The Use of Portals in a Systems Architecture

Prof. Paul A. Strassmann George Mason University February 25, 2008

What is Portal Software?

- Portal is a tool for aggregating content from Internet based applications.
- Portals will reflect interests of different users.
- Portals is web software that provides access to information from multiples sources.

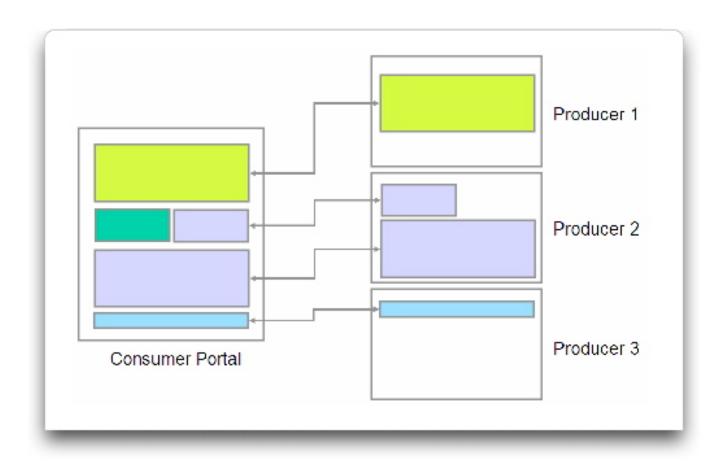
What Portals Offer

- Portals utilize Internet which offers an infrastructure that organizations does not need to develop.
- Portals allow users to visually arrange components into a customized screen display.
- Portals make it possible for non-technical business users to chose information to be displayed.
- Portal software presents a unified interface to back office business systems.
- Portal provides a single sign-on for services.
- Portals can be a Web service, offering "thin client" access.

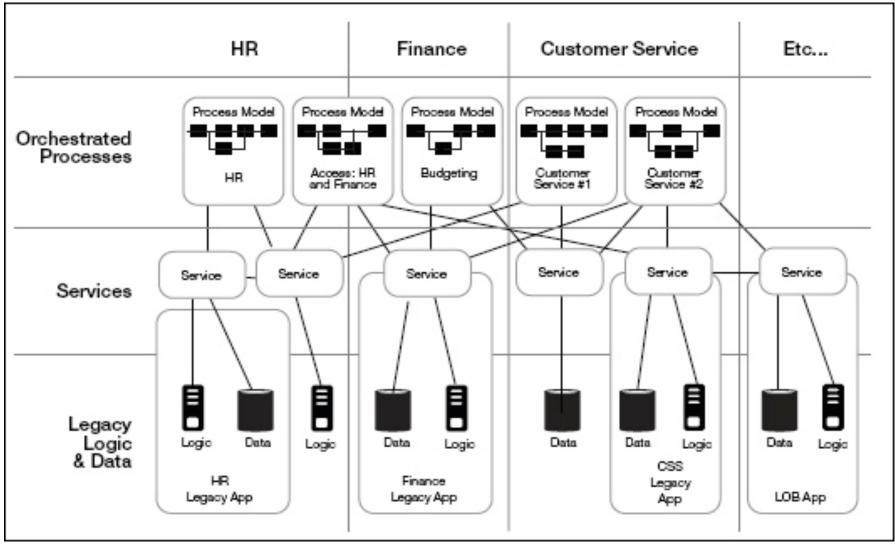
Trends and Benefits

- CIO surveys confirm that portal technology is a priority.
- Portals now include business process management.
- Portals are a means for launching virtualized applications.
- Portal adoptions are a good first step toward SOA.
- Deployment costs less than for stand-alone applications.
- Portal-based composite applications deliver rapid return on investment (ROI).
- Portals offer rapid implementation in < 6 months.

Portals Allow the Aggregation of Application



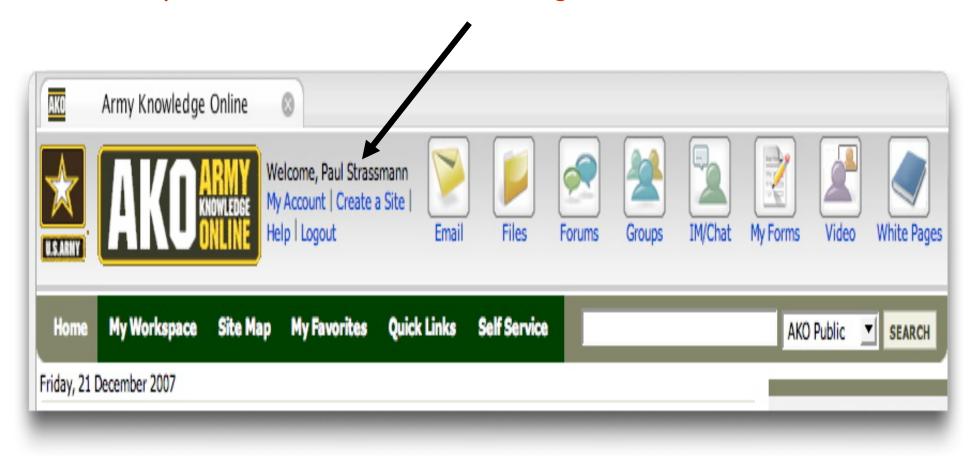
Portals Make Possible Aggregation into Functional Uses



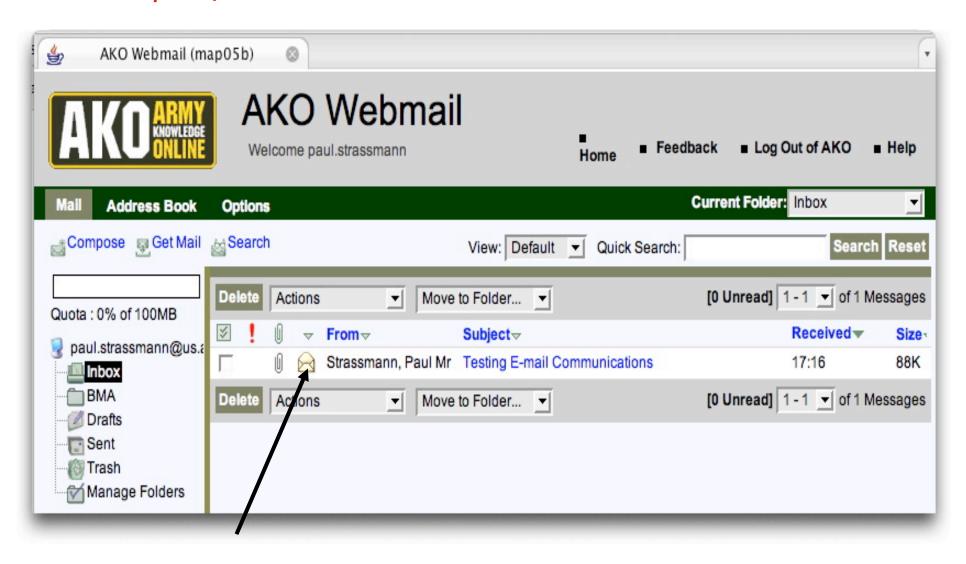
Part I

Example of a Portal

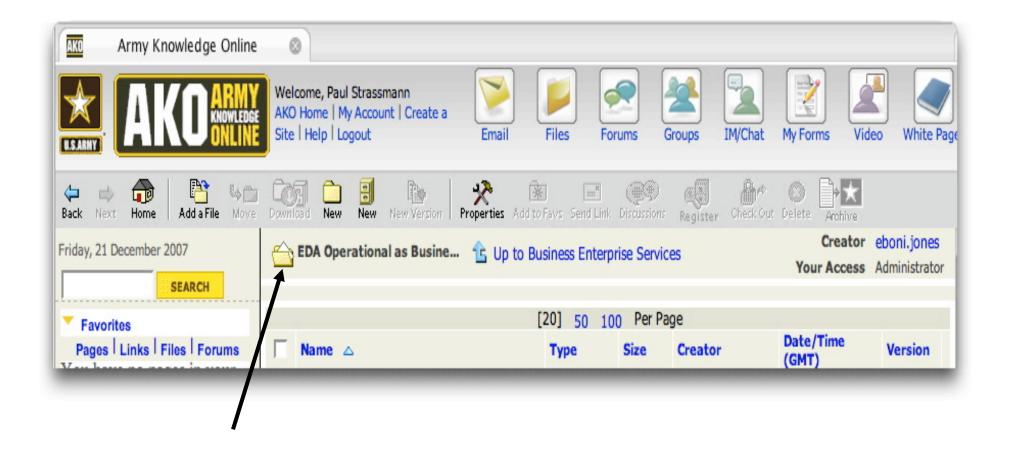
Example of a Generic Portal Home Page



Example of a Portal Service: Web Mail



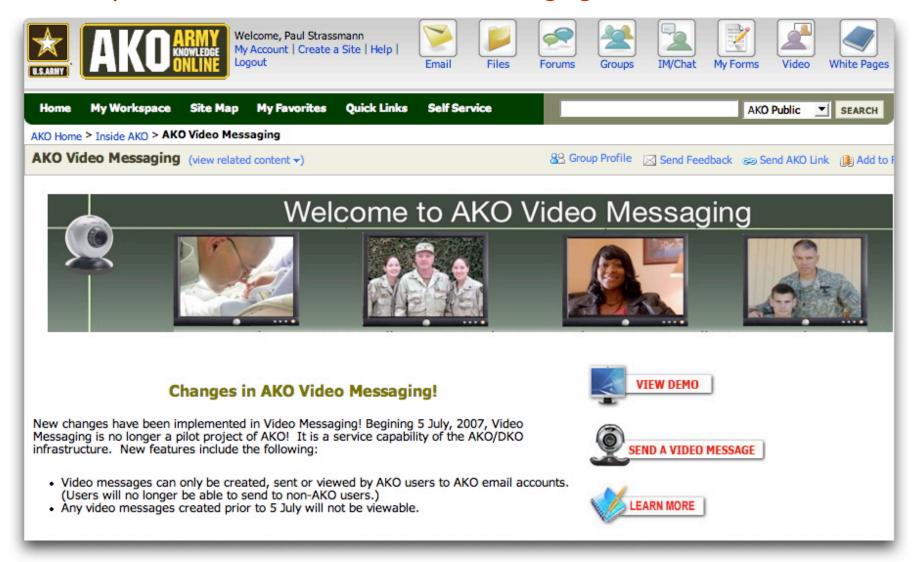
Example of a Portal Service: File Management



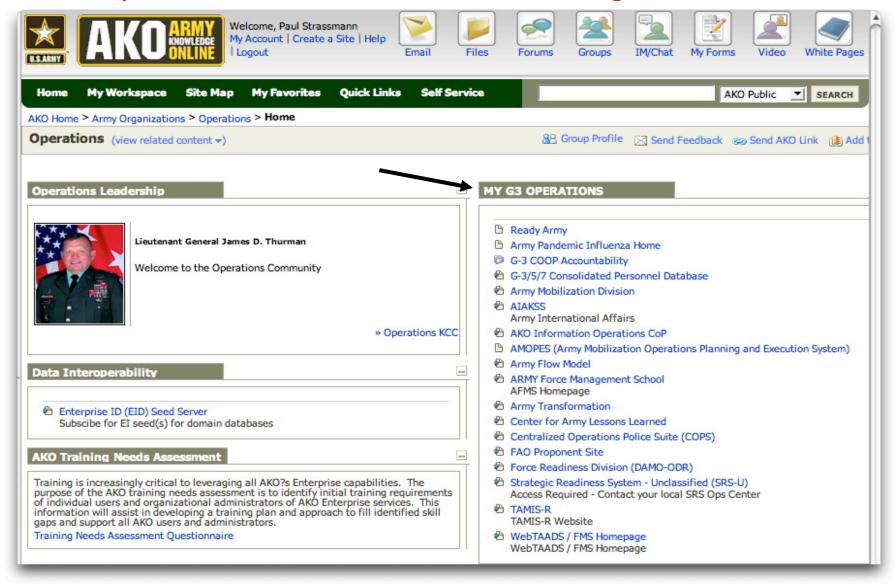
Example of a Portal Service: Instant Messenger



Example of a Portal Service: Video Messaging



Example of a Portal Service: Access to Web Pages



Example of a Personal Home Page



Example of Services Available (Partial List)



Did You Know ???



- Over 2600 FREE education courses available through AKO/DKO
- 30 Languages now available via Rosetta Stone (Army only)
- Over 80 certification programs such as MCSE, A+, CISSP, Cisco,
 Oracle and more with Personal Mentoring (Army only)
- Obtain Free anti-virus software for your office and Home computer
- Use the Files area to share photos for Official use and also share photos with family members in your personal area
- View your Official military record via AKO (Army only)
- Quickly setup 2-3 click shortcuts to your favorite Pages and Files
- Need to quickly check email, stop by ANY computer and check your AKO/DKO Web mail
- Forms or Publications, available in Pubs and Forms search area
- Need the latest news, check out the latest Syndicated News Channel

Part II

Portal Concepts

Examples of Portal Features

- Portals are supported by a network centric architecture, using Service Oriented Architecture (SOA) methods.
- Information can come from anywhere, from either previously "silo" applications, the Internet or access from any repository.
- Users control the data. Users create and submit information, consume it and have an instant feedback loop.
- Users organize data. Instead of fixed hierarchies users determine how information is organized and displayed.

Example of a Menu of Portal Services

Presence Management Dashboards Awareness Sales Force Instant Messaging Automation Customer Business Relationship Alerts Management Communication E-Forms Content e-Mail Management Document Collaboration Management E-Learning eHR Composite **ERP Information** products Workflows Syndicated Rates

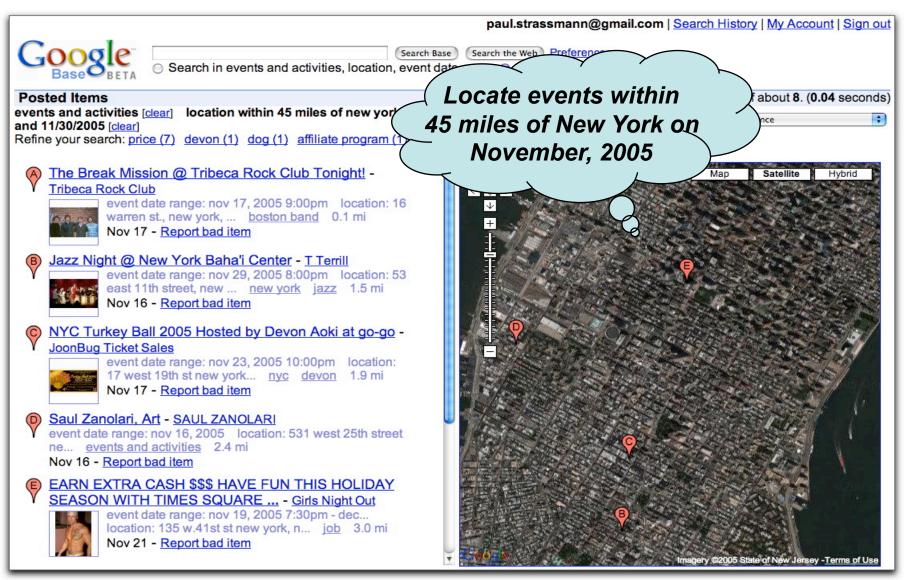
Examples of Portal Offering

- Content Services: The capacity to discover, scan and index documents from remote repositories for access through a Portal.
- Search Services: The capacity to discover results from non-standard applications or from different Portals for inter-Portal sharing of information.
- Single Access Sign-on: The capacity to authenticate a user for access to a variety of Portal offerings.

Mashups — An Important Capability for Portals

- "Mashups" are hybrid applications that utilize information from multiple sources.
 - Example: Real Estate Listings (MLS) combined with mapping data (Google Maps) show location of properties for sale.
- "Mashups" are a version of composite applications and can be displayed by a Portal if extracted from its source.
- "Mashup" software from Yahoo Pipes, OpenKapow, Dapper.net.

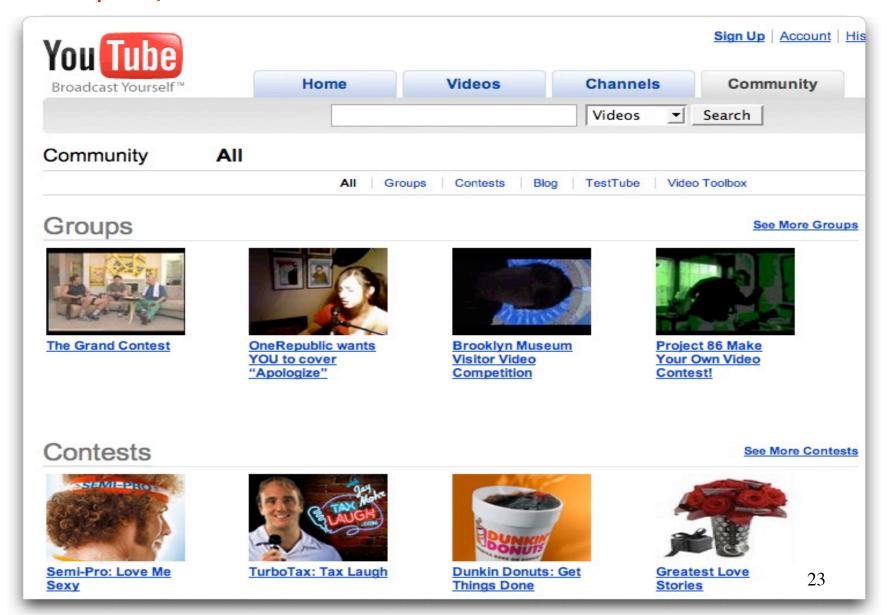
An Example of a Google Mashup



Portals Can be Also Access Points to "Social Computing"

- "Social Computing" or "Social Networking" offer Web sites where information is submitted and organized by end-users.
- Includes "Wikis", "Blogs", "YouTube", "Wikipedia", "Flickr", "LinkedIn", etc.
- Portals offer a link to authorized "social computing" pages.
- Portals Information Assurance offers a means for control of access to "social computing".
- Meets the demands of the new workforce.

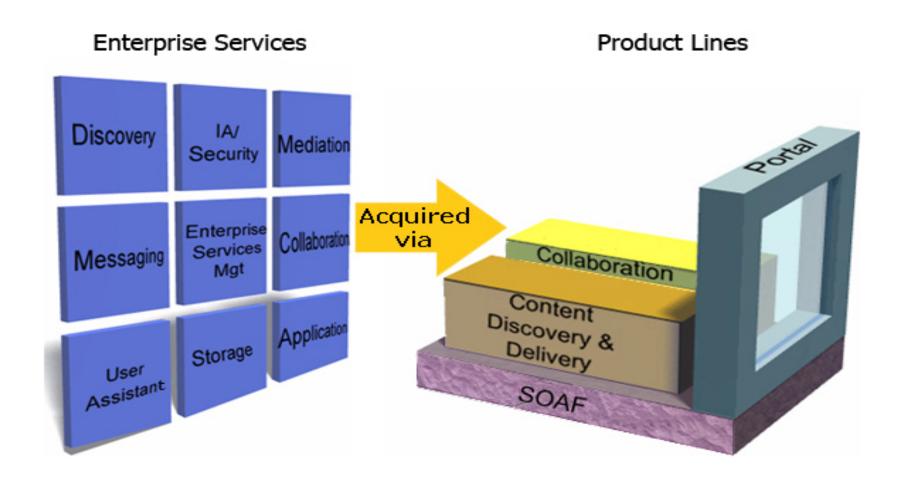
Example of a "Social" Portal



Part III

Portal Implementation

A View How SOA Services Can Be Accessed for Portal Delivery



Partial List of Portal Software Vendors

- Appian (used by AKO)
- BEA Weblogic (now Oracle)
- IBM WebSphere
- Microsoft Sharepoint
- Oracle Portal
- Plumtree
- SAP Enterprise Portal
- Vignette

OASIS Web Services Standard for Remote Access (WSRP)

- For portals to communicate with the different applications and to accommodate a variety of interfaces and protocols.
- The WSRP standard simplifies integration of remote applications/content into portals.
- Portal administrators can pick from a choice of services and integrate it in their portal without programming effort.
- WSRP becomes the link for providing services that operate portals.

Partial List of Features of Portal Support Software

Collaboration	
Document Sharing	☑
Threaded Discussions	☑
Chat	☑
Calendars	☑
Private Messaging	☑
Full-Text Search	☑
E-mail Notifications	☑
Sub-Workspace Support	☑

Security	
LDAP Integration	✓
NT Authentication	₫
Single Sign on	丞
Object Level User and Group Permissions	₫
Object Level Privileges (Read, Write, Create, Delete, etc)	₫
128 Bit Encryption	₫
Inheritable Permissions	☑

Usability and Management	
Remote Web-based Administration	✓
Document Archival	✓
Integrated Windows Explorer Interface	✓
Installation Wizard	☑

Integration	
ODBC Support	✓
COM/DCOM Support	✓
XML Support	M
Web Service Support	✓
HTML Customization	M
Complete Source Code	✓
Outlook Integration	₫
WSRP Support	✓

Personalization	
User Based Personalization	⊻
Group Based Personalization	✓
Pre-packaged Modules	19+

Platform	
Oracle 8i Support	☑
Microsoft SQL Server Support	☑
PostgreSQL Support	☑

Support	
Phone Based Support	☑
On-site Support	☑
Web Based Support	28 ☑

What is the Difference Between Websites and Portals?

- Website Publicly accessible web organized as web documents for public viewing.
- **Portals** Accessible or Restricted gateways with a variety of services such as ID management, security, application discovery, user assistance, collaboration, directory of websites, collaborative workspaces, document management, personalization, search capabilities, news, and email.

What are Some Services Offered by Portals

- **Presentation Services** These services provide the "face" of the portal page and present an interface to the various applications connected to by the portal.
- **Application Services** These services perform specific functions, the tasks that an application is expected to accomplish, such as searches and forms submission.
- **Data Services** Services at this level provide a means to transfer data from one application to another.

Technical Performance Requirements for Portals

- Portal software is supposed to be platform neutral, running on Java.
- Problem: WebSphere, BEA and JBoss incompatible.
- Portal software should allow for the aggregation of simple applications. Often requires reprogramming.
- Portals require low latency for handling of interactive communications (<250 ms). Slowest server may increase response time.

Considerations in the Choice of Portal Software

- Lock into a vendor platform only if migration costs are low.
- Should not be a part of a unified application suite.
- Integration to be controlled by owner, not by vendor.
- Should use several component solutions.
- Solutions should comply with "open" standards.
- Must be application "agnostic."
- Allow for variations of how Portals are displayed.

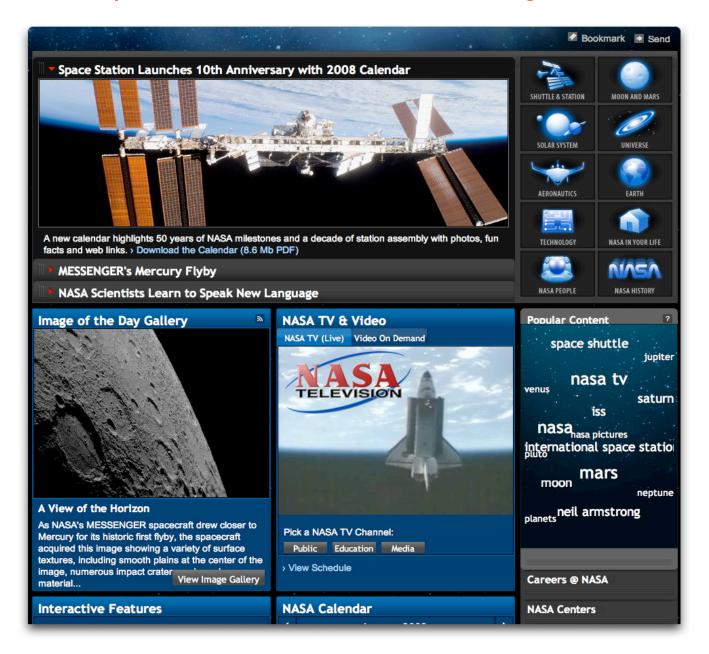
What are Portlets?

- Portlets are pluggable user interface components that are displayed on a web Portal. Portlets produce fragments of code.
- A Portal page is displayed as a collection of Portlet windows. Some examples of Portlet applications are email, weather reports, discussion forums, news, etc.
- Portlet standards enable software developers to create code that can be plugged in to any application.

The Importance of Transition from Legacy Systems

- The workflow for a given enterprise is a set of disjointed applications, tied together by a combination of manual and automated processes..
- Converting to a Portals aggregation model, maintained by one department, should make accessible applications via one consistent interface.
- For successful Portals one should concentrate on the standardization of the underlying data layer
- Standardization at the data side, not the user side!
- The goal is to achieve interoperability with the minimum amount of rewrite of underlying applications.

Example of a Sophisticated Portal: NASA Home Page (50% of Home Page)



Part IV

Content Management Systems (CMS)

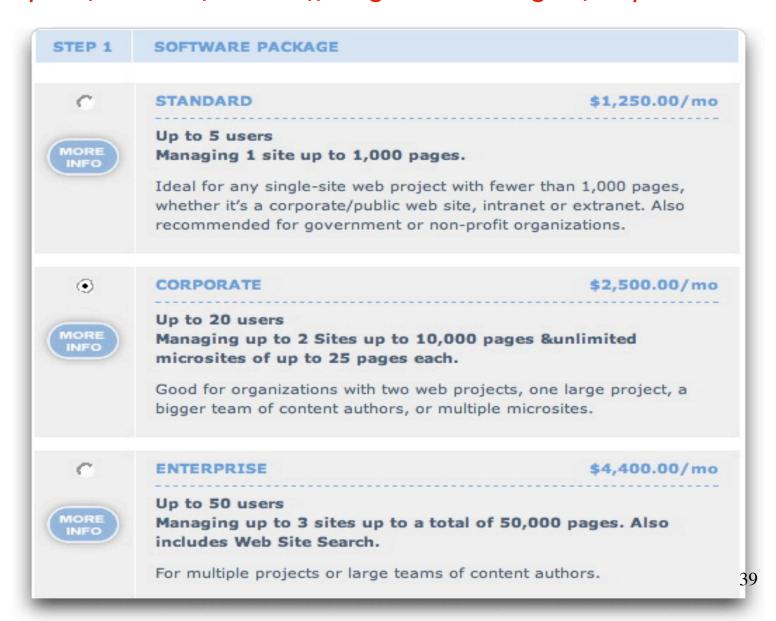
What is Content Management System

- Content management system (CMS) is software used to manage the content of a Web site.
- Content management systems are deployed primarily for coordinating the editing a large number of contributors of web material.
- For example, the software for the website Wikipedia is based on a wiki, which is a particular type of content management system.

What is CMS?

- CMS includes computer files, image media, audio files, electronic documents and web content.
- CMS makes files available inter-office, as well as over the web. It can be used as an archive.
- Companies use a CMS to store or share files.
- Many CMS include a feature for a "workflow process".

Example of CMS Software Offering a Wide Range of Capabilities



Example of the Costs of a Packaged CMS Solution

STEP 5	YOUR CONFIGURATION	
Please review and submit your ContentManagement.Com solution below: ONE-TIME IMPLEMENTATION FEE [Edit]		
Corporate Implementation		\$15,000.00
RECURRING MONTHLY FEES		
Edit	Corporate Software Package	\$2,500.00
Edit	Corporate On-Demand Services Retainer	\$1,000.00
Edit	CrownPeak Search	\$250.00
Edit	Basic Email Campaign Management	\$250.00
TOTAL/month \$4,000.0		

Part V

Future Directions

Web 2.0 Applications

- Web 2.0 is an application that gets better the more people use it. For instance, Google gets smarter every time people use a service.
- The purpose of portals is to harness collective intelligence.

Examples of Web 2.0 Applications

- Wikipedia is a free-content encyclopedia comprising 1.8 million articles in more than 100 languages, written collaboratively by people from all around the world. Anyone can edit an article by simply clicking the "edit this page" link.
- **SourceForge** is the world's largest open-source software repository, hosting over 100,000 active software projects contributed to by more than I million users. SourceForgehosted projects are popular: Azureus counts 100 million downloads thus far, eMule counts 142 million.
- **Flickr** is a social photo-sharing site that lets users post photos to the Web, making them available to a wide range of users that are related to a particular topic.

Project Holland (BEA/ORACLE)

- Extends the power of Web application to as many users as possible.
- It enables users to collaborate in interactive workspaces, group pages, and portal communities that use a library of reusable components.
- It enables participants to switch between collaborating on new applications and using those spaces as part of their daily work.

Part VI

DoD Portals

Design Requirements

- Need separate Portals for diverse communities of interest.
 - Extranets differ from Intranets
 - Coalition partners have user specific Portals
 - Interoperability with Intelligence thru separate Portals.
 - Separation of NIPRNET from SIPRNET Portals.
- Must impose Information Assurance for diverse communities.
- Has to offer unified access authentication.
- Must deliver "Google Speed" for end-to-end response time.
- Provides for virtual archiving of transactions.
- Needs capacity to discover > I million non-archived documents.

New Applications

- Portals must allow for inclusion of legacy applications instead of requiring construction of new systems.
- Portals require a capacity to offer aggregations of multiple data bases to eliminate redundant solutions.

Strategic Guidelines

- Aggregate e-mail and collaboration through Portals, not as stand-alone projects.
- Include excellent search tools.
- Host Portals in consolidated (virtualized) data centers.
- Eliminate any direct connection to and from the Public Internet traffic from linking with the DoD Portal.
- Use Portals not only for collaboration but also for creating a unified view of "Knowledge Management" and of business intelligence.

Portal Economics

- Using an I.T. infrastructure based on SOA offers the principal economic rationale for the installation of Portals.
- Greatest cost savings come not from open-source software or smaller staffs but from reducing the infrastructure.
- Improvement in application aggregation is the primary reason for the installation of Portals.
- Installation of Portals is a good opportunity to re-define systems requirements and to renegotiate vendor contracts.
- Adoption of Portals is an opportunity to in-source systems integration and architectural control.

Relationship Between SOA and Portals

- One way of starting SOA is to kick-start access to its services via several Portals.
- SOA makes it possible to build applications for Portal presentation from reusable components.
- SOA provides a consistent interface to a Portal since open interoperability standards are mandatory.
- Information systems that follow SOA standards will have significant advantages in meeting rapidly changing business requirements.

Portals as a Protection Against Compromise

- DoD portal management offers increased security.
- A serious threat comes from separate websites that have been planted with malicious code.
- Multiple flaws were discovered for applications which opportunistic malware distributors.
- Around 6,000 malicious web pages are created every day of which 83 per cent reside on websites belonging to legitimate organizations who are unaware their sites have been compromised.

Summary

- Portals offers a simplification of a firm's infrastructure by making it possible to integrate as well as to aggregate information from a variety of sources.
- Portals offer a means to make visible and usable results from applications that have origins from diverse resources, including legacy applications.
- Portals make it possible to enhance user direct involvement in understanding and managing complex situations.

Questions

- Prof. Paul A. Strassmann
- E-mail questions to: <pstrassm@gmu.edu>
- Video will be on: <www.strassmann.com>