

Creating a Successful Web Portal

Whitepaper

Covers:

- Web Portal Examples
- Web Portal Functional Overview
- Web Portal Technical Architecture

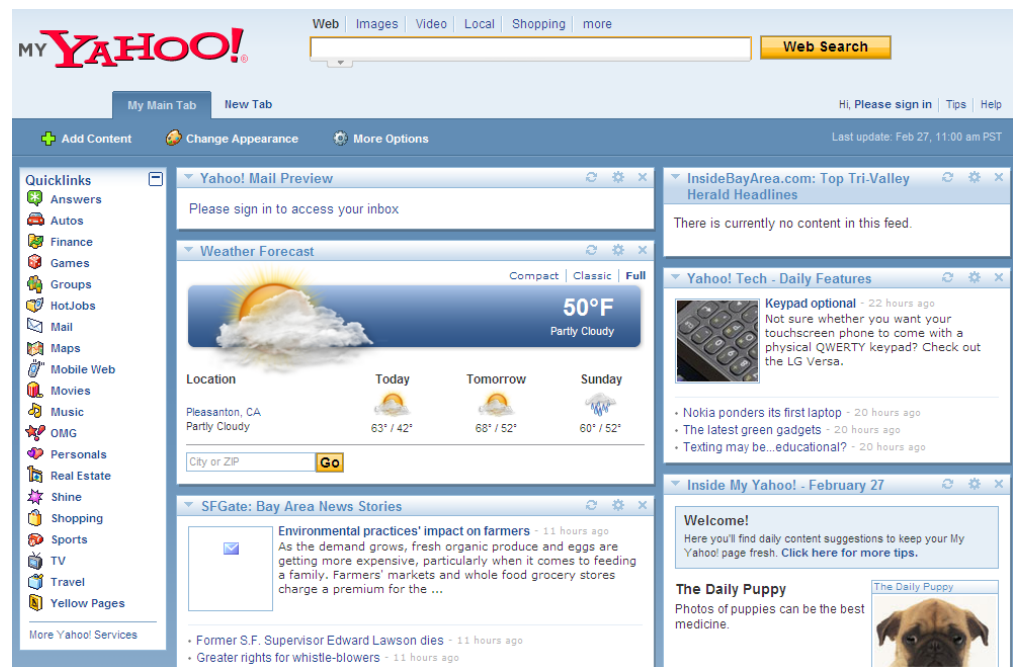
Thank you for reading this paper. We hope it will give you useful input to accelerate your portal project. The paper includes both functional as well as technical content: if you are primarily interested in technical information, feel free to skip ahead. If you have feedback on the content of this paper, please contact the authors at marketing@backbase.com.

Introduction to Web Portals

Web Portals were hot in the late 1990s, both consumer portals (such as Netscape.net) as well as corporate portals. They promised access to information from various sources via a single personalized home page. However, it took almost ten years for this vision to come to maturity.

Today, iGoogle and My Yahoo! set the standard for consumer portals. However, many corporations need an in-house solution that can be customized and managed properly, and the solutions from existing providers like IBM, Oracle and Sun don't even come close.

This whitepaper describes how corporations can overcome this challenge and develop portals that delight their users, whether they are customers, partners or the public at large. It presents several use cases that show how a web portal will support business objectives, such as improving the customer experience and increasing conversion.



My Yahoo! – A popular personalized consumer portal

Why use a portal?

Corporations implement portals with goals of attracting, engaging, converting and retaining customers. Increasing top line revenue is usually the primary driver, with customer satisfaction and lowering the cost of support as other important goals. Government agencies use web portals to lower the cost and improve the quality of the service being provided to its constituency.

Portals provide an opportunity to develop a more intimate relationship with customers through the use of customization and personalization. Engaging sites allow visitors to create a custom view of the functions that are most relevant to them so that they can quickly find the information they need

when they visit. This increases the likelihood that the visitor will continue to return to the site and the likelihood of doing repeat business.

Why do People Like iGoogle and My Yahoo?

Let's find out what makes iGoogle so good, so we can apply these best practices to corporate portals. First of all, all portals have the same basic features:

- The portal contains portlets/gadgets that are positioned on a grid
- Each gadget contains a separate application or piece of information
- The user can personalize the portal



iGoogle: easy and enjoyable to use

iGoogle is easy and enjoyable to use: do you want to move the weather gadget from the left to the right column? Just drag it over there. Do you want to add additional gadgets? Just click the "Add Stuff" link. Change the settings of a gadget? Just click on the menu button in the title bar of the gadget. Intuitive is the keyword.

If you are adding new gadgets, you can choose from standard Google gadgets, but also from a large library of third-party gadgets. It is easy for developers to create a gadget and add it to the iGoogle library. Therefore, you always find useful gadgets to improve your page.

Personalization is what gives iGoogle users a sense of ownership: they can simply login with their Google account to see their personalized page. They can change the background theme and color scheme, and configure the gadgets exactly the way they want. On top of that, they are never asked to click a 'Save' button.

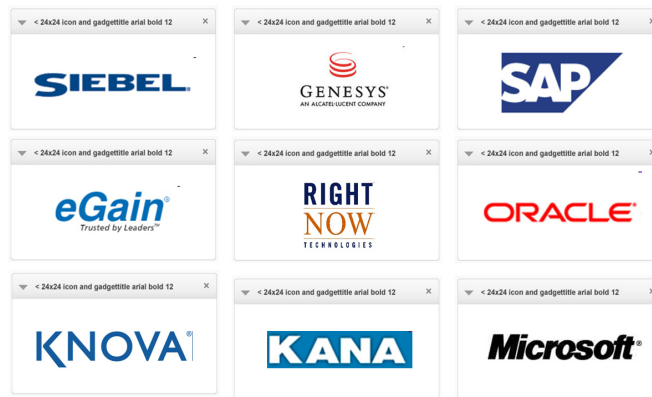
Finally, the iGoogle page is visually attractive. This is subjective, but if you're spending a lot of time on a personalized home page, it is valuable if that page is designed with care.

Web Portals for Corporate Use

Looking at popular consumer portals gives a lot of ideas, but corporate portals have their own set of requirements. First of all, most organizations want the portal on their own website. Google and other web portals don't offer this option.

Also, security is important. Unauthorized people should never get access, and different groups may have different permissions. Customers, partners and employees should be able to use a single login to access all relevant information and applications.

Usually there are at least several internal applications or information sources that need to be integrated into the portal. The portal should make it easy to do this, and – if needed – incorporate the entire application into the portal with minimal changes to the application itself.



Corporate Web portals combine 3rd party and legacy applications into useful applications that benefit customers and partners

And of course the look-and-feel of the portal should comply with corporate branding guidelines. It should complement the company's websites and web applications to maintain a cohesive brand identity.

So the challenge is to adopt the best features of the popular consumer web portals, while also satisfying all requirements for corporate use. This is hard, but getting easier and more practical with advances in web portal technology.

Web Portal Examples

Let's look at several examples of successful implementations of corporate web portals. Portals can be used for a large variety of applications, and we highlight several below.

News Portals

Example Industries: Telecommunications, Media

Target visitors: customers, the public at large

This type of web portals is most similar to consumer portals, because it has the same goal: offer your customers or the public at large access to a highly personalized news portal.

News portals are commonly offered by telecom companies as a way to attract more visitors and as a new delivery mechanism for their products and services. They provide the portal as a service to their customers, a tool for selling additional services, and as a point of entry to their self-service portal (see below). Media companies such as newspapers, networks and local radio and TV station are also using portals as a key element of their customer engagement strategy. Media companies will try to attract as large an audience possible to maximize advertising revenues and to increase market share.



KPN – the largest Dutch telco – made this news portal the country's most popular site

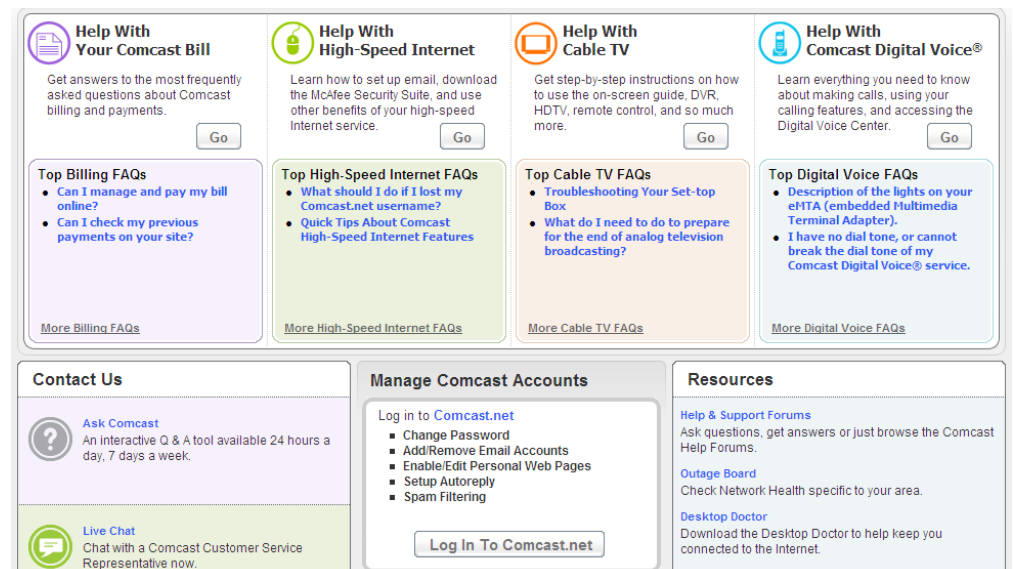
Customer Self-Service & Support

Example Industries: Financial Services, Telecommunications, Healthcare, High-Technology

Target visitors: customers

Many Global 2000 companies are assigning Chief Customer Experience officers to ensure that customers receive superior service. At the same time, customers are increasingly steered towards the website to reduce the support costs. Investing in a user-friendly customer self-service and support portal is seen as good investment to increase customer satisfaction while reducing overall cost.

The design of the portal will depend on the frequency with which the customer logs in. Customers who only visit the portal to pay their monthly bills are less likely to personalize, while software developers who visit a product support portal every day will benefit greatly from personalization features. The key is to find the right balance, and to support the user's workflow.



Comcast's help and support portal is personalized based on geographic location

Finance Portals

Example Industries: Retail Banking, Stock Brokerage, Insurance

Target visitors: customers

Financial services companies sell very information-rich products. Most customers frequently log in to their Internet banking system, to check their balances, pay bills and verify credit card transactions. People who invest in exchange-traded funds usually check on their portfolio every day. A personalized portal increases customer satisfaction and helps sell additional products to the existing customer base.

Security is especially vital for financial services portals. The portal should be on an encrypted connection; minimum password requirements should be in place; and it could use additional security features like activation codes or phishing protection.

Integration of all relevant back-end applications is also of key importance: a portal simplifies this, because separate applications can be loaded in their own gadgets.

The screenshot displays the ABN AMRO Internet Banking Portal interface. At the top, there are tabs for 'My Situation', 'Account Overview', and 'Account Details', along with a 'Select Modules' button. The main content area is divided into several sections:

- Greeting and Alerts:** 'Good morning Mr Williams' with 2 new invoices and 3 new alerts.
- Account Overview Table:**

Account Number	Account Name	Balance
1254324	My Checking Account	\$ 12,098.32
4213412	Shared Checking Account	\$ 750.56
62654	Internet Savings Account	\$ 3,766.05
8765345	Yes! Early retirement!	\$ 11,292.74
2343233	Mr P. Williams Nasdaq Fund	\$ 7,098.01
Grand Total		\$ 35,005.68
- Bill Payment:** A form to pay bills with fields for Invoice, Amount, Note, From account, To account, Name, Account, and a 'Send' button.
- Retirement Planner:** A section with input fields for age, annual income, savings, retirement age, and desired percentage of current income after retirement, with a 'Verder' button.
- Product Wizard:** A section with a 'Question' about advice, a 'Mortgages' selection, and a 'Next' button.
- Mail:** A list of messages with columns for Date and Subject, including items like 'New credit card', '401k', 'Appointment with mortgage specialist', etc.

ABN AMRO Internet Banking Portal used by millions of retail banking customers

Partner or Agent Portals

Example Industries: Financial Services, Healthcare

Target visitors: partners, agents, providers

Do you have partners who are selling your products and services to consumers? This could be insurance, cell phone plans or software licenses. Do you have partners who interact with you frequently, such as doctors submitting their claims with health insurance companies?

In any of these scenarios you probably already have a partner portal, which is the central hub for interaction with your business partners. Adding personalization and usability features to this portal can make your partners more productive, profitable, and more likely to do business with you, rather than a competitor.



A fictitious partner portal that supports collaboration with partners

Product Portals

Example Industries: Manufacturing, Semiconductors

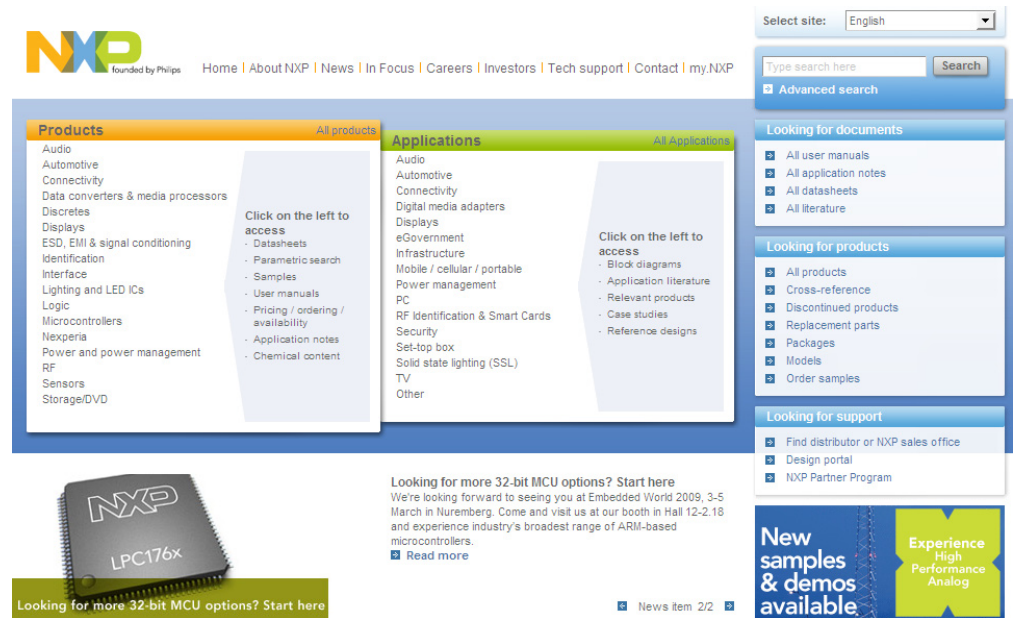
Target visitors: buyers, planners, partners

Industries that offer a lot of products or parts have the challenge of presenting these products in an effective way to their customers or partners. Think of a semiconductor company with tens of thousands of products: how is a customer going to find the right product? Think of a manufacturer that wants to give supply chain partners an easy way to order replacement parts.

For this type of application a portal does not necessarily look like iGoogle: the focus should be more on effective navigation than on full personalization of the page. However, personalization can be very useful: the portal can show personalized product recommendations, or a list of recently viewed products.

A good search function is a key feature for a product portal. Ideally the search box has an auto-suggest feature: a list with suggestions appears immediately when you start typing (useful for matching product names). Parametric search is important when customers search for certain product characteristics, rather than product names: they set their preferred parameters (e.g. voltage, size or other specifications) and it shows the recommended products.

An excellent example of this functionality is the portal of NXP, a leading semiconductor company. They efficiently present thousands of products with smart navigation and powerful search tools. See next page for a screen shot.



NXP's portal provides easy access to tens of thousands semiconductor products

Portal Anatomy & Functionality

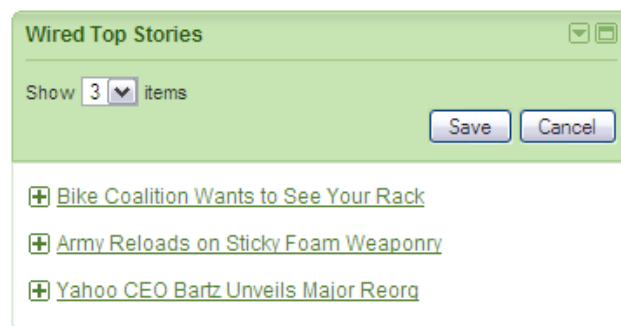
So what features should you include when you are developing your portal? It is often underestimated how many features users nowadays expect to find in a full-featured portal implementation. So let's look at an example and present the various features.

Gadgets

Let's start with the gadgets (or portlets) themselves: although they are essentially 'boxes', they can come in several different types. Some gadgets have a fixed position, while others can be dragged to different columns and positions.

Movable gadgets need to have a header (title bar) because that's where you drag them. In the header you can also have options for minimizing, maximizing and closing the gadget, as well as a settings button.

The settings panel usually slides down within the gadget itself, and setting take effect immediately without a page refresh.



An iGoogle Gadget with title bar and settings panel

Boards

Often, portals can have multiple tabs, sometimes called “boards”. These tabs can be pre-configured, while in other cases users can add new tabs themselves. On a board you can have multiple columns to position the gadgets in. Some of the gadgets may have a fixed position, or there might be certain positioning constraints: for example, some gadgets only fit in a wide column, not a narrow column.

The header of the page can contain additional navigation or shortcuts. These shortcuts typically apply to the portal as a whole, not to a specific gadget. For example, it can contain a link to the preferences panel where a user can set personal preferences, such as color scheme.

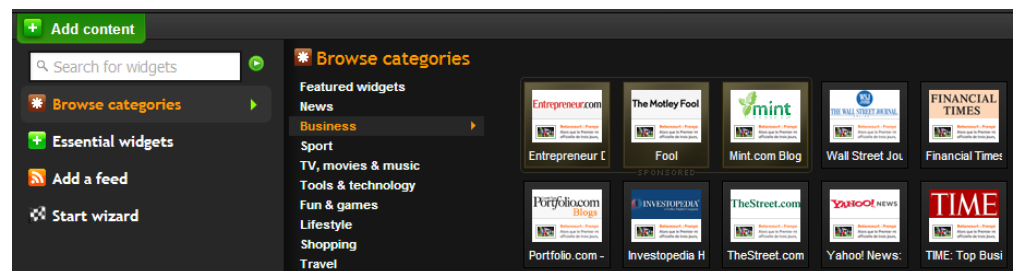


Tabs and page layout options on Netvibes.com

Catalog Browser

Not all people are interested to have the same gadgets on the page. The gadget catalog presents all available gadgets in an attractive way, so users can pick the gadgets they find useful and add those to the page.

Depending on the number of gadgets you have, the catalog browser may be organized in different ways. If you have hundreds of gadgets, they are often organized in categories. When you select a category you will see a summary of all available gadgets in that category, and clicking on one will show the details, usually with a preview.



The catalog browser at Netvibes.com

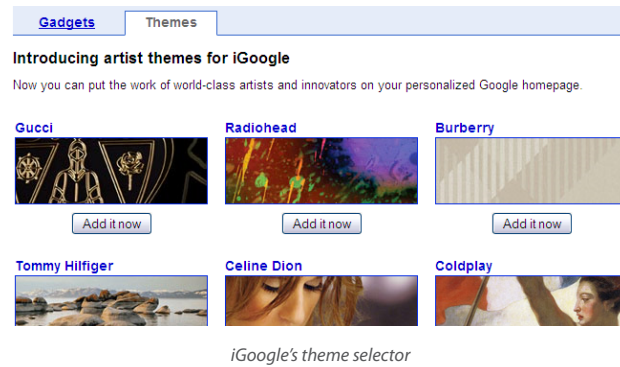
For smaller number of gadgets you could skip the categorization, and for simple gadgets you could also remove the details panel. It really depends on the situation.

Of course, there may be applications where the choice of gadgets is limited or where users are not supposed to add or remove gadgets. In that case, the entire catalog browser can be omitted.

Chrome & Themes

In almost all portal implementations there are special requirements for the design of the portal (what it looks like) and the behavior (how it works). Most portal implementations can facilitate this.

Every element of the portal – as discussed above – can be changed. If there is no need for tabs, just leave them out. If you want the gadget catalog on the bottom instead of on top, that should be possible. If you have a specific color scheme and design in mind, that should not take too much time to implement.



It's useful to distinguish chrome and themes. Chrome defines how the portal behaves, for example: does a gadget have a title bar or not. A theme defines what it looks like, for example, if the gadget's title bar has rounded corners or a drop shadow.

Personalization

The overarching feature of portals is personalization. As mentioned, it really depends on your specific portal application how much personalization you need. Some portals only let you rearrange pre-defined gadgets, while others are totally customizable. Most portals use a login to save user preferences. As a developer you can choose to enable auto-login based on cookies, or you could even save the preferences based on cookies alone, without requiring a login.

Portal Architecture & Requirements

Portals platforms come in two main flavors: server-centric and client-centric. About 10 years ago the first portal servers appeared on the market. They were server-side applications on top of Java application servers. This means that every time a user clicks on a link or button, a request is sent to the server to determine what needs to be done. Well-known server-centric portal servers are IBM WebSphere, Oracle WebLogic Portal, Oracle Portal and Sun Portal.

Only recently client-side portals have come into favor, driven by consumer applications, and enabled by Rich Internet Application technology (Ajax). Well known consumer examples are iGoogle, My Yahoo! and Netvibes. Now, a lot of the logic of the portal can be handled within the browser, or in other words: client-side. The most popular client-centric portal server for corporations is Backbase Rich Portal.

Client-side portals are based on a Web Oriented Architecture (WOA), which is a style of software architecture that extends service-oriented architecture (SOA) to web based applications, and is sometimes considered to be a lightweight version of SOA. WOA is also aimed at maximizing the browser and server interactions by use of technologies such as REST¹ and POX².

Security

For corporate portals, security is often very important. First of all, users should only have access to those applications that they are authorized for. The same is true for content. And ideally they only have to remember one login (single sign-on). In some cases you may want to use cookies to automatically login users, for example in the case of a consumer portal. You would still ask users to login when they change personal settings.

¹ Representational state transfer (REST) refers to any simple interface which transmits domain-specific data over HTTP without an additional messaging layer such as SOAP or session tracking via HTTP cookies.

² Plain Old XML (POX) is a term used to describe basic XML, sometimes mixed in with other, blendable specifications like XML Namespaces, Dublin Core, Xinclude and XLink.

Integration

The goal of the portal is to integrate multiple applications and content sources into a single screen, so it should provide many ways to integrate. It should be possible to load a local application into a gadget, but also a remote application. As an example, with Backbase Rich Portal existing applications can be added as gadgets in seconds. It is also useful if you can easily show data from databases or RSS feeds. And finally, you may want to integrate with a content management system, or use the portal's content repository.

Personalization

Based on the login, the portal stores a unique user profile. First of all, this contains the information about the user's configuration of the portal. Also, you should be able to store additional user profile data, for example the zip-code so you can display the weather for the user's region.

Development

Most portal server implementations will be at least somewhat customized. Solid development tools are therefore essential. It's also good to determine the required skill-set: do you need rocket scientists, or will standard web development skills suffice? Most users are nowadays used to rich user interfaces, so the tools should provide good support for Ajax development, ideally with a visual development tool.

Performance

Traditional Java Portal Server software has a reputation to be resource-hungry. However, if you optimize the application and buy enough servers, you typically get acceptable performance. Client-centric portals are much faster by design, because they delegate much of the work to the client, rather than create a server-side bottleneck.

Comparison of Server-side and Client-side Portals

In the previous paragraphs we already touched upon the two categories of Portal server software: server-centric and client-centric. This paragraph contains a comparison of the two types of portals.

Let's first give some examples of specific portal servers. Well-known server-centric portal servers are IBM WebSphere, Oracle WebLogic Portal, Oracle Portal and Sun Portal. The most popular client-centric portal server for corporate use is Backbase Rich Portal, which we will focus on in this comparison.

Java-centric vs. HTTP-centric

Java Portal Servers are frameworks that are based on a Java API for communication between different parts of the application, while the Backbase Rich Portal uses HTTP communication. Therefore Rich Portal can be used with any server-side technology, not just Java. Integration of existing systems is less complex and can often be done without modifying the original application, and without depending on complex enterprise application integration projects.

Server oriented vs. client oriented

With Java Portal Servers, all logic runs on the server. Often, the entire page is reloading because a server roundtrip is required. Backbase Rich Portal has more client-side intelligence, and is therefore more responsive, less complex and it provides a better end-user experience. Of course, certain features always have to run on the server, such as authentication and user profile storage, so those are included in the Rich Portal product.

Orchestration vs. loose coupling

Many Java Portal Servers orchestrate the portal: all logic has to pass through the portal lifecycle, involving a lot of overhead. Backbase Rich Portal is modular: useful features such as personalization, access control and caching can be used if required, resulting in less complexity and faster development.

WSRP vs. Web Oriented Architecture

The standard way to integrate external gadgets into Java Portal Servers is WSRP, which is a fairly complex technology. Backbase Rich Portal uses a Web Oriented Architecture (WOA) with HTTP and plain XML to provide the most dynamic, scalable and interoperable approach for creating enterprise mashups. Any external gadget that generates HTML can be integrated into a Backbase Portal gadget.

Page-based rendering vs. Dynamic page fragment updates

Java Portal Servers render the entire web page at once, so a change in a single portlet can sometimes result in a full page refresh, which is annoying for the user, and puts a strain on the hardware. Rich Portal updates only parts of the screen: if you minimize a gadget, that gadget is instantly minimized, and only in the background an asynchronous HTTP call is saving this change in the user profile.

Java-only vs. technology-neutral

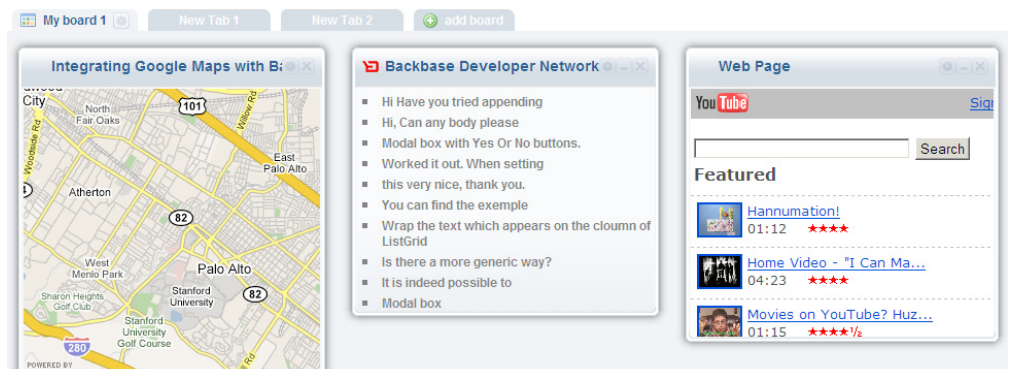
The name Java Portal Server already implies that you have to use Java to develop a web portal. Integration of applications that use .NET or other non-Java technologies is complex or sometimes simply impossible. The portal framework of Rich Portal is client-centric, so any server-side language can be used, and any HTML, Flash, Silverlight or other web application can be loaded into a gadget, without further integration effort.

Access Management

Most Java Portal Servers have built-in single sign-on and security features. Backbase Rich Portal leverages existing access management systems, such as Tivoli, SiteMinder, Oracle Access Manager and OpenSSO.

Backbase Rich Portal

Web 1.0 is being replaced by Web 2.0 technologies, and this also applies to portal technology. There is a paradigm shift from monolithic server-side applications towards agile Rich Internet Applications. Backbase Rich Portal is the first Web 2.0 portal framework that provides a solid alternative to the established portal server vendors.



Backbase Rich Portal: ease of use for both users and developers

Backbase Rich Portal provides superior usability, not just for end users, but also for application developers and administrators. Development is much faster, so the first version of the portal can often go live in a matter of weeks.

Gadget development is very simple. Any HTML page can be included, but essentially anything that can run in a web browser, including Flash, Silverlight and JavaFX. In addition, third-party gadgets can be used, for example from iGoogle or Netvibes. The gadgets can run on the local server or on a remote server.

Rich Portal scores high points on the usability and user experience features, but at the same time it complies with all common enterprise-level requirements. Rich Portal is secure, scalable and easy to manage and maintain. It has successfully been implemented with many Global 2000 companies in North America and Europe.

Conclusion

Requirements for Web Portal have evolved significantly over the past decade. Web 2.0 features are now mandatory, while established portal vendors are still trying to sell their multi-million dollar projects based on old technology. Backbase Rich Portal is an ideal match for the new requirements:

- Faster development
- Easier integration with any back-end
- Straightforward gadget development
- Integration with any existing web application
- Less complexity, easier maintenance
- More value for money

About Backbase

Backbase is a leading provider of Customer Engagement and RIA software and solutions. Customers include AIG, Visa International, ING, ABN AMRO, Vanguard, Philips, General Motors, Motorola, Sony, Telus and Airbus.

Recently Backbase received a "Positive" rating in Gartner's MarketScope:

"Backbase has a well-designed, full-featured, closed-source product range targeted for the enterprise sector and for public sites (online self-service and e-commerce). It's a small, agile vendor that understands the market. Backbase has achieved a certain track record and market penetration in the enterprise sector, as well as among public sites, compared with other closed-source alternatives."

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