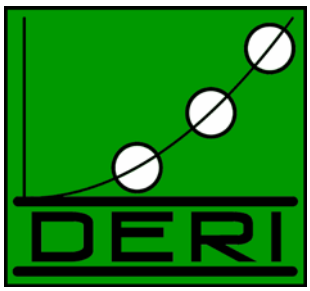

Commercial Portal Products

Semantic Web Community Portal Project

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Executive Summary

The main aim of the deliverable is to survey the current portal technologies through the analysis of the major commercial portal products. The commercial products currently available in the software market are overflowed and the portal technologies they use are also full of variety. The fundamental knowledge about portals is strongly required to understand these commercial products and their technologies. This deliverable briefly reviews the basic concepts about portal technologies including categorization of portals, general architecture and the core components, and portal development for better understanding the commercial products.

Considering the market competitiveness, the novelty of technology and the recommendation of major consulting companies, the deliverable selects 18 commercial portal products to review their features. This will be enough to appreciate the current portal technologies pursued in the industry side. For each product, the short review and technical analysis is described.

With this deliverable, the fundamental concepts for portal systems and the industrial efforts for the development of new technologies will be understood.

- Objectives of the deliverable:
  - Survey and Analysis of the commercial portal products
  - Understanding market trend of the commercial portal products
  - State of the arts of Portal technologies
  - Understanding the fundamentals of portal technologies

- Scope of the deliverable:

  The deliverable selects only 18 commercial portal products from tons of portal products. The selection is carefully made in terms of consulting the expert reports, market survey, and company brochures. The deliverable also checks whether products are immediately available.

  The deliverable also contains some basic concepts about portal technologies to understand and compare the features of products more clearly

Note: The main purpose of the deliverable is to survey commercial portal products. This deliverable is only the survey report to understand the state of the arts of portal technology. The deliverable summarizes and cites many articles, consulting reports and vendor brochures, sometimes as it is. All referred and cited texts are disclosed at the end of each section. Although the deliverable summarizes the key points, who want to know more details for each subject can refer to the original texts

1 Overview of Portal Technologies

Portal terminology has become very generic and abused and the word portal means different things to different people. Before we can examine the portal technology, we need a brief look at what a portal is and what functionalities are in portals. In this section, the state of the arts of portals is also discussed.

1.1 What are Portals?

A portal is a "supersite" on the Internet that provides a comprehensive entry point for a huge array of resources and services. Portals typically contain news, free e-mail services, search engines, online shopping, chat rooms, discussion boards and links to other sites. Yahoo, MSN and AOL are the typical portals to enter the Internet. The idea of a portal is to collect information from different sources and create a single point of access to information - a library of categorized and personalized content. It is very much the idea of a personalized filter into the web. Hence, Portals gather information from one or more servers as well as from the Internet, and deliver that information through a single, consistent interface. This gives users one interface to all the documents, e-mail, Web sites, competitive information, databases, and so forth that they need to do their jobs.

But today, instead of mega portals, the vertical portals are more important and are widely spreaded out enterprises and communities. Now portals become the entry point of an enterprise or a community and provide a personalizable, browser-based user interface to the following components: *Intranet, Extranet, Front end for business applications, Groupware, Knowledge management solution and Intelligent search engine*. Not each portal will include all these components, but they are a typical function of what can be found in today's portals and the functions will surely grow in the future. For example, groupware component might include workflow processes, collaborative applications, or chat rooms and discussion boards. The Intranet component might include self-service applications where employees can order office supply or apply for a vacation. The knowledge management section might include relevant documentation or regulations needed by the employees to perform their jobs. And there will be a personal section where employees can store and access their personal information, such as weather reports, sports news, or just short information snippets.

Portals are valuable to users when they simplify complex information, are context-specific, provide useful services and/or foster collaboration and community building. These characteristics represent the rapid evolution of portals from mere search engines to useful business tools and community communication/collaboration tools..

Although the early portals started as search engines that provided access to large quantities of information, portals have added content, services and personalization to foster greater user loyalty. Today, portals are often interactive windows to a variety of content as well as a wealth of other functions for employees or community users.. In the future, some e-business visionaries expect portals to become a pervasive part of daily life as they are integrated into devices of all shapes and sizes including wireless phones, automobiles, appliances, and so on..

■ The Evolution of Portals

Initially, the term portal was used to refer to well-known Internet search and navigation sites that provided a starting point for web consumers to explore and access information on the World Wide Web. The original portals were search engines. The initial value proposition was to offer a full text index of document content and a chance to take advantage of the hyperlinking capabilities built into the web protocols.

Internet navigation sites, such as Yahoo!, Excite, Infoseek, AOL, MSN, Netscape Netcenter and Lycos, represented the next phase of portal development. The term "Internet portal" (or "web portal") began to be used to describe these mega-sites because many users used them as a "starting point" for their web surfing. The term "search engine" had become inadequate to describe the breadth of the offerings, although search and navigation are still pivotal to most people's online experience. Compared to the original Internet search engines, Internet portals offer a more structured, navigable interface. Browsing an organized hierarchy of categories developed by people (rather than computers) who scoured the Internet for relevant and useful Websites is more effective than issuing a keyword search against the entire Web.

While these public Internet portals continue to flourish, the market for portal technology is increasingly focused on the better delivery of corporate information. Portal technology has significantly matured since the public search sites were first built, and has been used to build a diverse range of portal types, including specialized portals, enterprise portals, workspace portals, marketspace portals, knowledge portals etc. Especially, many enterprises start to bring portal technology in their enterprise information infrastructure to construct Enterprise Information Portals (EIP). EIP aims to

offer a single, uniform point from which all of an enterprise's data sources can be accessed. EIP can handle the diverse data sources that encompasses not only structured data (databases, Lotus Notes, etc.) and unstructured data (e-mails, files, archives, etc.), but also includes the data resulting from specific processes and enterprise applications (ERP and CRM tools, etc.).

Collaboration software like Lotus Notes provides users with the processes and environment to create and exchange information inside and outside the walls of an organization. It includes a powerful set of workflow components and is used extensively in knowledge management and online learning applications as well.

It is quite natural that the EIP is integrated with collaboration technology since EIP has become the gateway for employee, customers, and business partners. This integration of EIP and collaboration technology allows the organizational communication processes to be unified into a single information source creating a complete and usable archive of all transactions, including the data, discussions, collaboration, communication, and the decision-making process. In addition to enterprises, the organizations and the communities also use the portal as their foundational infrastructure for information, communication and collaboration. Portals, as the term implies, become not only the doorway, entrance or gate to enter the organization but also the workspace, team space or meeting place for collaboration. The following figure from Gartner Group will be helpful to understand the evolution of the portal technology.

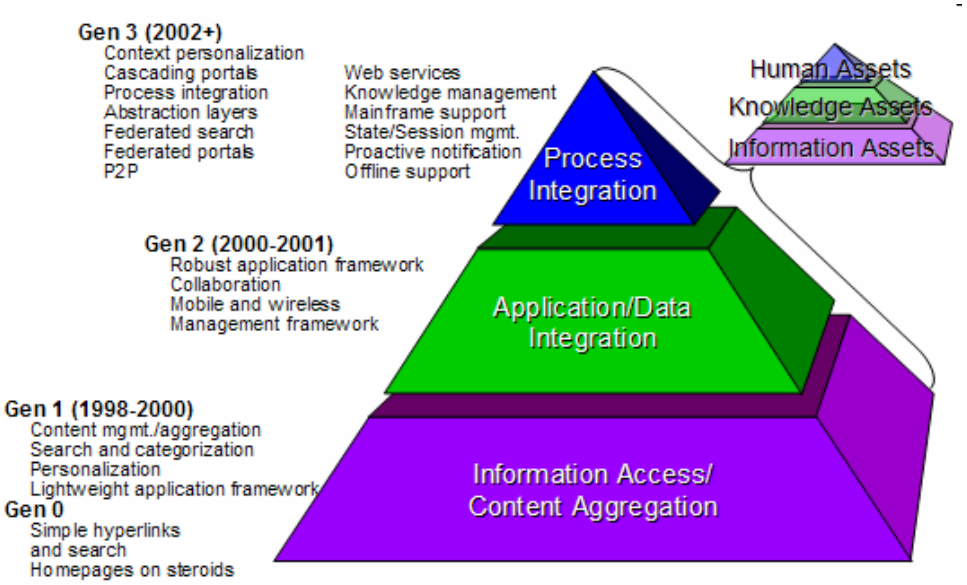


Fig. 1-1 The Evolution of Portals

Sources:
Eric Berkman, What is a Portal?
http://www.darwinmag.com/learn/curve/column.html?ArticleID=13
IBM, What is a Portal, http://www-.ibm.com/services/kcm/kcm_whatisaportal.html
Christine Wiegand, Portals - The Information, Functionality and Services I Need at My Fingertips, SAP Design Guild
Ray Valdes, What is a Portal?, NYS Office for Technology Portal Day, December 4, 2001
SiteSacpe, The Role of the Enterprise Collaboration Portal in the Enterprise Information Portal, October, 2001
PortalsCommunity, http://www.portalscommunity.com/library/fundamentals.cfm
SAP Design Guild, http://www.sapdesignguild.org/index.asp

1.2 Types of Portals

In order to clearly understand the portal technologies, it may be helpful to categorize portals into several types. However, since the spectrum of portals is greatly wide and diverse, it is difficult to make clear distinctions between portals and it is impossible to set up the unified criteria for the categorization of portals. We will examine the types of portals from several view points in order to catch the fundamental aspects of portals.

- **Architectural Types**

There are two types of portals from the point view of architectural properties: *horizontal portal and vertical portal*.

Horizontal Portal : Horizontal portals target the entire Internet community. These sites, often referred to as "mega portals", usually contain search engines and provide the ability for user to personalize the page by offering various channels (i.e. access to other information such as regional weather, stock quotes or news updates). Yahoo!, MSN and AOL constitute mega portals. These portals are gateways to contents and services of other web sites.

Vertical Portal : Vertical portals differ only in their more specific subjects and contents from horizontal portals, and the technology employed in vertical portals remains the same horizontal portals. Vertical portals offer information and services customized to community members about a particular area of interest. Vertical industry portals, known as *vortals*, are sites that provide a gateway to information related to a particular industry, such as insurance, automobiles, etc.

There are innumerable possibilities for establishing special vertical portals on the market. The numerous solutions can be divided into 3 major groups that partially overlap:

- **Corporate Portals :** provide personalized access to selected information of a specific company. The major Corporate Portal capabilities are multi repository support for structured/non-structured information sources, content and site cataloging, community interaction, collaboration, content authoring, communication tools, integration with ERP and other business application software, and syndicated information sources
- **Commerce Portals :** support B2B and B2C e-commerce
- **Pervasive Portals :** support access via Pervasive Devices such as PDAs. Particularly this type of vertical portal will have a great stake in the future according to the wide spreading of wireless technologies.

■ Functional types

Portals are categorized into 4 different type according to their purposes and functions. This categorization will be helpful to understand the variety of portals. The four different types of portals are not mutually exclusive and may be able to be integrated and coexist. Each of the four portal categories are briefly defined and described below:

Corporate or Enterprise (Intranet) Portals - Business to employees (B2E) portals:

- **Enterprise Information Portals (EIP)** - In general, Enterprise Information Portals is defined as "applications that enable companies to *unlock* internally stored information, and provide users with a single gateway to *personalized* information and knowledge to make informed business *decisions*". These are portals that are designed for B2E processes, activities and communities to improve the access, processing and sharing of structured and unstructured information within and across the enterprise. EIPs incorporate roles, processes, workflow, collaboration, content management, data warehousing and marts, enterprise applications and business intelligence. EIPs also provide access to syndicated content which is defined as external information, from a single or multiple sources, that is maintained by a third-party (e.g., news feeds). Examples of Corporate or Enterprise Information Portals include:
  - Business intelligence portals - A business intelligence portal is a corporate portal that enables users to access and produce reports for decision-making purposes on enterprise-wide databases.
  - Business area (Intranet) portals - Business area portals support specific functions or processes and applications within the enterprise. Examples of business area portals include HR, ERP, Sales and Marketing, and Supply Chain Management. These business area portals are emerging to provide

greater employee access to information stored in enterprise specific applications.

- Role portals - Role portals are evolving to support the three business models of B2E, B2C and B2B. Role portals for B2E support the access and availability of personalized information for employees, as well as employee self-service. Role portals for B2C support the linkage and relationship between the corporation and its customers. Role portals for B2C support the ordering, billing, service and support activities, workflow and collaboration between the corporation and its customers. Role portals also support customer self-service. Role portals for B2B support the information flow, business activities and processes across the corporation and its suppliers and partners for distribution and supply chain management activities.

e-Business (Extranet) Portals - e-Business portals have three sub-categories:

- **Extended enterprise portals** - Examples of extended enterprise portals are: B2C which extend the enterprise to its customers for the purpose of ordering, billing, customer service, self-service, etc.; B2B which extends the enterprise to its suppliers and partners. B2B portals are transforming the supplier and value chain process and relationships. Extended enterprise portals provide enterprise information asset to their business partners with the centralized information repository through the single entry point.
- **e-Marketplace portals** - An example of an e-marketplace portal is CommerceOne.net. CommerceOne.net focuses on the North American Maintenance, Repair and Operations (MRO) market. CommerceOne.net provides commerce related services to its community of buyers, sellers and net market makers. Another example of an e-Marketplace portal is VerticalNet. VerticalNet Marketplaces portal connects buyers and sellers online by providing industry-specific news and related product and service information. Buyers can find the information they need to quickly locate, source and purchase products and services online. Suppliers are able to generate sales leads by showcasing their products and services across multiple marketplaces to reach highly qualified buyers. Oracle Exchange and GlobalNetXchange are also good examples of e-Marketplace portals
- **ASP portals** - ASP portals are B2B portals to allow business customers the ability to rent both products and services. Examples of an ASP portal are Portera's ServicePort, Salesforce.com, SAP's MySAP.com and Oracle's oraclesmallbusiness.com. ServicePort is both an application and web information portal for the professional services industry. Salesforce.com manages the sales and reporting process for a distributed mobile sales team. MySAP.com and oraclesmallbusiness.com are examples of complete enterprise systems offered through a portal framework via the web.

Personal (WAP) portals - There are two major types of personal portals:

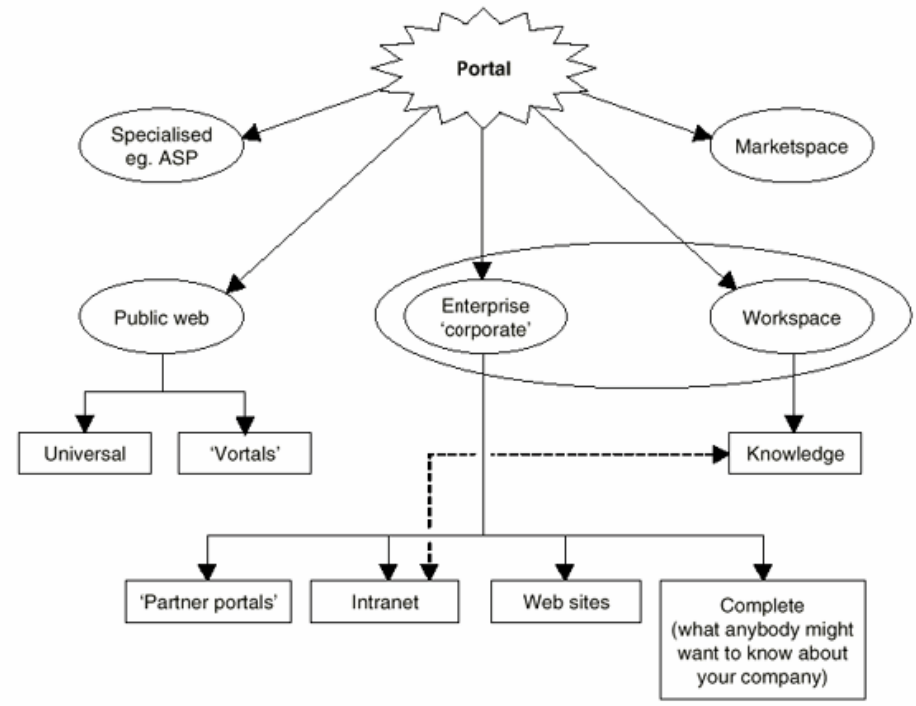
- **Pervasive portals or mobility portals** - These are portals that are embedded in web phones, cellular phones, wireless PDAs, pagers, etc. Personal or mobility portals are becoming increasingly popular and important for consumers and employees to obtain product and services information, prices, discounts, availability, order status, payment status, shipping status, scheduling and installation information, etc.
- **Appliance portals** - These are portals that are embedded in TVs (WebTV), automobiles (OnStar), etc.

Public or Mega (Internet) portals - Organizations that fit into this category are becoming "new media" companies and are focused on building large on-line audiences with large demographics or professional orientation. There are two major types of public portals:

- **General public portals or mega portals-** These portals address the entire Internet versus a specific community of interest and include: Yahoo, Google, Overture, AltraVista, AOL, MSN, Excite, etc. General public portals or mega portals will become fewer and consolidate over time.
- **Industrial portals, vertical portals or vortals**. Vertical portals or vortals are rapidly growing and they are focused on specific narrow audiences or communities such as consumer goods, computers, retail, banking, insurance, etc. Examples of vertical portals include: iVillage, which focuses on families; The Thomas Register of American Manufacturers for products and services; and Bitpipe, that is a syndicator of information technology content; etc.

- **Hierarchical types**

The analyst and consulting company Ovum has set up a detailed taxonomy of portal types that shows hierarchical relationships of portals. Figure 2 depicts Ovum's hierarchy of portal types.



Source: Ovum (Enterprise Portals: New Strategies for Information Delivery/Chapter C)

Fig. 1-2 Hierarchical Relationships of Portals

Specialized Portals: Specialized portals are designed for a specific purpose. One such specialized portal is an ASP portal that provides its customers with access to applications via an extranet or the Internet.

Marketspace Portals: Marketspace portals exist to support B2B or B2C e-commerce. The major functionalities are software support for e-commerce transactions, ability to find and access rich information about the products on sale and ability to participate in discussion groups with other vendors and/or buyers

Public Web Portals: Public web portals exist to provide easy-to-use and attractive services to the public. Public web portals are mega-sites used as "starting point" for the web surfing. The major functionalities are extensive search and/or navigation system.

Enterprise Portals: An enterprise portal or a corporate portal provides personalized access to an appropriate range of information about a particular company. As opposed to public web portals, enterprise portals aim at providing a virtual workplace for each individual using them - employees, customers, and third-party service providers. Rather than offering access to consumer goods, services, and information, enterprise portals are

designed to give each individual using them access to all of the information, business applications, and services needed to perform their jobs. More advanced enterprise portal solutions provide access via mobile devices, such as cell phones, PDA's, handheld PC's etc. facilitating on the road work, decision making, and business processes.

Workspace Portals: A workspace portal is a single, coherent, integrated portal that presents its users with all the information they need to carry out their jobs.

Knowledge Portals: Knowledge portals increase the effectiveness of knowledge workers by providing easy access to information that is necessary or helpful to them in one or more specific roles. Knowledge portals are not mere intranet portals since the former are supposed to provide extra functionality such as collaboration services, sophisticated information discovery services and a knowledge map.

Sources:

Colin White, Enterprise Portals: State of the Art, DM Review, Dec., 2002,
http://www.dmreview.com/master.cfm?NavID=193&EdID=6080#top
PortalsCommunity, http://www.portalscommunity.com/library/fundamentals.cfm
SAP Design Guild, http://www.sapdesignguild.org/index.asp

1.3 Major Functions of Portals

According to the analyst and consulting company Ovum - as described in their analysis "Enterprise Portals: New Strategies for Information Delivery", 2000 - the ideal portal is based on 8 functionality areas:

① search and navigation
② information integration (content management)
③ personalization
④ notification (push technology)
⑤ task management and workflow
⑥ collaboration and groupware
⑦ integration of applications and business intelligence
⑧ infrastructure functionality

In general a portal is the integration of information technologies that have been developed in the various enterprise application areas for a long time. Although most of the functionalities are not new, the power of a portal is considerably more than the sum

of its partial technologies. Thus, a successful portal consists of a well-integrated mixture of the basic portal functionalities.

① Search and Navigation

A successful portal should support its users in an efficient search for contents.

- automatically present its users with the information appropriate to the user's role
- suggest additional information to the user, and/or allow the user to voluntarily personalize the information presented by the portal
- allow the user to search for information that was not previously known to be relevant to the user's role, but which may be available through the portal

② Information Integration

A portal should warrant the integration of information from disparate sources. Moreover, the user should also be able to optimally use this information. One such promising technique of innovative interfaces was the Unified Content API which speeds up the development of portal applications. Most portals offer Portal Development Kit (PDK) to develop the portal applications in a minute.

③ Personalization

Personalization is vital to the delivery of appropriate information to portal users: each user gets only the information which is specifically tailored to his/her needs. Personalization on should be based on user roles, as well as user preferences. There are several types of personalization:

- Personalization of navigation
  e.g. shortcuts to specific information, mostly known as bookmarks or favorites
- Personalization of data/content
  e.g. which stocks do I want to see in my stock ticker
- Personalization of layout
  e.g. what information appears where on the screen, in which format, color or size

An important high-level distinction exists between:

- Design personalization
  the initial appearance of the portal, which may be 'pre-personalized' according to the user's role

- Voluntary personalization
  where the user is offered a menu of personalization options to choose from
- Involuntary personalization
  where the system itself unilaterally makes decisions for the user according to 'guesses' about user preferences

④ Notification

Notification (push technology) is referred to as a system in which a user receives information automatically from a portal server. Push technologies are designed to send information and business software directly to a user's desktop without the user actively requesting it. Thus, the user has the opportunity to subscribe to active information sources such as newsfeeds and periodically updated reports and ask to be alerted when documents are updated.

⑤ Task Management and Workflow

Portals providing task management services can help users take part in and/or manage formally defined business processes. The workflow functionality allows the automation of business processes. Thus, as part of a workflow-automated business process, a portal should be able to prompt its users when they have tasks to perform.

⑥ Collaboration and Groupware

Knowledge management and groupware ensure that the required information is stored in the right place and in the right mode. By this means the right persons are brought together with the right information. Groupware software assists in less formal collaboration than workflow tools. As with workflow automation, groupware increases the value delivered by many types of specialized portals; for example, it:

- increases the attractiveness of B2C e-commerce portals
- enables informal communication between suppliers and customers in B2B e-commerce portals

Supply chain portals are also dependent on collaboration support in order to help suppliers and their customers manage their relationships. Moreover, collaboration support is a key requirement for knowledge portals.

⑦ Integration of Applications/Business Intelligence

A portal can integrate and support a specific application type, for example:

- an application service provider (ASP) application
- business intelligence (BI) functionality
- support for e-commerce

⑧Infrastructure Functionality

The infrastructure functionality constitutes the fundament for the work environment - the other 7 functionalities mentioned above build up on this one. The runtime infrastructure associated with the portal will have a primary effect on manageability, scalability, security and availability.

1.4 The State of the Arts : the usage and status of Portals

The concept of portals has been around for several years. We can easily find an extensive list of Internet mega portal sites in Open Directory Project. Nowadays, portals are not only the starting point for their web surfing but also the gateway to enter enterprise or community. Portals can offer access to a wide variety of enterprise and IT resources, or serve as a front-end to enterprise data and applications. For example, it has become increasingly common for companies to offer portals to their employees for human resources-related purposes, virtual team spaces for collaboration, project planning with calendar, or diverse communication tools. In addition to enterprise portals built on intranets, some companies also offer external portals to customers and business partners over the Internet.

A Jupiter Research survey in February, 2003 found that 80 percent of corporations already have portals or will have portals in place for their employees. 49% said they already have customer portals, while 29% say they have one for channel partners and 25% say they have them for suppliers. In addition, two research surveys on portal projects show the detail statistics on portals used for real applications. One is for the application situation of enterprise portals from industry side and the other is for the usability survey of academic portals.

BI Research and DCI carried out a survey of some 310 organizations. The survey results show that portals are used to deliver business content to users both within and outside of an organization. Surveys at the DCI Portal Conference have shown a predominance of

portal projects for internal use (B2E portal), but a growing demand for customer facing (B2C) and supplier/partner (B2B) portals. The application areas being addressed by these portals included internal company operations (70%), human resources (62%), customer service (60%), marketing (55%), sales (53%) and finance (51%). The survey ensures that portal technology becomes the key success factor for enterprise IT strategies and achieves ROI by working in conjunction with other information technologies to provide an integrated business solution.

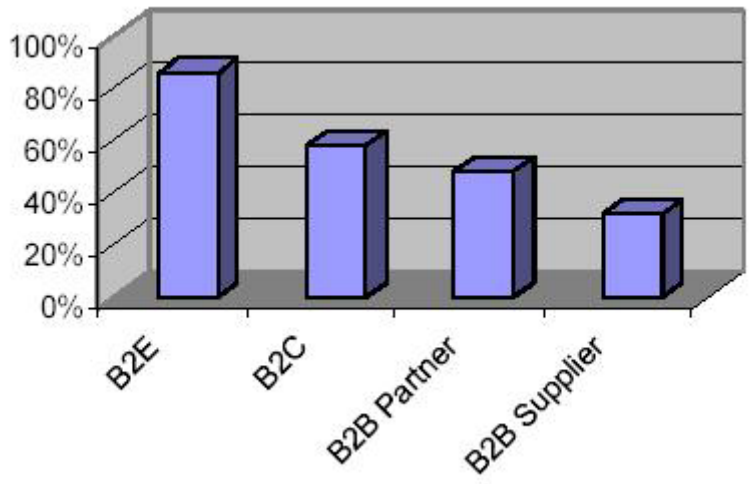


Fig. 1-3 Portal Types used in Enterprise

On the other hand, the aims of the portal feature survey accomplished by Subject Portals Project (SPP) was to generate feedback from the user community about what additional portal services they felt would be useful and would be most likely to convince them to use the Resource Discovery Network (RDN) services. The main focus of the project is to develop portal services for scientific research community portals. The survey reveals some essential functions that the scientific research community users want to use. These functions will offer some insights when designing portals, especially scientific research community portals. The top 5 features required for research community portals are:

① E-Journal Search Engine

② Web-based learning resources

③ Subject glossary

④ Conference/Events listings

⑤ E-Print archive

The 22 features proposed by SPP for research community portals and the average score of each feature assigned by a total of 813 responses are shown in Table 1-1.

Table 1-1 Ranked Features of Research Community Portals

Feature Title	Average Of Response	Totals
E-Journal Search Engine	**2.68**	**710**
Web based leaning resources	**2.48**	**813**
Subject glossary	**2.40**	**401**
Reference Sources	**2.35**	**131**
Conference Listing / Events	**2.34**	**683**
E Print archive	**2.31**	**314**
Personalized I-journal	**2.30**	**104**
Aggregated News Service	**2.26**	**682**
Sources of research funding	**2.21**	**632**
Reviews(software, books etc)	**2.19**	**628**
Job Announcements Service	**2.16**	**286**
Subject software tools	**2.11**	**374**
Aggregated Product Directory	**2.10**	**104**
Register of research	**2.09**	**810**
Short Course Announcements	**2.08**	**409**
Professional Society News	**2.05**	**104**
News Feed	**2.03**	**183**
Email newsletters / Alerts	**1.99**	**270**
Society News	**1.98**	**254**
Web Based Translation Service	**1.94**	**104**
Press release submission service	**1.93**	**501**

Rate Page Resource	**1.90**	**183**

Sources:

http://dmoz.org/Computers/Internet/On_the_Web/Web_Portals/

Colin White, 2003 Portal Community Member Survey, Portal Community, 2003

Subject Portals Projects, Finding of the Portal Feature Survey,

http://www.mathgate.bham.ac.uk/mathsportal/Developments.asp

2. Portal Frameworks

Since portals are the mixture of business components, content management components and other system components, the architecture will be heavily dependent on the types of the portal system the enterprise or the community wants to construct. For the vertical portals, they can select the components necessary for the achievement of their goals. However, as we review in the previous section, portals need the base architecture to realize the functionalities provided by components. In this section, we will review the general architecture of portals and their functional components briefly.

2.1 General Architecture Portal Systems

Since the types or the objectives of the portals are diverse when creating, the general architectures of the commercial portal products are greatly varied. Some portals may attach importance to collaboration while others lay stress on content management or notification. Most of today's commercial portal solutions meet the requirements of only single functionalities, thus providing a partial solution for particular problem areas. This is exactly why the theoretical distinction between horizontal and vertical portals becomes crucial.

The portals are the crystallized products that the current computing technologies are integrated. Thus, the portals are stacking or integrating the independent business applications in order to provide portal functionalities. In general, the portals are consisted of several layers that can offer the core services of the portals, as shown in Fig. 2-1.

Fig. 2-1 Service Layer Structure of Portals

The service components within a portal framework should have the flexible model to accommodate the diverse context of portal communities. The service components are usually selected at run-time based on profile and context. When consisting of the portal framework, the following key issues should be considered among other service components:

- Comprehensive security
- Information aggregation, filtering, indexing and classification
- Content creation or authoring
- Application integration
- Granular personalization and profiling across all data types
- Transactional, informational, and collaborative patterns of the organization

No matter what the type of portal is, a portal should conform to a basic architecture. Vertical portals make only sense if they are not established independently, but as a particular occurrence of a common platform, i.e. the horizontal portal. This horizontal portal performs and fulfills all the functionalities of an ideal portal discussed above. Based on the service stack in Fig. 2-1, the basic architecture of portals can be depicted

in Fig. 2-2 to realize layered services. The middle part encompasses all the functionalities and services of an ideal horizontal portal. These functionalities should at least in part be fulfilled by any portal. The bottom part, connectivity services, should be able to integrate any data type that comes into question. The upper area corresponds to the user interface which enables the presentation of all data and applications.

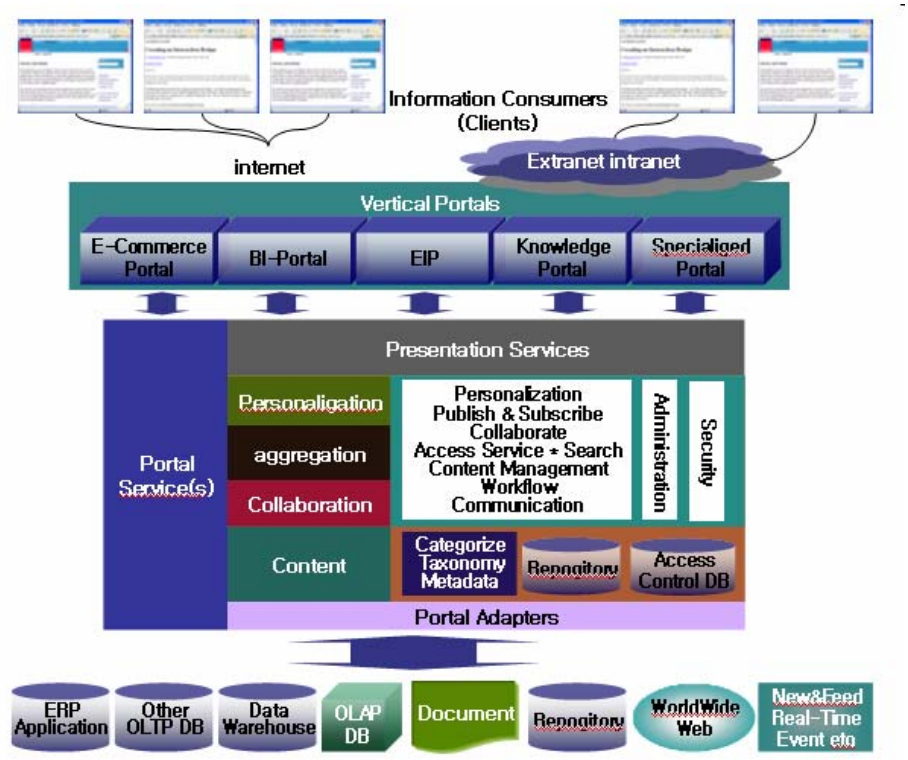


Fig. 2-2 Generic Architecture of Portals

Any portal should meet the requirements of this 3-layer-architecture and the mentioned basic functionalities. However, despite this common feature, the commercial portal market keeps ready a huge palette of various portals.

Sources:

Bain Cheney, Portals Now and The Future, META Group, 2001
Portals Community, http://www.portalscommunity.com/library/fundamentals.cfm
SAP Design Guild, http://www.sapdesignguild.org/index.asp

2.2 Technical Components of Portals

Portals provide a combination of the packed services and custom functionalities to allow users to manage content and applications and to collaborate with projects in the virtual work spaces. To achieve the goals of portals, a comprehensive portal solution incorporates a variety of the Internet and application-related technology components. While not all portals have all of the following features, they describe a good high-level view of the elements that can make up a portal solution. Some of these technologies (such as Web services) are constantly evolving, while others (such as the portal database, which is usually built on a SQL database) are relatively stable technologies.

- **Application Server** - Application servers are typically J2EE compliant and provide the underlying development and run-time infrastructure for the portal. Examples of application servers include BEA WebLogic, IBM Websphere, Oracle 9iAS and Sybase Application Server. Many of the application server vendors are incorporating "portals" as add-ons to their base product. For example, IBM Websphere Portal Server, Oracle Portal, BEA Portal and Sybase Enterprise Portal are all built on top of the corresponding application server and in some cases are sold as one package.
- **Web Server** - The Web Server works in conjunction with the application server to provide the run-time environment for client requests. The web servers used with portals are standard HTTP web servers, such as Microsoft Internet Information Server (IIS), Apache, etc.
- **Database** - Most portals have an underlying database (such as Oracle, DB2, Sybase, or SQL Server) that they use to keep track of information specific to the portal - such as users, personalization settings, available web services/portlets and security. This use of the database is in addition to a transactional system's database (e.g. ERP, CRM or SCM system) that a portal might query to present application specific data to end users.
- **Taxonomy** - Taxonomy is a classification scheme to organize a collection of information in order to browse, search or navigate information in the efficient ways. Sometimes taxonomy has the additional functional components of metadata for document classification as well as the rules for categorization. Ontology will be more suitable for this purposes, however, no commercial portal solutions are supported for ontology at the moment.
- **Crawler** - A crawler is an automated process that reads, indexes and classifies documents at a pre-determined interval. A web crawler, for instance, would crawl target web pages periodically to determine if the content has changed. The content is then indexed into the taxonomy so that end users can easily find it.
- **Metadata repository** - A metadata repository contains metadata about the content within the portal and about the structure of that content. This includes

the metadata about the taxonomy, as well as the metadata for the individual documents.

- **Portlet** - A Portlet can be thought of as a "building block" of a portal. It is a user-interface for presenting data and functionality from multiple applications on a single web page. Portlets encompass the presentation layer and the business logic. Many portal vendors have portlets for connecting to enterprise systems as well as for collaboration, news, and other functions.
- **Categorization Engine** - A categorization engine is used for sorting documents into the folders of a taxonomy. The categorization engine may do this based on metadata in the documents, based on business rules, based on the content of the document, based on search criteria or filters, or some other scheme.
- **Filters** - A filter is generally available in a taxonomy to restrict the documents that are stored into a particular repository, or that are returned as part of a search. A filter can be keyword based , concept based or rule based .
- **Index** - An index is a collection of information that allows for fast query and retrieval. Within the context of a portal, an index is usually a combination of a full-text index and a meta-data repository for the documents/content that is included within the portal.
- **Virtual Card** - Within an index or metadata repository, a virtual card is a description of a single document or piece of content within the portal. The card usually contains information about where the content physically resides, and contains the values of one or more metadata fields about that document. The card is the "placeholder" for the document within the portal.
- **Web Service** - Web services will be a critical component in the business plans of corporations as it offers the potential for creating highly dynamic and versatile distributed applications that span technological and business boundaries. Now web services are the fundamental component for portals to provide not only the valuable contents through simple communication channel but also the diverse portal functionalities to realize the effective collaboration. Recently, to accelerate Web Services in portal frameworks, the standard proposal called Web Service for Remote Portals (WSRP) is proposed. (Refer to the detail in Appendix.)
- **Development Standards and Protocols** – Both XML-related standards and Web service framework based on Service-oriented Architecture (SOA) are the core standard for the content and portal services.
- **User Profiles** - Each Portal contains a profile for each of its users. This profile is used for customization and personalization. Each of the Portlets in a portal has access to this user profile and can use it to store preference information about a user or a class of users. This profile is also how the user "configures" the home page of a portal and chooses which portlets show up and what information they should show.
- **Content Management System** - Most enterprise portals contain a Content Management System used to manage the content of enterprise. It typically consists of two elements: the content management application (CMA) and the

content delivery application (CDA). The CMA allows the author, to manage the creation, modification, and removal of content from a web site. While the CDA element compiles the information to update the web site. The features of a CMS vary, but most include format management, search, web-based publishing, revision control, and indexing, and retrieval.

- **EAI (Enterprise Application Integration)** - EAI serves as the umbrella term for all software and services meant to integrate enterprise applications with one another. Given the complexities of each type of application (sales, manufacturing, service, HR, purchasing, etc.) this can be a difficult and expensive proposition. EAI impacts the portal because the portal ideally will show consolidated information from multiple back end systems. An EAI layer is needed so that the queries can be coordinated and the results consolidated.
- **Single Sign On** - Single Sign-On technologies are critical to portals. In short, a portal may need to coordinate information from several web sites, data stores, XML feeds, and other transactional systems. All of these have different security paradigms that single-sign-on solutions will address. Single Sign-On (SS0) technology alleviates this for portal users and system administrators.
- **Authentication** - Authentication has both a cryptographic form and an access control form. Cryptographic forms of authentication use a certificate-based schema for ensuring identity. Access control forms are simpler; they generally use credentials such as user-id/password.
- **Authorization** - This is essentially an access control function. Essentially, a portal will maintain an authorization list, (a.k.a., access control list,) to determine the appropriate level of access that each identity will have to a resource. Such a system will determine if a user is authorized to act upon that resource.
- **LDAP** - The Lightweight Directory Access Protocol. A common directory structure accepted through most of the industry. Portals use these to maintain user information, organizational information, as well as access control and cryptographic certificate information.

Sources:

Discover IT, http://www.discoverit.co.uk/index.html

Intraspect Software, The Collaborative Business Portal: A White Paper on the Value of Integrating Collaboration Solutions and Portals, May 2003

Portals Community, http://www.portalscommunity.com/library/fundamentals.cfm

2.3 Functional Elements of Portals

Portals are the huge stack of service components. It is needless to say that these components are to realize the desired functionalities. Though each component offers the unique functionality, it is necessary to examine what service functions should be provided for portal users as a whole. The followings are the basic service functions necessary to fulfill portal users' needs and administrators' request.

- **Taxonomy/Directory** – Portals should present a taxonomy for an enterprise's unstructured information. A taxonomy is very useful method to categorize information resources and it can be used as meta-data for enterprise's information asset. A taxonomy can be presented to the user in many different ways such as tree hierarchy or relation graph. A taxonomy is the fundamental structure for the content management. On the other hand, the portal's directory is its organization of content into a structure and hierarchy of categories. The directory is the implementation within the portal of the enterprise's taxonomy.
- **Browse / Navigate Documents** - This feature enables portal users to manually locate content by navigating the directory structure.
- **Search** - A fundamental part of a portal implementation is its search capability, which indexes enterprise content from multiple storage systems and allows users to browse and retrieve content based on selection criteria. Portals allow the user to specify the search criteria once, but retrieve relevant content links from the diverse repositories targeted by the search.
- **Content and Document management** – Content and document management is the process of authoring, contributing, reviewing, approving, publishing, delivering, and maintaining content integrated with or accessed from a portal or other web site. The content and document management can ensure the users are using the correct, authorized documents and provide the efficient collaboration on content / documents such as presentation or co-production. It also often includes check in and check out of documents to ensure version control.
- **End User Customization** - Customization refers to the capability of portals to allow users to specify their own preferences for the user interface look-and-feel attributes. Customization typically accommodates preferences for color schemes, modules that appear, and the layout of the modules and content on a page of the portal.
- **Personalization** - Portals offer information, applications and services in one place. Thus, portal users must organize their electronic work space, their daily tasks, and their jobs as a whole. Portals need to offer mechanisms, which allow users to access the structure and to find portal functions through navigation. While each individual user can have settings for each of the portal functions that they use, a community, or group of users, can have settings up to the organizational level.
- **Collaboration, Communication and Community** - An EIP solution can be a very powerful collaborative tool. Collaboration functions integrated in EIP enable a group of users to work together to share ideas and documents, and thus complete

work as a team. Collaboration includes electronic interactions among users in different physical locations in real time ("synchronous") and at different times ("asynchronous"). Forms of collaboration are instant messaging (IM) systems, team workspace, and discussion forums, document sharing, electronic white boarding, mailing list, virtual conferencing, and video conferencing.

- **Business Intelligence** - Most enterprise portals can act as a universal front end to the different components of a BI solution, helping its users make better business decisions. BI includes enterprise reporting, ad hoc reporting, OLAP, data mining, multidimensional analysis, and exception reporting.
- **Alerts** - An alert is a notification of an event or change based on one or more conditions involving single or multiple information or application sources. These notifications can be delivered within a portal as well as by other mechanisms such as e-mail or wireless device. Alerting status information and event triggering offer information about the most important or critical indicators for the job or task. They may or may not trigger user actions, depending of the value of the status and the responsibility of the user.
- **Subscribe / News** - Many portals allow individuals to register an interest in or "subscribe" to a particular component, category of content or news. Portals will then notify the subscribers when the content changes or new content is added. Since news are short-lived information, it should be delivered to the related users immediately. Sometimes news need to be archived for future use.
- **Workflow** - Workflow refers to the efficient electronic management of a business process, including roles, tasks, templates, checkpoints, approvals, and escalation procedures. Within a portal, workflow systems are administered and integrated to achieve the interaction between different component modules of the portal through which the business process flows.
- **Single sign-on** – It is cumbersome for portal users to log in systems requiring authentication each time due to the different levels of security. From system point of view, it is difficult to control security and protection policy of portals. Single sign-on solutions facilitate the navigation among the systems through a single authentication scheme.

Sources:

Portals Community, http://www.portalscommunity.com/library/fundamentals.cfm

SAP Design Guild, http://www.sapdesignguild.org/index.asp

2.4 Implementation of Portal Systems

The implementation of portal systems is quite different from both web site design and application development. In some sense, the development of portal systems should consider both aspects of web and application development. This section reviews the system configuration of portals and then explains how to design portal pages.

2.4.1 Portals Development and Design

The main goal of an enterprise portal is to give each portal user a personalized and integrated view of the business content (information, applications and services) that they need to do their job. To achieve this goal a portal must offer more than just a simple Web interface to business content, it also must have a rich set of services for gathering, categorizing, integrating and personalizing this content. These services should have open interfaces that can be used in conjunction with a portal development kit (PDK) to customize and extend the portal environment to satisfy business requirements. These interfaces together with the PDK form the cornerstone of a portal development platform.

Since the commercial portal products vary considerably in their capabilities, the main portal features required to meet the business and technical objectives of portal project should be carefully identified and examined.

The main components of an ideal portal development platform are illustrated in Fig. 2-3 and are briefly reviewed in the below to help the system configuration to meet the requirements.

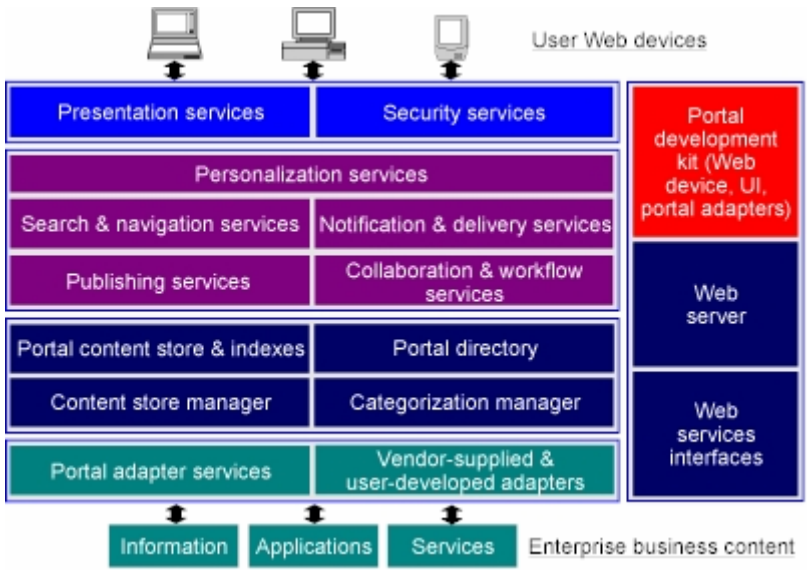


Fig. 2-3 System Configuration of Portals

Presentation services act as the main interface between the portal user and the enterprise portal itself. At present, most portals interact with portal users via a Web browser. In some products, Microsoft .NET or Java is used to enhance the appearance of the user interface. Most portal products allow the look and feel of the presentation interface to be tailored to match the needs of the user, and to match corporate presentation standards and branding.

Security services work in conjunction with other enterprise system security mechanisms to protect the security, integrity and availability of a portal's business content and underlying computer resources. These services ensure that users can only view the business content they are authorized to see. Users signing on to a portal need to be authenticated, and their access to content and portal services controlled based on user roles and access privileges defined by the portal administrator. It is also important that the portal provides a single sign-on capability, and does not require users to sign-on to each content store or business service they access. The authentication scheme used by a portal must be able to be integrated into the overall security infrastructure of the organization. This infrastructure may employ technologies such as LDAP, Microsoft Active Directory, or a separate single sign-on product.

Personalization services filter business content so that individual portal users only see the business content they are interested in or are authorized to access. The personalization approaches fall into one of two broad categories: *user-driven personalization and application-driven personalization.*

In case of the user-driven approach, portal users are presented with a form showing a list of the business content and services they are authorized to access. An entry in the list may be the name of an application, document or service, or may be the name of a business content server (a database, file, or document management system, for example) that manages content on behalf of a specific application or department. Users then manually customize their portal interfaces by including and excluding from the list the business content they are interested in.

A few vendors are beginning to employ rules-driven and collaborative filtering techniques to add application-driven personalization to their products. This type of personalization enables the portal to learn about the types of content that a portal user is interested in, and enables the personalization process to be automated. Automation is especially important in customer-facing portals.

Publishing services provide an interactive mechanism for business users to document the location and meaning of business content in the portal directory so that it can be

shared and accessed by other portal users. Some products support the relocation of published content to a portal content store. This content management capability is particularly useful when publishing business content that is stored on a user's private desktop computer – the content can be moved to a shared and managed environment. Other products, instead of providing a portal content store, supply interfaces to leading industry content management systems. In some cases, portal search engines can be used to index these external content management stores and to store these indexes in the portal to improve the speed of subsequent search queries.

Search and navigation services help the portal user find and access business content. If a portal directory is provided, users can browse their personalized version of the directory to find items of interest, and then use the information in the metadata to locate and access the associated business content. Directory browsing can be done by navigating the topic hierarchy, or by using search services to query the portal directory. Many products supply search engines that can search entries in the portal directory, the contents of a portal store, or external content stores. A few supply federated search engines that can search multiple external content stores in parallel.

Ideally, portal users should not have to search for the business content they require. Instead, the portal should notify them via the portal interface or e-mail whenever new content of interest is available through the portal. In certain circumstances, the portal may deliver the actual content (a business intelligence report, for example) to the user on a regular scheduled basis (at the end of each business day, for example). Many portals support this *notification and delivery services* capability by allowing the user to register interest in specific categories of content, and when content is added to the portal in any given category, all registered users for that category are alerted about the new content. A few products support rules-driven notification. These rules, for example, can be applied to the actual business content, and appropriate messages sent to registered users or even enterprise applications. Rules-driven notification is particularly useful when used in conjunction with the portal's workflow services.

One of the more significant new services required by portal users is support for *collaboration services.* Requirements here vary from messaging and discussion groups to the need for powerful workflow capabilities. Workflow services enable portal users to define and manage a set of interrelated business tasks. Each task in the workflow is triggered when a previous related task in the workflow is completed. Tasks can use portal services to access business information, run applications, send messages, and create operational transactions. Vendors are either adding collaboration and workflow

services to their products, or building interfaces to third-party products such as Lotus Notes and Microsoft Exchange.

Portal adapter services supply a set of interfaces and adapters for collecting metadata about business content and for accessing that content. The interfaces that are used to access business content can take several forms – examples include programmable interfaces, file import and export mechanisms, and crawlers that scan business content at regular intervals. Most portal products come packaged with adapters that use these interfaces to access a wide variety of different types of business content and services, including databases and files, business intelligence products, content and document management systems, groupware and office objects (e-mail, word processing documents, spreadsheets and Web pages for example), or applications (front-office, back-office, and e-business).

The portal adapter services may also provide tools that regularly scan business content and document metadata about the content in the *portal directory*. To fully support personalization, this metadata must be categorized by business topic. Categorization is done by applying taxonomy rules to information extracted from the business content itself, or from the metadata about the business content (file name, Web page URL, author, etc.). Some products require the categorization to be done manually, while others supply a *categorization manager* that automates the process. Other portal services and tools (publishing services, for example) that interface with the portal directory may employ the categorization manager to assist in assigning portal directory entries to one or more topic areas.

Most portals interact with the portal user via a Web-based interface. The underlying Web infrastructure that provides this interface may be provided by the portal product itself, or may be handled by a separate Web application server. Several Web application server and middleware vendors are also adding portal technology to their products.

The Web server facilities used by portal products vary from simple HTTP listener services to the use of the Web server for administration and development tools, security, and interfaces to back-end business content stores. Although it is important for portal products to provide portability between leading Web servers, it is also crucial, as user volumes build, that products exploit features such as directory services, caching, load balancing and fail-over in Web application servers.

Enterprise portals provide a single integrated and personalized view of enterprise applications and business information, and also supply collaborative and workflow capabilities that enable the portal to integrate business processes within the organization.

No single product today provides all of the capabilities outlined in this article, and it is therefore important that the key features required for a portal application be identified and matched to the capabilities of vendor products on the market.

By the ways, the configuration of a portal solution is not just about implementing technology; rather success is typically dependent on managing the operational, political and social issues that might occur as a result of implementing the portal. The challenges and business issues may be unique for each company and community, but there are some consistent themes related to change management, operational changes, and political issues common to all organizations that can impede the progress of the portal initiative. The consulting company Headstrong suggests “10 Best Practices” to accelerate portal implementation for the efficient portal project management.

- Ensure tight coordination between business and IT communities
- Sell the portal project from top down within the business organization
- Know your portal products
- Deliver high business value, low complexity requirements first
- Defer integration with complex legacy applications
- Develop vendor relationships
- Architect your portal solution for integration
- Build content competency centers
- Use a proven deployment methodology
- Communicate, communicate, communicate

2.4.2 Portal Pages Design

The design of a portal has to be flexible enough to meet diverse clients' and users' needs, yet structured enough to accommodate a wide range of content and visual elements. A good portal should offer an attractive and usable default design which is not so deeply entrenched in the coding that it is difficult or costly for the customer to modify. Although portals are a special breed of external or internal Websites offering a blend of information, applications and services, this implies that portals always have more than just information to offer, as many Websites do. Moreover, portals are typically based on more advanced Web technologies that go beyond the simple HTML interface of typical Web pages. So, there are more things to consider, fewer technical limitations, but also a more complex environment for the users - and designers - to work with.

The structure and the content of generic portal pages below proposes each design issue and indicates relations between page types. (R means related pages and S means similar pages.)

■ Entering a Portal

Page Type	Descriptions	Comments
LogOn Page / Log Off Page	A page for logging on; may display relevant system information, news etc. It may also be integrated into other pages, such as Start my Day, Reception Page, or Home Page. A page for logging off. It may display gimmicks such as a good-bye message or animation. It may also offer reminders	R: Start my Day, Reception Page
Start my Day	A page that comes up as the first page when the user starts his/her work in the morning.	S: Reception Page, Home Page R: LogOn/Off Page
Reception Page	A page that comes up as the first page when the user enters the portal.	S: Start my Day, Home Page R:LogOn/OffPage
Home Page	The central page of a portal, which serves as an anchor point to which users may return and then move to other sections, or where they find important information and functionality. This page can fulfill many roles, entering is only one aspect.	S: Best of Favorites, Reception Page, Start my Day

■ Organization/Structure

Page Type	Description	Comments
Home Page	The central page of a portal which serves as an anchor point to which users may return when they "reorient" and move to other section or where they find important information and functionality.	S: Best of Favorites
Best of Favorites	A page that offers a selection of the most important/most often used MiniApps; it may either be pre-designed or personalized by the user. The MiniApps may also appear redundantly on other portal pages.	S: Home Page
Overview Page	A page that provides an overview of the respective portal section (info section) and/or a quick access to the functionality needed for the respective section/role/workset	S: Hallway
Hallway	A page that serves as a navigation "hallway" for a portal/Website or a	S: Overview

	part of it. Typically it is a more or less structured link list.	Page
Sitemap	A page that provides an overview of a Portal or Website (text-based or graphical) and ideally also access to the pages or sections shown in the map.	S: Search

■ Service

Page Type	Description	Comments
1st use: Introduction/HowTo/Get started	A page that offers online help for first-time users (text-based instructions/tutorials, videos, wizards etc.).	
Search	A page that offers search facilities. The search may affect different parts of the portal, specific data only, or the WWW.	S: Sitemap
Sitemap	A page that provides an overview of a Portal or Website (text-based or graphical) and ideally also access to the pages or sections shown in the map	S: Search
Support Page	A page that provides a knowledge management area where users can store important information permanently or just temporarily for later use or as reminders.	
Services Page	A page that provides a personalized subset of the company Intranet & ESS (employee self-service); especially the ESS applications relate to the service aspect.	R: Bye-and-Sell, Employee Corner
Bye-and-Sell, Employee Corner	A page that supplies a forum for employees where they can offer or search for goods, announce group events, etc. This is more an employee-controlled forum (in contrast to the Services Page).	R: Services Page

■ Community

Page Type	Description	Comments
Meeting Point	A role-specific home page that offers a community area for users having the same role.	S: Team Place
Team Place	A page that offers a community and collaboration area for team members	S: Meeting Point

Services Page	A page that provides a personalized subset of the company Intranet & ESS (employee self-service); the Intranet pages may serve to establish a community of people sharing the same or related roles.	
Company News	A page that supplies news relevant to the company as well as to all employees or specific groups or roles (e.g. sales or service).	
Message Board	A message board for internal discussions, either company-wide or for special interest groups or roles.	S: Chat Room
Chat Room	A chat area for internal discussions, either company-wide or for special interest groups or roles.	S: Message Board

Generic pages round portals up by offering elements that are beyond the pure role-specific or interest-based needs. Portal designers should know which generic pages types are at their disposal to assure that they select the most suitable ones for their portals. The list presented here is by no means complete, but it is a first step towards a better understanding of what ingredients are needed for well-designed, people-centric portals.

Portal design is different from application design because it is not the design of a single task; it is the design of a whole job environment. It requires understanding a person's whole job. People will always need to tune their own environment, much as they decorate and move around the things in their houses. But they need not build their houses, their working context, from scratch. So today more than ever there is an even greater need for people-centered design: peopler-centered enterprise portal design driven by a deep understanding of how people work. Fig. 2-@@ shows the typical portal design for people of an enterprise.

Fig. 2-4 Typical People-centered Portal Page

Sources:

Nitin Lalwami, Accelerate Your Portal Implementation, Headstrong, 2003

Portals Community, http://www.portalscommunity.com/library/fundamentals.cfm

Karen Holtzblatt, Creating New Work Paradigms for the Enterprise Portal, SAP Design Guild, August, 2001. http://www.incent.com/pubs/SAPDGPortal.html

SAP Design Guild, http://www.sapdesignguild.org/index.asp

Colin White, Enterprise Portals: More Than Just a Web Interface, Portals Community, http://www.portalscommunity.com/advisor_advice.cfm?ObjectID=03A6DA32-45B8-4294-BBEC8161619987B8

Colin White, Building the Smart Business: The Corporate Portal: What's in a Name?, DM Review, December 2003

3. Commercial Portals Market Review

The portal product market will change dramatically with many vendors bring out new versions of their products every six months. Vendors have closed technological gaps or found a safe haven from the shakeout by partnering with, or acquiring, other portal product vendors. Though the portal product market space is dominated by very small powerful vendors, portal product technology is still young. This immaturity leads to accelerate the new product developments ironically. The market review will be helpful to understand portal products and portal vendors.

3.1 Overview

Portals have had a dramatic impact on IT business systems. Portals were initially to improve the usability of enterprise intranet and extranet. However, they have been quickly combined with other technologies such as content management, collaboration, and business intelligence to provide business solutions that enhance business management and boost business efficiency both within and across enterprises. According as portals are acknowledged as the key success factor for enterprises, most software vendors have jumped into portal market.

Portals are the integration of the business applications such as document management, collaboration tools and even desktop utility that have been developed independently. So most software vendors can easily jump on portal bandwagon with the extension of their major products. As the market researcher and consulting firm, The Delphi Group, illustrates in the following figure, portal players come from a wide variety of technology disciplines. It seems that some vendors simply regard a portal product as the integration of business applications. So care must be taken in choosing the right portal product.

Fig. 3-1 Portal vendors

The other reason why portal market is bustling is its prospective future. According to the Gartner report, the portal marketplace will grow at a healthy rate of 16.7% CAGR from $749 million in 2002 to $1,618 million by 2007. The Gartner report clearly demonstrates that portal market is healthy and is likely to remain that way for the foreseeable future. However, the serious competition and rapid changes of portal technologies will cause the acquisition and merge to the small vendors. Consequently, the powerful major vendors will lead the portal markets as usual, for portal products require the seamless integration of highly-specialized business products that have the unique functionalities.

Sources:

Tim Kounadis, How To Pick the Best Portal, ADVISOR,
http://doc.advisor.com/doc/06626

3.2 Portal Vendors Review

According to the survey results from consulting companies such as Gartner Inc. or BI Research, the portal vendors can be categorized into three groups. This category will be helpful to understand the property of portal products and vendor strategy to the portal technology.

- **Application Server Suite** vendors (IBM, Oracle, BEA, and Sun)
- **Independent Portal** vendors (Microsoft, Plumtree, and Vignette)
- **Application Package** vendors (SAP and Peoplesoft)

■ Application Server Suite Vendors

Solutions from these vendors bring together the four key integration infrastructure technologies (portal user interface, business process, application, and data) into a single package that is combined with an application server and collaboration services. These suites place emphasis on application integration and on an infrastructure for building an integrated business environment. Gartner calls it an *Application Platform Suite (APS)*. These vendors are clearly starting to gain market share.

■ Independent Portal Players

The pure-play portal vendors offer a packaged solution that integrates together the key features of an independent portal (categorization, search, and personalization) with collaboration and content management services, and in some cases business intelligence tools.

Pure-play solutions place emphasis on out-of-the box solutions for information access and sharing, content management, and collaboration. Gartner is calling these types of product a *Smart Enterprise Suite (SES)*. These products are brand new products for portals.

For many organizations, a key benefit of independent portal products is that they can run on and exploit the integration features application server suites in areas such as application integration and Web Services, without having to be tied to a specific application server product. The pure-play vendors are under increasing pressure, however, from both application server suite and application package suite vendors, and as a result the independent vendors are busy trying to create niche marketplaces for

themselves. One vendor that is immune from this pressure is Microsoft, who is likely to dominate the mid-market for portal products.

- **Application Package Suite Vendors**

These vendors provide an out-of-the box solution that integrates an application vendor's operational application and business intelligence packages into a portal environment. These suites also provide collaboration services, and an integration bus that enables third-party product integration. These suites place strong emphasis on prepackaged solutions. If the application vendor also markets an application server suite (Oracle and SAP, for example), then it is likely that the application package suite will be developed and integrated with that product.

Sources:

Sarah L. Roberts-Witt , Digital Doorways, PC Magazine, June 12, 2001, http://www.pcmag.com/article2/0,4149,142377,00.asp

Richard V. Dragan, Corporate Portals: More than Just a Pretty Face, PC Magazine, August 1, 2002, http://www.pcmag.com/article2/0,4149,383288,00.asp

David Haskin Collaboration Software Gets 'Portalized' Intranet Journal, 9/22/2003 http://www.intranetjournal.com/articles/200309/ij_09_22_03a.html

3.3 Portal Market Survey

- **The Portal Market**

Interest in portal software remains strong. In an executive presentation, META Group noted that "portal technology decisions are taking IT groups by storm." According to a Goldman Sachs IT manager survey, "enterprise portal software is one of the highest priorities for the greatest spending increases over the next 12 months, ranked behind only security technology and wireless networks." Of the eleven investment areas ranked as a highest priority, only integration software and portal software increased in priority since the previous survey in August 2002.

A Morgan Stanley CIO survey reflects the same trend, with "employee portals" as a top software spending priority in 2003 for 36% of respondents, again behind only security software. Morgan Stanley separately rated customer portals, ranked 7th, and supplier portals, ranked 15th, suggesting that the aggregate market for portal software is even

larger. Document and content management software ranked just behind portals, with 33% of respondents identifying the category as a spending priority.

- **Market Size**

Estimates for the size of the portal market vary, though most analysts continue to expect 20% or higher growth in portal license revenues. META Group estimates in an October 2002 report that the portal market is only 20% penetrated, but that by 2004 85% of the Global 2000 will have selected a portal platform. In a June 2002 report, Gartner Group estimates that new portal license revenues will grow from $709 million in 2001 to $2 billion in 2006. In research published the same month, IDC sizes the 2001 portal software market at $550.4 million, and expects the market to grow to $3.1 billion by 2006. A December 2002 Delphi Group analysis provides the first estimate for the size of the 2002 portal software market, at $787 million worldwide, with the market projected to reach $1.1 billion in 2004. Table 2 summarizes these findings.

Table 3-1 Portal Software Market-Size

Analyst Firm	Date of Report	Market-Size	Growth Rate
Gartner	June 2002	2001: $709M	24% through 2006
IDC	June 2002	2001: $550.4M	41% through 2006
Delphi	December 2002	2002: $787M	20% through 2004

- **Market-Share**

Market-share estimates vary, but the consensus among analysts is that Plumtree and IBM are the two major contenders, with Plumtree first in market-share in 2001. According to IDC, Plumtree led the portal software market in 2001 with 12% share. Gartner published a DataQuest report the same month showing Plumtree in the lead, but not by a significant margin: Gartner calculated 7% portal software market-share for Plumtree, IBM and SAP. Later in 2002, Delphi Group approached the market-share question differently, surveying 500 organizations to determine which portal products had actually been deployed. This approach led to sharply different results, with Plumtree doubling its lead at 15%, and Microsoft SharePoint, Oracle and IBM WebSphere rating second, third and fourth at 10%, 9%, and 8% respectively. Table 3 summarizes these findings.

Table 3-2 Portal Market-Share Estimates

Vendor	IDC	Gartner	Delphi
Plumtree	12%	7%	15%
IBM	9%	7%	8%
SAP	7%	7%	6%
Oracle	6%	Below 5%	9%
Microsoft	Insignificant	Below 5%	10%
CA	11%	Below 5%	Below 2%

The disparity in the results points to the difficulty of measuring share in the portal market. Many vendors do not segment revenues by product line, which creates reporting challenges, and differences in product prices and deployment rates are also significant. Microsoft SharePoint, for example, accounts for a respectable share of portal deployments, but not of revenue, because SharePoint is inexpensive to license. Many organizations may deploy multiple portals, from different vendors particularly in cases where applications or application server embed portal interfaces to the resources hosted on their own systems.

- **Market Segmentation**

On the surface, the portal market has changed very little: portals remain a high priority among buyers, the market is expected to grow 20%, and the leaders of that market have remained the same. But the technologies involved in the portal market have changed significantly. Goldman Sachs reports that demand for portal and integration software is increasing, and Morgan Stanley also notes strong interest in security and content management. Rather than viewing the demand for each category as a separate phenomenon, each category can be recognized as a component of an enterprise-wide Web strategy.

As Fig. 3-2 and 3-3 illustrate, the vast majority of organizations deploy content management, collaboration, search and single sign-on in some combination with portals.

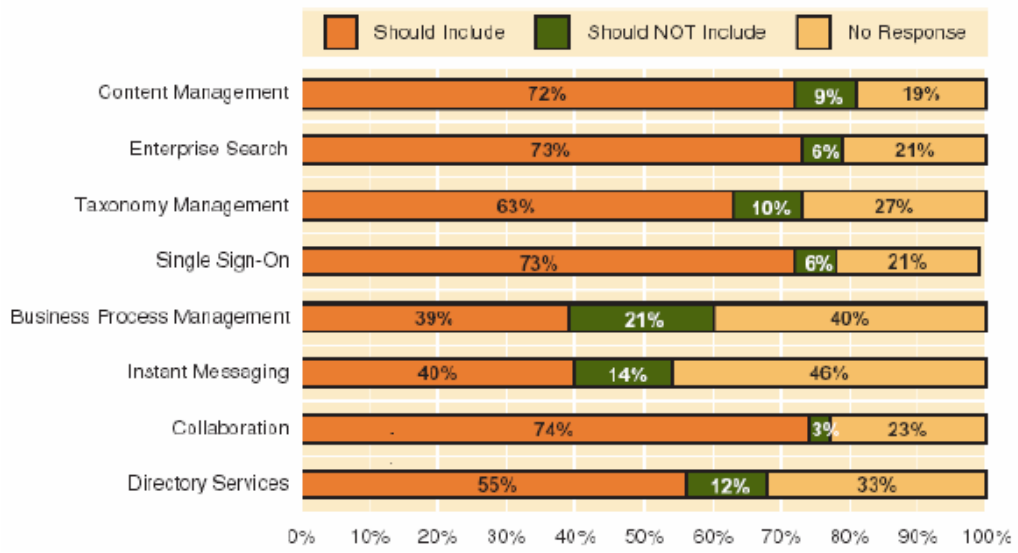


Fig. 3-2 Delphi Group, What Functions Should and Should Not Be Included in Portal Software

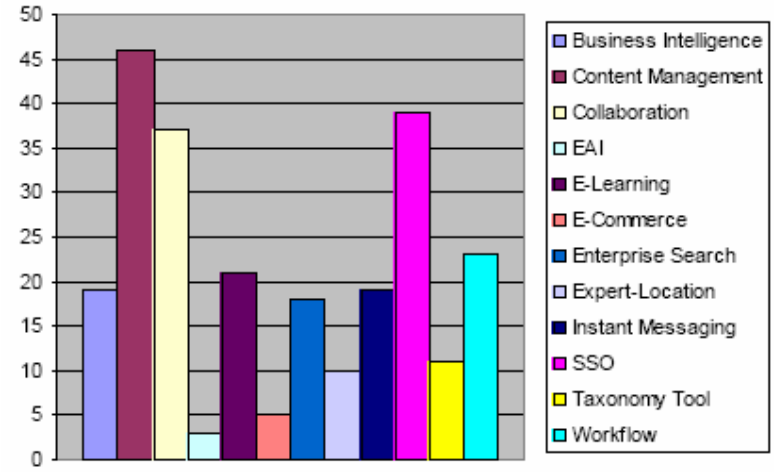


Fig. 3-3 Plumtree Survey, What Technologies Related to the Portal Project. Do You Anticipate Buying in the Next 12 Months?

According to Delphi, nearly three-quarters of customers believe portals should be deployed with search, content management, collaboration and single sign-on. In the Plumtree survey, nearly half of the total respondents to a similar question indicated an interest in purchasing content management, collaboration and single sign-on; interest

levels would likely have been higher if many respondents had not already licensed these technologies, particularly in the case of search and taxonomy capabilities.

Sources:

Colin White, 2003 PortalsCommunity Member Survey, BI Research and Portals Community, 2003

Plumtree, The Corporate Portal Market in 2003, January 20, 2003

Richard Young, Findings of the Portal Feature Survey, http://www.portal.ac.uk/spp/

DMReview.com, META Group Expects Over 150 Percent Revenue Growth for Portal Market in 2004, DM Review Online in November 2003

3.4 Future Trend of Portals

A great number of analysts' reports inquire the future development of portals. One of the most popular reports is the hype cycle of emerging technologies for 2000 released by the Gartner Group. The cycle is depicted in Fig. 3-4.

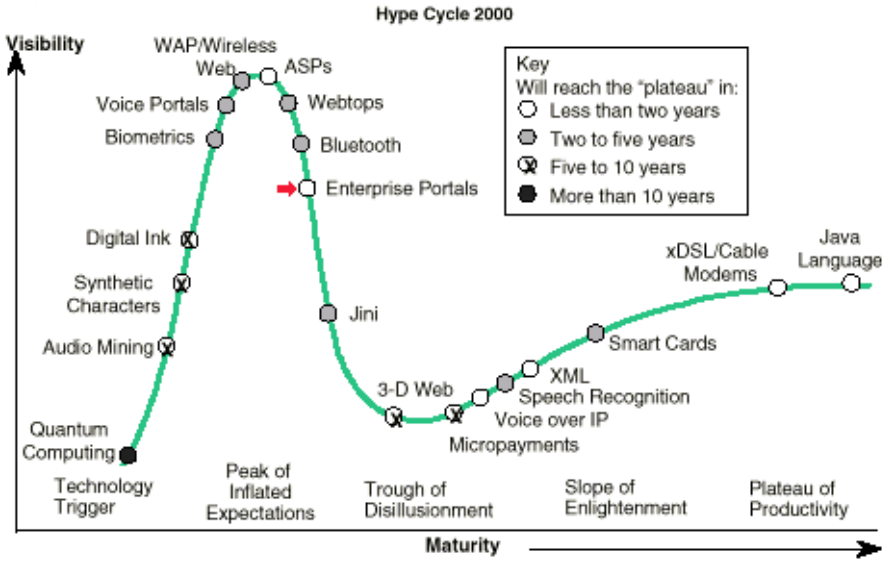


Fig. 3-4 Hype cycle of emerging technologies

The hype cycle covers information such as which emerging technologies should early adopters be examining for competitive advantage and how technology planners should identify the technologies and applications that will generate maximum benefit for the organization. Technologies at the peak of inflated expectations in this hype cycle include wireless Web/WAP, ASPs, and Webtops.

The Gartner Group expects the first portal euphoria to calm down within 2 years. Only by then will the broader market exactly know which specific portal functionalities are relevant and indispensable.

Ovum, on the other hand, places the emphasis on the portal mix which is supposed to become the new GUI standard. According to Ovum, "by 2005, applications that cannot present themselves via a fully-functional portal interface will be universally rejected by IT users".

- **Integration of the ECP into EIP**

Collaboration software provides users with the processes and environment to create and exchange information inside and outside the walls of an organization. It includes a powerful set of workflow components and is used extensively in knowledge management. Collaboration occurs at all level of the organizational structure with people, devices, and applications working together, much like an informational ecosystem.

Collaboration software was a technology flavor due to these potential benefits and analysts predicted widespread adoption. Ironically, while that adoption never occurred, collaborative software is becoming a staple in many enterprises. However, enterprise information portal (EIP) vendors are now building collaborative software into their products, which is increasing its adoption. That lack of success led EIP vendors to incorporate collaboration software into their wares. IBM, for instance, added the Lotus Quickplace collaboration application into the WebSphere portal. A number of other EIP vendors followed suit.

Adding collaboration to EIP not only makes it widely available within enterprises but it also enhances the use of portals. The integration of EIP and collaboration technology allows the organizational communication processes to be unified into a single information source creating a complete and usable archive of all transactions, including the data, discussions about the data, and the decision-making process. Another potential

benefit of integrating collaboration software into EIP is the relative simplicity of delivering back-end data to collaborators. That means, for instance, that a widely dispersed sales team can easily work with customer relationship management data in real time. The following figure shows SiteScape's strategy to integrate collaboration into EIP.

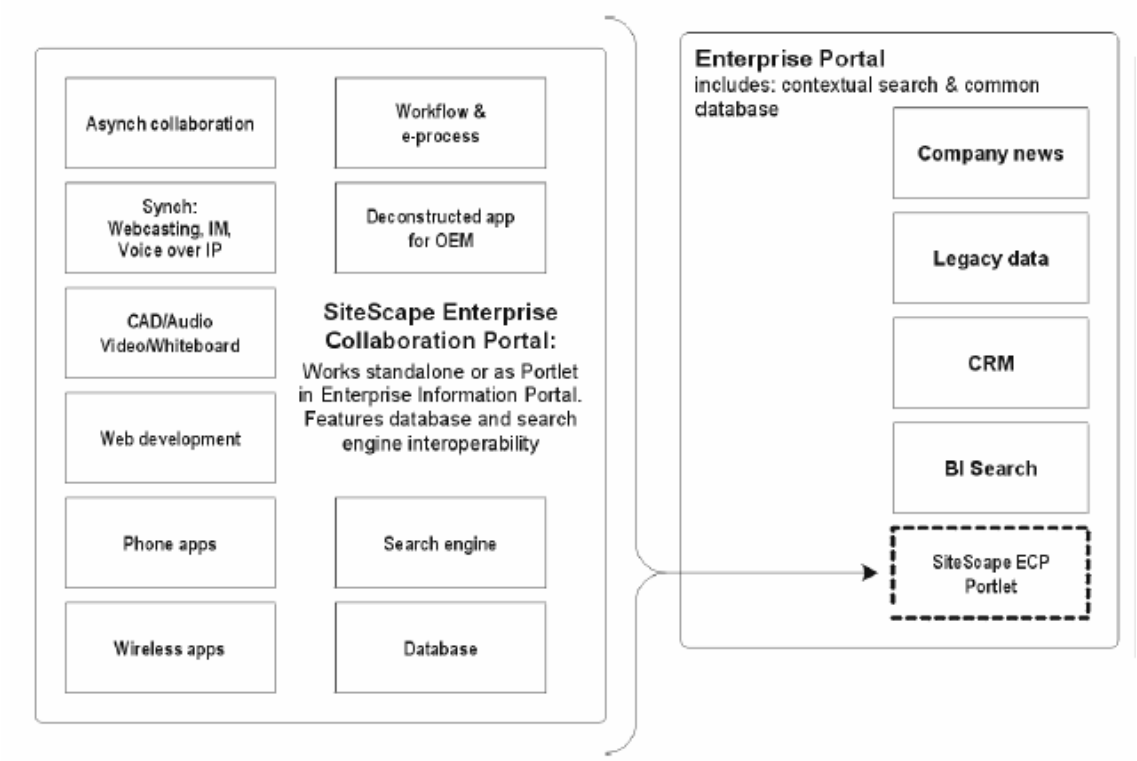


Fig. 3-5 Integration of ECP into EIP

- **Web services-based Portals**

Web services-based portals may well be the wave of the future for the enterprise that can give employees and managers powerful ideal tools for gathering information, making decisions and getting their work done most effectively. These new portals may well be the wave of the future in the enterprise.

Web services and portals are a perfect mix. Because Web services are written as reusable components that can be accessed in a variety of ways, it should be relatively easy to create portlets that provide portal-based access to already written Web services.

Since Web services are also useful for accessing older applications and legacy systems, they're an ideal way for providing portal-based access to those applications and systems. There are many benefits for doing this. When portals are built using Web services, they become more dynamic and simpler to change, so that it's easy to constantly redo them as the needs of the corporation and its employees change. Most vendors and analysts believe that Web services-based portals will become increasingly important in the coming year.

Analysts warn, however, that it will take some time before these kinds of promises will come true - and the first Web-services-powered portals will not necessarily deliver on all of the technology's potential. There are security limitations with being able to use portals as a mechanism to actually run business processes, so the first Web services-based portals will be used for information gathering and information display rather than for business processes. To a great extent, the success of Web services-based portals will be determined by whether standards for building them become widely used and accepted. Two related relatively new standards make all this possible. One handles building "portlets" and "portlet containers" and the other handles building portals.

The standard that covers portlets, called JSR 168, was developed by the Java Community Process (JCP); the current 1.0 spec was approved only recently, in October of 2003. (Refer to Appendix for detail.) It handles not just portlets, but portlet containers as well. The standard that covers portals, Web Services for Remote Portlets (WSRP), is also a relatively new standard, having been approved by OASIS in August of 2003 and is in version 1.0. (Refer to Appendix for detail.) Its purpose is to create a standard that allows for the dynamic integration of business applications and content into a plug-and-play portal solution. It's been designed to work with JSR 168.

Both standards are relatively new and Web services portals are being talked about at this point rather than being used to any great degree. To a great extent, though, whether they become widely used will be largely dependent on whether vendors integrate WSRP into their products. But if it does happen, expect a new generation of portals to help corporations and their business partners and for Web services to become even more embedded in the daily life of enterprises.

- **Wireless Portal**

Wireless portals are going to be the telecom industry's next big thing. At the leading edge of wireless services, these new portals will snatch Web access from the desktop and make it accessible to everyone anywhere. At the interface between two fast-moving

technology sectors, one of the most powerful applications for wireless portals may well prove to be a new class of Web-based tools for high-mobility vertical markets by vertical portals. The perception that enterprise wireless Internet use would be leveraged by consumer use, where wireless devices are most prevalent, has proven inane. Wireless Internet access can, in fact, be uniquely exploited by mobile enterprise users: it is optimized for anytime, anywhere access to time-critical information (push or pull from corporate databases).

In this respect, the wireless Internet opens a floodgate for a variety of potential vertical and horizontal industry applications.

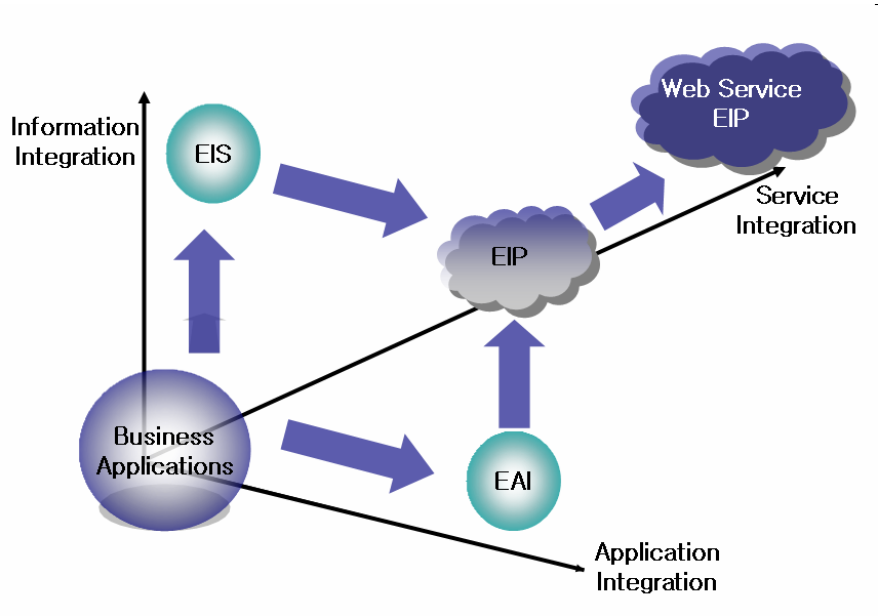


Fig. 3-6 Trend of Portal Technology

SiteScape, The Role of the Enterprise Collaboration Portal in the Enterprise Information Portal, October 2001,

4. Commercial Portal Products

When portals products first appeared on the market in 1988, they were packaged as standalone products. More recently, however, portal technology has been integrated into many types of community service components to support the community user's needs such as communication, collaboration, content management, and personalization. In this section, we will review the state of the arts of portal technology through the technical survey of some popular products by the major leading vendors. We will see the variety of technologies used in portal systems as well as the future trend, and we can learn how vendors integrate and develop the assorted service components.

4.1 ATG Portal (6.2)

- **Summary**

Company and Product Name: ATG Potral, http://www.atg.com/en/

Support Platforms: J2EE application servers, ATG's own Dynamo Application Server (DAS), IBM WebSphere and BEA WebLogic

- **Descriptions**

While ATG Portal includes all the features most companies look for in a standard EIP, the product is unique in that it is built on top of ATG's Relationship Management Platform. This provides some benefits, especially in customer and employee self-service capabilities and in personalization.

As a J2EE-based application, ATG Portal can run on nearly any platform. The portal also runs on BEA's WebLogic application server or ATG's Dynamo Application Server.

The browser-based administration interface for ATG Portal is good, although not among the best portals. Some tasks, such as copying a template, required seemingly needless steps. Still, the interface is intuitive and is able to easily manage almost any task.

ATG Portal uses the concept of communities to handle creating unique portal sets and capabilities for different types of portal users. One new feature in ATG Portal is the

ability to create new communities using the settings from another community as a template. This makes it simple to deploy communities for new user groups.

User rights and roles are handled well in ATG Portal, allowing the user to control access across all communities and content in the portal. User management is a little difficult in that users are managed by community. This model makes localized management by delegated administrators easy, but it makes global tasks a little more difficult. ATG Portal also integrates with Microsoft Corp.'s Active Directory and Sun's Sun ONE Directory for user access.

Like most portals, ATG Portal comes with a collection of pre-made portlets that provide a wide variety of collaboration and user productivity tools. Because portlets are based on JSP and Java, creating new ones doesn't require learning proprietary languages or scripts.

Pricing for ATG Portal 6.0 starts at $40,000 per CPU for production systems, $20,000 per CPU for staging systems and $4,000 to $5,000 for developer seats. The required Relationship Management Platform costs $40,000 per CPU.

Table 4-1 ATG Portal Features

FEATURE	BENEFIT
ATG Portal's Comprehensive Feature Set	
Customization and Personalization	•Includes traditional user-customization, Scenario Personalization, personalized content portlets and alerts.
Modular Presentation Framework	•Uses a flexible presentation framework to control the look, feel and content of each page and lets your users control the content they see and how it appears in their portal view. • Allows for portlets within the portal page to be replaced without rebuilding the entire portal or page.
User Management	• Gives you precise control over what users can see and change on the portal. • Allows for an extensible set of roles associated with different communities or different portlets. • Lets business users assign different authorizations for different areas of the portal, ensuring that your portal maps to your organization rather than forcing your organization to map to your portal.
Delegated	• Uses comprehensive administration tools to give assigned business users control over who

Administration	sees what content in which areas of the portal. • Includes tools to create custom administration capabilities, both in look and feel and functionality, and gives business users control over what and how much is delegated.
Alert Management	• Uses any action taken by a user or a change in any data point accessed by the system to trigger an alert to a specific user, category or role by Web, e-mail or mobile device. • Lets you deliver information to the user rather than passively waiting for the user to find it.
Collaboration	• Lets self-regulating communities manage their own membership, pages and portlets. • Includes standard portlets for improving group productivity: - Calendar Portlet, - Directory Portlet, - Discussion Portlet, - Document Exchange Portlet - News Portlet, - Polling Portlet, - QuickLinks Portlet
Content Syndication	•Lets you import up-to-the-minute news content from third-party data feeds that are part of the ATG Alliance Network or from other sources with an ATG XML-Feed Portlet and ATG Syndication Portlet.
Content Management	• Provides zone and task-list portlets for accessing content as part of a regulated workflow. • Works with ATG Publishing to offer check-in, check-out version control and a flexible work flow for approving content.
Search	• Gives users a range of advanced and foolproof tools to ensure that everyone finds what they're looking for. • Includes keyword, natural language and parametric search with Boolean operators for searching the full text of documents. • Contextual hyperlinking lets you provide users with automated links to related content.
Security	• Meets the most stringent security requirements for healthcare, national security and homeland security applications. • Integrates with LDAP directories as well as dedicated security solutions for single sign-on to give your users a seamless and secure experience.
Reporting	• Gives administrators reporting tools that capture extremely precise data on users' behavior streams and lets them better understand the portal's effectiveness. • Includes a base set of portal performance indicators to help measure ongoing effectiveness.
Analytics	• ATG Analytics module provides a complete set of visual data analysis tools that measure the effectiveness of the portal and provides an indepth understanding of how your portal is used.
Integrations with ERP/CRM	• Provides a complete solution — code, best practices and training — that integrates with many of the most popular ERP and CRM solutions.
Web Services	• Provides portlets that leverage emerging standards, such as SOAP, and easily integrates Web services into the Portal environment. • ATG is a member of OASIS and the Java Community Process to ensure that future XML

	and Web Services standards are well supported, and to simplify their use with ATG Portal.
Demo Implementations	•Includes demonstration implementations for partner, employee and customer sites, so you can get your portal up in running in as few as 30 days.
ATG Alliance Partners	• Compatible with over 25 Alliance partners that provide solutions for ATG Portal.

Sources:

ATG**,** http://www.atg.com/en/products/portal/

eWeek, Review: ATG Portal 6.0, November 4, 2003,
http://www.eweek.com/article2/0,4149,1372255,00.asp

4.2 BackWeb Proactive Portal Server

- **Summary**

Company and Product Name: BackWeb ProActive Portal Server

Support Platforms: Windows OS, (Solaris 7 or Solaris 8); SQL 2000 (SP2 or higher) Oracle 8.1.7, 9i

Features: Off-line viewing and Interaction Reporting; Combines proxy/cache, push; Innovative LAN traffic optimization techniques; Polite synchronization

- **Descriptions**

BackWeb ProactivePortal Server's mission is to give disconnected users transparent off-line access to portal and Web content. This portal server allows users to view company-hosted data when they can't reach the LAN, but it relies on a complex, proprietary approach. BackWeb manages this by maintaining local replicas of intranet content.

The concept behind BackWeb is simple and familiar: Identify the network-hosted content that users care about and make a copy of it on their PCs. ProactivePortal Server is not so much a comprehensive off- line viewing solution as it is a rebranding of BackWeb's existing push and caching technologies.

BackWeb ProactivePortal Server's mission is to give disconnected users transparent off-line access to portal and Web content. BackWeb manages this by maintaining local replicas of intranet content. Whereas Lotus set the standard for this approach, BackWeb

extends off-line viewing to shops without a Lotus back end, something IT departments need.

BackWeb administrators control what is replicated to users. They set up user subscriptions (users can also select their own subscriptions) and create special push packages that are delivered to selected groups of users. Authors must add tags, expressed in BackWeb's proprietary OTML (off-line tagging markup language), to documents in order to identify related files and to mark content that can't be viewed off-line. In our view, an off-line solution shouldn't require content changes. BackWeb's administrative overhead is too high.

BackWeb keeps users' local replicas in sync by shipping compressed packages of site changes to them while they're connected. BackWeb uses "differencing" to send only the portions of files that have changed since the last update. It compresses the data to optimize bandwidth utilization.

BackWeb also performs what it calls Polite Communications, watching the network and sending updates during dips in activity. When traffic rises, BackWeb waits for things to quiet down before it starts sending again. And clients that disconnect during transfers don't have to start over from the beginning. The BackWeb client resumes interrupted transfers at the point they halted.

Another BackWeb innovation is NeighborCast, a sort of peer-to-peer relaying. Instead of blasting all replication data to clients directly from the server, clients that subscribe to identical data can copy the changes from each other. This is a cool concept, but it doesn't help off-line users. Unless you're lucky enough to share a hotel room with someone who reads the same pages you do and who has already downloaded them, you'll still have to wait for a server connection to replicate.

In ProActive Portal Server, BackWeb tried to combine push, proxy/cache, LAN-usage optimization, and off-line viewing into a single solution that works with any portal or intranet.

Pricing at $50,000 for the server plus $100 per seat.

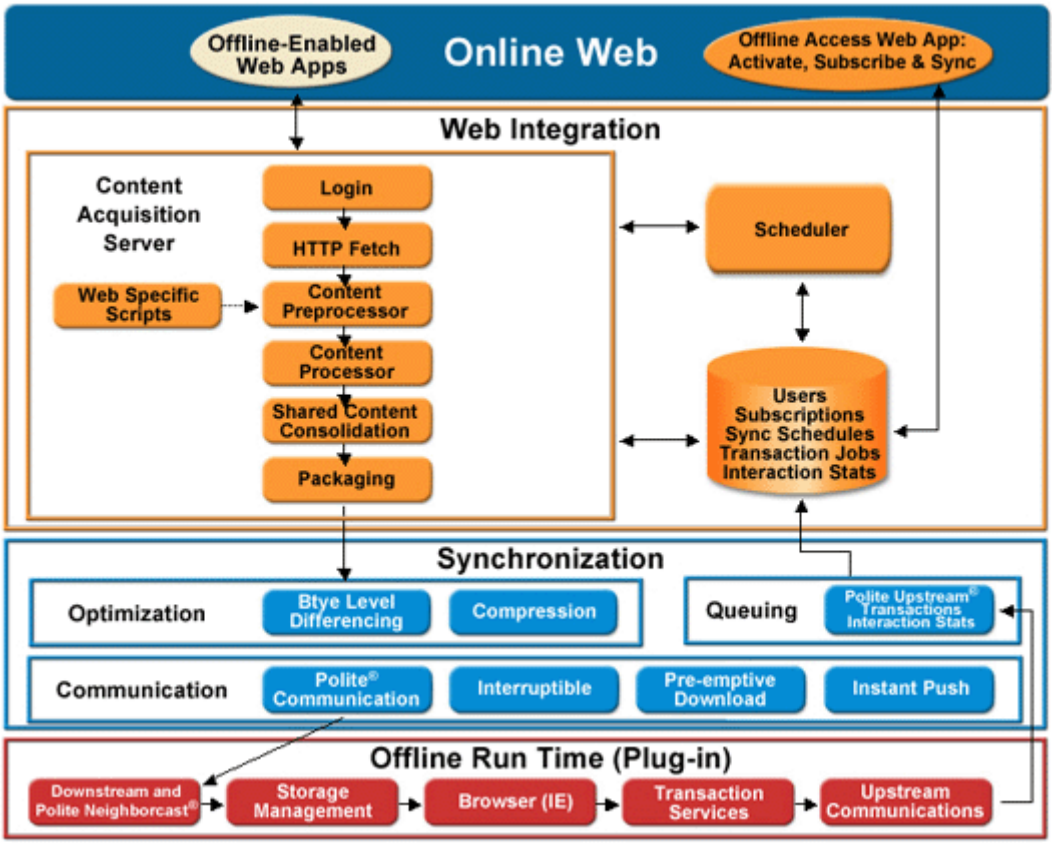


Fig. 4-1. BackWeb Offline Access Server Architecture Diagram

Sources:

Tom Yager, Portal unplugged, InfoWorld, July 29, 2002,
http://www.findarticles.com/cf_dls/m0IFW/30_24/89882650/p1/article.jhtml
BackWeb, http://www.backweb.com/products/html/pps.html
Michael W. Muchmore, Portable Portals, PC Magazine, August 1, 2002,
http://www.pcmag.com/article2/0,4149,383291,00.asp

4.3 BEA Weblogic Portal 8.1

- **Summary**

Company and Product Name : BEA Weblogic Portal 8.1

Support Platforms: wide variety of hardware, operating systems, and databases.

Features: Unified portal framework; Portal lifecycle management; real-time and archived communication; Support for standards; Business services including e-Commerce

- **Descriptions**

BEA is often regarded as an application server and business integration vendor, but it has also become one of the top players in the EIP market. WebLogic Portal 8.1 provides some of the best portlet and application development tools found in any portal, given BEA's background.

WebLogic Workshop, included with WebLogic Portal, is probably the best tool for creating portlets, Web applications and Web services. WebLogic Workshop provides easy drag-and-drop capabilities, action workflows and detailed customization options. The only negative in this tool is that it is a client-based Java application, rather than a browser-based tool. And all these applications and portlets are built using common languages and standards, such as JSP, XML and SOAP. The Workshop also includes several extensions that make it possible to add powerful capabilities to the portal, including content management integration. In addition, the user can create personalized content for portal users based on their activity within the portal.

WebLogic Portal's new browser-based administration interface made it very easy to manage multiple portals and applications. The user can define detailed role and user rights, as well as define delegated administrators for different areas of our portals.

BEA WebLogic Portal 8.1 is priced at $57,000 per CPU and includes WebLogic Workshop and a clustered version of WebLogic Server 8.1.

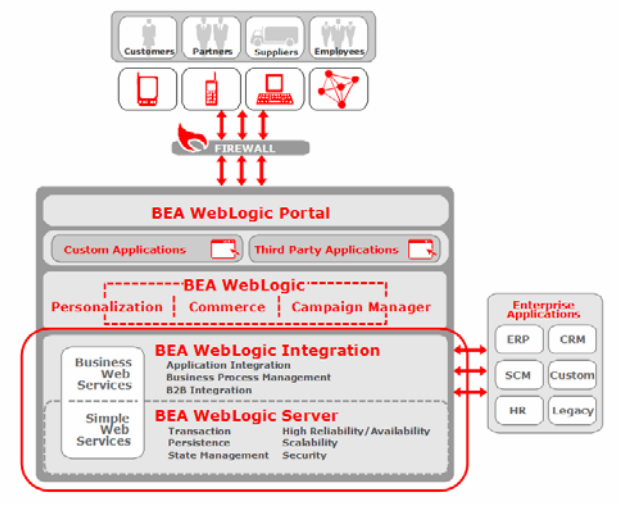


Fig. 4-2 Overall architecture of BEA Web Logic

Sources:

BEA, www.bea.com/framework.jsp?CNT=index.htm&FP=/content/products/portal

eWeek, Review: BEA Weblogic Portal 8.1

http://www.eweek.com/article2/0,4149,1372256,00.asp

4.4 CleverPath Portal

- **Summary**

Company and Product Name : CleverPath Portal

Suppoprt Platforms: multiple J2EE-compatible application server environments, IBM WebSphere, BEA WebLogic, Sun ONE and Oracle9iAS.

Features: Multiple, Personalized Workplaces; Wireless Support; Support Web Services; Extensive Portlet Library; Spidering; Automatic, Query-Based Categorization; ADA Section 508 Support; Broad International Support; Unparalleled Open architecture; Real-Time Collaboration and Communities

- **Description**

CleverPath Portal 4.51 has similar interface for many of the products in the CA portfolio. CleverPath Portal, which has its roots in the old MyEureka portal, is a highly capable platform, if lacking somewhat in flash.

CA seems comfortable with treating the product as a Java server application, even providing information on how to deploy the portal .war file to any compliant J2EE server. This makes it possible to deploy the CleverPath portal to almost any platform and application server, although, for the less adventurous, CA provides good installation routines for Windows and Unix platforms.

All administration of CleverPath is done through the main portal interface. It isn't the prettiest or most interactive administration interface, but every task option was easy to find and carry out any number of configurations and template edits.

In the stripped-down interface's favor, user administration is easier in CleverPath than in any other EIP. CleverPath's rights options are not as detailed as the other portals', but the user activity option in the main interface quickly shows which systems are using the portal.

The CleverPath portal comes with a large set of prebuilt portlets, and creating simple portlets is easy in tests. Also available is a detailed software development kit for creating Java server and XML-based portlets.

Like many portals, CleverPath Portal includes support for wireless access.

CleverPath Portal 4.51's price is tier-based, ranging from $20,000 for the smallest Intel-based servers to $500,000 for the largest multiprocessor machines running Unix operating systems.

Fig. 4-3 CA CleverPath Portal Suites

Sources:

http://www3.ca.com/Solutions/Solution.asp?ID=303

http://www3.ca.com/Solutions/Product.asp?ID=262

eWeek, Review: Review: CleverPath Portal 4.51, November 4, 2003, http://www.eweek.com/article2/0,4149,1372257,00.asp

4.5 Glue Code Portal Foundation Server

- **Summary**

Company and Product Name: Gluecode Portal Foundation Server (PFS)

Support Platforms: Operating Systems: Red Hat Linux, Microsoft Windows 2000/XP; Web server: Apache 1.3; Application server: Tomcat 4.1.1.2 (JBoss 3.0.3 optional); Servlet Engine: Tomcat 4.1.1.2 ;Database: HypersonicSQL (JDBC integration included)

Features: Open-source solution; Granular Access Control; Portlet Administration and Creation Standards-Based (JBoss, J2EE and Apache)

- **Desecriptions**

Gluecode Portal Foundation Server is a Java-based portal framework that enables companies to easily build, deploy, and maintain enterprise portals at a significantly reduced cost. Utilizing DataPower's patent-pending XG3™ technology providing the world's fastest XML processing available, Gluecode's integration with the XA35 solves the problem of scaling portal users and content while significantly reducing server infrastructure costs.

Gluecode Portal Foundation Server is the most broadly distributed portal framework today, with an audience reach of over 400,000 users through distribution relationships with Redhat and the JBoss application server. Gluecode provides the backbone for business automation through dynamic content processing and workflow within the portal. Traditionally, companies have relied on resource-intensive, batch pre-processing of data in an external application, which often results in dated, obsolete information being presented in the portal. The Portal Foundation Server significantly reduces latency by assembling raw content feeds from heterogeneous data sources, including XML, SOAP, JSP, and JDBC, and performing single-step XSL transformations in real-time to deliver personalized applications. Users are empowered with the latest information, and can respond quickly by using the Portal Foundation Server to execute business processes, and to communicate effectively with partners, customers, and employees.

Gluecode Portal Foundation Server bundled with the DataPower XA35 XML Accelerator is available for purchase immediately for $49,000.

Sources:
DataPower, http://www.datapower.com/newsroom/pr_031003_gluecode.html
Gluecode, http://www.gluecode.com/website/html/PFS.html

4.6 Hummingbird Enterprise Portal 5.0

- **Summary**

Company and Product Name : Hummingbird Enterprise Portal 5.0

Support Platforms:

Features: Very good security features for document and system; Excellent native search and discovery features including concept-based searches, parametric searches and fuzzy logic capabilities; Point-and-click personalization; Messaging delivers content using Mobile e-Clip; Integrates collaborative capabilities; Supports native automatic file type conversion for more than 200 file formats; Single sign on utilizing NT, NTLM, NIS, LDAP or NDS through the Hummingbird Common Authentication Protocol (CAP);

- **Descriptions**

Hummingbird Portal offers a fully customizable Web-based workspace that enables centralized access to business-critical applications, information, and resources, including both structured and unstructured data sources. It provides unsurpassed integration of existing enterprise resources, offers seamless integration with all components of Hummingbird Enterprise - a fully integrated Enterprise Information Management System (EIMS) - and accommodates any new solutions adopted throughout the enterprise via e-Clip plug-in.

Hummingbird Portal features advanced native search and categorization capabilities

that provide true federated search-enabling users to search across the entire range of both structured and unstructured enterprise content from a single query. Not only can users search enterprise information sources, but portal content as well.

Hummingbird Portal is a full-featured enterprise portal with strong security features, good scalability, and very good search capability. Organizations can leverage existing security models, including LDAP, NTLM, NDS, and Netegrity SiteMinder, to establish user profiles for Hummingbird Portal.

Administrators can control access at a granular level via a straightforward interface.

Hummingbird Portal allows administrators to create, view, update, and delegate permissions and access rights to applications, sources, portal communities, and even documents - all from an intuitive security profile "grid." Another unique capability of Hummingbird Portal is the provision of user activity logging to track such elements as session times, community access, document downloads, and content viewing. Administrators can also run user activity reports to allow for analysis and measurement of portal implementations.

The look and feel of Hummingbird Portal is completely customizable, allowing organizations to tailor the interface design to match graphic standards or functionality layout and design. Organizations can also take advantage of an advanced developer kit

to build custom e-Clip plug-ins for application integration, content access and delivery, and other specific requirements.

Designed to leverage the power and range of enterprise content management capabilities of Hummingbird Enterprise, Application Collaboration enables Hummingbird Portal to provide seamless cross-application functionality between Hummingbird BI, Hummingbird DM, and Hummingbird Collaboration, as well as between these solutions and business systems such as Siebel and SAP.

The API of the EIP gives developers the ability to create what Hummingbird calls e-Clips: plug-in XML-based modules that enable other applications to fit into the portal framework. An e-Clip delivers content to EIP users by reformatting information from text and HTML sources and it can also deliver complete interactive applications such as a calculator, a navigation bar, or a user page editor through the Hummingbird EIP. Moreover, administrators can make a selection of e-Clips available to users, who can then use them to construct a personalized home page by plugging in new applications.

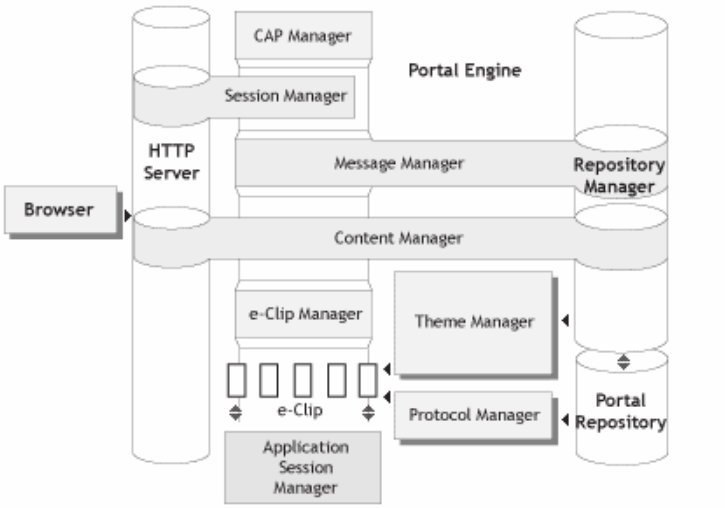


Fig.4-4 Architecture of Hummingbird Portal

Sources:

Meta Group, Evaluation of: Hummingbird Portal, 2001

Knlowledge Partner, Hummingbird Portal Features,
http://www.knowledgepartners.com.au/portal_feat.htm

Hummingbird Communications, The Hummingbird EIP, December 1999

4.7 IBM Web Sphere portal

- **Summary**

Company and product Name : IBM Web Sphere portal

- **Descriptions**

IBM's WebSphere Portal is a big player in the portal market. With the release of Version 5.0 of its portal platform, WebSphere Portal is now fully deserving of its spot among the top EIP products in the EIP market.

WebSphere Portal 5.0, improves administration, document management, search, and collaboration. Moreover, two included portlet builders (for Domino and SQL) enable business analysts to quickly access and manipulate data in enterprise applications.

Significantly, WebSphere Portal 5.0 integrates five common functions that were disjointed in Version 4.2. Lotus Collaboration Center 5.0 combines a people-finder portlet, Lotus Team Workplaces (QuickPlace 3 portlet), Lotus Web Conferencing (Sametime 3 portlet), and Lotus Notes e-mail, calendar, and to-do lists. Now Lotus users can quickly create a portal page with the majority of collaboration options they would normally use.

Beyond permitting subscriptions to syndicated content (such as Moreover, Hoovers, or NewsEdge), WebSphere Portal introduces a new Document Manager. This release also provides basic on demand" editors for viewing and editing rich text documents, spreadsheets, and presentations within the portal's user interface. Web content publishing tools allow users to contribute information to a site in a simple yet controlled manner. Content publishing functions then supervise (based on roles) what content each user can see or change, and coordinate approval and publishing processes. Campaign management tools are yet another significant part of tailored content publishing.

The WebSphere Process Choreographer provides its visual interface to rapidly construct a workflow; the system then alerted users when they had pending approvals and other tasks requiring attention.

IBM's Portlet Writing Tool now makes it possible to create portlets that communicate with one another. This allows users to change data in one portlet and have it affect the output in linked portlets. Creating these portlets requires simply entering specific JavaServer Pages tags, and IBM provides sample portlets that have this capability. In

fact, WebSphere Portal 5.0 includes many new portlets that can be deployed to end users. Several of these portlets improve on the integration between WebSphere Portal and Lotus Notes and Sametime. It's not surprising that WebSphere Portal would have such tight integration with Lotus applications. Taking easy portlet integration an important step further are two new specifications: JSR (Java Specification Request) 168 and WSRP (Web Services for Remote Portals).

The WebSphere users can automatically transcode the page into WML (Wireless Markup Language) for WAP-enabled (Wireless Application Protocol) devices or cHTML (Compact HTML) for i-Mode phones. Some portlets have more specialized wireless and offline capabilities for handhelds.

Although WebSphere Portal competes in a crowded market, its performance, enterprise focus, usability enhancements, and open standards make it a strong challenger to more established products.

WebSphere Portal 5.0 is available in an Express version for small businesses ($68 per user or $26,400 per processor); an Enable version with the base portal capabilities ($71,000 per processor); and a full-featured Extend version ($115,000 per processor), the version we tested.

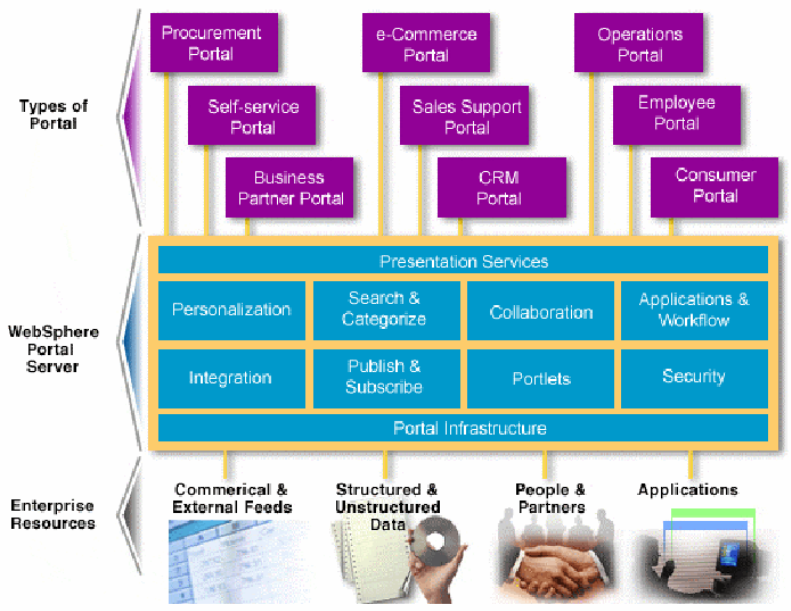


Fig. 4-5 Overall architecture for WebSpere Portal Server

Sources:

Jim Rapoza, Review: WebSphere Portal 5.0, eWeek, November 4, 2003, http://www.eweek.com /article2/0,4149,1372251,00.asp

Mike Heck IBM polishes the portal InfoWorld, October 17, 2003, http://www. infoworld.com/article/03/10/17/41TCwsportal_1.html

4.8 Microsoft SharePoint Portal Server 2003

- **Summary**

Company and product Name : Microsoft SharePoint Portal Server 2003

Support Platforms:

Features: Consistent SharePoint Products and Technologies experience for users, developers, and IT professionals Consistency and integration with the Microsoft .NET Framework Integrated storage strategy Trustworthy Computing: security and reliability

- **Descriptions**

Microsoft Office SharePoint Portal Server 2003 provides portal services, integrated instant messaging, discussion boards and document-management services. SharePoint can be used alone or as part of Microsoft Office 2003. Within Office, SharePoint lets you design documents or spreadsheets that can be used on Web pages and automatically updated online whenever you save changes offline; check documents in and out of the different Office products; and set up discussions of documents right in the application you use to view and edit that document.

The new release's end-user interface and personalization options are by far the best of any available EIP. One of our favorite features in this area is the new My Site capability. With this feature, portal users can create personalized pages on the portal that have public and private sides. This allowed us to post information to be shared with others while maintaining the same portal organization capabilities for access to private information, documents and applications. It is also possible to offer end users a wide variety of personalization options in SharePoint Portal Server 2003. The users could completely control the look and feel of the portal so that it looked and worked

differently for each. However, it is also possible to turn off this kind of advanced personalization for companies that want greater control over the system.

Most of SharePoint Portal Server 2003's strongest collaboration features, such as discussion groups and meeting work spaces, come as a result of the portal's integration with Windows SharePoint Services.

The best of these are the new Audience capabilities, which make it possible to direct personalized portal content to specific types of portal users. Using this capability, it is possible to define an audience based on a variety of properties and rules.

The portal's My Site feature can be extended to collaborative groups through the new Team Sites feature, which works in the same way as My Sites but makes it possible to add users and manage Team Sites almost as a unique collaborative portal site.

SharePoint's indexing and searching are excellent. In addition to improvements in the categorization, ranking and indexing capabilities in the server, the portal now offers increased sorting options for search results and the ability for site administrators to offer certain documents to specific queries. The indexing function not only indexes properties, titles and other meta data, it also indexes the contents of documents it recognizes--all Microsoft Office documents, XML, TIFF image files and discussions. As a bonus, Adobe offers a PDF index plug-in for SharePoint. The OCR in the TIFF indexing is some of the best.

Management of the portal has been enhanced in this version, especially in areas such as topic creation and management, portal analysis, and multiserver environments. We also appreciated the new single-sign-on feature that let us pass portal authentication information to third-party integrated portal applications.

Pricing for SharePoint Portal Server 2003 starts at $3,999 per server and $71 per user, with volume pricing available. An external connector license, which enables an unlimited number of external, nonemployee user-access connections, is priced at $30,000 per server

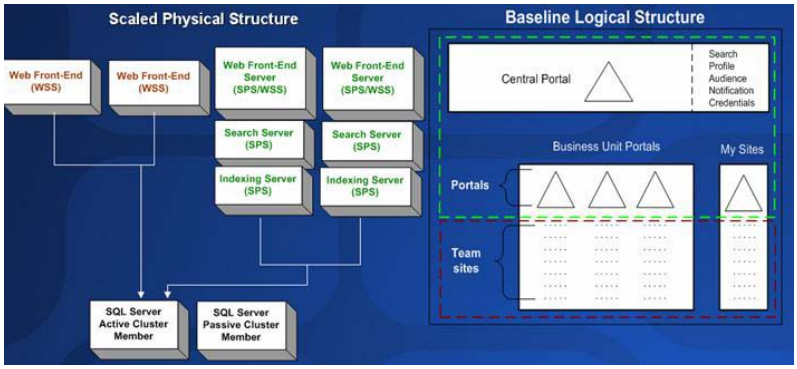


Fig. 4-6 Microsoft SharePoint Organization

Sources:

Richard V. Dragan ,Microsoft SharePoint Portal Server 2001 (Beta), PC Magazine, June 12, 2001, http://www.pcmag.com/article2/0,4149,142380,00.asp

Jim Rapoza, Review: SharePoint Portal Server eWeek, 2003 November 4, 2003, http://www.eweek.com/article2/0,4149,1372252,00.asp

Don MacVittie Microsoft Office SharePoint Portal Server 2003: Open to Improvement Network Computing, Nov 13, 2003, http://www.networkcomputing.com/showitem.jhtml?docid=1423sp1

4.9 Novell exteNd Director 4.1

- **Summary**

Company and product Name : Novell exteNd Director 4.1

- **Descriptions**

The most prominent features of Novell exteNd Director are the portal platform for web services and the mobile application. It also strongly support the standards such as WSIA (interactive applications), WSRP (remote portlets), JSR 168 (local portlets), JSR 170 (content management), JSR 107 (caching), JSR-94 (rules), RFC 2518 and WebDAV Interoperability Group (WebDAV).

Novell exteNd Director is an interaction and portal server that enables IT organizations to deliver web-based applications. IT developers can define interaction between systems,

users and applications. Using Director, developers can rapidly build portal and advanced web-based applications that consolidate information from different sources and deliver relevant views to key business users. Personalization, content management, user profiling, workflow, rules management, searching, security and wireless device support enable the design of dynamic business applications. Using Director's rich development environment and interaction services, developers can rapidly build J2EE-based portal applications that consolidate information from different sources and deliver relevant views to key business users. Applications built with Novell exteNd Director are 100% standards-based and can be deployed to leading J2EE application servers.

Sources:

Novell, http://www.novell.com/products/extend/director/

Richard V. Dragan, Novell Portal Services 1.5, PC Magazine, August 1, 2002, http://www.pcmag.com/article2/0,4149,382111,00.asp

4.10 Open Text Coreport 5.1

- **Summary**

Company and Product Name : Open Text Coreport 5.1

Featrues: Enterprise Integration Portal Framework; Role-based Access; Dialogue Management; Single Sign-On; Support for a wide variety of wireless devices, including PocketPC, Palm, RIM, WAPenabled, and i-mode cell phones; Complete Windows Integration

- **Descriptions**

OpenText Coreport 5.1's acquired from Corechange has strong usability and scalability. The package includes wireless support and connectors to data sources and applications as standard equipment.

Coreport's design tools support an attractive interface design for creating departments or work groups. The process of placing objects on the interface is not entirely visual. By default, a placement control pops up and lets you shift its position, tweak its size, or hide components, but this took some getting used to. Much better was Coreport's ability

to change the order of content tabs within a portal easily—a welcome and intuitive feature.

Though we needed separately priced modules to pull off our database and Web connectivity testing, Coreport includes some 250 portlets. Working with Web services is also a readily available option.

Coreport supports Microsoft Web Parts—part of the Microsoft Digital Dashboard technology, which can merge HTML, XML, and scripts. This capability requires Internet Explorer as the browser client, illustrating the extent to which this portal is tied to Microsoft products. Coreport is the only portal that can run Office programs from within a browser - ideal for locking down preconfigured groups of desktops.

Besides common collaboration features such as chat and e-mail through Microsoft Outlook Web Access, Coreport offers good connections to business-intelligence and decision-support systems. For searching and indexing, OpenText recommends the included Autonomy Navigator.

Coreport requires Active Directory and a server version of Windows. After installing these prerequisites, the user can manage Coreport through the standard Management Console in Active Directory or through Internet Explorer. To replicate Active Directory attributes easily, a SQL Server is required. Coreport performs audit trails, which let you track individuals' portal usage.

Coreport offers excellent scalability by assembling disparate streams of content rather than routing them through a single server. The support for single sign-on is also well done. Excellent wireless capability is also built-in: Coreport can target Pocket PC, WAP, and Palm OS devices.

Though its Windows-centric view of the world limits its appeal for some businesses, Coreport is an enterprise-worthy solution that builds on the natural strengths of Active Directory for modeling organizations and managing access rights.

Table 4-2 Features of Coreport

Features	
Access Control	Single sign-on access to enterprise applications, content and services—from any browser device

Role-based	Personalized content and access, based on users' roles and relationship to the enterprise—the Coreport portal interacts directly with Active Directory at user login to authenticate the user and create a profile based on the user's roles and responsibilities
Audit/Trail	Each user's portal access reflects their current and complex combination of roles, group memberships, and relationship with the enterprise
Wireless	Personalized portal and single password sign-on can be extended to wireless devices, including AvantGo, RIM, and WAP-enabled and i-mode cell phones.
Content Management	Robust search capability that supports aggregation, categorization, hypertext linking, personalization, and retrieval of both structured and unstructured information from corporate applications, legacy information systems, and the Web.
Messaging	Support for instant messaging, threaded discussions and community chats.

Sources :

Richard V. Dragan, Corechange Coreport 5.1, PC Magazine, August 1, 2002 http://www.pcmag.com/article2/0,4149,382111,00.asp

4.11 Oracle 9iAs Portal

- **Summary**

Comapny and Product Name : Oracle 9iAs Portal

Features**:** Richer Page Layout and Presentation, Greater Publishing Flexibility via WebDAV, Support, Enhanced Search Facilities, Improved Page Templating, New Page Building Model, Enhanced Content Publishing, Pre-Built Portlets Across 9iAS, Hosted Portals, Wireless Portals

- **Descriptions**

Oracle9i Application Server (AS), which incorporates a Java-based framework for building and customizing a portal. The Oracle portal Web interface is similar to that of many other portal products. It consists of personalized portal "pages" that are subdivided into "regions." Each region on a page is formatted using HTML or XML/XSL and contains one or more "portlets" that provide access to a specific business

content source such as a Web site, database application, or newsfeed. A portlet can also point to an Oracle portal "content area" that acts as a central store for managing shared documents, images, and so on.

There are two types of portlets: Web portlets and database portlets. A Web portlet communicates with the Oracle portal using the XML-based Simple Object Access Protocol, so you could develop a portlet as a Web service. A database portlet lets the user interact with data and is maintained as a stored procedure in the Oracle portal database. You can write these portlets in PL/SQL or in Java with a PL/SQL wrapper. The product comes with several built-in portlets for connecting to newsfeeds, linking to external applications, building a list of favorite Web links, performing searches, and so forth. There are also portlets for building portal pages, portal content areas, and portal Web applications.

A portal content area consists of a hierarchical set of folders that contain items such as files, Web URLs, pointers to other folders, Java applications, multimedia objects, and so on. Each item has attributes such as display name, description, and search keywords. This offers the convenient way for the effective content management. The Oracle portal page can also be used to build Web database applications. Web database applications consist of components such as menus, forms, charts, and reports you use primarily to manage and access Oracle database data from the Web environment.

The Oracle portal is implemented as a three-tier architecture consisting of a Netscape or Microsoft Internet Explorer Web browser, middle-tier Oracle9iAS, and back-end Oracle8i Standard or Enterprise Edition database server.All Oracle portal definitions and content areas are stored in the back-end Oracle database server, which is known as a portal "node." You can use multiple nodes to improve performance. Note that for mobile and wireless users, Oracle provides a wireless option for Oracle9iAS that you can use as a portal-to-business content, but this feature is not yet integrated into the Oracle portal framework.

The middle-tier Oracle9iAS contains an Apache HTTP server that includes a built-in PL/SQL dispatcher to translate HTTP requests into calls to the portal database. The application server uses a parallel engine to assemble portal pages and issue requests in parallel to business content providers. The server can cache portlets in a file system for improved performance. You can use multiple application servers to scale up for high demand.

Oracle 9iAS includes a login server for user authentication and management and to provide several options for supporting a single sign-on capability to business content

that may be dispersed across multiple back-end systems. This login server can optionally use the services of an external LDAP-compliant directory such as the Oracle Internet Directory.

Princing: Part of Oracle9iAS; Standard Edition costs $200 per named user license and $10,000 per processor license, Enterprise Edition costs $400 per named user license and $20,000 per processor license.

Sources:

Colin White, Portal Assimilation , Intelligent Enterprise, November, 12, 2001, http://www.intelligententerprise.com/011112/417products1_1.shtml

OracleAS Portal, http://portalcenter.oracle.com/servlet/page?_pageid=356&_dad=ops&_schema=OPSTUDIO

Oracle9iAS Portal Quick Tour, ttp://otn.oracle.com/products/iportal/getstart/gsmain.htm

4.12 Plumtree Portal Platform

- **Summary**

Company and product Name : Plumtree Portal Platform

- **Descriptions**

Plumtree is moving into the cross-platform market and is focused on Web services. Plumtree offers a strong option but falls slightly behind Vignette's in cross-platform support, content management, and user management.

Many of Plumtree's portlets standard cost extra. The rich choice of portlets remains one of the best reasons for considering this portal. Although many of Plumtree's portlets are simple, having components ready-made for almost every conceivable connection has a lot of appeal.

Plumtree Corporate Portal administration and user interfaces are the same, with different options and applications available according to a user's rights. A wide variety of management options are available, providing almost-limitless configuration and extensibility options. In addition, Corporate Portal provides other options for building

various communities and subportals, making it possible to create almost any necessary combination for different company and user group requirements.

Permissions are nicely granular, and by default, you assign them to user groups in four basic categories: administrators, content maintainers, content managers, and ordinary end users. You can also easily add more groups of your own.

Crawling files, Web content, and Microsoft Exchange data is easy with the well-integrated Verity search engine. The process can be scheduled as a background job and off-loaded to different servers for improved performance. We also like that imported content can be spidered and filtered into separate directories using a wizard. This capability offers approvals, but beyond that, there's not much in the way of content management.

Plumtree Corporate Portal supports Web services, using a wizard to encapsulate SOAP calls. And it can syndicate content using common standards, including raw HTML, HTML with JavaScript, XML Rich Site Summary (RSS), and XML News. Plumtree's commitment to Web services and new cross-platform compatibility shows that the company is not sitting on its laurels as a portal pioneer.

Pricing for the entire Plumtree portal suite starts at $90,000 for 250 users. Variable pricing is also available based on components purchased.

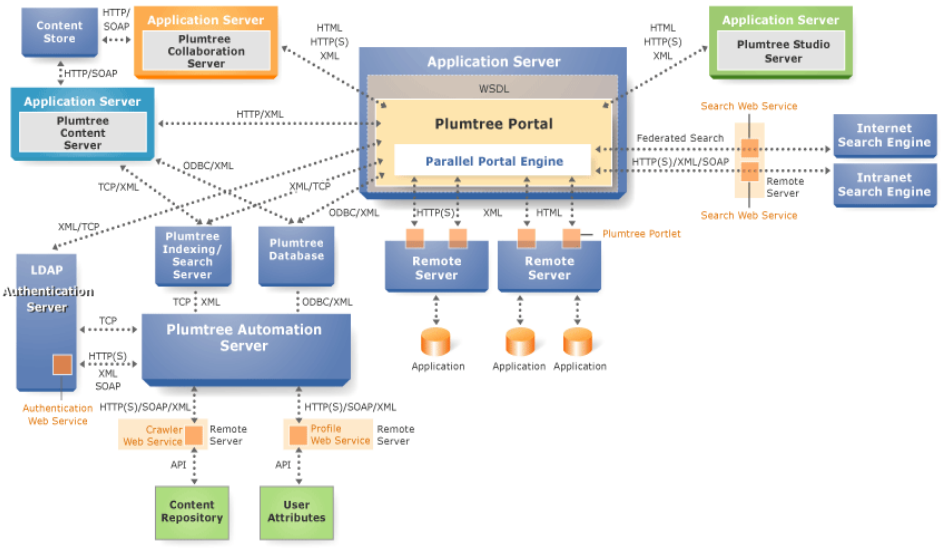


Fig. 4-7 Portal Suite of Plumtree

Sources:

Richard V. Dragan, Plumtree Corporate Portal 4.0, PC Magazine, June 12, 2001, http://www.pcmag.com/article2/0,4149,142381,00.asp

eWeek, Review: Plumtree Corporate Portal 5.0 November 4, 2003 http://www.eweek.com/article2/0,4149,1372258,00.asp

Richard V. Dragan, Plumtree Corporate Portal 4.5WS , PC Magazine, August 1, 2002 http://www.pcmag.com/article2/0,4149,382137,00.asp

Plumtree, http://www.plumtree.com/products/platform/

4.13 PostNuke

- **Summary**

Company and product Name : PostNuke

- **Descriptions**

PostNuke portal (available through http://phpnuke.org/ and http://www.postnu ke.com/), software released under the GNU/GPL license, can be a gateway into managing a small-business or personal portal.

At its heart, PostNuke is both an extensible framework and an out-of-the-box portal that offers administrative tools and a set of portlets, or modules, in PostNuke jargon, all glued together by the PHP scripting language. PostNuke can run on any Web server that supports PHP. Its database management system maintains identity profiles and module data. PostNuke can connect to many databases including Microsoft SQL Server and PostgreSQL. Most implement tations use the open-source MySQL.

PostNuke offers several default modules. Among the more useful are basic Web site statistics, site search, polls, and a file repository. Portal users can also access a news and reviews module using a mobile device through an included AvantGo transform engine. Users can choose from several themes and language preferences-especially welcome if your portal users are not all native English speakers.

PostNuke's roots as a content management system show up in its content submission and workflow features. The user can submit html content straight from the portal with

one click. An editor with authoring privileges can then check in, check out, edit, and approve documents before they're released.

An administration console accessible through a Web browser manages all the portal assets that can be modualized with size and position functions. Dozens of different themes, including many Flash animation themes, have been donated to the PostNuke community, but many of them are buggy and require some low-level programming.

To set up permissions, an administrator must assign a user to a group. Based on the group setting, a user is granted access to designated areas of the site, as well as read, write, and edit privileges. Error checking and notification of broken pages are useful, but they require coding.

PostNuke isn't intended for large-scale portal development. Nor does it have connectors for enterprise resource planning or customer relationship management software. But what it lacks in those areas it makes up for in well-executed design and a lower price.

Sources:

Sahil Gambhir, Take a Free Ride with PHP-Nuke, PC Magazine, August 1, 2002, http://www.pcmag.com/article2/0,4149,383290,00.asp

4.14 SAP mySAP Enterprise Portal

- **Summary**

Company and product Name : SAP mySAP Enterprise Portal

Features: Unification of workspace; Business intelligence and knowledge management

- **Descriptions**

SAP's Enterprise Portal Version 6.0 upgrade will include support for Unix and Windows servers, as well as WebSphere and .Net SDKs, and a localized Unicode character set that supports more than 20 languages, including most European languages as well as Chinese, Japanese and Korean.

Business Warehouse, upgraded to Version 3.5, will include real-time business intelligence capabilities, information broadcasting and streamlined alert messaging. At

the same time, NetWeaver's Exchange Infrastructure will include improved support for business-to-business, integrated business process management and extended versioning support for metadata.

NetWeaver Studio is a visual development platform used to build applications. It also provides capabilities to graphically create different screens in an application and supports code writing and code generation for visual elements to appear on a screen, according to sources familiar with the environment. Because Development Studio is based on NetWeaver developers can take advantage of the back-end connectivity that is part of NetWeaver to build in integration with SAP and non-SAP applications. The NetWeaver technology, part of SAP's Enterprise Service Architecture for Web services, includes SAP's Enterprise Portal; Exchange Infrastructure; and the combined Java 2 Platform, Enterprise Edition and proprietary ABAP Web application server. It also includes the Business Information Warehouse, Mobile Infrastructure, Composite Application Framework and Master Data Management module.

At the same time, portal administration has been simplified through an object-based administration model for a more streamlined interface for delegating access and control of portal components.

Table 4-3 Features of SAP Enterprise Portal

Features	Descriptions
Unification	Patented Drag&Relate technology for transparent navigation of independent data sources
Business intelligence	•One-step integration with mySAP Business Intelligence for robust reporting and analysis •Personalized distribution of timely information and cost-effective collaborative capabilities
Knowledge management	•Manage all facets of unstructured information, from collaborative authoring and publishing to advanced search and navigation of existing and portal-based repositories
Business packages	•Provide immediate value by delivering portal content in the context of users' business roles •Streamline problem solving by unifying information, applications, and services

Open solution	•A completely open solution that integrates SAP and third-party applications, unstructured documents, production reports, and Web content – regardless of source and format Open standards •Java and Microsoft .NET interfaces and support for XML, Web services, SOAP, UDDI, and WSDL
Security	•Supports for security standards like LDAP, Active Directory Services, SSL, PKI, and X.509
Single sign-on	•Access all authorized enterprise systems with just one logon, eliminating the need for multiple logon procedures and passwords
Scalability	Platform-independent, multiserver approach for true enterprise scalability
Administration	Completely Web-based administration without any local installation of tools
Accessibility	Anywhere, anytime access using Web browsers, wireless devices, and PDAs

Source :

Val Latzke, SAP Portals, DM Review in August 2001.

http://www.dmreview.com/master.cfm?NavID=193&EdID=3818

Renee Boucher Ferguson, SAP Drills Down on NetWeaver, eWeek, September 10, 2003

http://www.eweek.com/article2/0,4149,1261044,00.asp

Renee Boucher Ferguson, SAP Drills for Developers, eWeek, September 8, 2003

http://www.eweek.com/article2/0,4149,1253115,00.asp

4.15 Sybase Enterprise Portal Enterprise Edition 5.1

- **Summary**

Company and Product Name : Sybase Enterprise Portal Enterprise Edition 5.1

Support Platforms: Server Platforms: Microsoft NT, Windows 2000, UNIX operating systems; Application Servers: Tomcat 4.x, Web Logic 7.0, Web Sphere 5.0, Sybase Enterprise Application Server 4.x; Data Servers: Adapter Server Anywhere 6.x, Adapter Server Enterprise 12.5.x, Oracle 9i, PostgreSQL; Browsers: Netscape 4.7, 7.0, Microsoft Internet Explorer 5.0, 5.5, 6.0; Messaging Systems: MS-MQ, MQ-Series, Tibco

Features: Complete portal framework; Rapid portlet development tools; Centralized web administration; Advanced security framework; Support for enterprise application integration and mobile options.

- **Deseciptions**

Sybase Enterprise Portal 5.1 is typical of the EIPs that come from big database and enterprise information infrastructure vendors—including strong back-end and data integration capabilities. But Sybase Enterprise Portal features many of the capabilities found in products from EIP-only vendors, such as strong portlet development capabilities and intuitive interfaces. The Sybase EIP also features excellent standards support for integration and for Web services standards.

One of the most impressive features of Sybase Enterprise Portal is its user interface, which proved capable and intuitive. The end users can create portlets and unique portal pages and to share them with other portal users.

The Sybase EIP has solid workflow features for carrying out management tasks, and the browser-based Portal Studio interface is capable of tasks such as portlet and template creation and management.

Sybase Enterprise Portal provides many options for controlling users, roles and rights, but the interface for doing this is probably the least friendly of the portals. In addition, to perform some high-level management, a user had to access other Sybase application tools and interfaces.

Sybase Enterprise Portal does provide nice options for creating and linking portlets. Using the new messaging portlet capability, a user can create portlets on a page that would tie together and affect the data being shown in one another. This will be especially useful in analytical or customer service portlets. Sybase Enterprise Portal also now includes the ability to create single-sign-on portlets, where the portlet drives authentication to back-end systems.

Depending on the size and complexity of the implementation, pricing for Sybase Enterprise Portal 5.1 varies greatly. Information Edition, which includes only the portal interface and Portal Studio and is designed for small implementations, starts at $99 per developer and $4,000 per CPU. At the high end is Enterprise Edition, which is designed for high availability and large enterprise implementations. The cost of Enterprise Edition, the version we tested, is $4,000 per developer, $42,500 per CPU for development and testing, and $85,000 per CPU for deployed systems.

Table 4-4 Features of Sybase Enterprise Portal

Reatures	Description
Zero programming	Build portlets without programming using the easiest-to-use and most sophisticated portlet builder on the market. Portlets can be quickly created from the multiple sources, including Web, JSP/ASP, Databases, XML, HTML, and Web Services.
One-Click Capture	Sybase provides an advanced patent-pending content capture engine that parses Web content and stores the patterns, not the content, using an object orientated scripting language. At run-time, the Content Engine uses pattern matching to re-locate the same signature or content. The beauty of this approach is that if content has moved or changed, the engine has an excellent chance of finding the information.
"Click-cross" portlet interaction	Create portlet to portlet interaction without programming. The point and click "Click-Across" wizard allows users to easily link output data from one portlet to the input parameters of another portlet.
Content management	Sybase EP includes content management capabilities like document management as well as sophisticated content creation capabilities.
Collaboration	Sybase EP contains portlets that enable real-time and secure collaboration among team members.
Concept searches	Sybase EP includes a full featured, natural language, concept-based search engine. In addition, end-users can create their own search agents to automate the retrieval of relevant information.
Categorization	Sybase EP includes the ability to index data sources for use with concept search queries. These data sources include structured data such as ODBC-compliant databases, Lotus Notes, MS Exchange, as well as over 200 unstructured document types.
Federated portals	Sybase EP includes the ability to easily create separate portals for different communities within a single portal server, each with their own distinct look and feel and content.
Advanced Security Framework	Sybase EP includes authentication, authorization, data confidentiality/integrity, and auditing capabilities to ensure secured access to portal resources.
Application integration	Use the Portlet Builder to quickly integrate third-party applications into the portal using the single sign-on capability.
Openness	Sybase EP is an open platform designed to run with other vendor's products and technologies. It supports Java J2EE, COM, and PowerBuilder component models, and supports the market leading application servers and databases.
Scalability	Sybase EP was designed around a stateless architecture to ensure that it would scale in a distributed environment. In addition, the rendering of portlets or content is done in parallel to ensure consistently fast performance.

4.16 TIBCO Portal

- **Summary**

Company and product Name : TIBCO Portal

- **Descriptions**

TIBCO ActiveEnterprise (formerly called AvtivePortal) comes with excellent Web services support, real-time messaging, and a wide range of connectivity options. But it does not have the visual pizzazz of some of the other solutions.

One powerful metaphor TIBCO uses is the pass-through source of content, which lets PortalBuilder incorporate any existing site's output. If this code breaks because of a changed online source, ActiveEnterprise can automatically send e-mail alerts to administrators.

TIBCO's traditional strengths in messaging carry over to its portal, with real-time "push" content available through Rendezvous, the company's messaging middleware.

TIBCO portal solutions enable each user to personalize their portal view, increasing the efficiency of their interactions with business by providing convenient access to the information and interfaces they need.

TIBCO portal solutions provide a wide range of options for information display,

including HTML, Javascript, XML/XSL, ActiveX, Macromedia Flash and Java applets. Since all display elements are managed through templates, companies have complete design flexibility and can tailor pages, content, user personalization and error messages to corporate standards.

TIBCO portal solutions provide mechanisms to determine which information and services individual users or groups of users can access. TIBCO portal solutions support user management either with existing authentication mechanisms such as LDAP and NT Login Management, or with a cookie-based registration and authentication system.

On the downside, the administrative module is short on extras, but it's functional. Instead, TIBCO concentrates on corporate content. You'll want to watch pricing for the numerous PortalPacks that get ActiveEnterprise connected to different data streams, including Microsoft Exchange and Siebel. Tools for consuming Web services are among the best we saw anywhere.

ActiveEnterprise is based on J2EE and has some of the best cross-platform support. It can use a wide variety of directory servers, operating systems, databases, and application servers, and its support of SOAP and UDDI adds further versatility.

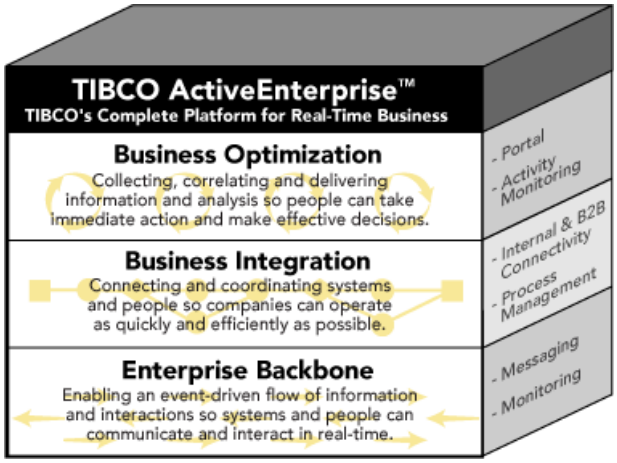


Fig. 4-8 Conceptual Structure of TIBCO Portals

Sources:

Richard V. Dragan, TIBCO ActivePortal, PC Magazine August 1, 2002
http://www.pcmag.com/article2/0,4149,382145,00.asp

TIBCO,
http://www.tibco.com/solutions/products/business_optimization/portals.jsp?m=d2

4.17 Viador BI-Portal

- **Summary**

Comapny and Product Name: Viador BI-Portal Suite, http://www.viador.com

Support Platforms: Windows NT, Windows 2000 and UNIX with International Language Support

Features: Publish and Subscribe Framework; Portal Explorer; PageBuilder; Workflow Services; Rules Engine; Event Management ; ServicesSchedule Services; Good Reporting solution; OLAP Analytic Presentation Tools;

- **Descriptions:**

The Viador BI-Portal is a business intelligence portal solution for working with an organization's valuable information and intellectual assets. The Viador BI-Portal can be used as a platform that integrates vital applications, document systems, databases, information feeds, reports, raw data, news sources, and calendars for delivery to any community of users - employees, partners, or customers. The Viador BI-Portal Suite is comprised of several products: Viador Report Server, Viador E-Business Intelligence, Viador E-Portal Express and Viador Sentinel.

The first piece of Viador E-Portal's powerful management system is the User Administrator. It manages users, groups, and roles; it also lets you manage data sources, including SQL and OLAP databases, and tweak system settings.

The most important management tool is undoubtedly Portal Explorer, which is also Java-based. This very capable Web console lets you publish content to individual user pages, as well as manage the layout of your content. You can place elements on the page using the Page Builder tool. If assigned permission from the administrator, a user can construct a default layout selecting from 29 canned color schemes.

Unique for its administrative functionality, Viador E-Portal uses Java on the client as well as on the server. The advantage of relying on Java is that many of the Viador E-Portal admin tools look and behave like traditional applications. Though these administration tools are powerful, the administrator must jump a good deal between separate windows.

Viador E-Portal uses the Ultraseek search engine, which is administered through a Web-based console. Ultraseek's standout feature is its precise control over spidering options. Ultraseek will index Web, file, and e-mail data sources. The disadvantage of having a separately functioning search engine is that you must attach "collections" to your portal pages in yet another admin console within Viador E-Portal itself—a simple process but yet another window to open and another tool to learn.

Unique to Viador E-Portal is built-in support for data-mining tools. In the base product, you can attach to data warehouses powered by vendors like IBM, Microsoft, Oracle, and SAP. The separate Business Intelligence add-on module ($75,000) provides a set of Java-powered Web pages for controlling data-mining queries, analysis, and reporting. Viador is currently working on a Mobile Application Platform (MAP) add-on for wireless support. Viador E-Portal runs on Solaris and AIX as well as Windows, an important consideration since it is powered by Java

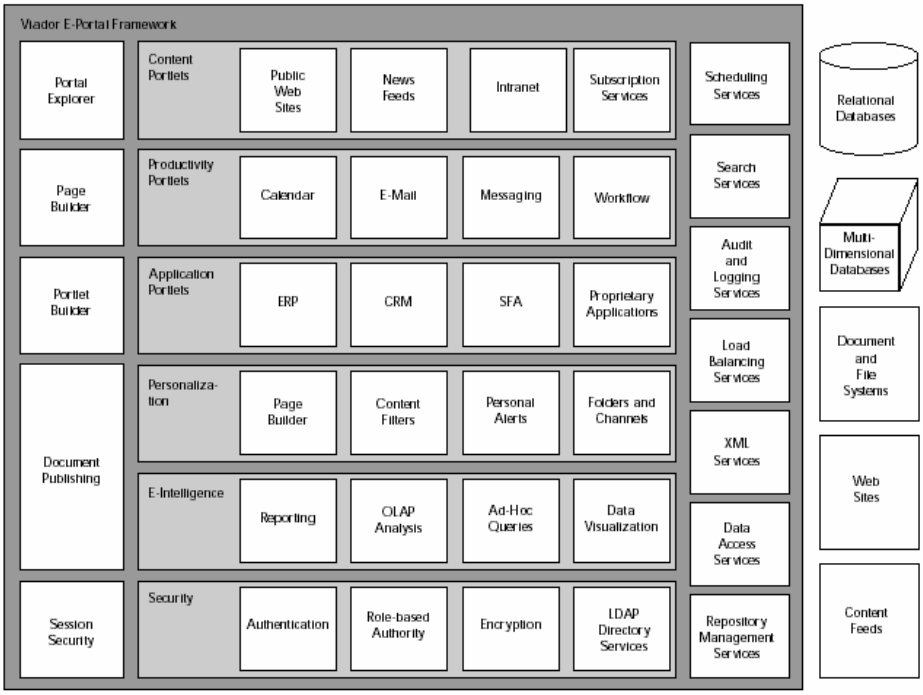


Fig. 4-9 Page Builder of Viador Portal

Sources:

Richard V. Dragan, Viador E-Portal Express 3.6, PC Magazine, June 12, 2001, http://www.pcmag.com/article2/0,4149,142382,00.asp

Viador, http://www.viador.com/products/product_over.htm

4.18 Vignette Application Service V7

- **Summary**

  Company and Product Name: Vignette V7 (http://www.vignette.com/)
  Base Product: Epicentric EIP
  Support Platform: Microsoft Windows 2000 Server; Sun Solaris; IBM AIX,
  DB: Oracle; Sybase; IBM DB2; Microsoft SQL Server, Servers: IBM WebSphere; BEA WebLogic; Macromedia Jrun;Apache Jakarta Tomcat
  Clients Tools: Microsoft Internet Explorer; Netscape Navigator; Wireless devices

- **Description**

Vignette V7 comprises six comprehensive, modular application services: content, portal, collaboration, process, integration and analysis. Vignette V7 Portal Service is based on the Epicentric EIP, which Vignette gained through its acquisition of Epicentric. Vignette was a vendor for content management platform. Vignette Portal Suites (Group suite, Business suite and enterprise suite) becomes even more open and flexible than Epicentric was, with excellent and well-integrated support for Web services standards. And, like most Java server-based portals, Vignette Portal Suites support a wide variety of platforms and application servers.

Although Vignette Application Portal should definitely be considered by any company already using the Vignette content management platform, the portal will also be a good fit for non-Vignette platforms because it can easily integrate with nearly any enterprise application (including non-Vignette content management systems).

Vignette Application Portal's administration interface includes the best combination of streamlined simplicity and interactive capability than other portals products. The location of tasks and settings always made sense, and each option provided a wide variety of customization settings and parameters. The Vignette portal also provided excellent user, groups, roles and rights management features, which are centrally managed and very configurable.

The Vignette Application Portal has good portlet and application development options and includes a solid set of sample portlets. The new Web Services Manager made it easy to create and consume Web services and customize them to fit our portal.

A user can define groups of users that were created dynamically through certain criteria (for example, those logged in to our sales site from the Eastern time zone). Using these dynamic groups, a user can create rules to send personalized content to these users through a specialized portlet.

The main user interface is improved over the Epicentric interface, including more dynamic content options. However, while the Vignette interface is highly capable, it is not the portal's strongest selling point, lacking some of the interactivity found in other portals.

Table 4-5 Features of Vignette Portal

Features	Benefits
Portal personalization	Intuitive user interfaces provide non-programmers with a simple interface for creating sophisticated business rules for targeting user segments. Additionally, end users can easily tailor their portal interface with drag and drop portlets, while "My Page" functionality allows users to create entirely new pages with customized portlets.
Roles based	Organize business users into role-based user groups using hierarchical structures to mirror business objectives and business processes within the Web site or portal.
Flexible presentation	Flexible presentation layout that can be quickly and easily tailored with graphical, pointand-click portal layout interface using common styles, grids and themes to quickly change the look and feel of your Web site or portal.
Pre-defined portlets	Rapid solution assembly with pre-defined portlets that provide common portal functionality such as e-mail, calendar, and contact management, as well as information collaboration and integration with existing applications and data.
Information and document collaboration	Make documents available to groups of business users with a flexible repository. Documents and content are stored in easily configurable folders.
Search and taxonomy management	Seamlessly integrate search services with access to documents and other content inside and outside the organization. Build and maintain dynamic hierarchies of information through visual navigation.

Sources:

Richard V. Dragan, Epicentric Foundation Server 4.0 , PC Magazine, August 1, 2002, http://www.pcmag.com/article2/0,4149,382111,00.asp

Jim Rapoza, Review: Vignette Application Portal 4.5, eWeek, November 4, 2003, http://www.eweek.com/article2/0,4149,1372260,00.asp

5. Summary

The portal systems for enterprises, organizations or communities can unleash the hidden power of Internet technologies. In the early days of World Wide Web, people were fascinated with their nice presentation of information and the effective communication capability. However, it took not long to realize that the Web is more beyond the communication tool and has the great potential for collaboration. The next phase of the Internet revolution will be interconnection of these Internet islands with the systems that realize the workspace or team space to create a responsive, flexible, scalable, and differentiated virtual enterprise or cyber community. The information systems that connect the workspace or team space are coming to be known as enterprise portals or community portals. Portals as the next step in Web evolution are a single gateway and access point to enter these virtual meeting places. In addition, portals can offer a variety of content and services in a variety of ways for their users.

According to the perspective future of portals, almost all software vendors jumped on portal market. The competitions between portal vendors are intensified in proportional to the growth of the market. Since every six months new products are announced in this market, portal vendors need to differentiate themselves and their products somehow. This differentiation will likely manifest itself by providing some clarity and delineation for the portal market through newly defined products. Although many useful service components for portals have been continuously developed, it seems that portal vendors compete in the integration or mixture of all available service components such as content management, personalization, security, collaboration and so on. In some sense, it looks like multifunctional electronic appliances. The important things are not to plug-in glossy service functionality, but to realize the usability and the efficiency to sustain the functionality.

To make portal products a reality, they should be based on semantic technology such as ontology and have intelligent processing capability. From the system point of view, portal system should conform the standards such as WSRP and JSR 168, and accommodate web services for the effective development. Many portal products already adopt the standards and use web service technology, however, it is hard to find products based on ontology on a full scale.

References

Eric Berkman, What is a Portal?
http://www.darwinmag.com/learn/curve/column.html?ArticleID=13

IBM, What is a Portal, http://www-.ibm.com/services/kcm/kcm_whatisaportal.html

Christine Wiegand, Portals - The Information, Functionality and Services I Need at My Fingertips, SAP Design Guild

Ray Valdes, What is a Portal?, NYS Office for Technology Portal Day, December 4, 2001

SiteSacpe, The Role of the Enterprise Collaboration Portal in the Enterprise Information Portal, October, 2001

PortalsCommunity, http://www.portalscommunity.com/library/fundamentals.cfm

SAP Design Guild, http://www.sapdesignguild.org/index.asp

Colin White, Enterprise Portals: State of the Art, DM Review, Dec., 2002,
http://www.dmreview.com/master.cfm?NavID=193&EdID=6080#top

Colin White, 2003 Portal Community Member Survey, Portal Community, 2003

Subject Portals Projects, Finding of the Portal Feature Survey,
http://www.mathgate.bham.ac.uk/mathsportal/Developments.asp

Bain Cheney, Portals Now and The Future, META Group, 2001

Portals Community, http://www.portalscommunity.com/library/fundamentals.cfm

Discover IT, http://www.discoverit.co.uk/index.html

Intraspect Software, The Collaborative Business Portal: A White Paper on the Value of Integrating Collaboration Solutions and Portals, May 2003

Portals Community, http://www.portalscommunity.com/library/fundamentals.cfm

SAP Design Guild, http://www.sapdesignguild.org/index.asp

Nitin Lalwami, Accelerate Your Portal Implementation, Headstrong, 2003

Karen Holtzblatt, Creating New Work Paradigms for the Enterprise Portal, SAP Design Guild, August, 2001. http://www.incent.com/pubs/SAPDGPortal.html

Colin White, Enterprise Portals: More Than Just a Web Interface, Portals Community,
http://www.portalscommunity.com/advisor_advice.cfm?ObjectID=03A6DA32-45B8-4294-BBEC8161619987B8

Colin White, Building the Smart Business: The Corporate Portal: What's in a Name?, DM Review, December 2003

Tim Kounadis, How To Pick the Best Portal, ADVISOR, http://doc.advisor.com/doc/06626

Sarah L. Roberts-Witt , Digital Doorways, PC Magazine, June 12, 2001, http://www.pcmag.com/article2/0,4149,142377,00.asp

Richard V. Dragan, Corporate Portals: More than Just a Pretty Face, PC Magazine, August 1, 2002, http://www.pcmag.com/article2/0,4149,383288,00.asp

David Haskin Collaboration Software Gets 'Portalized' Intranet Journal, 9/22/2003 http://www.intranetjournal.com/articles/200309/ij_09_22_03a.html

Colin White, 2003 PortalsCommunity Member Survey, BI Research and Portals Community, 2003

Plumtree, The Corporate Portal Market in 2003, January 20, 2003

Richard Young, Findings of the Portal Feature Survey, http://www,portal.ac.uk/spp/

DMReview.com, META Group Expects Over 150 Percent Revenue Growth for Portal Market in 2004, DM Review Online in November 2003

ATG, http://www.atg.com/en/products/portal/

eWeek, Review: ATG Portal 6.0, November 4, 2003, http://www.eweek.com/article2/0,4149,1372255,00.asp

Tom Yager, Portal unplugged, InfoWorld, July 29, 2002, http://www.findarticles.com/cf_dls/m0IFW/30_24/89882650/p1/article.jhtml

BackWeb, http://www.backweb.com/products/html/pps.html

Michael W. Muchmore, Portable Portals, PC Magazine, August 1, 2002, http://www.pcmag.com/article2/0,4149,383291,00.asp

BEA, www.bea.com/framework.jsp?CNT=index.htm&FP=/content/products/portal

eWeek, Review: BEA Weblogic Portal 8.1 http://www.eweek.com/article2/0,4149,1372256,00.asp

http://www3.ca.com/Solutions/Solution.asp?ID=303

http://www3.ca.com/Solutions/Product.asp?ID=262

eWeek, Review: Review: CleverPath Portal 4.51, November 4, 2003, http://www.eweek.com/article2/0,4149,1372257,00.asp

DataPower, http://www.datapower.com/newsroom/pr_031003_gluecode.html

Gluecode, http://www.gluecode.com/website/html/PFS.html

Meta Group, Evaluation of: Hummingbird Portal, 2001

Knlowledge Partner, Hummingbird Portal Features, http://www.knowledgepartners.com.au/portal_feat.htm

Hummingbird Communications, The Hummingbird EIP, December 1999

Jim Rapoza, Review: WebSphere Portal 5.0, eWeek, November 4, 2003, http://www.eweek.com /article2/0,4149,1372251,00.asp

Mike Heck IBM polishes the portal InfoWorld, October 17, 2003, http://www.infoworld.com/article/03/10/17/41TCwsportal_1.html

Richard V. Dragan ,Microsoft SharePoint Portal Server 2001 (Beta), PC Magazine, June 12, 2001, http://www.pcmag.com/article2/0,4149,142380,00.asp

Jim Rapoza, Review: SharePoint Portal Server eWeek, 2003 November 4, 2003, http://www.eweek.com/article2/0,4149,1372252,00.asp

Don MacVittie Microsoft Office SharePoint Portal Server 2003: Open to Improvement Network Computing, Nov 13, 2003, http://www.networkcomputing.com/showitem.jhtml?docid=1423sp1

Novell, http://www.novell.com/products/extend/director/

Richard V. Dragan, Novell Portal Services 1.5, PC Magazine, August 1, 2002, http://www.pcmag.com/article2/0,4149,382111,00.asp

Colin White, Portal Assimilation , Intelligent Enterprise, November, 12, 2001, http://www.intelligententerprise.com/011112/417products1_1.shtml

OracleAS Portal, http://portalcenter.oracle.com/servlet/page?_pageid=356&_dad=ops&_schema=OPSTUDIO

Oracle9iAS Portal Quick Tour, ttp://otn.oracle.com/products/iportal/getstart/gsmain.htm

Richard V. Dragan, Plumtree Corporate Portal 4.0, PC Magazine, June 12, 2001, http://www.pcmag.com/article2/0,4149,142381,00.asp

eWeek, Review: Plumtree Corporate Portal 5.0 November 4, 2003 http://www.eweek.com/article2/0,4149,1372258,00.asp

Richard V. Dragan, Plumtree Corporate Portal 4.5WS , PC Magazine, August 1, 2002 http://www.pcmag.com/article2/0,4149,382137,00.asp

Plumtree, http://www.plumtree.com/products/platform/

Sahil Gambhir, Take a Free Ride with PHP-Nuke, PC Magazine, August 1, 2002, http://www.pcmag.com/article2/0,4149,383290,00.asp

Val Latzke, SAP Portals, DM Review in August 2001.
http://www.dmreview.com/master.cfm?NavID=193&EdID=3818

Renee Boucher Ferguson, SAP Drills Down on NetWeaver, eWeek, September 10, 2003 http://www.eweek.com/article2/0,4149,1261044,00.asp

Renee Boucher Ferguson, SAP Drills for Developers, eWeek, September 8, 2003
http://www.eweek.com/article2/0,4149,1253115,00.asp

Richard V. Dragan, TIBCO ActivePortal, PC Magazine August 1, 2002
http://www.pcmag.com/article2/0,4149,382145,00.asp

TIBCO,
http://www.tibco.com/solutions/products/business_optimization/portals.jsp?m=d2

Richard V. Dragan, Viador E-Portal Express 3.6, PC Magazine, June 12, 2001,
http://www.pcmag.com/article2/0,4149,142382,00.asp

Viador, http://www.viador.com/products/product_over.htm

Richard V. Dragan, Epicentric Foundation Server 4.0 , PC Magazine, August 1, 2002,
http://www.pcmag.com/article2/0,4149,382111,00.asp

Jim Rapoza, Review: Vignette Application Portal 4.5, eWeek, November 4, 2003,
http://www.eweek.com/article2/0,4149,1372260,00.asp

Appendix

Appendix 1. Portal Standards : Web Services for Remote Portlets (WSRP) and Java Specification Request (JSR 168) standards.

Portlets, or portal applets, are visual components that make up a Web page residing in a Web portal. Typically, when an end user requests a personalized Web page, multiple portlets are invoked when that pages is created. An example is a news/financial portal that displays a single page including updated financial news, a report on how the stock market is doing and the latest information on stocks of interest to the end user. Each component has its own portlet.

Until now, users have had to develop portlets using proprietary APIs for a single portal platform and often are faced with a limited number of available portlets from a particular portal vendor. All this changes with the introduction of the Web Services for Remote Portlets (WSRP) and Java Specification Request (JSR 168) standards. These two standards enable development of portlets that can be interoperable on different portal products and therefore increases the availability of portlets to an organization. This, in turn, can dramatically increase an organization's productivity when building enterprise portals.

WSRP services are presentation-oriented, user-facing Web services that plug and play with portals or other intermediary web applications. They are designed to let businesses provide content or applications in a form that does not require any manual adaptation. Portals easily can aggregate WSRP services without programming effort. WSRP defines:

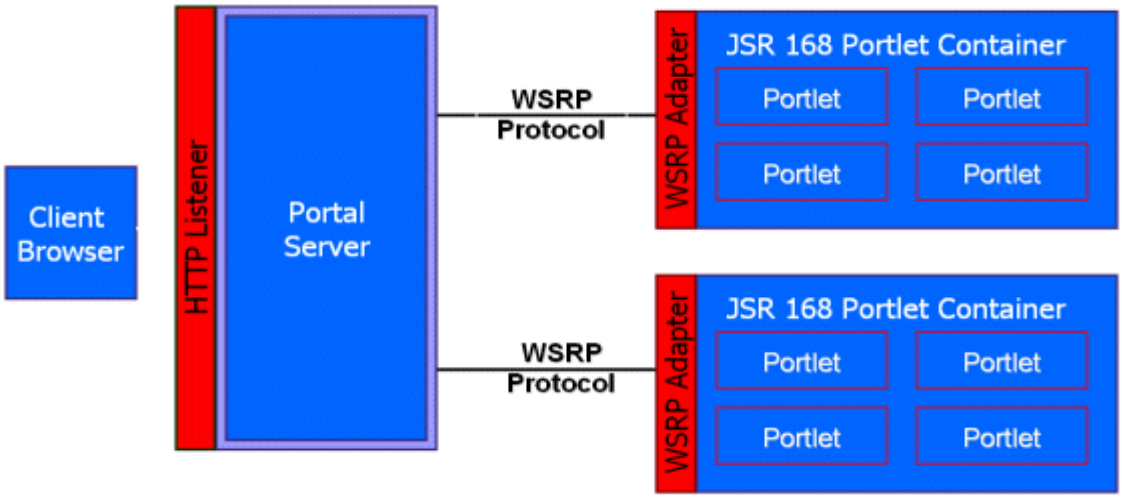
- WSDL interface description for invocation of WSRP services
- Markup Fragment Rules for markup emitted by WSRP services
- The method to Publish, Find, Bind WSRP services and metadata

JSR 168 is a specification that defines a set of APIs to enable interoperability between portlets and portals, addressing the areas of aggregation, personalization, presentation, and security. JSR 168 defines:

- The portlet API (Portlet container) provides a runtime environment to invoke portlets
- Provides URL-rewriting mechanism for creating user interaction within a portlet container
- Effectively handles the security and personalization of portlets

■ Relationship between WSRP and JSR 168

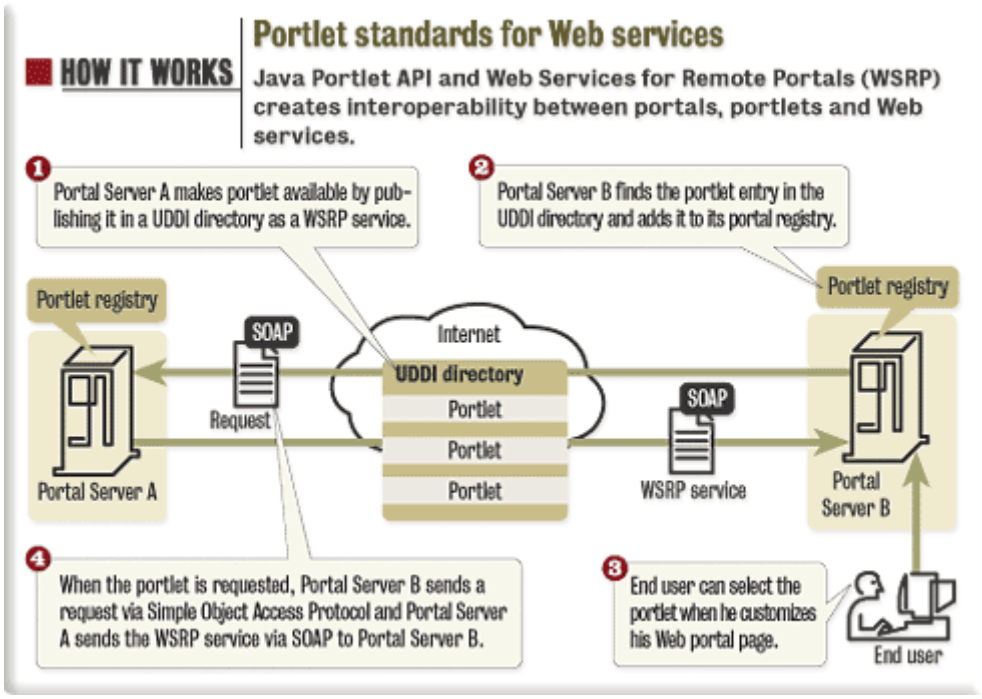
WSRP and Java Portlet API will be able to cooperate in a beneficial way. WSRP is a communication protocol between portal servers and portlet containers, while JSR 168 is a Java API for portlets to work with WSRP portals. This API enables developers to integrate their applications from any internal / external content as portlets with WSRP portals. Building portal pages becomes as simple as selecting portlets from the portal repository. The illustration below shows the architecture of the WSRP specification.



Once a portlet entry is listed in the UDDI directory, other portals can find and bind to the referenced WSRP service. To make a WSRP service available as a portlet, the portal's administration may create an entry in the local portlet registry with the information obtained from UDDI.

For example, once the entry is in the local portlet registry users might select it and put copies of it on their pages. When a portlet proxy is invoked during page aggregation, the portlet proxy will generate a Simple Object Access Protocol (SOAP) request and send it to the WSRP service. Then it receives the SOAP response from the WSRP service and provides the result to the portal.

For more information about Web services-based portals, go to POST, the Portlet Open Source Trading Site. It's an open source site that not only includes information about Web services portals, but also includes open source code and downloads.



Sources:

Thomas Schaeck and Stefan Hepper, Portal standards for Web services, Network World Fusion, http--www_nwfusion_com-news-tech-2002-0902tech_html.htm

An Overview of Oracle's Support of OASIS/WSRP and JSR 168 Standards, http://portalstudio.oracle.com/pls/ops/docs/FOLDER/COMMUNITY/PDKRELEASE2/PDKHOME902/STANDARDS/OVERVIEW.WSRP.JSR168.HTML

JSR Specification, http://jcp.org/aboutJava/communityprocess/final/jsr168/index.html.

WSRP Specification, http://www.oasis-open.org/committees/download.php/3343/oasis-200304-wsrp-specification-1.0.pdf.

Portlet Open Source Trading Site, http://sourceforge.net/projects/portlet-opensrc.

Appendix 2 Open Source Portlet Container

jPortlet is an open source implementation of a portlet container. The standards-based portlet API framework is available for free download.

Portlets are components that run inside the portlet container of a portal server, similar to how a servlet runs on an application server. These Web components combine to make up a composite page, such as the "news" panel on a home page.

jPortlet is not compliant with Java Specification Request (JSR) 168, the Java Community Process's portlet specification designed to provide interoperability between portlets and portals and define a set of APIs for portal computing that address aggregation, personalization, presentation, and security. That specification has been kept secret for more than one year now, SourceForge says. However, it says the jPortlet API, which defines the interface between the container and the portlets, is similar to IBM WebSphere Portal server.

For a template language, jPortlet uses Velocity, a Java-based template engine from the Apache Jakarta Project that lets you use the simple template language to reference objects defined in Java code. This lets the developer use a Model-View-Control (MVC) framework such as Struts.

jPortlet offers the following features:

- You can view portlet in different modes: VIEW, EDIT, CONFIGURE, or HELP.
- The API lets you deploy portlets on Web browsers, PDAs, cell phones, etc.
- The portlet container can cache a portlet's content to accelerate the portlet rendering.

In addition, the software provides role-based security and internationalization. the open source implementation of jPortlet 1.0 is downloable at http://jportlet.sourceforge.net.

References:

jPortlet 1.0 Open Source Portlet Container Available, http://doc.advisor.com/doc/12324

Appendix 3 Portal Player

	Direct price	OSs supported	Authentication standard supported	In a nutshell
BEA WebLogic Portal BEA Systems Inc. www.bea.com	$57,000 per CPU	AIX; HP-UX; Linux; Solaris; Windows NT 4.0, 2000 Pro, 2000 Server	LDAP, X.500; JNDI 1.2	Offers integration with the number-one app server; strong on Web services.
Brio Portal 7.0 Brio Software Inc. www.brio.com	100 users, $60,000	AIX; HP-UX; Solaris; Windows NT 4.0, 2000	LDAP	Integrates with the leading business intelligence software.
Citrix NFuse Elite Citrix Systems Inc. www.citrix.com	$67 per user (75-user minimum)	Windows 2000	Microsoft Active Directory	Ties in with Citrix MetaFrame server-based computing.
CleverPath Computer Associates International Inc. www.ca.com	For a small to medium-size business, $21,000	AIX; HP-UX; Linux; Solaris; Windows NT 4.0, 2000	LDAP, Microsoft Active Directory, NDS, NIS	Ties in with CA's businessintelligence and supply-chain software.
Hummingbird Portal 5.0 Hummingbird www.hummingbird.com	$90,000 per server, $199 per user	AIX; HP-UX; Windows NT 4.0 Server,2000 Server	Microsoft Active Directory, LDAP, NDS, NIS, NTLM	Strong on business intelligence.
IBM WebSphere Portal 4.1 IBM Corp. www.ibm.com	$55,000 to $580,000 per implementation	AIX; Linux; Solaris; SuSE; Windows NT 4.0, 2000	Domino, iPlanet Directory Server, LDAP, Microsoft Active Directory	Excellent scalability, personalization, and collaboration.
Microsoft SharePoint Portal Server Microsoft Corp. www.microsoft.com	$3,995 per server and up	Windows 2000 Server	Microsoft Active Directory	Currently a partially scalable solution, but Microsoft is Integrat ing it with harePoint Team Services in

				the .NETstrategy.
One-To-One Portal BroadVision Inc. http://broadvision.com	$60,000 per CPU	AIX, HP-UX, Solaris, Windows 2000	LDAP	Strong on personali zation; ties in with BroadVision's e-business products.
OptimalView Compuware Corp. www.compuware.com	$40,000 to $70,000 per implementation	Solaris; Windows NT 4.0, 2000	LDAP, Microsoft Active Directory	Geared toward software developers, for building in business logic.
Oracle 9*i*AS 2 Portal Oracle Corp. www.oracle.com	Standard edition, $10,000 per CPU; Enterprise edition, $20,000 per CPU	AIX; HP-UX; Linux; Solaris; Tru64 Unix; Windows NT 4.0, 2000	LDAP	An add-on to to the Oracle 9iAS applicat ion server; offers a portlet development kit.
PeopleSoft 8.4 Enterprise Portal PeopleSoft Inc. www.peoplesoft.com	$65,000 to $90,000 per server	AIX; HP-UX; Linux; Solaris; Windows NT 4.0, 2000	iPlanet Directory Server, LDAP, Microsoft Active Directory, Novell eDirectory	Ties in with the leading HR package.
Portal-in-a-Box Autonomy Corp. www.autonomy.com	Average price, $380,000	Unix; Windows NT 4.0, 2000	ADO, LDAP	Strong search features.
SilverStream eXtend Director SilverStream Software www.silverstream.com	Developer edition, $1,295 per CPU; Enterprise edition, $65,000 per CPU	AIX; HP-UX; Solaris; Windows NT 4.0, 2000	LDAP, Microsoft Active Directory, NIS+	Strong development tools and support for J2EE.
Sun ONE Portal Server 6 Sun Microsystems www.sun.com	$25,000 per CPU and up	Solaris, Windows 2000 Server	LDAP, Microsoft Active Directory, Sun ONE Identity Server	Strong identity management and support for J2EE; excellent scalability.
Sybase Enterprise	Developer edition,	Solaris, Windows	LDAP	With the acquisition of

Portal 2.5 Sybase Inc. www.sybase.com	$4,000, plus $85,000 per CPU; duplicate CPU, $21,250	NT 4.0		OnePage, this is a strong solution with J2EE and XML integration and superior scalability.
Viador E-Portal Suite Viador Inc. www.viador.com	$50,000 and up	Solaris; Windows NT 4.0, 2000	LDAP	A highly customizab le cross-platform solution.
Yahoo! PortalBuilder 4.0 Yahoo! Inc. http://enterprise.yahoo.com	$100 per seat	Solaris; Windows NT 4.0, 2000	Novell eDirectory, Sun ONE Directory Server	Based on TIBCO's portal technology; adds Yahoo!'s extensive content sources.

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common.ziffdavisinternet.com/download/ 0/1548/portalplayers.pdf