IBM
WebSphere Portal
White Paper

August 2007

"Politics without Principle, Education without Character, Science without Humanity and Commerce without Morality are not only useless, but positively dangerous"

Abstract

This document introduces the reader to the concept of Enterprise Portals as a means of conducting business on the Internet. We continue on to a discussion of the value of using Enterprise Portals, combined with Service Oriented Architecture (SOA) methods, to tie existing processes and applications together to support the Enterprise.

This leads to a discussion of the capabilities that are needed for the software products, which are used to build the Enterprise Portals. In particular, we contrast the offerings of IBM, BEA and SAP, concluding that IBM offers the best solution for those companies focused on building transaction based portals that have complex integration requirements for business processes, business applications, live content and legacy applications. With support for standard SOA, BPM and BPEL development processes, IBM's WebSphere Portal enables the development of components that are re-useable across a broader range of platforms, resulting in significant savings in development and support costs. A secured single sign-on capability is built in.

The report concludes with a series of 5 case studies, in a variety of environments, in which the use of the IBM Websphere Portal product not only generated savings in development and support costs, but also enhanced in-house productivity, improved customer access to business processes, and enabled Enterprise-wide collaboration numbering in the thousands of users at one time.

Table of Contents

This page intentionally left blank.

1.0 The Market for Portal Software

1.1 Why Enterprise Portals?

Begin with the most generic term. A "portal", on the Web, is any single point of access to information which is linked from various logically related internet based applications and of interest to various types of users.

In the early days of the Internet, most portals were what would now be called Personal Portals, ranging in content all the way from the Smith family's personal webpage to the greater content provided by service organizations such as AOL, Netscape and Yahoo!. The point was to provide information and entertainment and, in the latter cases, make these so interesting that users could at first be charged for it and later would stick around long enough to be exposed to the ads.

As user volume on the Internet grew, businesses realized that websites could be used to capture information as well as provide it. Applications were developed to receive, manipulate, report and store the information, which could then be transferred to other departments within the business organization and used for outreach to the customers who had originally supplied it. A next step was the realization that the information could be used to customize the way the web page was presented, allowing the automation of many of the repetitive customer support processes and tailoring the presentation to the real-time needs of the specific customer. And finally, rather than require users to identify themselves to each application via a series of WebPages, single sign-on (SSO) methods were devised, where users needed to identify and authenticate themselves only once, on one page, through which access to the whole rich application suite could be gained. The resulting personalized, secured, SSO-accessed web page through which the customer saw the company's business became an "Enterprise Portal", and the Internet became a business tool in its own right.

Specifically, an Enterprise Portal may be defined as means to provide Web access, for a controlled set of users, to a framework that connects information, people and processes across organizational boundaries.   Examples of this are:

- Reducing call center costs by providing interactive on-line support
- Providing just-in-time inventory management support to customers
- Managing the storing and provision of documents
- Supporting automated intra-company process and information flows, thereby ensuring consistency of operation and adherence to standards.
- Capturing statistics regarding use, inventory, and performance that can be combined to monitor and report the company's business.
- Doing all of the above, while at the same time providing secure and personalized access control, such that customers, partners, and employees are each able to access those parts, and only those parts, of the system that they are entitled to use.

From the above list, it may be seen that Enterprise Portals themselves may be broken down into three other types. A Customer Portal is one whose purpose is support the sales process, by providing a means for individuals outside the company to gain ready access to products and technical support. A Partner Portal is one designed to enhance the business process with other companies. And an Internal Portal is one which is used to manage the flow of information within the company itself.

In today's practice, the Enterprise mixes and matches all of these approaches as needed, to support a broad spectrum of specific business projects, ranging all the way from such uses as a full corporate site to HR self-services to the capture and management of business performance indicators.

1.2 Why Enterprise Portal Software?

An Enterprise Portal Software product is a toolkit, one that enables enterprises trying to develop any of the portal types we have mentioned. The toolkits of course will come in a widely varying range of capabilities and usefulness, depending upon what functions the manufacturer intends to support. Portal Software vendors will also frequently, and understandably, bias their portal software toward the inclusion of their other products, such as databases and documentation management systems.

But, since the goal is to provide reliable support of the Enterprise, every substantial Enterprise Portal Software package should at a minimum address the following areas:

- Carrying Forward the Value from Existing Enterprise Applications

  The workflow for a given enterprise may currently be a set of disjointed applications, tied together by a combination of manual and automated processes. Under this model, a given need, say to obtain information from one or more databases, may be part of any number of these processes, but used by each of them in slightly different, independently maintained ways. Converting to a Portals model, maintained by one department but useable by all, should make both databases accessible via one consistent interface, provide a single response combining information from both databases, and ensure that the content of the response is consistent no matter which department requests it. The goal is to achieve this with the minimum amount of rewrite to the underlying applications.

- Improved Coordination and Collaboration

  Half the job is providing information, and ensuring that the same information is provided to all requesters, while at the same time providing a hierarchy of distribution authorizations to ensure that requesters get only the documents the enterprise wants them to see. These could range all the way from brochures intended for easy access by customers to highly confidential documents being used by a product development team. Support of user identity management and secure transmission are therefore important components of Enterprise Portal Software.

- Better Documentation Management

  The other half is the capturing of the information itself. This means not only specific documents on specific topics, but potentially also project records, FAQ depositories, sales presentations and tools, etc.. The easier it is to identify documents for storage, and the broader the range of acceptable document formats, the more likely they are to become part of the company intellectual property database. Portal Software should support storing and indexing as many of these types of information as possible, in a way that effectively supports coordination and collaboration within the enterprise.

- Compliance with Government Regulations

  Recent years have brought an increased responsibility for the enterprise to demonstrate that information has been stored and transferred in conformance with, and its content has been designed to match, the requirements of various government regulations. Portal Software should support creation of process flows that enforce these requirements, and be able to provide reports that demonstrate conformance.

1.3 Portal Services

As we said earlier, Enterprise Portal Software provides Web access services. Support for these is distributed over three layers:

- Presentation Services - These services provide the "face" of the portal page. They give users the first impression of the company and, if well designed, present an intuitive interface to the various applications connected to by the portal.

- Application Services - These services perform specific functions, the tasks that users expect the portal to accomplish, such as database searches, forms provision and submission, and the control of process flows.

- Data Services - Services at this level provide a means to transfer data from one application or part of a process to another.

Many Portal Software products claim these capabilities are bundled with the package, but in fact built-in capabilities vary significantly with the vendor and with the layer being considered. All should of course be strong at the Presentation Services Level, since appearances should have no dependence upon the source of the data being presented.

Application Services need to accomplish tasks, and the supplier's version of the necessary supporting application will often be bundled with the Portal Software. There may be third-party applications available that provide more features, at the cost of adding complexity to the process of embedding them in the Portal. The added complexity at this level may be necessary anyway, if the need is to combine a number of specialized third-party tools to achieve a complex task by following a set of business rules.

At the Data Services level, the information being processed is likely to be proprietary, with its form and method of transmission perhaps even already tightly governed by the enterprise's existing applications. In this case, there is a slim likelihood that applications bundled with the Portal Software will be able to do the work. Instead, the developer may need to revise or create interfaces to the existing applications/process, and the Portal Software will be expected to manage and direct data between those interfaces, at the Application Services level.

Some basic services are usually bundled with the Portal Software and should require minimal development effort, if any:

- Business Process Management (BPM) - Also called a workflow, a BPM module breaks a process into steps controlled by business rules, limits who is allowed to perform each step, and provides a monitoring capability to watch the progress of action and data through the process. A given portal may support several BPM modules.

- Utilities, such as clocks and calendars, and personal file storage areas.

- Collaboration, providing a built in communication paths between all users of the Portal Software, and a minimal storage area for group and project documents.

- Search - no point in storing basic documents or files if you can't find them. And of course this needs to interface easily to the enterprise documentation management tool.

- Personalization - Based upon the user identity, this provides a way to customize the way the portal looks to the user, and, more important, confine system access levels and features to those consistent with the user's security level.

More sophisticated services, though versions may be bundled with the Portal Software and therefore easily made operational, are sometimes outperformed by third party applications, or the company's existing applications. The trade-off is that the non-bundled application may require significant development effort to be embedded in the Portal. Some examples:

- Document management - Chances are that the company already has an established process and application set that it uses to store and retrieve documents; if so, the best approach is likely to be to add interfaces to the existing application(s).

- Executive Reporting "Dashboards" - This feature can be used to present nicely formatted charts and tables, covering information such as revenue, salesman productivity, system use rates, etc. to be used by managers. The catch here is that the source data is likely to be strongly secured, and the combining of the data for display is likely to be idiosyncratic to each company; significant development work may need to be done in order to prepare data to be seen via the dashboard.

- Content and Application Integration - If the business process already exists, with actions and data spread over several departments, performed differently and stored in differing formats, and supported by several distinct applications, it will usually be necessary to do significant development work to get them to work effectively together, and then to integrate the result into either the application or data service layer of the Portal.

1.4 Service Oriented Architecture in the Web 2.0 World

As we move into the 21st century, we find ourselves in a revolutionary age, the age of Web 2.0, which O'Reilly Media has defined as "the business revolution in the computer industry caused by the move to the internet as platform, and an attempt to understand the rules for success on that new platform."

Part of this process has been to convert desktop applications to be available on a website, present an interface to the user when the proper URL is accessed, perform a series of operations when requested, and produce a retainable product.

In the more general case, a company may build an application that, at the user's request, performs two services, one that gives the user access to some part of the company's online business infrastructure and a second that at the same time captures information to be used by the company. In short, the company may build a portal, such as we have been discussing. In so doing, it begins to implement Service Oriented Architecture (SOA).

"Service-oriented" means to loosely associate various services to support the requirements of business processes and users, and "architecture" means the structure within which they are associated. "Loosely associate" means that only the interface with each service needs to be controlled; the application underlying each service can be replaced by any other, as long as the new application accepts the same input and generates the same output.

Using the SOA approach, with its objective of maintaining a consistent process flow, the business obtains several benefits:

- Faster application development and delivery

  Since the services are modular, limited to performing a certain set of tasks, the scope of work necessary to change each of them is also limited.

- Improved developer productivity

    A well-designed service can perform several different tasks, depending upon the input provided to it. For example in our original example, the data capture function could also contain a feature, which recognizes and creates a greeting for the user in a subsequent sign-on. The developer needs only to assemble existing services together to accomplish almost any series of tasks, rather than creating entirely new applications.

- Guaranteed data consistency and availability

    Services retrieve information from a single set of databases, guaranteeing that it will be up-to-date for all users.

- Consistent adherence to compliance requirements

    Good SOA design practice requires interfaces to processes to be kept constant, and data content to be well defined and predictable. Once this has been achieved, and found to be compliant with documentation standards, compliance will be on going.

The gateway to SOA, the fundamental building block for the designer, and the interface that allows the user to set the resulting process in motion, is the Portal. And for that reason, the most current Portal Software will be designed with an emphasis upon its utility in the SOA arena, as shown in Table 1-1.

Table 1-1: Portals in Support of SOA

Where Standalone Portals emphasized:	Portals built to support SOA emphasize:
Access and integration	The deployment framework for the resulting cluster of applications
Browser access	Intelligent, innovative, multi-modal use
Development that was IT led and controlled	"Managed Autonomy", focused on business needs
Tight coupling and integration	Reusable, dynamic and personalized services

Portal software containing this kind of support then becomes a vital tool for building "composite applications", using SOA techniques to combine multiple services and components into a single application in order to present an integrated interface to users.   The services and components can range all the way from chunks of functionality carried forward from existing applications, to existing web services, to entire legacy systems rewritten to provide output in the form of a web service. For the benefit of developers, the best Portal software products will anticipate and provide tools to handle the many possible ways that data can be transferred among these components. For the sake of users, it will provide an easy to understand and use method to personalize the actual appearance of the customer interface. Either way, the customer is enabled to select as finely focused or as broad a set of features as desired, with development scope limited to a specific project goal.

Figure 1-1 for example, shows a Portal in an SOA environment, providing front-end access to a company's suite of processes.

Figure 1-1: Websphere Portal as a Service Access Front-end
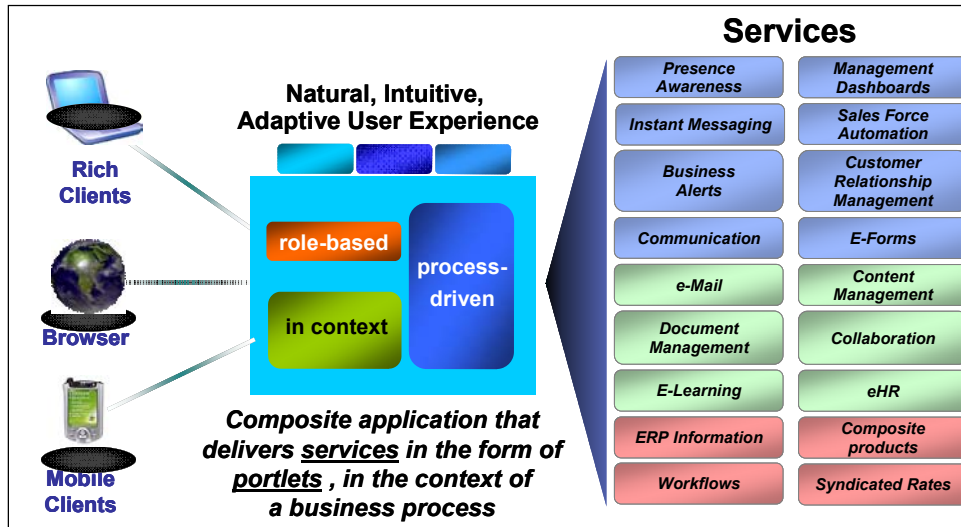
1.5 Various Modes of Development

As is to be expected, Portal Development tools support a wide range of development approaches. The continuing trade-off is between high flexibility, paid for with a significant development time, and short development times, limited to prepackaged features.

Ranging from the most extensive development times to least, the following are the generally available modes of development:

- Application Program Interfacing

    This involves creating code, either to extend the Portal's capabilities, or to write an entirely new application, with interfaces to the Portal.

- Portlets

    These are pluggable user interface components managed and displayed in a web portal. Each contributes a piece of markup code that can be combined with others to create a portal page. The result appears to the user as a web-based application seemingly hosted in a portal.

    This approach is so broadly used that a Java Specification Request, JSR168, has been created under the Java Community Process, and is commercially implemented in most JAVA based portlet products. Another standard, Web Services for Remote Portlets (WSRP), also applies to portlets, and describes a method for communicating with other portlets, which JSR168 does not. Not surprisingly, these two specifications are often used together, with JSR 168 defining a portlet and WSRP providing connectivity.

- Non-Technical Portal Customization

    Under this mode of development, the product consists of components, which can be combined by non-programmers, generally using a browser, to configure a set of services. This can be accomplished by having the browser operation create the underlying code, or by combining pre-

defined modules, or by having a wizard produce the final product, based upon a set of parameters given to the wizard.

1.6 Market Dynamics

1.6.1   Key players and Market share

The graph of Figure 1-2 shows the market share held by each of several leading portal vendors in some major Portal Product areas:

• Executive Dashboards

   These portals provide presentations of data such as revenue, salesman productivity, system use rates, etc. to be used by managers

• Customer and Employee Self-Service Applications

   These portals provide an interactive means for the user to locate information, and set requests in motion, from one starting location and generally with a single sign-on. In the case of a customer, this might involve calling up a list of products, generating a features comparison, and requesting sales follow-up on those that were of interest. For a new employee, this might involve HR activities, such as providing campus maps, company organization charts, and selection of benefit packages.

• Supplier-Partner Facing Applications

   These portals give the company's suppliers, partners and customers access to the information necessary to do business, for example by adding e-commerce capabilities such as a product catalog, ordering capabilities, and inventory monitoring.

Figure 1-2: Market Share by Vendor
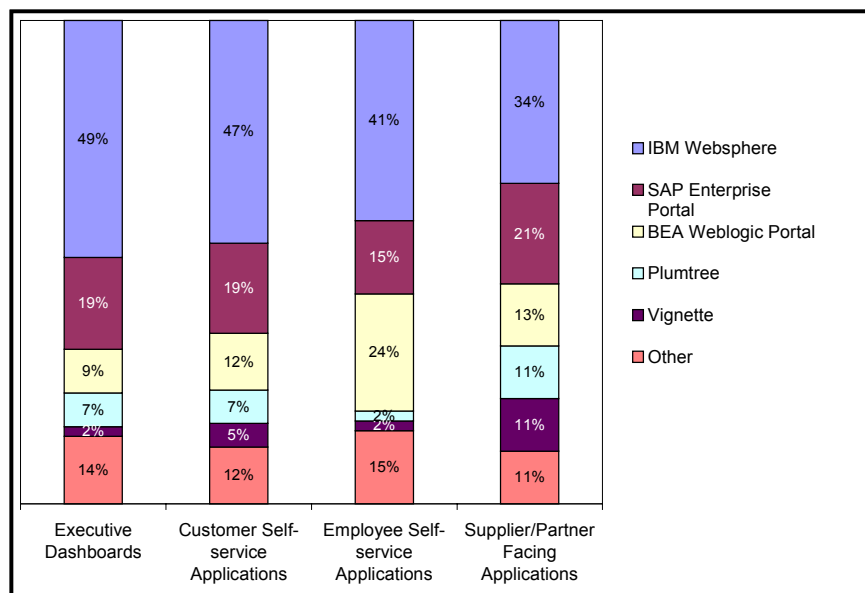
Source: AMR Research

1.6.2   IBM Portal Software: Current Leadership and Things to Come

IBM's leadership position in the Portals Industry, as shown in the previous section, is the consequence of providing a superior product, in several areas:

- Personalization and Branding - Rules based on business logic can be interactively applied to both portlets and portal pages.

- Composite Application Framework - Basic composite applications can be created and deployed to different potential users, who can then modify them to meet their own specific requirements. The composite applications can be used in both a browser and desktop format.

- Content Management Integration - Enables non-technical, non-HTML savvy users to create content for the Portal, working from a template, which controls content and presentation.

- Strong Support for Composite Applications - Via its Portlet Factory development environment, automatic generation of portlets without coding, re-use of portlets enabling quick revision to support new uses, customizable interfaces, and built-in support for the SOA design approach, allowing customers to quickly create portals for a project of any size.

- Scaleable Support - Small to very large sites are supported, with some existing portal sites already at over 30,000 pages.

- Standards Leadership - IBM is a member of both the WSRP and JSR168 standards committees.

In the second half of 2007, IBM plans to add these additional specific features:

- IBM Content Accelerator - To rapidly develop sites with reusable out-of-the-box SOA components, reducing the TCO and speeding ROI. This will provide an automated workflow, caching to enhance performance, content delivery based on user role and preferences, as well as actions taken during a session, seamless integration with Office and Windows, and enhanced document control, with the addition of user-based create, view and edit rights.

- IBM Self-Service Accelerator - To streamline employee and manager activities using an intuitive self-service front end. This includes a flexible life and events framework and easily customizable out-of-the-box portlets for self-service tasks like updating personal information, managing taxes, establishing new-hire information, job transfers, etc.

- IBM Collaboration Accelerator - To facilitate communications and collaboration within secure, role-based team workspaces.

- IBM Enterprise Suite Accelerator - To improve operating efficiencies, increase productivity, and thereby help to improve revenue generation.

- Dashboard Accelerator (Lotus ActiveInsight) and New Dashboard KPI Catalog (continuously updated with new KPI's)

- Portal Enhancements, including v6.0.1, Google Gadgets, Portlet Factory, with out-of-the-box AJAX components

1.6.3   Critical Differentiators: IBM Websphere and Its Key Competitors

Though each competitor in the Enterprise Portal marketplace will of course claim its product can be all things to all people, in practice significant differentiators apply, such as:

- Product scope
- Product specialization

- Product fit to business use cases and scenarios

All of these must be taken into consideration in choosing a Portal product that matches the business need. When the goal is to add a reporting capability for a particular department, why buy a product intended to support the entire enterprise? If the company goals can be achieved by simply using a browser to combine standard out-of-the box applications, there is no reason to buy a package that includes extensive development capabilities. And, it would make no sense to use a full-rigged E-Commerce-supporting Portal to do web publishing, nor to expect a product that is wonderful at web publishing to do a good job of Business Process Modeling.

Looked at this way, the leading Enterprise Portal providers can each be conceded a "sweet spot" in the market, as summarized in Table 1-2.

Table 1-2: Sweet Spots of Key Enterprise Portal Vendors

IBM WebSphere	BEA WebLogic	Microsoft Sharepoint	Oracle Portal	SAP NetWeaver
Transaction based Portals supporting a broad variety of composite applications for business partners, customers, and suppliers. Middleware-based Enterprise Integration of business processes, business applications and live content, for large enterprises with complex integration requirements and legacy applications.	Self-Service Portals for customers and employees. Middleware-based Enterprise Integration of business processes, business applications and live content.	Web Development supported by out of the box applications and frameworks for building custom applications, with a strong emphasis on collaboration and document management.	Self-Service Portals for customers and employees Corporate Intranets focused on HR, Sales, Inventory, etc.	Enterprise Integration focused on merging corporate applications with SAP and other applications to support SAP customers.

Note that three of these products, IBM, BEA, and SAP, focus on delivering a strong value proposition in the area of Enterprise Integration, to support enterprises which have, or want to create, a strong Web presence. "Enterprise Integration" refers to the ability, essential when working in an SOA environment, to carry forward and combine existing processes and applications. Though these products do include at least a nod to web publishing, collaboration portals, and a range of out-of-the-box applications, the solution each provides goes well beyond just those few limited requirements. Instead the focus is upon SOA support, Business Process Management features, and special capabilities provided to enable the development process necessary to bring them into being.

It is in that arena that we compare Websphere against those two competitors.

Table 1-3: Common Portal Product Features

Feature	IBM WebSphere	BEA WebLogic	SAP NetWeaver
Proprietary Server Required	Websphere Application Server	BEA Weblogic Server	SAP Netweaver Application Server
Client Browser Supported	Microsoft Internet Explorer (and others)	Microsoft Internet Explorer, only	Microsoft Internet Explorer, only
Operating Systems	AIX, HP-UX, Linux, Solaris, Windows	AIX, Linux, Solaris, Windows	Windows; UNIX, IBM
Databases	IBM DBM2, Microsoft SQL, Oracle	IBM DBM2, Microsoft SQL, Oracle	IBM DBM2, Microsoft SQL, Oracle

We begin first, in Table 1-3, by showing what the products have in common. For the most part, each product can be used with a broad range of OEM software, though the range of operating systems supported by SAP is a bit less than for the others. It is important to note that each product requires the customer to also have, purchase if necessary, the server product which supports the Portal software.

From this common base, however, the products rapidly diverge in the extent of what they offer and the details of the offering.

1.6.3.1 IBM Websphere Portal

WebSphere Portal is a true, full-function heterogeneous horizontal Portal by design. As for all these products, the most significant use case is for Enterprise Integration of legacy systems, in this case controlled by the Websphere Application Server using IBM's Websphere MQ or other adapters to provide a communications capability. SOA is fully supported. The WebSphere product line overall provides a single, proven and reliable platform and a dependable technology path, supported by a strong partner channel. Workplace Forms is part of Websphere, providing a smoothly integrated e-Forms capability and supporting rich management content, including multimedia.

Some specific features:

- Hosts a Portal Catalog giving access to third party portlets, integration tools and other solutions.

- Includes a "Portlet Factory", Eclipse Integrated Development Environment based, which enables a block-by-block combination of APIs without the necessity of paying specific attention to code. Microsoft tools are supported, including Word for authoring, and a drag and drop capability for files. A "Theme Builder" portlet branding capability is provided, controlled by cascading style sheets, to give the Enterprise a consistent appearance. Portlets are based upon open standards and therefore likely to be exportable to other development environments.

- Provides a native Single Sign-on capability, and supports third-party security products such as Tivoli Access Manager and Netegrity SiteMinder. Security is provided down to the portlet level.

- Via its Lotus Collaboration capabilities, enables instant messaging and web conference abilities as integral parts of the product. Re-useable and department-customizable portlets ensure that inter-department data handling is uniform and that the data is up-to-date.

- Supports Business Process Management techniques with the Websphere Process Server and Websphere Process Engine. The Engine includes a BPEL based workflow engine, including automatic handling if the process fails.

- Conforms to the Accessible US Rehabilitation Act Section 508.

1.6.3.2 BEA WebLogic

BEA is competitive in many of the areas we list for IBM. Like IBM, it provides a flexible, open architecture for building portlets. Like IBM, it provides a catalog of Portal Solutions. Security is provided down to the portlet level, and the portlets can communicate with each other. Single sign-on is of course supported. But there are some areas where it is less strong:

- The developer may need to obtain another product, the optional Weblogic Integration Platform. This is not part of the Portal product.

- Effective use of the BEA Workshop IDE is closely tied to the developer's experience with Java.

- When changes are made, the entire portlet directory needs to be deployed at one time, rather than a few at a time as IBM allows. This makes deployment complex and time-consuming, and reduces the ability of developers to quickly implement changes.

- There is no search across multiple repositories, and the product has very limited reporting features.

1.6.3.3 SAP NetWeaver

SAP has also earned its stature as a portal provider. Like the others, it provides a flexible architecture for portlet builds, and a library of portal components. It is very strong on the business reporting side, and supports a wide variety of authentication techniques. Single signon is supported. But again there are some negatives.

- Overall, the SAP Enterprise Portal is strongly biased toward establishing interfaces to SAP applications; integration with non-SAP applications can be a challenging task. Rather than following SOA methods, SAP offers a very limited ESA approach.

- Portlets are built using SAP's proprietary iViews, which are non-standard and not easily transportable to other environments. In particular, the product is not JSR168 compliant. - JSR168 portlet code can be imported, but not exported. This has a severe impact on reusability and tends to foster a dependence upon the SAP environment. Rather than provide its own content management, SAP provides interfaces through these iViews portlets to third party Content Management Systems, the purchase of which is an additional cost to the user.

- SAP has no built-in instant messaging capability.

- The development tool is SAP's NetWeaver Developer Studio. Because many web standards are not followed in this tool, it has a steep learning curve, and the acquired expertise is useable only in the SAP environment.

- Presentation theme templates are provided, but these start with a frames-like block structure that is not easy to modify.

- Single Sign-on support is not available for some third-party security products.

2.0 Customer Experiences with IBM's Portal Software

2.1 Summary

This section presents case studies over a broad variety of customers, in which there was a clear need to access relevant information and applications through a centrally managed, easy to use and scalable system and shows how the need was best satisfied by IBM's Portal solution. For each case study, we discuss the business problem that the customer faced, the solution that IBM provided and the resulting benefits from the solution implementation.

We summarize the results in two tables. Table 2-1 shows the value components of the IBM solution which each customer considered most critical in solving its business problem. The level of importance that the customers placed on each of these value components was scored on a scale of 1 to 5 with 5 being most important. Only the high scoring components are shown; it is probable the others had supporting value in the decision to use IBM's WebSphere Portal.

Table 2-1: WebSphere Portal Solution - IBM's Value Proposition

	IT Solution Provider	Discount Retail Chain	American Baker	Insurance Company	Cosmetic Company
Personalization & Branding			5	5	
Easy Customization to meet unique requirements via Composite Application Framework	5	4	4	5	
Easy Content Management Integration for non-technical users	4	4			
Back office integration		5	5	5	4
Quick revision to support new uses of portal via automatic generation of portlets				4	
Security including Single Sign-on	4			4	4

Scalability/ Performance; support for large number of concurrent users	5				4
Collaboration: Instant Messaging & Web Conferencing facilities	4		4		5
Support for Open Standards					

Table 2-2 lists the measurable benefits achieved by each customer when the Websphere Portal solution was implemented.

Table 2-2: WebSphere Portal Solution - Benefits

	IT Solution Provider	Discount Retail Chain	American Baker	Insurance Company	Cosmetic Company
Savings		$2000 savings per store in back-office IT support costs; over $0.2M per year		Savings in new application development costs	Displaced BEA; avoided the need to buy additional licenses & training
Productivity	Greater employee self service 200 virtual portals 2000 external users	Reduced workload for store managers Price checking and other tedious tasks more efficient Timely alerts during peak times has improved employee productivity	Data is automatically published to appropriate customers; employees do not have to manually e-mail data.	Increased sales activity due to brokers finding it easier to do business with the company. Faster access to multiple applications.	Integrated development environment.

| Other | Enterprise wide collaboration – grown from 600 QuickPlace Workspaces to 3000+ Workspaces in one year. | Enhanced communication structure; all stores no matter how remote are included | Secure web based repository for storing and sharing customer specific data

Enhanced communication between Manufacturer & customer | Improved customer service better designed to meet customer needs. | Streamlined communication methods. |

2.2 Case Study #1: A Worldwide Provider of IT Solutions

2.2.1   Customer Background

The Company is a leader in IT solutions for businesses worldwide. A consistent performer in the IT market for more than 40 years, it is dedicated to solving business problems by applying technology-based solutions tailored to its customers' individual strategic objectives. The Company provides comprehensive services, from front-end consulting and planning, to systems integration and outsourcing. It has a history of managing mission-critical and highly complex programs while maintaining hardware and software independence.

The Company has operations in more than 80 countries, employs 92,000 people worldwide and generates annual revenues of approximately US$12 billion.

2.2.2   Business Need for a Portal Solution

The Company had been relying on a Plumtree implementation to support its business-to-employee (B2E) portal. But the Plumtree infrastructure lacked the features and functionality to support the company's strategic vision for a "next generation" portal to serve the internal needs of its business users. The Company was using IBM Lotus QuickPlace workspaces as project centers in its Plumtree portal, but the QuickPlace workspaces could not scale to meet the growing needs of the company's business units. With its new portal, it wanted to offer a collaborative environment with customized Web content that could scale to support 4,000 or more users and enable access for external users.

Needed was a new portal infrastructure that would offer:

- A central location from which to manage projects
- Scalability to support large internal and external user populations (more than 4,000 users)
- Virtual portals
- Secure access for internal and external users
- Self-service portlet provisioning

2.2.3   Solution

The Company chose IBM WebSphere Portal Extend V5.1 middleware and IBM Workplace Web Content Management V5.1 software as the basis of its new portal implementation. IBM won this sale because of the superior functionality and better long-term vision of the WebSphere Portal

Extend technology. To ensure a smooth migration to the new solution, The Company engaged a team from IBM Software Services for Lotus (ISSL) to supplement its internal portal project team.

The IBM solution implementation was initiated in April 2005 and was completed in May 2006. The solution was deployed in three stages. In the first stage, the ISSL team and the company performed an architecture analysis and implemented the WebSphere portal environment. Next, the team mimicked the functionality of the Plumtree environment to enable migration to the new solution. Finally, the ISSL team and the company enabled new functionality for role-based customization, virtual portals and content management.

The ISSL group worked with the company to help the client understand the functionality available in the IBM software components. After thoroughly reviewing the business and technological requirements, IBM mapped the requirements to the Workplace and WebSphere solutions. The team also defined a gap mediation strategy.

After deploying the IBM solution, the ISSL team and the company designed a home page for the new portal and designed two separate workplaces for the client. IBM also assisted with testing the new solution and enabling strong security controls.

The IBM Workplace Web Content Management software allows the company to manage content in its two portal workplaces. The new B2E solution also allows users to self-provision portlets for their collaboration needs. Business users can now request a portal shell and be provisioned within 24 hours.

The WebSphere and Workplace solutions run on IBM System x hardware running the Microsoft Windows operating system. The Company uses Netegrity software to manage the security aspects of the portal.

2.2.4   Benefits of the Solution

The IBM portal solution provides The Company with increased functionality, better collaboration solutions and a robust, scalable framework to support future business needs. Compared to the Plumtree environment, the new portal adds support for large-scale usage, virtual portals, Lightweight Directory Access Protocol (LDAP) integration and robust content management and search capability. The ISSL team provided the expertise and experience to resolve the complex integration issues that were encountered.

The WebSphere Portal Extend middleware offers greater employee self-service, allowing users to personalize their portal experience and set up their own portals as needed. This capability has led to productivity improvements and distributed management of content. The new infrastructure has also resulted in better enterprisewide collaboration. The Company has grown from 600 QuickPlace work spaces to more than 3,000 workplaces in a single year, and the company now runs over 200 virtual portals. More than 2,000 external users can now access its portal.

2.3 Case Study #2: A Major Australian Discount Retail Chain

2.3.1   Customer Background

The Company opened its first store in South Yarra, Victoria, in 1981, selling discounted seconds and end-of-line merchandise. Since then, it has expanded to become a market leader in the discount variety retail sector in Australia.

The Company employs approximately 2,000 staff in 119 stores in the Australian Capital Territory, New South Wales, Queensland, South Australia and Victoria.

2.3.2 Business Need for a Portal Solution

With more than 100 outlets across Australia, ensuring fast and consistent communication from head office and area managers to stores was becoming an increasing challenge. The Company was striving for centralized direction, but actually achieving it was an entirely different matter. Many of its stores are located at a distance from the head office. They need to know what to do and how to do it.

Compounding this was the complicated back-office environment that required individual stores to run a Microsoft® SQL Server database. Company staff did not have the expertise to fix IT problems; if a server failed or the system became corrupt, it could take up to two days to restore it. Management needed to reduce maintenance costs and make the back-office environment easier to support and direct.

2.3.3 The Solution

The Company evaluated two vendors and their solutions: IBM and Microsoft. It selected IBM's WebSphere Portal Express over Microsoft Sharepoint Portal because they were convinced that it would be easier to deploy, use, manage and maintain and would perform to their expectations. IBM worked with its business partner Synergy Plus to develop a portal that simplified the back-office environment and allowed relevant information and applications to be easily accessed through a centrally managed system.

Most retailers in Australia haven't invested in this sort of technology; The Company believes that the system will give them a competitive advantage in cost control and productivity.

2.3.4 Benefits of the Solution

IBM WebSphere Portal Express has helped to place The Company at the forefront of retail technology and given it a distinct advantage in the cutthroat world of discount retail.

In the first phase of implementation, the portal has allowed store managers to access ticketing, email, notices and price checking functions. Staff training in the new system has also been provided.

According to the company's IT manager, staff reactions to the new system have been overwhelmingly positive. As well as giving each store functionality that it didn't have previously, the enhanced communication structure has meant that every store, no matter how remote its location, is now included.

Many of the new applications, such as the task management system, have significantly reduced the workload of store managers and made peak periods like Easter and Christmas much easier to handle. Area managers can now advice store managers what needs to be done and when. They can also send regular reminders about routine tasks such as markdowns.

Rostering has always been something of a black art in the retail sector, but IBM WebSphere Portal Express has allowed the head office to notify stores when stock deliveries are due, alerting managers to put on extra staff. This has had an enormous effect on employee productivity.

Time-consuming tasks such as price checking are now more efficient. Through the portal, staff can now access the entire product master file, including stock codes and up-to-date prices. Rather than

using hand-written and often inconsistent price tickets, the tickets are now printed in store so that pricing and appearance are consistent throughout the chain. Managers can also specify what stock they require when ordering. This allows stores to reduce the amount of inventory they have on hand, while ensuring enough stock of popular items is available. Customers continue to pay the low prices they expect, but don't have to compromise on the quality of their shopping experience, according to the company's IT manager.

The Company is now in the second phase of the portal implementation. Phase two will give stores increased access to stock reports and information, which will be especially useful at peak times like Christmas. More interactive rostering functions will be available, allowing store managers to compare staff spending with store budgets.

The Company expects to see big savings once Phase two is in place, including reductions of up to $2,000 a store in back-office IT support costs. With more than 100 stores, that's a saving of several hundred thousand dollars.

The Company sees the IBM solution as more than just a one-off project. It's a platform for change that is transforming their business from the inside out.

2.4 Case Study #3: A Large North American Cookie and Cracker Manufacturer

2.4.1   Customer Background

Headquartered in Richmond, Virginia, The Company is the third-largest cookie and cracker manufacturer in North America, employing a workforce of over 3,000 people in eight locations around the country. The Company has its own private label for retail goods, and it serves as a contract manufacturer for other businesses. In fact, it produces almost 50 percent of Girl Scout cookies made in the United States.

2.4.2   Business Need for a Portal Solution

To support its large employee base and many customers, The Company needed a strong internal and external communication network. Though the company had used an IBM Lotus Domino software-based extranet application to communicate with its business-to-business (B2B) customers, such customers could retrieve only their account data. For the manufacturer to share product or industry-related information with customers, it had to e-mail documents or keep softcopies, which needed to be refreshed regularly, at customer sites. To improve the buying experience for its B2B customers, it wanted to make the most current data and information available around the clock.

Additionally, the company had a limited ability internally to gather data from disparate data sources, which was making it difficult for management to make key decisions. To address all of its issues, it needed to expand its Web development and design capabilities so that it could develop intranet and extranet sites that would be more comprehensive and user-friendly.

2.4.3   The Solution

Because The Company was already using IBM Lotus Domino software and other IBM technology, it believed that IBM WebSphere Portal Enable V5.1 software was the best choice for easy integration and implementation with its existing products.

In November 2004, the effort to implement WebSphere Portal solution was initiated. IBM Business Partner Ascendant Technologies installed the WebSphere software and linked the portal and the

client's applications to create a comprehensive intranet that displayed data from disparate systems on one convenient platform. To help the client further improve its intranet, Ascendant Technologies trained the company software developers in the Java language and taught them how to design portlets to enable them to customize the portal as needed.

After successful creation of the intranet portal, developers used the WebSphere Portal Enable software to develop a customer extranet portal, which currently supports approximately 30 users. The client uses the extranet portal to share technical tips, product specifications and miscellaneous documents with customers.

The new portal solutions reside on a pair of servers running the Microsoft Windows 2003 operating system. The portal provides users with access to the following applications:

- IBM DB2 Universal Database information management software
- Business Planning and Control System software running on an IBM System i server
- IBM Lotus Domino messaging software
- ShowCase data warehouse software running on a System i server

2.4.4   Benefits of the Solution

By implementing the WebSphere Portal Enable software, The Company gained a secure, Web-based repository for storing and sharing customer-specific data. Though the cookie manufacturing industry does not demand top-tier communications between the manufacturer and the customer, customers appreciate the extranet portlets as a value-added service, which improves customer satisfaction and makes The Company stand out among competitors.

The solution was easy to integrate, as there was no need to change any data-capturing processes internally. In fact, data is automatically published to the appropriate customers, saving employees' time because they no longer need to manually e-mail data. And employees can view data from disparate systems in a concise, easy-to-use platform for simplified data management.

As new products and services become available, The Company's software development team can design new portlets for the intranet, which will make data readily available for employees, and for the extranet, which will support effective marketing of new offerings.

2.5 Case Study #4: A Leading US Insurance Provider

2.5.1   Customer Background

The Company is a leading life, health, home and auto insurance provider. With more than 90 years of experience and agents in all 50 of the United States, customer service is at the core of its vision and values. Financial achievements, combined with a reputation for superior service and innovative products, have earned The Company high ratings from firms including A.M. Best Company; Fitch, Inc.; Moody's Investors Service and Standard & Poor's.

2.5.2   Business Need for a Portal Solution

The Company's IT environment comprised a large number of Web and Java technology-based applications running on an IBM WebSphere platform. The IT organization struggled to maintain and develop the vast numbers of monolithic applications required by its brokers and agents to enable them to meet customers' needs.

Because agents and brokers had to log on to and use so many disparate applications to perform daily tasks, it was difficult for them to respond quickly to variable business requirements. To remain competitive, The Company needed to find a simpler and less costly Web-based environment to help it to maintain and modularize applications in order to satisfy individual customer needs. It also wanted to give users a single interface to all relevant applications.

2.5.3   The Solution

After considering alternatives, The Company in May 2004 chose a solution built on IBM WebSphere Portal Extend V5 software. An IBM Software Services for Lotus (ISSL) team helped design the architecture.

The new portal creates an interface to the company's agency brokerage application. The portal also integrates with the client's existing databases and with its Lightweight Directory Access Protocol (LDAP) applications.

Now, the IT organization can use portlets to build various types of new applications, or to access existing Web applications. And it has a single framework for deploying highly personalized applications to a variety of users. The portal's document library capabilities also allow the company to offer external document storage capabilities to agents and brokers.

There are 6,000 registered users (100 concurrent users) for the new portal software. The client intends to add more applications and projects to the portal in the future.

2.5.4   Benefits of the Solution

With the new WebSphere Portal Extend solution from IBM, sales agents and brokers have single sign-on access to a common location where they can find all the information they need to optimize sales and services by providing customers with heightened service designed to meet their individual needs. The portal delivers fast, convenient access to a multitude of applications, commissions and sales information, customer documents and other information.

With a consistent and efficient way to use and share multiple applications, agents are more productive, brokers find it easier to conduct business, and The Company expects to benefit from increased sales activity. And because the IT department can create new functionality and deploy it to the portal rather than having to continually develop new applications from scratch, The Company realizes significant savings in development costs and has become more responsive to customers' needs.

2.6 Case Study #5: A Large US Cosmetics Manufacturer

2.6.1   Customer Background

Headquartered in New York City, our fifth case study is one of the world's largest beauty companies, with sales of US$1.95 billion in 2004. With roots that stretch back to 1904, The Company has grown from a small business to an international conglomerate that includes several well known top-flight beauty offerings. The Company is composed of two divisions: one specializing in high-end fragrances, color cosmetics and skincare products, and the other selling beauty products for mass distribution. Currently, The Company employs 6,500 personnel worldwide in more than 25 countries.

2.6.2   Business Need for a Portal Solution

The Company has been successfully using IBM WebSphere Portal software in its application development department since 2005. Although the deployment was successful, the software was not being utilized to its fullest potential. As part of the takeover of another business, it absorbed that organization's IT architecture, which included a third-party portal application from BEA Systems. As it analyzed both programs, The Company needed to decide which portal solution would best meet its needs.

To make the right decision between the two portal applications, The Company needed to determine if IBM WebSphere Portal software could accommodate its instant messaging and Web conferencing applications, and if the software would perform well under the increased workloads resulting from the acquisition. The Company was interested in implementing a best-of-breed solution for its portal needs, and it wanted to unify its development processes using a single portal software solution.

2.6.3   The Solution

The Company engaged IBM Software Services for Lotus (ISSL) - Lab Services to discuss its competitive situation, and it gave the ISSL team the opportunity to prove the merits of the WebSphere Portal software and help the company decide which portal software to implement.

To fully illustrate the benefits of WebSphere Portal software, the ISSL team implemented a proof of concept (POC) environment at the client's site that included IBM WebSphere Portal Extend V5.1 software. The WebSphere Portal Extend software will allow the client to build a business-to-employee (B2E) portal in addition to its other portals.

By running the POC environment at the client's site, the ISSL team successfully demonstrated the WebSphere Portal software's ability to fully support and integrate the company's instant messaging and Web conferencing applications, including the IBM Lotus Notes and Domino platform. In addition, the ISSL team created and executed a successful test scenario that demonstrated the software's ability to accommodate increased business loads.

Convinced of the superior benefits of the IBM solution, The Company is implementing WebSphere Portal and WebSphere Portal Extend software as its single portal development platform and is displacing the BEA portal software.

2.6.4   Benefits of the Solution

The Company has saved money by preserving its investment in WebSphere technology and licenses and avoiding the need to purchase additional licenses and training. The Company is realizing more opportunities to streamline its communication methods, thanks to the new B2E features included with WebSphere Portal Extend software.

The WebSphere Portal solution provides best-of-breed portal technology that is flexible, scalable and open, thereby effectively delivering the client's communication and critical business applications. Using the features of the WebSphere Portal platform, The Company has developed a strategic vision to unite its development environment.

2.7 Overall

As suggested by these examples, IBM WebSphere Portal software is leading the rapidly growing portal market for two reasons. First, much of the technology contained in the WebSphere Portal

software is technology that IBM had been investing in before the advent of portals. These ongoing investments include security, application integration, user interface technology and support for mobile devices. The result is a breadth of features and a depth of functionality that go beyond enabling an attractive portal screen. Second, WebSphere Portal software delivers value while withstanding the rigors of enterprise-class computing, making it the best-of-breed portal software in the industry.

Appendix A: About Strategic Focus

Strategic Focus, founded in 1986 is a business strategy-consulting firm focused on creative problem solving with out-of-the-box thinking. Strategic Management methodologies as well as a variety of market research techniques within the Enterprise Software and Services space are used. Besides having expertise in using traditional approaches, such as Customer Interviews and Phone Surveys, to help its clients address strategic and competitive issues the company complements these methods with hands-on evaluations of Enterprise Software products in its own laboratory.

The core competencies of the firm may be summarized as follows:

- Use of Business Strategy Development along with supporting market research and the Balanced Score Card methodologies to help client companies increase their penetration within the Mid and Enterprise Software vertical market segments. This may include:

    — Understanding customer requirements, customer experience, software, and vendor selection criteria as well as competitive analysis via phone interviews in USA, Europe and Japan

    — Market segmentation, analysis, positioning, value proposition, and sizing of market opportunities

    — Scenario Planning -- including understanding strategies of the competition and forecasting future moves

    — Partner analysis and development

    — Developing strategies to target the competitor's customer base

    — Case Studies as Sales Collaterals to compare and contrast customer experience between the vendor and its competition

    — TCO and ROI studies.

- Hands-on technical competitive evaluation of all of the major domains of the Enterprise Software and Services Market in our own laboratory by software engineers. We are pioneers in this space, starting in 1993 long before other research firms jumped into the fray. Our reports are used for competitive analysis, product improvements, and product planning as well as for developing Sales Collaterals.

The company has domain expertise in the following areas: Portals, CRM, ERP, Open Source, Development Tools, BI Tools, SOA, Application Servers, RSS Feed Servers, SOA, J2EE and Database Application Performance Management Tools, Enterprise Application Integration, Web Services, Mobile Solutions and other emerging market segments. Strategic Focus has conducted numerous projects over the years in all of these areas.

For additional information please contact Jay Prakash, President, Strategic Focus, by phone at 408-568-3993 or by e-mail jay@strategicfocus.com.