use in knowledge-based systems.

▶ COMPARISON MATRIX

	ECM	WCM	DM	DAM	EIP	KM	SCM
Content Authoring	✓	✓✓				✓	
Template Support	✓✓	✓✓✓			✓✓		
Document Capture	✓✓	✓	✓✓✓	✓		✓	
Content Repository	✓✓✓	✓✓	✓✓✓	✓✓✓	✓✓	✓	✓✓✓
Workflow	✓✓✓	✓✓	✓✓✓	✓			✓✓
Web Site Development	✓✓	✓✓✓					✓✓
Indexing and Searching	✓✓✓	✓✓	✓✓	✓✓	✓✓	✓✓✓	
Categorisation	✓✓		✓✓	✓✓	✓✓	✓✓✓	
Version Control	✓✓	✓✓	✓✓✓	✓✓			✓✓✓
Personalisation	✓✓	✓✓✓		✓	✓✓✓	✓	
Web Publishing	✓✓✓	✓✓✓		✓✓	✓✓		
Content Delivery	✓✓✓	✓		✓✓	✓		
Multi-Channel Publishing	✓✓	✓	✓	✓✓✓	✓		
Collaboration	✓✓	✓	✓✓		✓✓	✓✓✓	✓✓
Content Syndication	✓	✓✓		✓✓✓	✓✓		
Content Aggregation					✓✓✓	✓✓	
Digital Asset Security	✓✓	✓	✓✓	✓✓✓			
Content Lifecycle Management	✓✓	✓✓	✓✓✓	✓✓	✓		✓✓
Records Management	✓		✓✓✓				
Multiple Web Site Management	✓✓	✓✓					
Application Integration	✓✓				✓✓		

We believe that an organisation should give careful consideration to all these aspects of its information strategy, and can use the matrix to help its understanding of how different product types are positioned. DCM solutions can quite easily be deployed in a modular fashion, but it is desirable at a strategic level to take an inclusive approach, that addresses a complete information management architecture.

▶ VENDOR POSITIONING

The market for DCM products embraces all the categories and features presented in the matrix, but despite the fact that some of the vendors have been in business for a relatively long period by computer industry standards, it is still in a phase of rapid development. There is a clear evolutionary line here, from the origins of DM and workflow, through the boom of WCM during the dot.com era, and now to the focus on content infrastructures and collaboration.

We believe that there will be a significant period of market consolidation during the next two years, from 2002-2004, as the number of vendors in this space (over 150 in total) is not sustainable, particularly in the current economic climate.

This consolidation will see the leading players building a broad portfolio of DCM technologies, including KM functionality, and offering comprehensive information management suites, founded on a strong integration layer.

The analysis that follows describes the positioning of 19 of the leading vendors in the market for document and content management solutions and associated technologies.

Autonomy

Autonomy, founded in 1996, produces add-on KM technology for the content management and portal markets. The company's technology uses a sophisticated range of analytical techniques, including Bayesian Inference and neural networks, to identify value within structured and unstructured content. Most importantly, this analysis is independent of the type and format of the content, and of the application or repository in which it is held, so is equally applicable to information stored in documents, video, Web pages, e-mails, images, and audio. The Autonomy product suite includes conceptual search, automatic generation of taxonomy, categorisation, clustering, and data visualisation.

In the document and content management space, Autonomy's approach is unique, because it provides content integration across all repositories and applications at an abstracted level, based upon meaning, rather than physical integration. The company terms this an Intelligent Data Operating Layer (IDOL), which is modular in nature, and which has been embedded into many third-party applications including CRM, business intelligence, and e-commerce, as well as CM systems and enterprise portals.

Autonomy has a customer base that includes Astra Zeneca, British Aerospace, General Motors, Lucent, and NASA, but is equally applicable to companies of any size, that need to extract value from large volumes of unstructured content. Autonomy partners with a number of DCM vendors, including Documentum, Vignette, and IBM, and we believe that it could benefit from an increased focus on this market.

BroadVision

BroadVision's One-To-One Content, part of its One-To-One Enterprise platform, is designed to deliver highly-personalised content for large scale Web applications and portal deployments. The product makes extensive use of XML both for content and metadata storage. It provides tools to address content design, creation, management, deployment, distribution, and archival, covering the whole content lifecycle.

BroadVision One-To-One Content is particularly well-suited to organisations looking to implement customer self-service initiatives, and is capable of scaling for use in large customer-facing deployments. The product also includes content analytical functions which can provide feedback on the suitability of content, how often it is being accessed, by whom, and when. This helps the organisation to determine whether a particular content item is meeting its needs.

BroadVision was founded in 1993, and is a successful provider of enterprise-class business portal applications, particularly in the business-to-consumer market. Customers include British Telecom, The Boeing Company, Ericsson, Rockwell Automation, Sears, Toyota, and Vodafone. BroadVision acquired Interleaf Inc in January 2000, strengthening its capabilities in XML-based content management, and providing it with specific functionality to support wireless applications.

divine

With many vendors delivering marketing messages that focus on content infrastructures and internal systems, divine has a message that is refreshingly different. The company believes that the whole rationale of content management must be to exploit the value and knowledge within an organisation to improve the quality and success of customer engagements. This message dovetails with divine's concept of the Extended Enterprise, emphasising the need to push content towards the edge of the organisation, where it can contribute directly to business-focused solutions.

divine began operating in 1999, and has followed an aggressive acquisition strategy, to build up a portfolio of products in support of its Extended Enterprise strategy. In the CM space, these have included Open Market in August 2001, and Eprise in September 2001.These acquisitions have respectively provided divine with two major content management products, Participant Server and Content Server. The former is a departmental solution that is focused on ease of use for business users, whilst the latter is a content framework that encompasses aspects of both ECM and WCM.

divine's solutions are particularly strong on collaboration, and the need to integrate CM with customer-facing applications in a bi-directional manner. This is particularly well suited for enabling customer self-service, which Butler Group believes is a fundamental benefit to be derived from effective document and content management. The divine Customer Engagement solution extends the content management platform to include customer segmentation and campaign management for eMarketing as well as multi-channel tools for sales and customer service. divine partners with webMethods for integrating CM into operational systems, and is enabling its products to both deliver and consume content using a Web services model.

Documentum
Founded in 1990, Documentum has a longstanding reputation in the document and content management field. The company initially focused on DM, but has now built on these strengths through both internal development and acquisition to position itself as an ECM vendor, with its flagship product - Documentum 4i. It is unashamedly a top-end solution, with a robust architecture and strong scalability that make it suitable for large organisations needing to manage substantial volumes of content. It also offers a rich development environment with open APIs that allow integration with other applications.

Documentum believes it is essential to provide a broad solution that handles all types of content, and to include features of WCM, DM, and DAM in an overall content infrastructure. Recent acquisitions have included DAM specialist Bulldog Group in December 2001, and content aggregation and distribution technology from Boxcar in January 2002. Documentum also provides integration with enterprise applications from vendors such as SAP, PeopleSoft and Siebel, so that a link is established between unstructured content and a company's operational systems.

For organisations looking to build a comprehensive content infrastructure, Documentum has a particularly strong offering. It is perhaps not a solution for the faint-hearted, but does provide a standards-based platform that supports all the elements described in the ECM column of our matrix, and which is highly scalable.

FileNET
FileNET, founded in 1982 is a vendor of ECM and collaborative commerce solutions. The company has a heritage in DM and workflow, but through both development and acquisition, most recently of WCM provider eGrail in April 2002, is now positioned as one of the leading providers of content infrastructure and services, with its flagship Panagon product. FileNET's approach to ECM is to tightly integrate the core content management features with content-related business processes, and a rich application development environment.

Panagon includes a digital content server, a digital image server, a document capture engine, a Web publisher, a sophisticated workflow engine, and a business process management tool. These features are built on top of an integration layer that provides connectivity into enterprise applications such as SAP and Siebel, and also into portal products. Panagon has both a WebDAV-enabled interface, and a Windows desktop client.

FileNET has pursued an aggressive strategy in the ECM market over the past two years, and has benefited from the trend towards building a content infrastructure. It also has a strong network of partners, and produces specific vertical market solutions for a number of industries, including financial services, discrete manufacturing, government, insurance, process manufacturing, and utilities.

Fujitsu   Fujitsu is the world's third largest IT products and services company, and has built ECM technology into its Interstage e-business integration platform. Conceptually, Interstage comprises three layers: a foundation layer built on an application server, an integration layer which includes portal and CM technology, and a development suite that allows end-users and partners to build business-specific solutions.

The content management product, Interstage Contentwiz, makes use of object repository technology, known as Enabler, acquired from German company Softlab GmbH in June 2002. The product has a built-in metadata layer, and one of its unique features is an integrated relationship management service, which allows users to create links between different documents, and store these links in the repository. This means that a collection of information, even of disparate content types, can be treated as a single unit.

Interstage also includes a content broker, which manages links to external content sources and repositories. It has connectors to enterprise applications such as SAP, to allow integration between unstructured content and transactional systems. Contentwiz includes other standard CM functionality such as change control, workflow, and document search capability. The Fujitsu focus is very much on the ECM space – providing a content infrastructure upon which content-based applications can be developed, and relies mainly on partners, both within the Fujitsu group, and externally, to deliver its solutions to the customer.

Gauss   Founded in 1983, Gauss is a vendor of ECM software with headquarters in Germany and the USA. The company's flagship product is its VIP Enterprise 8 suite, which comprises modules for content management, enterprise portal, document management and distribution, workflow, and connectivity to enterprise applications. This suite is built on a J2EE platform, and with a distributed architecture is scalable to handle enterprise-class ECM projects. It also has an integral single sign-on capability to help support remote and mobile users.

Gauss' solution is particularly strong in the areas of workflow, document handling, and business process management, and the company's philosophy is to treat content within the context of both internal and external business processes. VIP Enterprise 8 is capable of integrating to legacy systems, and to enterprise applications including SAP, PeopleSoft, and JD Edwards. It has a range of APIs that permits its modules to be accessed from existing line-of-business applications.

Gauss believes that its solutions are applicable to a wide horizontal range of business and public sector environments. Customers include BMW, Deutsche Telekom, Rockwell, Samsonite, Sony Music, and Volvo. The company also has a number of key technology partnerships with companies such as ATG, Eastman Kodak, Fujitsu, IBM, SAP, Staffware, and Sun Microsystems.

Hummingbird   Hummingbird, initially founded in 1984, has an extensive portfolio of products in the information management space, ranging from business intelligence to document management and records management, Web-based collaboration, and enterprise portals. In 2002, the company has brought these solutions under the umbrella of Hummingbird Enterprise™, and is one of the first examples of a new breed of Enterprise Information Management Systems (EIMS). The company's products provide particularly strong document management and records management functionality, but it is almost invidious to single out a particular module, because the major benefit of the suite comes from the integration of the parts into a larger whole.

Technically, the integration is more than just skin-deep, as the modules now share a similar look and feel, and are built on a common platform of core services. A range of interfaces can be used to access the document and content management functionality, including client/server, portal, Web browser, and Outlook. Hummingbird also has relationships with companies such as Siebel and SAP to create the link to transactional systems.

Hummingbird is one of the top 50 largest software vendors, with over five million users worldwide, and targets medium to large-size organisations. The company is capable of providing information management solutions to a wide range of customers, by utilising the modules within the Hummingbird Enterprise suite in combinations that are relevant to the business need. Hummingbird has also focused on ease of use, and the need for customers to achieve a rapid ROI. We believe that other vendors are likely to follow the path of producing integrated information management frameworks.

IBM IBM has been a longstanding advocate of the need to adopt a broad definition of content within the enterprise. This positioning identifies the company firmly as a provider of ECM solutions, which IBM believes should be a framework for the creation, capture, and management of content as a strategic asset. It contends that content-related point solutions are now converging into a requirement for an enterprise-wide CM infrastructure, based on a strong repository, and the management of metadata. This is underlined by the fact that IBM's Content Manager product is part of the company's DB2 software division, and currently uses DB2 technology as its library server.

IBM Content Manager Version 8.1 has a three-tier architecture that is suitable for a wide range of organisations, and can be developed as business requirements change. This scalability, combined with the focus on enterprise content, which covers a multitude of different types of structured and unstructured content, is the company's primary emphasis, and differentiates it from many other CM providers. IBM partners with application vendors such as SAP, Siebel, and PeopleSoft, to provide integration with transactional content, and can also integrate into its own WebSphere Portal, or into other leading portal products. For WCM, IBM relies primarily on partnerships with vendors such as Interwoven who are stronger in this area.

This is very much an enterprise-class product, and will suit organisations looking to build a broad-based infrastructure for content management. Some of the CM application functionality is less strong, but the company offers integration with other products within its own portfolio, as well as to external partners to fill these gaps. IBM provides an enterprise foundation for many types of content and partners with several solution providers for additional capabilities such as e-records and compound document management.

iManage Founded in 1995, iManage positions itself as a vendor of collaborative content management solutions. The company's core Worksite suite includes modules for document management, collaboration, portal access, knowledge management, workflow, and business process automation. iManage asserts that the capture and storage of critical business content, allowing collaboration, reuse, and the streamlining of business processes, can lead to reductions in costs, and a faster response to changing business conditions.

The company's background has been in document management and it is particularly strong in this area, with its WorkDocs module providing features such as check-in/check-out, change notification, version control, document retrieval, and archiving. Collaboration is another strength, and the WorkTeam module enables the creation of shared workspaces, with task lists, discussion threads, event calendars, document sharing, and project collaboration.

iManage has been successful in several vertical markets, including legal services (currently over 50% of the customer base), financial services, manufacturing, government, and high tech. Customers include Baxter Healthcare, Charles Schwab, J.C. Penney, Marriott International, and Motorola. We believe that the WorkSite suite, through its tight integration and security of content, and firm basis in standards, is well placed in the expanding market for collaborative technologies.

Inktomi   Having recently restructured the company to focus on its information search, retrieval, and classification technology, Inktomi positions itself as a provider of complementary products for document and content management solutions. Inktomi Enterprise Search, as the name suggests, offers a unified search capability across all an organisation's content repositories, covering both structured and unstructured data. It has connectors to any ODBC-compliant database, to application servers such as IBM WebSphere and BEA WebLogic, and to enterprise applications including ERP, CRM and content management systems. It also integrates with directory and single-sign on products, so that search results respect existing authentication and access controls.

Inktomi has its own Content Classification Engine, but in July 2002, acquired Quiver Inc, a provider of categorisation and taxonomy software, which will strengthen its portfolio in the auto categorisation area. The company also sells an XML Toolkit, a native XML retrieval engine designed to be incorporated into existing information management solutions: Interwoven, for example, has embedded this technology into its ECM platform. Whilst many products already include search technology, Inktomi believes that users don't want to switch context between different search tools, and sees its unified approach as a key selling point.

Inktomi was founded in 1996, and its go-to-market model has predominantly been via direct sales to enterprise customers. It also offers a range of associated services, including consultancy and product customisation. With its modular suite of content retrieval and classification solutions, Inktomi can benefit from the growing DCM market. We believe, however, that it must expand OEM sales of its technology, if it is to take full advantage.

Interwoven   Founded in 1995, Interwoven was a pioneer in WCM and the collaborative development of large-scale Web properties. As the need for a comprehensive content infrastructure becomes better understood, the company has evolved into a leading ECM provider, and has added new product lines to its Interwoven Release 5 platform, to complement its core content management TeamSite product. The company contends that an effective ECM platform should act as a backbone technology, supporting all content-related applications, and managing any type of content – from documents and Web content, to rich media and code – in a collaborative fashion.

In addition to TeamSite, Interwoven's platform includes content intelligence and content distribution offerings. MetaTagger is the core content intelligence offering for automated tagging, classification, search, and advanced metadata management. OpenDeploy is the core offering handling content distribution, replication and syndication. Building on this platform, in 2002 the company has released a range of content applications: TeamPortal, for provisioning and managing content in a portal environment, TeamDoc, for document sharing, publishing, and collaboration, and TeamCode, to provide synchronised management and testing of the code and content that makes up a Web application.

Architecturally, Interwoven is developing its suite to become a set of content services, using Web services protocols, which makes it easy to integrate with existing applications, and the company has relationships with a wide variety of technology partners. Interwoven's products are powerful tools for Web site and Web application development, and by establishing a robust content framework, and adding applications such as collaborative document management, the company has significantly broadened its appeal.

Merant   Merant has roots going back to 1976, but was established in its present guise in 1998, and is quoted on the London Stock Exchange. The company has specialised in Software Configuration Management as its core business, but following the acquisition of the Collage product from NetObjects in February 2001, is now also addressing the WCM market. Collage is built on a J2EE foundation, and includes facilities for content creation, content maintenance, and content deployment. It has particular strengths in its task-driven interface, and in its ability to synchronise the control of content and code for Web applications. The product is positioned as an out-of-the-box solution, is easy to setup and install, and works entirely from a browser-based interface.

Merant's offering is a complete solution for the creation and maintenance of Web content, separating the tasks of Web design and content contribution. Business users are able to use the built-in content contribution tools or their chosen applications to create content for the Web site, whilst the IT department can use Collage to import existing sites, set up contribution and workflow models, define deployment configurations and generally manage the site. As such, Merant's offering has successfully separated design from content whilst also integrating the management of Web application code.

Collage offers pre-built Web site design components, and can integrate with Web design tools such as Macromedia Dreamweaver and Microsoft FrontPage. The latest version of the product includes improved content lifecycle management, a graphical tool for designing content workflows, the ability to contribute content directly from Office applications, and better auditing facilities. Merant has considerable expertise in the management of digital assets, and for organisations seeking a specific WCM solution, has a strong offering.

Microsoft   Microsoft, founded in 1975, is a recent entrant into the content management market, following its acquisition of Canadian WCM vendor NCompass in May 2001. The NCompass product already made extensive use of Microsoft technology, including SQL Server, Sharepoint Portal Server, and Biztalk, and has now been rebranded as Microsoft Content Management Server 2001. The product addresses content contribution and delivery, Web site development, and enterprise Web site management, and its strengths still lie very much in the WCM area.

Content Management Server (CMS) includes features such as template-based content authoring, revision tracking and page archiving, workflow, content scheduling, language-specific content personalisation, and dynamic page assembly. As one would expect with a Microsoft application, it makes use of, and integrates with, many of the other products in the Microsoft portfolio, and three of these links are particularly noteworthy. The combination of CMS with Commerce Server can be used to build personalised B2B and B2C e-commerce Web sites; with SharePoint Portal Server, CMS can act as a content-based collaboration tool; and with Mobile Information Server, CMS can be used to deliver content to wireless devices.

Content Management Server 2002 is currently in beta test, and will provide further integration into the .NET framework. Although targeted at organisations of all sizes, high-profile customers for CMS have included Ford and CB Richard Ellis. As document and content management becomes a key infrastructure component, we believe that Microsoft will build upon its initial foray into this area, and develop or acquire additional CM functionality over the next two years.

Open Text   Open Text was founded in 1991 as a spin-off from the University of Waterloo in Ontario, Canada. The company was a pioneer in Web-based document management, and its flagship product Livelink, has positioned it as one of the market leaders in team collaboration and knowledge management (KM), based around content and documents. Open Text believes that collaboration has three aspects: people to documents, people to processes, and people to people, and must encompass communication, information sharing, and access to information systems.

Livelink includes facilities for document and records management, virtual team collaboration, information retrieval, enterprise group scheduling, and business process automation, all of which is accessed from a Web browser. It also acts as a collaborative environment for development of intranets, extranets, and Web-based business applications. Livelink is built on a three-tier Open Interchange Architecture that allows integration with multiple document and content repositories, and with enterprise applications.

Open Text has more than five million users across 4,500 corporations. Customers include Siemens, Nortel, Cable & Wireless, SwissAir, Hewlett-Packard, Sprint, Lockheed Martin, ISO, and VICTORIA-Insurance Group. Whilst its core competency lies with document-centric collaboration, Open Text is combining multiple channels of communication with information availability to create a strong collaborative backbone, reinforced by relationships with portal and enterprise systems vendors. The technology can be applied to a variety of business areas across the value chain to quickly provide significant tangible and intangible benefits.

SAP   In contrast to many other vendors in this space, SAP's content management functionality has been an integral part of its mySAP Enterprise Portal from its inception. SAP's portal is conceptually built on four pillars of Unification (data integration), Business Intelligence, Knowledge Management, and Web Content. Within the latter two of these categories, SAP provides functionality for content management, search and retrieval, and content collaboration. The portal includes its own repository, but the product also includes adapters to other content repositories, such as Documentum, Lotus Notes, and Microsoft Exchange.

mySAP Enterprise portal includes standard CM features such as check-in and check-out and version control, whilst workflow is used to control the content lifecycle, and allows tasks to be assigned to individuals or groups of users, based on roles. Support is also provided for syndicated content. The product's strengths, however, lie in content collaboration and KM, particularly with the Text Retrieval and EXtraction engine (TREX). This search and retrieval tool can process free text as well as search queries including fuzzy searches. Using the 'See Also' feature, searches for similar documents can be undertaken, exploiting contextual search capabilities.

Founded in 1972, SAP gained its portal technology through the acquisition of TopTier in March 2001. Since that time, the company has added CM functionality to the product, which has become an important part of SAP's platform. We believe that this integral CM functionality gives mySAP Enterprise Portal a competitive advantage, and that provided the company develops this capability further, it can become a significant player in the document and content management market.

Stellent   Stellent, founded in 1995, experienced substantial growth as a provider of WCM solutions, and has now expanded the functionality offered by its Stellent Content Management 6.0 release, to address the needs of the ECM market. Stellent believes that the management of all types of unstructured content is the prime requirement of businesses seeking CM solutions, and draws parallels with the role of the relational database in managing structured information. The company contends that the Web is still the de facto mechanism for information delivery, but that the role of content management has now expanded to include business content, content collaboration, and file sharing.

Stellent acquired content integration specialist Kinecta in April 2002, to provide access to other content repositories in a federated architecture. It also makes extensive use of the WebDAV protocol to provide easy integration with existing content creation tools. Stellent has a particularly strong solution for content delivery to wireless devices, and several manufacturers are building Stellent's viewing technology into their products.

Speed of deployment is becoming an important point of comparison between CM products, and Stellent believes that its ability to quickly deploy fully functional systems, often within a four to six week timeframe, is a key selling point. The company is looking to expand substantially within the European market place, where it sees significant opportunities in sectors including e-government, healthcare, and manufacturing.

Vignette

Founded in 1995, Vignette sells content management solutions that are focused on enabling online interaction with customers, partners, and employees. The company's products provide three core capabilities: content management, content integration, and content analysis. Its flagship offering is Vignette V6 Content Suite, which uses content adapters to aggregate content of virtually any type from back-office and legacy systems, enterprise applications, DM systems, and other content repositories.

The company has particular strengths in content personalisation, with the ability to create targeted content from both role-based profiles and historic user behaviour. It has been a pioneer in content analytics, helping to evaluate the effectiveness of Web applications, through detailed metrics on content interaction. Vignette's product range also includes Content Extensions, providing advanced functionality in areas such as multiple Web site management, relationship management, content collaboration, and content deployment.

Vignette has established strategic technology partnerships with BEA, IBM, Hewlett-Packard, and Sun Microsystems. The company principally targets large and enterprise-scale organisations, working with Systems Integration partners such as Accenture, IBM Global Services, and EDS. Vignette is particularly strong in the high-tech, new media and publishing, and financial services markets, and customers include Dun & Bradstreet, Bertelsmann, CBS, Guardian Newspaper Ltd, United Airlines, and Ziff Davis.

Workshare Technology

Workshare Technology, founded in 1998, is a provider of flexible tools for the document management market. The company contends that most DCM solutions have three principal components – a document repository, a document transport mechanism, and a workflow capability, but that they lack an essential fourth element, the ability to track how a document has changed over time. Workshare has created two products to meet this requirement, Workshare Deltaview, and Workshare Synergy. Workshare DeltaView is a document comparison tool that is widely used in the legal market, whilst Workshare Synergy is a document content collaboration application that automates the process of compiling and integrating proposed changes from multiple authors.

Currently, both products operate with Microsoft Word documents, but Workshare plans to extend the technology to other file formats. Butler Group believes that Workshare Synergy is a valuable extension to a DM solution, providing functionality that goes well beyond the comparison and collaboration capabilities of native content creation tools. The benefits of these tools are most apparent in environments where documents have a high intrinsic value, such as the legal, pharmaceutical, financial services, government, and professional services markets.

Whilst Workshare is agnostic of the underlying DM system that is installed, it partners with companies such as Documentum, OpenText, Hummingbird, and iManage, carrying out collaborative development work, and undertaking joint marketing. The company currently sells predominantly directly to end-users, but is looking to expand its partner network.

▶ BUTLER GROUP SYMPOSIUM

Butler Group is holding a two-day Symposium on Document and Content Management, at the London Heathrow Marriott Hotel on 18 and 19 September 2002. The Symposium will deal with the issues surrounding the control and management of content, and offer access to some of the most successful vendors operating in this space. In addition to case studies, presentations will include workshops and application labs, and the Symposium will be an ideal opportunity to examine the strengths and weaknesses of the CM model.

For further details on the Butler Group Document and Content Management Symposium, please visit **www.butlergroup.com/events/dcm**

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