

Creating Portals from Building Blocks

Shannon Fowler

Abstract— Corporate portals can be used to present aggregated information customized for a wide variety of business users. This paper presents a method for implementing a portal by breaking the process down into reusable components, or building blocks, and it also profiles a successful business-to-supplier implementation. Building blocks are flexible and can be designed to cover a variety of topics, such as target audience evaluation, security architecture, common look and feel standards, project management deliverables and communication plan, infrastructure configuration and architecture, content management and acquisition, metrics, and operations and processes. Once the building blocks have been established, future enhancements can be targeted to specific blocks, making it easier to plan upgrades to the system.

Index Terms—architecture, building blocks, CLAF, components, corporate portal, e-business, extranet, portal, reusable, security, supplier

I. INTRODUCTION

Portals represent one method of aggregating information from different sources for a variety of users. From a business perspective, the user set divides portals: employees, customers and suppliers. From a vendor perspective, portals include people, products and services on the Internet; connecting applications and data, and connecting people to applications/data. An opportunity to transform how information is used within businesses by delivering content relevant to the user's role or task can be a prime benefit of deploying a portal [1].

Implementing a portal requires a lot of planning and integration. However, dividing the required work into reusable individual components, or building blocks, can help define the statement of work and focus resources on the most critical aspects of the implementation.

II. DEFINITIONS

Access Control: Policies, standards and specific procedures identifying the specific usage privileges that an authorized individual/application has, relative to a specific application, web site or web document.

Authentication: Verification that the individual/application logging onto the system is who they say they are.

Authorization: Verification that the authenticated individual/application has usage privileges relative to certain applications, web sites or web documents [2].

CLAF: Common look and feel standards that specify requirements for user interface components and provide a consistent user experience.

Extranet: A network of controlled-access Web resources available only to specific users, such as customers or trading partners [3].

Metadata: Descriptive information associated with each document.

Portal: Focal point for Web technologies to deliver and organize dynamic information and services based on identity or function of the user. The classic portal site functions as an informational hub, aggregating links that connect the portal's constituency of visitors to related information sources. Portals are typically positioned as starting points for users [4].

Portal Customization: Allows configuration of a portal with sets of services tailored for different portions of the portal audience. Ease of customization of a portal product is a measure of its ability to support various categories of portal applications [5].

Portal Personalization: The ability to customize a user's view of the data. Allows users to configure prescribed (by administrators) common look and feel elements and select content areas for their portal's entry page.

III. BUILDING BLOCKS

Some of the more common and important building blocks used in a successful implementation of a business-to-supplier portal are covered in this paper, but the exact quantity and content of the blocks may change based on the portal project. Not all elements may be needed for all portal implementations, and some implementations may need additional blocks identified and developed.

A. Target Audience Evaluation

It is important to know who will be visiting and using the portal, so the design and content can be created to satisfy the needs and desires of this audience. Identification of a primary target audience is a critical component of the portal requirements. It is not uncommon to have one or more secondary target audiences as well.

Metrics gathered on the target audience can be a useful tool when planning the portal implementation. Fig. 1 shows a

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Shannon Fowler is with Connexion by Boeing, P.O. Box 3707, M/C 14-09, Seattle, WA 98124 USA (cell phone: 206-550-7625; e-mail: shannon.l.fowler@boeing.com; URL: <http://www.connexionbyboeing.com>).

sample graphic of data collected on browser versions used by a target audience. In addition, these metrics can be continued to be collected to provide design guidance throughout the lifecycle of the project.

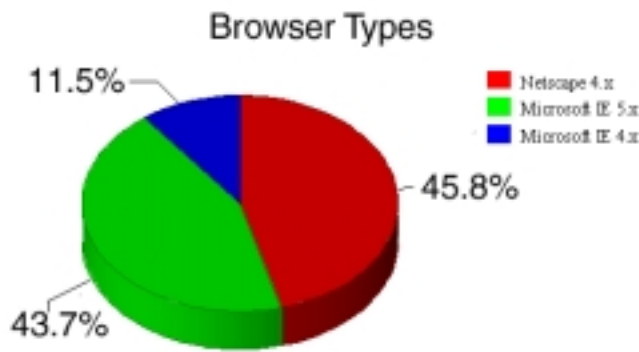


Fig. 1. A sample graphic showing browser types used by a target audience

When evaluating the target audience, various user-centric factors need to be considered, such as available hardware, operating systems, browser versions, bandwidth, computer skill level, native language, etc. Some members of the target audience (or users) will have fast computers, the latest Windows operating system, the most advanced browser available, a high bandwidth connection, a hacker's mentality, and a firm grasp of the English language. Other users will have slow computers, a non-Windows operating system, an old browser version, dial up modems, a general mistrust of computers, and a limited ability to understand English. And then there are all the users in between!

B. Security

Security is a top priority, especially when proprietary and sensitive information has the potential to be exposed. Authenticating a user's identity is the first step, but then a list of resources the user is authorized to access, based on data about the user, must also be determined. In addition, some application owners and developers may want to control access to the data at a more granular level, and limit access to specific content within the application to authenticated users with particular authorization attributes. Application-specific business rules can be created to support these requirements.

To support this activity, careful consideration should be given to a secure process for account management and administration (including password resets).

A crucial deliverable for this building block is an architecture plan detailing the various elements needed to create a secure environment, such as a security perimeter, see Fig. 2. Providing documentation on security policies and procedures to portal application developers is also an important part of this activity to ensure the team is working toward a common goal.

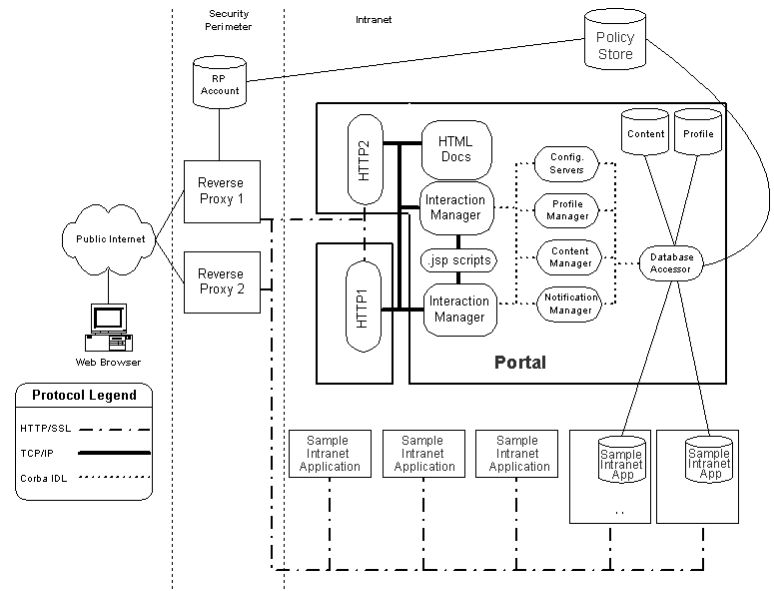


Fig. 2. Sample security architecture diagram

The effort to enhance the experience of the user should include minimizing the number of login times and the number of unique identities and passwords. To accomplish these goals, a single sign-on solution can be purchased or built, see Fig. 3.



Fig. 3. Sample diagram of a single sign-on solution from Oblix, Inc. [6]

Single sign-on solutions can promote standardization and save development time and cost. As new methods of authentication are adopted, application developers do not need to develop new interfaces.

C. Common Look & Feel (CLAF) Standards

By providing a common look and feel, CLAF helps users learn how to find information and how components function. This allows returning users to more easily navigate the site and more readily mine its resources for solutions.

CLAF benefits developers as well as users. In addition to ensuring a consistent user experience through the application of consistent user interface components, CLAF simplifies page development by providing a set of page interface guidelines

procedures, and security restrictions, if any.

Interviews with the target audience are a good source of content ideas. However, content can sometimes be difficult to obtain. Assessing currently published sources, and convincing the developers of those sources deemed appropriate for portal partnership, can be one way to obtain authentic content.

F. Operations and Processes (Governance Board Structure)

Processes for creating policies, enforcing standards and decisions, and applying orderly changes to the system can be handled by creating a governance structure.

A governance board can review all requirements and project initiatives for compatibility with stated project goals and directions before unnecessary costs are accrued. New project tasks can then be integrated into the project schedule.

In addition, processes for dealing with problems encountered by users should be developed. Components of the process include identification of the group or individuals responsible for fielding complaints from the users and coordinating problem resolution, and scripts for service personnel to use when dealing with a variety of situations.

It is important to realize that leveraging the success of other portal deployments can speed up building block development for new portal projects. Therefore, documenting the successes of each implementation is critical

G. Metrics

Metrics are an important tool for providing Return on Investment (ROI) data for executives and finance-minded individuals, but they are also critical for assessing the validity of the portal and the partner applications. The data can help provide answers to a variety of questions, steering portal development and future enhancements.

For example: Are users viewing essential content? What path do they take when moving through the portal? How much time do users spend browsing the site?

Applications that analyze server logs and produce metrics can be created or purchased, see Fig. 8.



Fig. 8: Sample metrics report from WebTrends [8]

H. Project Management Deliverables and Communication Plan

Project methodologies are used to produce deliverables for communicating status, documenting requirements, tracking action items and problems, coordinating with other teams, obtaining management approval, developing timelines, see Fig. 9, and scheduling project tasks. Breaking the schedule into 90-day increments can be useful, since it provides time to accomplish significant portions of the project, while showing progress to executives and other interested parties on a regular, confidence-inspiring basis.

Communication - with the target audience, management, team members, partner applications, and infrastructure teams – is essential to the success of the overall project. A good communication plan helps minimize misunderstandings and duplication of effort, ensures executives make decisions on the most accurate information, and lessens user confusion over new features and interface enhancements.

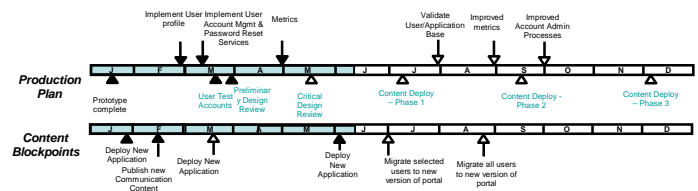


Fig. 9: Sample portal implementation timeline

IV. BACKGROUND

An actual account of one company's experience implementing a business-to-supplier portal is included in this paper to illustrate the use of the building blocks concept.

A growing amount of business data for this company is stored and accessible via its Intranet and extranets. Increasing requirements for online services and applications to support various e-business initiatives produced a desire to show a united storefront to the company's suppliers.

An important strategy for this company involves e-enabling business functions; implementing e-business applications with suppliers is part of that strategy. Prior to the supplier portal going into production, applications for suppliers were available via the Web through the company's extranets. However, the applications did not have many things in common – for example, navigation varied from application to application, an additional log-in was sometimes required, and the look and feel did not suggest the suppliers were dealing with a single company. Users had to learn to navigate multiple interfaces.

A decision was made to unite all of the applications together with a common interface, including CLAF and single sign-on. The applications became partners in the portal experience. A resolution was drafted stating that the portal home page would be changed frequently to provide timely information, and the portal software would allow users to personalize the display.

V. IMPLEMENTATION

The successful supplier portal implementation used the building blocks outlined previously. The overall plan was broken into three phases, each phase consisting of one or more 90-day increments.

A. *The First 90 Days*

A 90-day study was commissioned to build a prototype and determine the feasibility of a portal project. A team was assembled consisting of a project manager, a team lead, several application developers, an account administration and content publishing group, an infrastructure team, and a portal architect. The team set up a development environment and began brainstorming, experimenting, and testing various building block strategies.

A portal for customers already existed, so an effort was launched to work together and attend meetings with the customer portal team to share information. The customer portal already had a security structure well documented, so the supplier portal team was able to leverage that work.

The technology presented its own challenges, but trying to find timely content for the portal proved somewhat difficult, so a member of the portal team was assigned the task of rounding up information for publishing.

A portal interface was created and CLAF standards documented. In the meantime, the many existing supplier applications were inventoried and evaluated, so decisions could be made about eliminating redundancy and level of effort to comply with CLAF. Account administration procedures for identifying supplier user accounts were also developed.

In addition, a target audience evaluation was completed, and it was discovered that whereas some suppliers were large companies with current computer configurations, a computing staff, and lots of available bandwidth, other suppliers were small mom-and-pop shops with limited knowledge of how computers work. In addition, many of the suppliers were located in Third World countries, and must work with older computers, spotty dial-up connections, and language barriers.

Once the 90-day prototype was approved, work began on a production implementation.

B. *The Move to Production (In 90 Day Increments)*

Supplier user accounts were flagged so they could receive communication on the changes and be directed to the new supplier portal interface. Documentation of business rules governing the information users were authorized to see was also produced.

Work also began on an application-by-application basis to apply CLAF standards. Changes to the portal were first tested by the supplier portal team and selected representative suppliers. Simple metrics were used to track progress.

A governance board structure was created, and began to produce documented procedures and process flows. The governance board also began scheduling regular application review meetings to ensure a high level of quality and a

demonstrated compliance to established standards.

The supplier portal went into production late last year. The portal now has about 6,000 users (with the number of user accounts growing monthly) and provides information access to more than 400 active suppliers.

C. *Future Challenges (In 90 Day Increments)*

A change of portal software will be deployed this year by the infrastructure team, so work is under way to plan the migration. Enhancements to the portal, such as a dynamic site map based on authorized applications, are on the schedule, and will be added as they become available. Methods of verifying communication with suppliers via the portal are also being explored.

In addition, more detailed business intelligence metrics are in development. The data will be analyzed in the hope of paring down the remaining available applications to a more manageable number, and giving the supplier portal team additional insight into the behaviors and needs of the suppliers using the portal.

Efforts continue to incorporate CLAF standards in more of the available applications, and the top 10 most visited applications are high on the list.

Finally, the supplier portal team plans to forge an even closer relationship with the customer portal team, and to more fully explore the opportunities for accelerated advancement based on best practices.

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