FSA Integration Partner

United States Department of Education

Federal Student Aid

Data Strategy Enterprise-Wide
Technical Strategies Team
123.1.7 Web Usage (Portals) Strategy

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Executive Summary

Web usage is focused on improving customer service for all FSA business channels, increasing FSA's effectiveness at disbursing financial aid information, and enhancing the methods of communicating with trading partners. The goal of this strategy is to outline options to improve self-service capabilities, increase Web interaction with customers and expand FSA's Web usage to bring a consolidated view of information and services to its end users.

The Technical Strategies team collected business objectives, identified gaps and developed options in conjunction with key FSA stakeholders to enable this future vision of Web usage. Each of these options was then reviewed and compiled into an overall Web Usage Strategy. Below are the business objectives and gaps related to Web usage from the Technical Strategies Statement of Strategic Focus (123.1.6). It is worth noting that in the current state, the business objectives as identified by FSA are only minimally realized. Explanations of the assessment criteria can be found in Appendix A: Business Objective Accommodation Criteria.

Rank	Business Objective	Percent Realized	Gaps
1.	Create simple, function-based websites that allow easy access to desired functions and search capabilities throughout the entire lifecycle.		• Limited web-enabled self service capability. • Limited access to desired business functions. • Not all of the enterprise search requirements are adequately met by the current solution.
2.	Provide dynamic content and personalization for unique customer experience.		• Limited customization capability utilized. • Minimal use of integrated personalized messaging and alert functionality. • Several sites display only static content. • Varied use of dynamic content.
3.	Provide the capability to collect/view FSA customer's touch points.		• No ability to identify and track a particular customer across the lifecycle. • Some aggregate Web trend capability but limited customer insight. • Limited feedback mechanisms enabled through the Web.
4.	Leverage a common "look and feel" while maintaining individual customer needs.		• Varied use of graphics, fonts, colors, navigational menus and content positioning. • No enforced FSA standards for "look and feel."
5.	Establish a single entry point (one URL to remember) for new FSA customers.		• Entry points for channels exist across multiple URLs. • No consolidated location that contains links to all FSA sites.

Rank	Business Objective	Percent Realized	Gaps
6.	Share certificates with external sites (shared authentication/credentials with Third Party).	◯	• Multiple logins required. • Limited role-based authentication.

Web Usage Current State Gap Analysis

To present options and recommend a solution, the Web Usage Strategy reviewed a series of key decision questions that help address the gaps associated with FSA's Web usage business objectives:

- How will FSA's Web usage experience evolve?
- How will website content be managed by FSA?
- How will website content be provided to the customer?
- What kind of search functionality is needed by FSA users?
- What reusable Web assets can be utilized to improve efficiency?

Overall Web Usage Recommendation
For FSA to reach its target state and achieve its highest priority Web usage business objectives, the following are recommended:

1. Increase the amount of Web-enabled self-service capabilities.
   - Simplify on-line business processes.
   - Implement Web access controls.
   - Leverage internal/external integration services capabilities.
   - Integrate more feedback/interaction capabilities.
2. Expand upon the FSA Standard Web Framework.
   - Uniform Web architecture.
   - Enterprise content management.
   - Integrated search functionality.
   - Reusable components and capabilities.
3. Consolidate the number of FSA websites.
   - Create a marketable home page.
   - Simplify navigation.
   - Standardize URL naming convention.
   - Design common "look and feel."

To satisfy FSA's primary objectives, FSA should simplify its use of websites by integrating existing functionality and incorporating new capabilities into a standard Web framework. To achieve this goal, FSA should create a marketable "home page" from which to launch the user experience and strengthen program awareness. From the home page, FSA customers can then access the portal that aligns with their business channel. FSA should also adopt common Web access controls that prompt users to identify themselves before having access to personalized content/messages, privacy data, or secure application processing. The system could then share

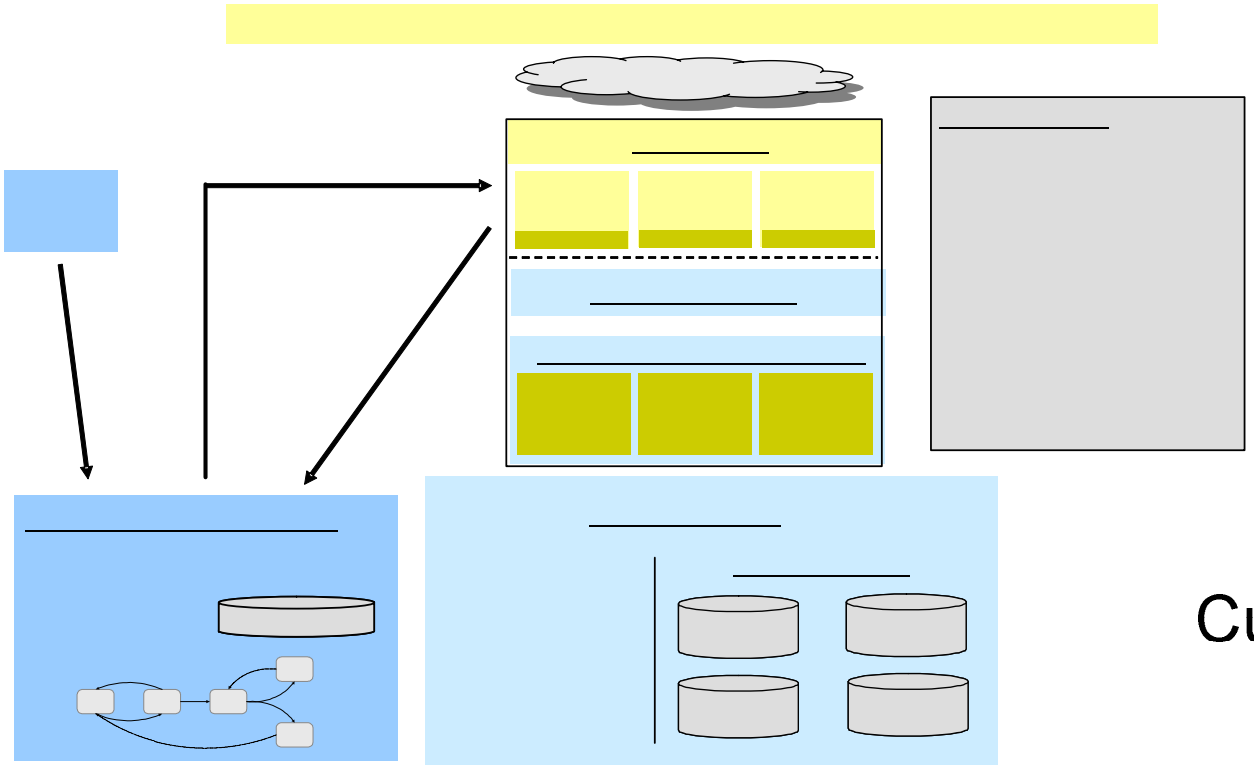
the access credentials across the enterprise so the user will not have to login more than once. This process, coupled with a more uniform content presentation, can help create a seamless customer experience as the users navigate to the information and services they require. FSA should also consider standardizing its URL naming convention in order to make navigation more intuitive to the end users.
Building on those recommendations, FSA should look to enable user access to the following:

- Integrated customer data that displays content and messages pertinent to an individual user's needs.
- Self-service business functions to shorten the time spent looking for information or initiating a transaction.
- Robust search capabilities that retrieve information across the enterprise.
- Feedback mechanisms to report back to FSA on the success of their user experience.

The enterprise Web environment should also take advantage of more reusable capabilities. This will help to improve operational effectiveness and program efficiency. Capabilities that can be applied in multiple locations across the Web environment include:

- An enterprise content management tool to deliver dynamic content.
- Standardized templates and stylesheets for content presentation.
- A uniform search engine that provides a customizable interface to resources across the enterprise.
- Web services that expose business functions to the portal architecture.
- A uniform architecture platform for development and production.

The diagram below illustrates how each component of the recommendation integrates with one another to bring an enterprise approach to Web usage at FSA:



The benefits that can be gained by implementing the proposed solution are:

- Improves Customer Satisfaction:
  - Simplifies customer interaction.
  - Increases customer self-service.
  - Enhances FSA Web products and services.
  - Enables and improves FSA's business processes over the Internet.
- Reduces Operational Costs:
  - Streamlines website development and maintenance.
  - Maximizes reuse of processes and technology.
  - Leverages existing investments and infrastructure.
  - Improves operational efficiencies.
  - Reduces customer service calls/costs.
  - Improves integration with other FSA applications and initiatives.

Also efforts of information technology (IT) consolidation at the Department of Education support the eGovernment initiative on Internal Efficiency and Effectiveness: "Through the use of Web-based technologies, government and citizens can now be closely linked, rapid access to the government information realized, and real efforts undertaken to streamline agency operations to eliminate bureaucratic waste by consolidating duplicative services and programs."[1]

[1] http://www.whitehouse.gov/omb/egov/internal/etravel.htm

Next Steps
This Web Usage Strategy will be combined with strategies from the other four technical areas to represent a comprehensive Technical Strategy that is in alignment with the overall FSA Data Strategy effort. The collective picture and the required implementation steps will be outlined in the Technology Vision and Strategic Plan (123.1.12), Data Framework Technical Specification (123.1.4) and Quality Assurance Strategy and Implementation Plan (123.1.5). These documents will serve as the enablers of the high-level Data Strategy business objectives.

Web usage is only a part of the overall FSA Data Strategy vision. It must be integrated with the other components of the data strategy and aligned with ongoing and future initiatives. The final Technology Vision and Strategic Plan will capture the implementation considerations across the Technical Strategies. Preliminary integration considerations captured during the Web usage strategy development include:

- Require CIO and Business Owner support.
- Phase approach by website and application.
- Align with FSA acquisition strategy, business cases, and task orders.
- Align with data and technical strategies.
- Target low hanging fruit to quickly realize benefits.
- Enable/support FSA goals and objectives.
- Integrate with FSA's products and services.

Integration considerations will be updated and evolve but strong attention to their impacts will be a necessity for realization of the outlined strategy target states.

Amendment History

DATE	SECTION/ PAGE	DESCRIPTION	REQUESTED BY	MADE BY
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1 Introduction

1.1 Purpose

The purpose of the Web Usage Strategy document is create a target Web usage vision and outline options that may be employed to help FSA reach it. This document will expand upon the current state and business objectives related to Web usage that were captured in the Technical Strategies Statement of Strategic Focus (123.1.6) by clearly documenting options that can be used to fill the gaps that exist between the current and target states. In addition, thorough assessments of options and technical enablers of the Web Usage Strategy will be outlined and evaluated. This document addresses FSA Performance Plan Action Items 16.5.3 (Develop technical standards and guidelines) and 16.8 (Develop an enterprise Web Services/Portal Strategy) and includes options assessments of solutions that may help FSA align its key technology areas with its overall business objectives. Five strategy documents will be produced for each of the key Technical Strategies areas in preparation for the delivery of the Technology Vision and Strategic Plan (123.1.12), which will outline the steps that will be required to implement FSA's overall data vision across the enterprise.

1.2 Background

The Department of Education's Federal Student Aid (FSA) organization is seeking to provide overall improvements in the ability to provide access to data and services. This builds on the goal of implementing improvements to the flow and consistency of data exchange is to ensure that FSA complies with regulations set forth by oversight organizations in support of the program-wide goals, which include maintaining a clean audit and ensuring exclusion from the General Accounting Office (GAO) high-risk list.

The purpose of the FSA Enterprise-Wide Data Strategy is to define FSA's enterprise data vision and strategy for how it will combine the tools, techniques and processes to handle its enterprise data needs. The effort to improve the Web usage experience for FSA customers (internal and external) is one of five technical strategies that when combined with the strategies for Data Framework, XML Framework, Common Identifiers, and Enrollment and Access Management comprise the overall FSA Enterprise-wide Data Strategy. The technical strategies also include Internal Data Exchange, Web Services, External Information Access (FSA Gateway), and Data Storage, Management, and Access. Each of these strategies will be addressed in separate documents, but were considered during the development of the overall Web Usage Strategy.

In order to create the overall Web Usage Strategy for FSA, the current state of Web usage at FSA was compiled and validated with key business owners. This current state was then used as a basis for a series of seven business objective gathering sessions. During these sessions detailed business objectives with respect to the five technology areas were gathered from FSA business across the student aid lifecycle.

Approximately 200 raw business objectives were gathered for each of the technical strategies key areas. These business objectives were then refined, consolidated, and prioritized by FSA

business owners in a series of consensus meetings. The business objectives and associated gaps between the objectives and the current state of technology at FSA were gathered and presented in the Technical Strategies Statement of Strategic Focus (123.1.6).

This document details how improvements in the Web usage experience can help FSA achieve the business objectives that were set forth in the Technical Strategies Statement of Strategic Focus.

1.3 Scope

This strategy document provides options for the technical enablers of FSA's vision for improving the Web Usage capabilities between FSA systems and their customers. The strategies associated with each of the other four technical areas will later be combined in the Technology Vision and Strategic Plan (123.1.12) to present an overall technical strategy along with a road map for achievement.

The goal of this technical strategy document is to provide a three to five year vision for improving the access to information and usability of FSA's websites. The key items that this document will present include:

- An overview of the Web Usage current state with respect to business objectives.
- Detailed options assessment to outline the future state of areas that include access, content presentation, content management and technical architecture.
- Analysis of each technical option, which includes positive and negative impacts as well as gap fulfillment.
- Recommended technical options that will help FSA best achieve the business objectives.

1.4 Assumptions

The following assumptions have been factored into the scope for the Web Usage Strategy:

- A three to five year timeframe to implement the technical strategies that will help FSA achieve its business objectives.
- Any discussion pertaining to the "portals" will include the Students, Schools, and Financial Partners Portals.
- Considerations have been made that account for the future FSA direction of Internal Data Exchange, Web Services, External Information Access, XML Framework, Enrollment and Access Management, and Data Storage, Management and Access.
- Since the time of the original business objective gathering sessions, additional projects have been identified as having an impact on the Technical Strategies and FSA's future state. As appropriate, these efforts and other potentially relevant efforts will be assessed for impact during subsequent Technical Strategies deliverables. For example, work being done through the eCMO (Electronic Case Management Organization) effort may be influenced by any recommendations that are adopted from this strategy.

- At the time of delivery for the Web Usage Strategy, the 'go-live" date of Release 2.0 of the Students Portal was September 2003; and, therefore, its functionality not included in any discussion of the current state of Web usage at FSA.
- All future Web development efforts and ongoing maintenance being conducted by FSA should coordinate with the enterprise vision and recommendations adopted from this strategy.

1.5 Business Objectives and Gaps

Websites are being used as both a dissemination point for financial aid information as well as a front-end access point to system based services. Although there is some conformity around the structure and layout of the portals, there is a lot of variation within the FSA Web enterprise when it comes to access methods, content presentation, content management and technical architecture.

The consolidated and prioritized business objectives related to Web usage from the consensus meeting were captured in the Technical Strategies Statement of Strategic Focus (123.1.6). These objectives then served as the primary input for the overall vision for Web Usage. This strategy focuses its technical option assessment on the ability for the recommended solution to fulfill the gaps. The table below outlines the business objectives that were captured from key business owners and the gaps that exist to accomplish the FSA target vision:

Rank	Business Objective	Percent Realized	Gaps
1.	Create simple, function-based websites that allow easy access to desired functions and search capabilities throughout the entire lifecycle.		• Limited web-enabled self service capability. • Limited access to desired business functions. • Not all of the enterprise search requirements are adequately met by the current solution.
2.	Provide dynamic content and personalization for unique customer experience.		• Limited customization capability utilized. • Minimal use of integrated personalized messaging and alert functionality. • Several sites display only static content. • Varied use of dynamic content.
3.	Provide the capability to collect/view FSA customer's touch points.		• No ability to identify and track a particular customer across the lifecycle. • Some aggregate Web trend capability but limited customer insight. • Limited feedback mechanisms enabled through the Web.
4.	Leverage a common "look and feel" while maintaining individual customer needs.		• Varied use of graphics, fonts, colors, navigational menus and content positioning. • No enforced FSA standards for "look and feel."

Rank	Business Objective	Percent Realized	Gaps
5.	Establish a single entry point (one URL to remember) for new FSA customers.		• Entry points for channels exist across multiple URLs. • No consolidated location that contains links to all FSA sites.
6.	Share certificates with external sites (shared authentication/credentials with Third Party).		• Multiple logins required. • Limited role-based authentication.

Table 1.1 - Web Usage Current State Gap Analysis

1.6 Key Decisions Points

Based upon the business objectives and gaps that were identified in the previous section, a series of key decision points were established and refined by key cross lifecycle business owners. The purpose of these decision points is to provide guidance in developing options and proposing a solution:

- **How could the FSA's Web usage experience evolve and what role do the portals play in FSA's future state?**

  FSA maintains a variety of websites as a means to disseminate financial aid information and provide online access to current applicant systems. As FSA continually improves the way its does business with its customers, the Web Usage Strategy needs to take into consideration how future changes affect the online user community. The business owners recognize that the enterprise website infrastructure can be better utilized to deliver products and services to all its customers. The question is intended to identify areas that can improve usability of FSA's websites and streamline business processes. In addition, any discussion of a new or improved website environment should review how the portals will be utilized by FSA's customers.

- **How could content be managed by FSA and provided to the users?**

  One of the goals of the Web Usage Strategy is to address how information will be delivered to the end users. Distributing knowledge to FSA's user community means more students have access to the information needed to receive financial aid. Discussing content management and methods of content delivery are necessary steps towards creating an enterprise Web environment in order to ensure that users are getting the right information to accomplish their intended goals.

- **What kind of search functionality is needed by FSA users?**

  The users need the ability to search FSA for detailed information on relevant topics that meet their specific business needs. The Web enables the users to have access to this information. Understanding the user requirements and available search capabilities can provide input into an enterprise search solution.

- **What reusable Web assets could be utilized to improve efficiency?**

  A Web environment is a prime location for an organization to provide maximum value to its customers while reducing the cost to provide its products and services to multiple channels. This strategy reviews areas in which FSA can utilize the potential of certain technologies to improve operational efficiencies and reduce costs in maintaining a Web infrastructure.

1.7 Assessment Criteria Methodology

In an effort to effectively assess the options identified, the business owners established a set of criteria by which each option would be assessed. These criteria will be used with the business objectives and key decision points in order to determine each option's true value to FSA.

This set of rating criteria is being applied to enable the consistent comparison of options to one another so that it is readily apparent as to which option best serves FSA's future needs. This comparison will serve as the basis for determining what the overall technical strategy recommendation is going forward.

The following assessment criteria were used to evaluate each option:

Business Process Impact – Does the option have the potential of introducing significant cross-lifecycle business process improvements?

Level of Effort – Will significant effort (time and resources) be required to realize this option? Will the amount of effort required to maintain the Web environment be reduced?

Flexibility – Does the option offer improved flexibility for Web usage? Can the option support both existing legacy systems and potential future systems?

User Impact – To what extent will the end user experience improvements with this option?

The following scoring system will be used to evaluate each option. For each category, lower numbers represent the less favorable options and higher numbers represent the more favorable options.

Criteria	Rating Scale
Business Process Impact	1 to 5
Level of Effort	1 to 5
Flexibility	1 to 5
User Impact	1 to 5

Table 1.2 - Assessment Criteria Scale

2 How could FSA's Web usage experience evolve?

To align the Web Usage Strategy with the overall improvements proposed by the Enterprise-Wide Data Strategy, FSA business owners identified the need to create simple, function-based websites as the highest priority Web usage business objective. FSA not only maintains three distinct portals (one for each of its business channels) but it also has a number of other websites that act as either an additional dissemination point for financial aid information or as a front-end user interface to FSA systems and services. This diverse infrastructure gives customers multiple locations to choose from to obtain the information they need. Resources are also dispersed across the enterprise. Sometimes these locations and resources are contributing to duplicate purposes. Additionally, content is managed by individual site ownership and minimal coordination of sharing these resources reaches across the entire enterprise. FSA is considering consolidating its Web usage in order to communicate more effectively with its customer base and facilitate better integration and coordination across the enterprise. In order to accomplish those objectives, FSA realizes that there is a business advantage to consolidating the current Web environment and reducing the duplication of resources. The following list is a sample of usability guidelines that are taken into consideration when reviewing consolidation options in this strategy:

- Minimize the number of screens or pages required to complete a task.
- Provide consistency with other existing applications and sites.
- Use meaningful and consistent navigation tools.
- Minimize the number of times a user must enter a User ID and password to enter an application.

When simplifying websites and integrating a common "look and feel," the Web infrastructure should consider these guidelines to help structure navigation and consolidation across an enterprise. By simplifying the Web experience, FSA can help its customers better understand the places they need to go to find the information they are looking for and thereby improve overall customer satisfaction. Additional design considerations and usability guidelines are listed in Appendix B.

Some features to consider for consolidating Web usage include:

- Entry
- Navigation
- URL Scheme

2.1 Entry

In the FSA working sessions, the Technical Strategies core team reviewed various methods of entry in order to access the enterprise websites. Currently, FSA customers have a variety of ways in which they can access the information and services that are available through the portals and other websites related to the financial aid process. The majority of this access is achieved through direct URL navigation to specific application home pages. The diagram

below illustrates one example from a student's perspective of links a user may use to find information on financial aid:

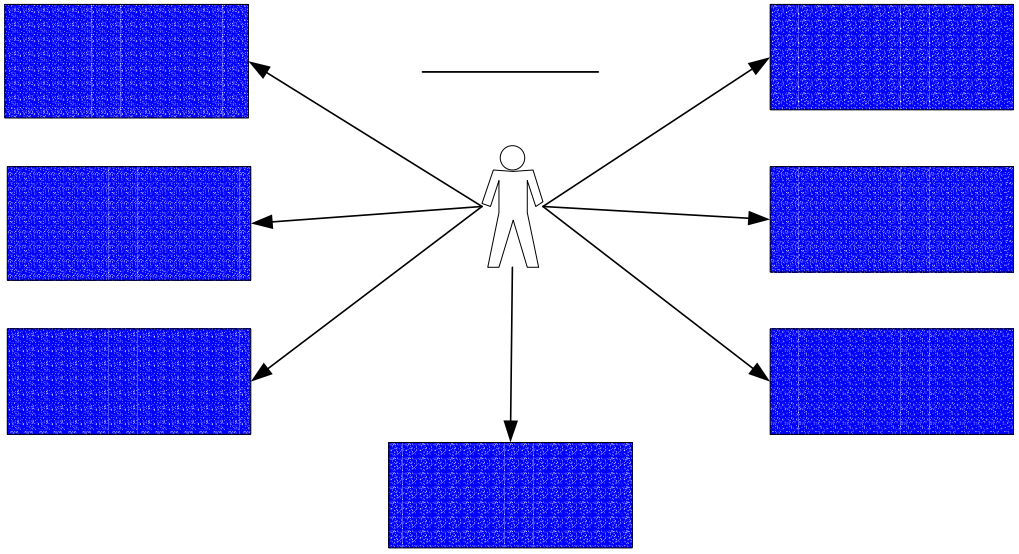


Figure 2.1 - Current State for User Entry

The options that were discussed in addition to the current state of directly accessing individual sites included such options as:

- A single point of entry through ED.gov.
- A single point of entry through an FSA home page.
- Multiple points of entry through the portals.

There was a consensus that reducing the number of websites where a user has to go to get information and consolidating the access points to web-based services can improve the efficiency of delivery and enhance the user experience. The group further debated that the first step to rectifying any confusion of where to go to get the information needed is through the establishment of a single, marketable home page. As the working sessions revealed, FSA does have a home page (http://www.ed.gov/offices/OSFAP/) but it is a site buried deep within the ed.gov domain that is often overlooked by the end user.

Department of ED
http://www.ed.gov

This strategy reviews ways in which an organization can better highlight its identity to improve accessibility and program awareness. An organization's home page can take on a variety of flavors when it comes to how it is incorporated into the enterprise Web architecture and portal framework. One way to improve the marketability of an organization's home page is to establish it as the single point of entry from which all new users must enter. An effective for an enterprise, this method of entry must be flexible enough to handle a variety of user types, varied degrees of knowledge of the current Web functionality and different options for accessing enterprise websites. Because of the general use of a single home page, this type of

FSA Home Page
http://www.ed.gov/offices/OSFAP/

entry point should not consist of just a series of links, but should rather serve as a launching pad into a portal architecture in order to reach more specialized/personalized content.

Under this new scenario, any user (parent, student, school etc…) could begin his online experience at the FSA home page regardless of the task the user was looking to accomplish. The home page would be a single access point for which to find information and services related to federal financial aid. This new scenario is depicted below:

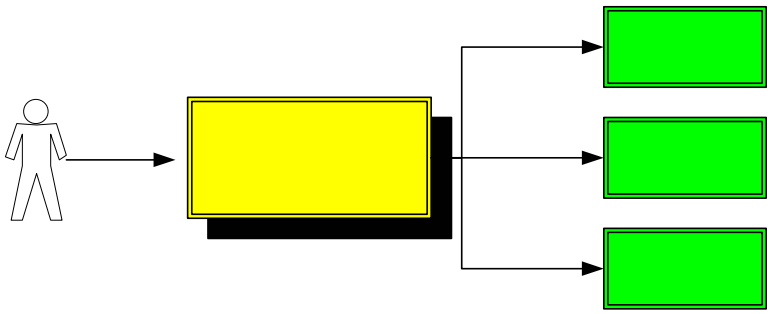


Figure 2.2 – Single Point of Entry

Within the working sessions, the topic of accessing FSA's information and services expanded to include not only FSA's home page but also the ability for the user to directly enter an application site through an individual URL. In other words, a Guaranty Agency that has been doing business with FSA for many years could continue to enter the Financial Partners portal through www.fp.ed.gov without necessarily having to go through the FSA home page. So in this scenario, there are actually two methods of entry.

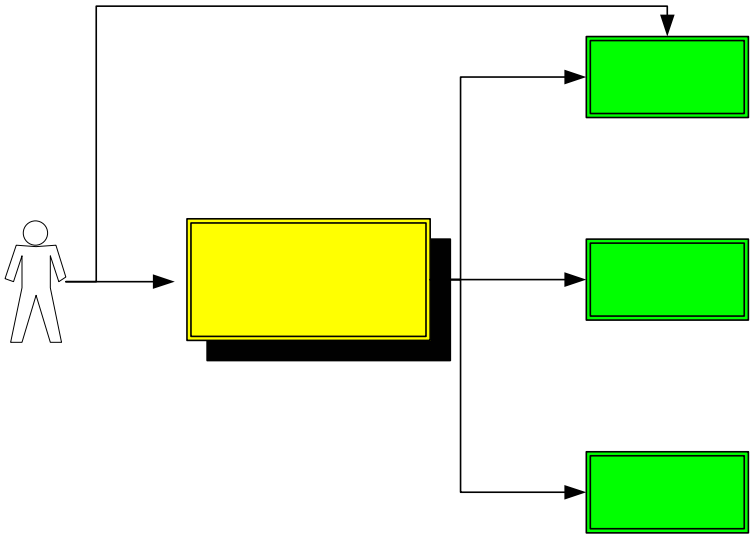


Figure 2.3 - Multiple Points of Entry

Role of Portals

By addressing the method of entry, FSA provides a certain direction in order to answer the question concerning what role can the portals play in the Web infrastructure. A portal is an aggregation point for content, functions, and features using web-based technology and dynamic channels to existing applications to create an application with a unifying theme. Portals have matured as a proven method for governments to offer services on an electronic self-service basis and are developed more around what business functions the citizens want to achieve. FSA has begun to move its business more in line with this direction by establishing the Student, Schools and Financial Partners Portals. There are additional capabilities that these portals have yet to take advantage of and this strategy highlights capabilities that can be considered in conjunction with the current portal architecture. The use of portals also supports broader eGovernment initiatives such as:[2]

- Providing citizens with one stop shop access to relevant information and services online.
- Reducing the burden on businesses by adopting processes to streamline data collection and eliminating redundancies.
- Applying industry best practices to government.

An enterprise's portal functionality should constantly be evaluated against the needs of its user community so that the most pertinent information and access to the most relevant systems can be provided to the end user through the portal. In order to capitalize on some of the benefits associated with a portal environment, an organization's portal should contain all the necessary information to reach the goals that the intended audience wishes to achieve. This structure achieves the following:

- Reduces the burden of maintaining multiple websites across the enterprise.
- Allows consolidation to occur under a single access point.
- Supports integration efforts and promulgates an organization's branded identity.
- Increases operational flexibility to make changes and adopt/integrate new technologies.

As FSA's business continues to evolve, the role the portals play in the future state vision will determine what level of accessibility customers have to FSA information and services. Currently, the FSA user community utilizes three main portals that are aligned by business channel. The portals have been a successful means to distribute financial aid information based on business channel. They have also provided those business channels with links to services that are Web enabled.

In order to maximize the potential of a portal framework, an organization should look to coordinate its internal data exchange structure with the presentation layer of a portal in order to present an integrated view of data. This can be accomplished by the various dynamic content delivery and personalization techniques that can be applied to a portal architecture. For example, the Students Portal could provide a presentation layer for an integrated student view that would bring up data from multiple backend systems related to an individual student's

[2] Source: http://www.whitehouse.gov/omb/egov/

financial aid status. See Section 4 for additional detail on how content can be provided to the end user.

2.2 *Navigation*

Once the architecture establishes the point of entry into the Web environment, the next logical step in the user experience pertains to the navigational procedures and addresses the question of how will users find their way to the information they are looking for. In the Web Usage working sessions, the Technical Strategies core team reviewed various methods of navigation that discussed:

- How would a typical user navigate to a web-enabled business function?
- At what point would the user authenticate himself?

Currently, the users' ability to navigate among the enterprise websites that contain different functionality related to all stages of the financial aid lifecycle is inconsistent. There are a variety of login capabilities whereby some sites use the PIN and others maintain proprietary login functionality for authentication. There are also inconsistencies in the use of links, menus and toolbars to help users progress through the Web experience. Some sites have explicit top and side navigation while others rely on the "Back" button of the Internet browser. While some of the questions pertaining to navigation were held over for the discussion on common "look and feel" (refer to Section 6.2 for more information on seamless navigation), the group agreed that the end user should have the ability to reach the desired page/business function through either the FSA home page or by directly accessing the site's URL as illustrated in Figure 2.3 above.

Accompanying the discussion on navigation was the topic of authentication and access management. In order to identify a location for users to login under a consolidated environment, the participants of the FSA Web Usage working session discussed three options for applying authentication within the Web infrastructure:

- Require users to login prior to accessing the FSA home page.
- Require users to login on the FSA home page (prior to proceeding any further)
- Require users to login only at the point when authentication is necessary.

Where these options could reside within a consolidated environment is illustrated in the diagram below:

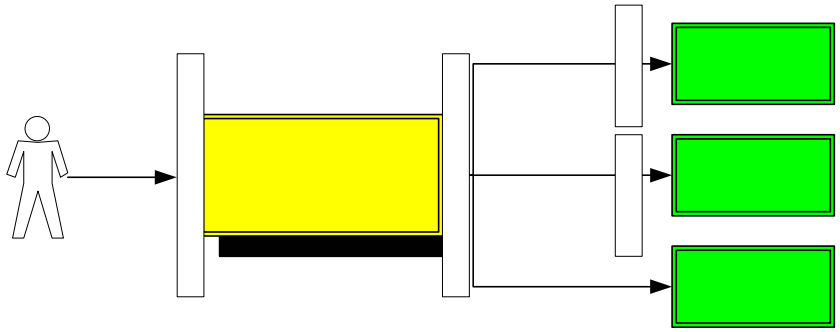


Figure 2.4 - Login Options

The Enrollment and Access Management Team is reviewing and analyzing FSA's current Enrollment and Access Management environment and looking for ways to simplify these business processes for trading partners. Currently, enrollment and access management processes and tools operate on a non-centralized, non-standardized basis. The Web Usage Strategy supplements the direction set forth by the Enrollment and Access Management team. One of the systems being reviewed by the Access Management team is a Web Access Control System. A Web access control system intercepts a user requests and enforces login and authentication requirements. The Web usage experience could leverage common authentication techniques applied across the enterprise to identify customers. When implemented for a single sign-on solution, a user can log into one website and go to another website without having to login again. Access could be granted based on rights and privileges established at the time of registration. Asking the customers to identify themselves early on in the Web usage experience has a number of benefits:

- It provides the system a starting point for identifying and tracking customers.
- It allows the portal(s) to display customer data early on in the user experience.
- It can deliver dynamic content and personalized messages from the moment a user logs in.
- It allows quick access to the web-based systems.
- It simplifies the security architecture and maintenance by applying the security framework at a centralized location (i.e. home page) rather than multiple locations (i.e. application specific).

In the current state, FSA requires that Financial Aid Administrators (FAAs) maintain a variety of login IDs and passwords in order to access a number of online services. With a single login solution, these IDs and passwords could be reduced to improve the manageability of the customer's access as well as track an FAA's touch points with the Web environment. Additional information on the security, access and enrollment elements of the Data Strategy effort can be found in the following deliverables from the Security Architecture and Enrollment and Access Management teams: 123.1.26 Enrollment Business Objectives and High-Level Requirements, 123.1.27 Access Management Business Objectives, 124.1.2 Final Security and Privacy Report, and 124.1.3 Security and Privacy Architecture Specifications.

User

In addition to simplifying the Web structure by leveraging some of the techniques mentioned above, an organization can further its consolidation efforts by grouping similar functions intended for the same audience under the same location. Enterprise website functionality should be consolidated under distinct umbrellas to lessen the burden on the user and improve transparency when physically moving across applications. The environment should be structured in a way that allows for the fewest number of clicks for users to get to the information or service they need, which coincides directly with the e-Government Strategy that mentions the need to establish "single sources of information, accessible by citizens in no more than three clicks (one stop portals such as Recreation.gov and Regulations.gov)."[3]

Portals that are connected to a number of disparate systems or that collaborate with a variety of web-based channels should not only have a simplified structure but the navigation among those pages should be seamless to the end user. Navigation should be an enterprise-wide construct and appear in a format that is independent from any disparity that exists from the content ownership. The users should not feel as if they have left the confines of the Web environment they intended to do business with. For example, currently, FAAs can link to two distinct websites through the Schools Portal to find information on conferences and training, but the user experience is so dissimilar to that which is had on the portals it is difficult to recognize if the user is still within FSA's domain. This is also an example of functionality from two completely different websites that could actually be accessed in the same location helping the user accomplish similar tasks on the same page. Applying common navigation standards and a consistent "look and feel" allows the customers to feel more at ease with their experience and reach their end goal at a faster rate. Additional elements of common "look and feel" are discussed further in Section 6.2.

2.3 URL Scheme

A supplemental component to website entry and navigation is the URL schema applied to all the websites within an enterprise. One of the FSA business concerns has been the inconsistent naming convention applied to enterprise websites and the discrepancies that exist in organizational structure when compared with FSA's parent ED.gov. Currently, there is no standard being applied to the directory structure of Web pages within FSA's control. FSA websites contain a diverse set of URLs illustrated by some examples below:

- http://studentaid.ed.gov
- http://www.nslds.ed.gov/
- http://www.cbfisap.sfa.ed.gov

The FSA working groups recognized that the success of any marketing strategy for improving program awareness would be contingent upon a standardized directory structure that coincides with Department of ED initiatives. Below is an example of how a new website directory structure would follow a standardize pattern:

[3] "E-Government Strategy." http://www.whitehouse.gov/omb/egov/2003egov_strat.pdf

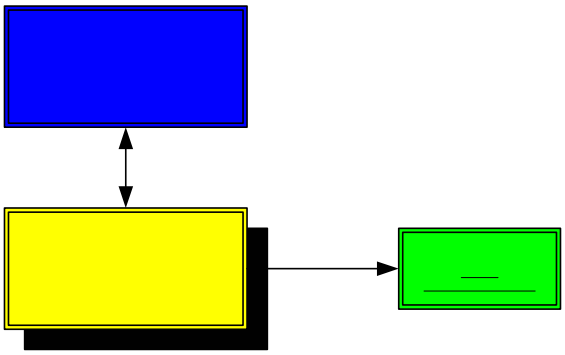


Figure 2.5 -Web Usage URL Scheme Example

As an organization increases the amount of material that is being offered or incorporates additional departments under the same business umbrella the more complicated the URL structure can become. By understanding the hierarchy of the organizational structure as well as the needs of the user community, business owners can establish a simplified website naming convention to improve access and promote consistency within the enterprise.

As part of a branding effort, organizations should create a simple, standardized directory structure that demonstrates a logical hierarchy of websites within the enterprise while maintaining a central, easily identifiable home page from which the directory structure can branch. The more intuitive the URL can be for the user the more effective the identity branding strategy. The successful implementation of a common URL scheme depends upon how well the home page is marketed and accepted as the common starting point for users. The URL schema becomes so intuitive to the user that page names can be guessed by filling in the blank with the application name (i.e. www.____.ed.gov).

While reviewing Web usage options, FSA key stake holders also identified that applying a branded identity solution would require a detailed marketing and communication strategy to improve the marketability of any new home page or URL scheme.

The overall benefits that improved consolidation can bring to an enterprise Web environment include:

- Single unified entity to improve program awareness.
- Improved user experience through seamless navigation.
- Reduction in costs by minimizing rework across multiple venues as well as decreased customer service call volume.
- Streamlined processes with integrated systems allowing increased delivery of information and services to the customer.

Any efforts of information technology (IT) consolidation at the Department of Education can also support the eGovernment initiative on Internal Efficiency and Effectiveness: "Through the use of Web-based technologies, government and citizens can now be closely linked, rapid access

to the government information realized, and real efforts undertaken to streamline agency operations to eliminate bureaucratic waste by consolidating duplicative services and programs."[4]

2.4 *Option Assessment*

The following tables present an overall assessment of the entry, navigation and URL techniques outlined above with respect to business process impact, flexibility, level of effort and user impact:

Business Process Impact	Does the option have the potential of introducing significant cross-lifecycle business process improvements?	Negative Business Process Impact ← → Positive Business Process Impact

Points	**Comments**
A single marketable home page, minimizes customer inquires on where to find information.	• Users have a single location to begin their search for information. • Customer service representatives can uniformly direct users to the same location and reduce inconsistent responses to customer inquires. • Requires standardization and centralized governance to ensure consistent application of URL naming convention.
Seamless navigation still allows proprietary maintenance of system specific content and functions.	• Diverse Web infrastructure delivery remains uninterrupted by new structure as applications retain control of content delivery.
Extensive business channel and application owner coordination.	• Bringing all applications under one URL structure with seamless integration will take a large coordinated effort.

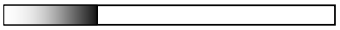
Table 2.1 - Web Usage Consolidation Business Process Assessment

Flexibility	Does the option offer improved flexibility for Web usage? Can the option support both existing legacy systems and potential future systems?	Not Flexible ← → Highly Flexible

Points	**Comments**
Consolidating entry and standardizing the navigational structure produces a highly flexible and adaptable environment.	• Additional sites can easily be added to the infrastructure. • A single home page can streamline access to the most desired business functions and consistently provide information at the most accessible levels.
Consolidated entry and new URL scheme can still allow for direct hit - "bookmark" access to application sites.	• Users with greater knowledge of enterprise websites can get to sites directly.

Table 2.2 - Web Usage Consolidation Flexibility Assessment

[4] http://www.whitehouse.gov/omb/egov/internal/etravel.htm

Level of Effort	Will significant effort (time and resources) be required to realize this option? Will the amount of effort required to maintain the Web environment be reduced?	 Significant Effort Required — Minimal Effort Required

Points	Comments
Simple URL structure is relatively easy to create.	• No complex technology required to implement a new URL/DNS structure to display website/organizational hierarchy.
Degrees of implementation are possible to achieve consolidation and seamless navigation.	• An enterprise can start off small by slowly bringing in sites under the new umbrella instead of abruptly changing the whole configuration.
New marketing strategy needed.	• Could be a shift from marketing individual portals to market a new home page.
Linking web-enabled applications together could take coordination time and technical resources not yet available.	• Applying uniform capabilities across an enterprise with distinct content presentation requires significant coordination and a governing body to enforce standardization. • Consolidation has dependencies related to other elements considered in the portal strategy such as Web services, uniform technical architecture etc… • Sharing certificates for seamless navigation requires that sites understand and accept credentials.

Table 2.3 - Web Usage Consolidation Level of Effort Assessment

User Impact	To what extent will the end user experience improvements with this option?	 Negative Impact to User — Positive Impact to User

Points	Comments
Single source for access to enterprise information.	• Users get the information they need faster. • Reduces the ambiguity of where to go for information.
One stop shop for all financial aid information and services a customer should need.	• Users use home page to initiate interaction with the enterprise. • Seamless navigation improves user experience and accessibility.
Users continue to use and access the Portals in the same manner.	• Familiarity with current functionality. • Maximum reuse/leverage of existing investments.
Efficient and timely access to desired business functions.	• Consolidation brings business functions to the forefront of the customer experience.
New training/education/marketing to the user.	• The more consolidation that is implemented the larger the learning curve. • Learning curve can be minimized with effective communications/marketing, Web design and navigational structure.

Table 2.4 - Web Usage Consolidation User Impact Assessment

Score Summary

Business Process Impact	Flexibility	Level of Effort	User Impact
4	5	2	4

Table 2.5 - Web Usage Consolidation Assessment Scoring

3 How could website content be managed by FSA?

FSA identified the need to improve the way content is delivered to its customers. Currently, content ownership is divided across the enterprise by each application with minimal consolidated content management practices shared by the portals. The portals and a limited number of other websites on the FSA Integrated Technical Architecture (ITA) platform leverage the same content management tool set to develop, review, approve, and deploy financial aid information. The remainder of FSA's applications deploys content in different ways. These divergent business processes and separate architectures limit the ability to share content across FSA websites and increase the difficulty of managing changes. It also duplicates efforts of creating and maintaining similar content. The sections below review some options of how to handle content management within an enterprise Web environment. These options are broken out by the following sections:

- Enterprise Content Management
- Content Storage and Indexing
- Content Management Business Process

3.1 Enterprise Content Management

FSA can approve the sharing resources across the Web enterprise and minimize the duplicative efforts that go into creating, organizing, and managing content. One option to achieve this goal is to migrate FSA's websites into an infrastructure that can leverage an Enterprise Content Management (ECM) solution. Enterprise Content Management is a set of strategy, processes, and technologies to electronically manage an organization's content. The alternative of maintaining specific content by application was noted as an option but dismissed as a potential solution because it is too closely aligned with perpetuating the gaps that exist with the current state. Currently, FSA is not able to capitalize on the benefits that coincide with increased knowledge sharing across multiple resources.

The need for an ECM at FSA is driven by several factors including:

- Multi-channel architectures.
- National audiences (and required 24x7x365 availability)
- Need to maximize operational efficiency, through:
  - Effective reuse of existing assets,
  - Optimizing workflow, and
  - Increasing collaboration across systems.
- Duplication of information across several websites.
- Lack of standardized content management tools.
- Lack of standardized content management approach.
- Lack of Web content governance.

In the past, most enterprises used Web channels only as a means to disseminate relatively static information (e.g. online marketing brochure or employee manual). Today's enterprises are

building highly dynamic sites where content is not only updated on a daily basis, but often changing in real-time or near real-time, just as with most of the FSA web sites. Other organizations are also implementing high volume transactional sites with complex content, such as streaming audio and video. In addition to enterprise-generated content, end users are beginning to generate significant amounts of content that must be maintained by these same organizations.

Gartner summarizes the benefits that an ECM can bring to an organization - "Conceived correctly, an enterprise content architecture will maximize interoperability, reduce software redundancy, save procurement effort and achieve economies of scale."[5]

As organizations continue to incorporate web-based functions as a means to communicate to their customer base, a robust ECM architecture can help improve the quality of knowledge sharing and increase throughput organizing and maintaining content for that enterprise. The positioning of ECM systems is such as to optimize the treatment of data from the input channels – both in terms of technology and processes to increase the overall quality and efficiency of delivery to the output channels. Because of the number and complexity of FSA's websites, ECM has the potential to increase operational efficiencies as well as improve customer satisfaction.

ECM systems support content management in its most generic sense from **Unstructured Data**, such as Documents (e.g. IFAP worksheets), through **Semi-Structured** Data, such as Web Content (e.g. FAFSA deadlines), to **Structured Data**, such as data from traditional Database Management Systems (e.g. student loan data). ECM is used in a wide range of areas including: collaboration, content publishing, electronic records management, and digital media management.

Some of the components (e.g. search and personalization) that make up pieces of the Enterprise Content Management solution are assessed in additional sections of this document. For a more complete review of a content management and delivery framework refer to Appendix C. This appendix discusses several process considerations that are needed in conjunction with the development and management of content.

3.2 Content Storage and Indexing

One of the key components to being able to deliver content in an efficient and timely manner is directly related to the method used to store the content used by the Web channels. The delivery of content is handled through the integration of content repositories or library services with the presentation layer (i.e. portals). Storing content for distribution over the Web can take any one of the two forms described below:

- Single enterprise-wide content repository.
- Multiple repositories segregated by business entity.

[5] © Copyright Gartner, Inc. Source: "Enterprise Content Management Starts With an Architecture." June 25, 2003.

As the FSA working session discussed the options for content management, there was a consensus that there are a number of business benefits that FSA can take advantage of through the implementation of a centralized repository to store enterprise content. Some of the business benefits include:

- Centralized management and governance of content distribution.
- Uniform content management tool set.
- Effective reuse of resources across the enterprise.
- Decreased duplication of content on multiple web sites

Although the creation and management of localized content is needed at FSA, an ECM can still accomplish those goals without establishing multiple content repositories from which to deliver content to the Web channels. In support of this view, Gartner has captured the problem with the current state of content management at some organizations: "Many enterprises already have the components for enterprise content management, but they are disconnected or isolated implementations by individual business units."[6] FSA falls into this category of enterprises because there are so many websites that maintain custom content management solutions but deliver similar messages. For example, the Students Portal, the Direct Loan Servicing website, and the Ombudsman website all contain information and links relating to loan consolidation options. They each explain in their own way what consolidation is and some of the benefits and steps needed to consolidate student loans.[7] Not only is this less efficient and more costly to maintain, but it is also more confusing to customers.

Because content management tools have evolved to the point that they can handle specialized distribution of content to multiple channels, it is not necessary to maintain separate instances of content stores. Instead, the content repository leverages the content categorization capabilities and metadata elements of the ECM tool to route content to the right channel. Additional details on the enterprise's data architecture options will be outlined in the Data Storage, Management and Access Strategy (123.1.10). At a high-level, an ECM tool set supports the integration of many layers of the enterprise technical infrastructure, with the content storage solution at the heart of the Web content management infrastructure as the diagram below illustrates:

[6] © Copyright Gartner, Inc. Source: "Enterprise Content Management Starts with an Architecture." June 25, 2003.

[7] Students Portal: http://studentaid.ed.gov/PORTALSWebApp/students/english/consolidation.jsp?tab=repaying
Ombudsman: http://www.ombudsman.ed.gov/ombudsman/consolidation.html
Direct Loan Servicing: http://www.dlssonline.com/qctr/qctr-index.asp?SectionId=FAQU&APageId=QctrFaquA047

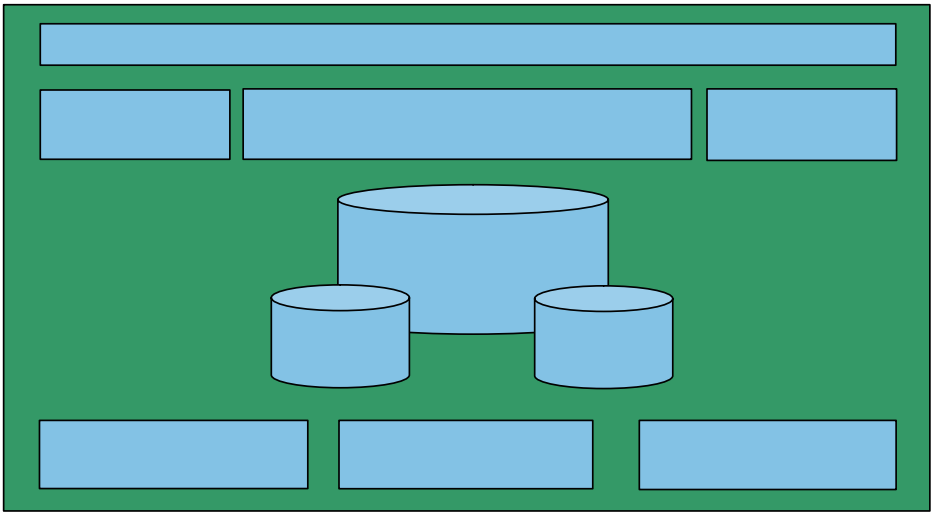


Figure 3.1 - Content Storage Configuration Example

The content repository preserves the content and enables reliable persistent use, aggregation and reuse of the content in various contexts. Past architectures have evolved from repositories designed for specific types of information to more integrated repositories designed to store and manage heterogeneous collections of unstructured information. These integrated repositories add the functionality required not only to manage the information but also to understand the information content and its structure. If properly planned and deployed, the content repository can become a key enterprise asset. It allows for the reuse of content across multiple channels without duplicating the work required to create or maintain it.

Document Generation

3.3 Content Management Business Process

The role of Web content management is to handle the creation, organization, and delivery of content that is available on a website. This is achieved through a series of tasks and activities throughout the content management lifecycle, some of which are manual and some of which can be supported by enabling Web content management software tools. As an example, the five stages in the Web content management lifecycle are:

1. Create
2. Review
3. Aggregate & Manage
4. Distribute & Deliver
5. Archive or Destroy

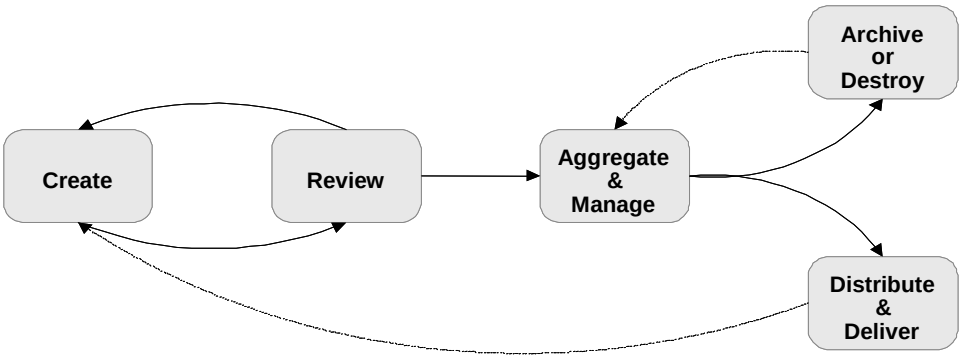


Figure 3.2 - Content Management Business Process

Workflow functionality is most often leveraged to support the content review and approval process. A basic workflow feature would include the ability to define rules governing the release of content including rules for those involved with the process. This feature allows for content to be released, rendered, and published at a predefined time. The task of publishing is fully automated and useful for sites relying on the ability to publish content at a predefined time or intervals.

More extensive workflow features include the ability to manage the entire content lifecycle, from content creation, through review and approval, to publishing and potentially archiving and/or destruction. For example, rules can be defined for routing content from the content author, to the content reviewer(s) and to the final content approver(s). These rules could be based on roles, user names, etc. Workflow could also be leveraged to govern a collaborative content creation process involving multiple content authors. FSA has some automated workflow capabilities built into the content management of the portals Web pages but this functionality is not integrated across the enterprise websites. By expanding and standardizing the content management business process to be applied to all FSA websites, the enterprise does not only benefit from the reuse of content but it also creates a unified response for customer inquiries because each channel is leveraging the same content base.

Currently, FSA has six major internal and external Web applications that are maintained by nearly seventy users through a single content management tool. This tool provides the flexibility required for these applications' varying content development, management, and deployment needs. The tool gives each content contributor the power to develop Web pages without the need for a strong technical background. Content contributors use customized templates on a daily basis to create, for example, headlines, calendar entries, and electronic announcements for their websites. These templates are then used to generate text, HTML, and even JSP files, which are ultimately deployed to production sites.

For example, the current CM process for the Students Portal:

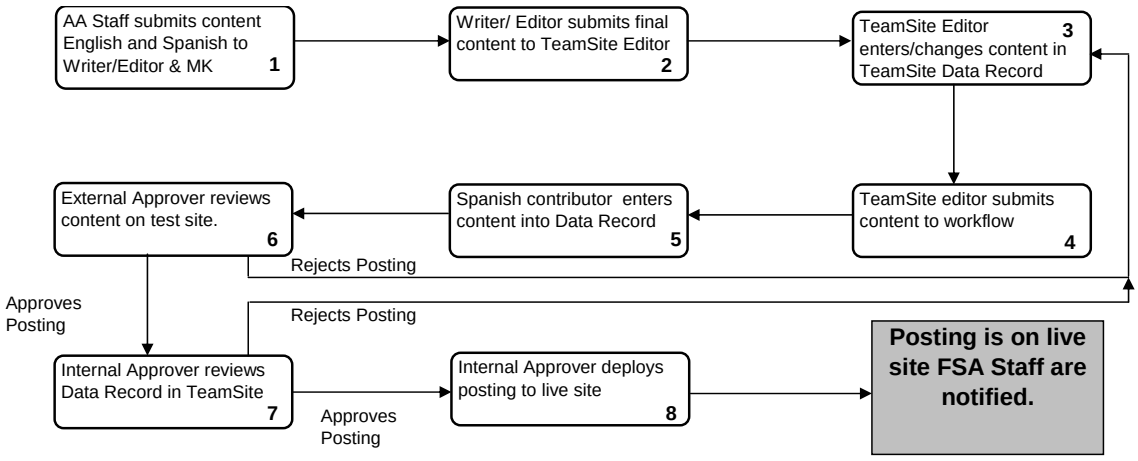


Figure 3.3 - Current Students Portal Content Management Process

The content management process becomes more robust if sophisticated delivery methods such as dynamic content and personalized messages are incorporated into the solution. With these methods, additional processing rules must accompany the ECM to govern the execution of such content delivery. Refer to Section 4 for more details on the impacts to these methods.

Key challenges faced by today's enterprises related to managing Web content are:

- *Managing a decentralized content creation and publishing process*. Publishing an increasing variety and amount of information requires the enterprise to rely on a larger number of individuals and groups - both internal and external - to provide, produce, and maintain information. As a result, creating content for an organization's websites is no longer the responsibility of a limited, centralized group of technically knowledgeable individuals traditionally located within IT.

  Instead, Web content management becomes a cross functional, collaborative effort that requires involvement from non-technical individuals from various departments and organizational levels depending on the nature of the information. For example, the business owners from the Students Channel may be responsible for creating and posting FAFSA information, whereas counselors within the Servicing branch would be responsible for developing and posting loan consolidation information.

  A decentralized and collaborative content creation process introduces several challenges related to administering content. These are centered on questions such as:

  - Who should determine an organization's standards to ensure a consist look and feel of the organization's Web presence that enforces the organization's image and strategy?
  - Who is responsible for approving content prior to making it available to the public?
  - How is content kept up to date?
  - When should content be reused?

- *Managing a large centralized content repository*. Posting an increasingly larger amount of content to the organization's websites also presents the issue of managing an extensive content repository, (i.e. maintaining a large amount of content shared and used by a large number of individuals). Managing the content repository requires effective version and rights control as well as robust content search capabilities.

Inability to effectively administer content could result in loss of data integrity and dissemination of incorrect and useless information. This could have adverse consequences, such as the wrong business decisions being made or inaccurate information causing eligible students to miss out on financial aid. These types of problems could result in unsatisfied customers and business inefficiencies.

Specific suggestions for establishing enterprise content management business processes include the following:

- Inventory all non-personalized Web content.
- Evaluate customer service inquiries and logging.
- Review all user feedback from on-line surveys and email messages.
- Assess website/page usage and current content organization.
- Evaluate existing content management processes across all applications.
- Outline overall content organization for enterprise (i.e. taxonomies).
- Define enterprise content management processes to include standards and best practices.
- Establish web governance roles and procedures.
- Design and implement enterprise solution.
- Evaluate website/page usage and customer feedback.

3.4 Option Assessment

The following tables present assessments of the enterprise content management solution with respect to business process impact, flexibility, level of effort and user impact.

Business Process Impact	Does the option have the potential of introducing significant cross-lifecycle business process improvements?	Negative Business Process Impact ← → Positive Business Process Impact

Points	**Comments**
Web Content Management helps manage large and dynamic volumes of content, and lays the foundation for multi-channel content delivery.	• A centralized repository for content reduces cost of data collection and storage and simplifies management of data and content. • Managing content centrally enables repurposing of content (e.g., usage of content in more than one functional area or delivery channel). • Content can be updated without updating HTML of each page • Formalized workflow and approval process reduces the cost of rework. Content gets out right the first

Business Process Impact	Does the option have the potential of introducing significant cross-lifecycle business process improvements?	Negative Business Process Impact ... Positive Business Process Impact

Points	Comments
	time. • Business users' ownership of content improves accuracy and timeliness of the message delivered.
Significant coordination efforts needed among website ownership teams to consolidate Web content repositories.	• To maximize the efficiency of content reuse, additional FSA business processes need to be deployed to facilitate knowledge sharing across the enterprise. • Web Governance rules and guidelines need to be established.

Table 3.1 - Content Management Business Process Assessment

Flexibility	Does the option offer improved flexibility for Web usage? Can the option support both existing legacy systems and potential future systems?	Not Flexible ... Highly Flexible

Points	Comments
Centralized content management is easily managed and adaptable to change.	• New systems that are added to the enterprise can leverage the same content management tool sets and access the same content repositories. • Central deployment of enhancements can reach multiple systems at once.
Flexible output of content to multiple channels	• Workflow capabilities of content management tools deploy content to the enterprise from a single source.
Localized management of content bound by centralized repository guidelines.	• Content that is created locally but shared globally needs to fit into ECM solution standards and conform to templates for universal delivery.

Table 3.2 - Content Management Flexibility Assessment

Level of Effort	Will significant effort (time and resources) be required to realize this option? Will the amount of effort required to maintain the Web environment be reduced?	1……2……3……4…….5 Significant Effort Required ... Minimal Effort Required

Points	Comments
Once an ECM is in place there can be significant Return on Investment (ROI).	• Good document management leads to an increase in reuse of content and reduction in the cost for new document creation.
Significant effort required to centrally house existing content.	• Existing content spread across multiple systems utilizing a variety of content management tools.
Significant level of effort for creating content categorizations around existing resources.	• All existing content that would be part of an ECM solution needs consistent "tagging" or metadata categorization in order to be properly store and delivered or retrieved in a search.

Table 3.3 - Content Management Level of Effort Assessment

User Impact	To what extent will the end user experience improvements with this option?	Negative Impact to User ... Positive Impact to User

Points	Comments
Customers' Web usage experience improved by uniform content management.	• Improved availability and consistency of content delivers similar messages to multiple customers.

Table 3.4 - Content Management User Impact Assessment

Score Summary

Business Process Impact	Flexibility	Level of Effort	User Impact
4	4	2	4

Table 3.5 - Content Management Assessment Scoring

4 How could Web content be provided to the customer?

There are a variety of ways that FSA can deliver content to users. As discovered in the analysis presented in the Technical Strategies Statement of Strategic Focus, FSA deploys a mix of both static and dynamic content with limited use of customization and personalized messaging. In the business objective gathering sessions, FSA business owners highlighted the need to improve content distribution by leveraging additional content delivery mechanisms to enhance the user experience on the Web. The Technical Strategies core team confirmed that the Web Usage Strategy should highlight the technical enablers to these processes.

The more specific the content can be to a customer's individual needs the more efficient the online user experience will be. For example, once a student logs into the FSA website, the system should recognize where the student is in the aid/loan lifecycle and present only relevant information. If the student is in the process of repaying, there should not be reminders about getting a PIN or submitting the FAFSA. The following methods of delivering content, which are reviewed below, contain certain dependencies, such as an enterprise content management tool and additional customer identification capabilities before they can be deployed to any Web environment:

- Custom Dynamic Content
- Personalized Messaging
- Customizable User Interface

4.1 Custom Dynamic Content

The Web environment is a vehicle for delivering both static and dynamic content. The difference between static and dynamic content relates to how content is generated into its final consumable form. *Static* Web pages are created and saved as files in an appropriate file structure from where they are retrieved by end-users as needed. The Web pages are static, or unchanging. No server-side processing or rendering is done and the same files are retrieved and displayed to any user requesting them.

Dynamic page generation is typically utilized when data combinations make the generation of static pages impractical. It is also used when content changes frequently to reduce the costs and effort associated with updating the content. For example, consider the status of a borrower within the Financial Aid Lifecycle. It may be impractical to generate a static page to all users across various stages of the lifecycle. In addition, maintaining multiple static sites is costly, especially since each page has to be altered or regenerated every time information changes. It would be more effective for the users' needs and more efficient to employ a dynamic approach where pages are created each time the end user needs to see their status or other supporting material specific to the individual. This approach would support FSA's need to have an integrated customer view based on lifecycle status.

With dynamic sites, Web pages are generated on-the-fly and such sites are database driven. Various content elements are stored in the database and assembled to generate a Web page each

time a page is requested. In the lifecycle status example above, all borrower information is stored in a back-end database(s). Each time a borrower makes a request for information specific to them, the data is retrieved from the database and pulled into a webpage that is served to the end-user. Content is displayed differently based on the data contained in the database.

An advantage to implementing a portal framework is its innate ability to deploy dynamic content. This process is heavily contingent on the systems' ability to recognize a user type or, for more specialized content, recognize an individual user to push the proper content. Once the enterprise architecture can identify its end user, it opens up the door to leveraging additional capabilities supplemental to dynamic content such as personalized messaging and customizable interfaces.

Each industry strives to understand customers well enough to deliver the right goods or services to the right place at the right time and the government is no different. To support this encompassing principle, FSA recognizes the need to develop intelligent applications that integrate internal business processes with their end users to create seamless business interactions. One way to support this is to have automated business rules assisting with personalized features. The Internal Data Exchange Strategy (123.1.9) helps address the enterprise's need to aggregate data, perform data transformation and apply business logic on the various pieces of data housed at FSA. The portals are means to take this aggregated data and roll it up into a format that is presentable to and possibly actionable by the end user. For example, the Schools Portal could provide a view to review and update school demographic data that could then be distributed to the enterprise systems needing that information.

4.2 Personalized Messaging

Another type of content that FSA business owners identified as providing customer value is the idea of personalized messages. The current portal architecture can be leveraged to offer users within the enterprise a single integrated view with personalized information that is pertinent to the users needs. There is limited use of this technology in place today at FSA. For example the Schools Portal distributes "Headlines" pertaining to key FSA milestones, such as deadlines for the application processing cycle. Options for personalization techniques can come about from three main areas:

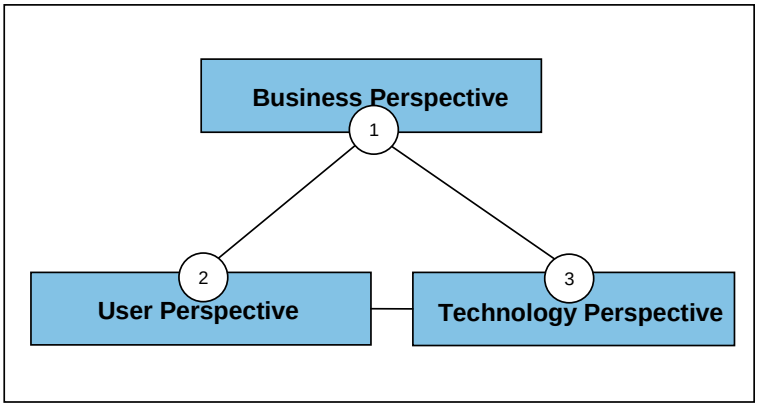


Figure 4.1 - Personalized Messaging Perspectives

1. **Business Perspective**: The trigger for personalization is the user's current status as retrieved from data in the user profile. According to the user's status, it is decided which information is provided across which channel. The need of the user in the different stages of the lifecycle will be acknowledged and the user specifically addressed based on that stage.

2. **User Perspective**: Personalization is triggered and determined by the user, according to the user's preferences and needs. This enables users to customize their own online offerings. For example, "My Page" allows content selection, layout configuration, etc. This option is discussed below in the Section 4.3.

3. **Technology Perspective: Static Type** - Personalization is based on offline analysis of tracked and existing user data. New attributes are generated and/or existing data are refined and affect personalization in the following user session. **Dynamic Type -** User behavior is analyzed during the session in order to make personalized offerings while the user is visiting the site. This personalization method is especially important for unknown users, due to missing customer insight for predefined personalization strategies.

The objective for website personalization is to increase productivity and ensure customer satisfaction. The first step in creating a personalized experience is to gather data about the customer. For this process to be successful, the proper data storage and management techniques need to be deployed to capture the customer data, store it for future use, and then analyze its properties to maximize its usability. These capabilities will be addressed further in the Data Storage, Management and Access Strategy (123.1.10). For example, a student in the repayment process of the financial aid lifecycle could receive online alerts prior to when payments are due.

The second and more difficult step is to use the amassed data to guide the customer through the transaction. To accomplish this, many enterprises are turning to a rules engine, which can work at the level of the individual customer and provide a personalized experience through the web.

The most complex business rules used today are normally not automated. They are, instead, rules of thumb that the agency employees routinely use in serving customers and partners. This information represents the knowledgebase of an organization. For example, general rules can be transformed into database triggers that acknowledge a school's eligibility cycle and dynamically produces an alert that informs an FAA that his school is up for recertification in the next year. This way the FAA has time to prepare and submit the proper documentation on time.

To implement personalized messaging capabilities, the business rule takes inputs (i.e. identifiers that say who the user is) and displays information to the screen or performs a business function. For example, a portal could display school news if the user is an FAA and student news if the user is a borrower, or a provide access to a specific function if the user is an executive and has certain privileges. A student could receive personal alerts through the portal that say when the FAFSA is due or how long until their next loan payment. Generating these outputs require a method of identification prior to exposing the individualized capability and personalized messages.

More and more organizations are using portals to personalize the Web experience, increase productivity, reduce costs and maximize the overall user experience. Business rules also play a big part in this process, as they work together with the customer profile information to deliver the content. This process is achieved by analyzing the user preferences and using pre-determined business rules to determine the content that is displayed to the screen.

The overall benefits of personalization for FSA include:

- Indirect, personalized customer interaction.
- Displays of integrated customer data based on the role in the Financial Aid Lifecycle.
- Individualized assistance to the users in order to properly receive and service aid.

If FSA wants to maximize the personalization capabilities of the portal architecture, it would need a way to organize, search, secure, and personalize access to all of the financial aid information for the entire enterprise in order to aggregate and organize it together for personal use. All of these elements (except for search) will be addressed in the Data Storage, Management and Access Strategy (123.1.10).

4.3 Customizable Interface

Another advantage to utilizing a portal framework within the enterprise website infrastructure is its ability to provide the users with a number of customizable features. Portals have the potential to deliver unique customer experiences. This is done by distributing custom dynamic content or personalized messages as well as by giving customers control over shaping their own user experiences through customizable interfaces. Portal frameworks offer the flexibility to expose various functions at the discretion of the user, while continuing to maintain the initiatives of the enterprise business needs. For example, the Schools portal allows users to register for a personalized account that gives them access to customizing the online features of

the Schools portal home page through "MyFSA." The user can display a list of favorite bookmarks, links, and other components that he or she wishes to display after logging in to "MyFSA."

Customization features, like the personalization functionality described above, are contingent upon the interface recognizing an individual user. Also, individual preferences must be stored separately from content that is delivered to the entire user community. The level at which a business leverages customizable features is dependent on the business requirements. Some of the functionality that can be incorporated into a customizable interface includes:

- Alerts
- Headlines
- Bookmarks
- Design and/or layout preferences

The overall benefits to implementing a customizable Web interface are:

- Empowering the user with access to the necessary resources to complete a task.
- Enhanced user experience and improved customer satisfaction.
- Increased user control over Web experience.

4.4 Option Assessment

The following tables present assessments of the various content delivery methods with respect to business process impact, flexibility, level of effort and user impact.

Business Process Impact	Does the option have the potential of introducing significant cross-lifecycle business process improvements?	Negative Business Process Impact ← → Positive Business Process Impact

Points	**Comments**
Web Content Management is required for successful personalization because the metadata repositories enable delivery of content based on personalization rules.	• Good descriptors in metadata enable content to best be targeted to the end-user.
Requirements for dynamic content, personalization and customizable features may differ across channels and require coordination to bring about a business consensus.	• Different audience may require different needs and the business owners need to identify the divergences.
New, automated workflow processes need to be defined.	• Web governance needs to be defined and implemented.

Table 4.1 - Content Delivery Business Process Impact Assessment

Flexibility	Does the option offer improved flexibility for Web usage? Can the option support both existing legacy systems and potential future systems?	Not Flexible — Highly Flexible

Points	Comments
Dynamic content delivery, personalization and customization are all highly flexible components of an enterprise content management solution.	• Individualizes the customer experience. • Can support multiple user types. • Can support multiple input and output channels.
In ability to deliver personalization features without significant user data collection and analysis.	• Users must first be identified before certain dynamic content and personalized messages can be delivered.

Table 4.2 - Content Delivery Flexibility Assessment

Level of Effort	Will significant effort (time and resources) be required to realize this option? Will the amount of effort required to maintain the Web environment be reduced?	Significant Effort Required — Minimal Effort Required

Points	Comments
Portals already provide the framework to offer dynamic content, personalized messages and a customizable interface.	• The effort to bring these solutions to the customers resides on backend system support of the functionality.
Dynamic content and personalization features require the data architecture to support content delivery.	• Content and personalized preferences need the correct data storage configuration to bring the customer a unique user experience. • The Data Storage, Management and Access Strategy will outline the proposed data architecture solution that will take into consideration the requirements of the Web Usage Strategy. • Requires coordination with the Enrollment and Access Management recommendations.

Table 4.3 - Content Delivery Level of Effort Assessment

User Impact	To what extent will the end user experience improvements with this option?	Negative Impact to User — Positive Impact to User

Points	Comments
Provides significant value to the customer.	• Unique customer experience. • Targets individual needs to accomplish tasks specific to the user's role in the lifecycle. • Expedites business on the Web by bringing pertinent business functions to the forefront of the user experience.

Table 4.4 - Content Delivery User Impact Assessment

Score Summary

Business Process Impact	Flexibility	Level of Effort	User Impact
4	4	3	4

Table 4.5 - Content Delivery Assessment Scoring

5 What kind of search functionality is needed by FSA users?

A significant portion of FSA's interaction with its customer base revolves around the ability for the user community to find information on federal financial aid. This is not just accomplished by displaying static text on a webpage but the users also require the need to search FSA for detailed information on relevant topics that meet their specific business needs. FSA identified easy access to search capabilities as part of its number one business requirement for Web usage. There are gaps that exist today between what the users wish to achieve and what is available to them through the enterprise search capabilities. Information is being stored in multiple locations and there is little ability to search across the enterprise and aggregate the data from disparate sites.

The participants of the Web Usage Working Sessions reviewed several options relating to two questions associated with the search capabilities available through FSA websites:

1. How should content repositories be managed to enable search retrieval?
    a. Cross-application search
    b. Business channel
    c. Lifecycle stage
    d. Enterprise-wide

2. What kind of search functionality is needed by FSA users?
    a. Simple Keyword Search
    b. Intelligent, question-based search functionality
    c. Cross-site search capability
    d. Customizable search criteria

5.1 Search Capabilities

A search engine's capability is directly related to the content storage configuration. The search engine's capabilities must work in tandem with the content management repositories so that when content is created it is properly categorized. This process will help users retrieve the right information on demand and reduce time spent searching for the right response.

In order to structure the content categorization schema, the enterprise needs to identify the user requirements to better understand what a user's expectations are and configure the search engine to bring about the best possible results. For example, if an FAA is searching on the Schools Portal using the "Return to Title IV" keywords and they really just want to see the IFAP worksheets for Title IV aid, then the engine should be configured with that user intent in mind and not pull back extraneous links to Web content that do not meet the FAA's needs. It is this kind of user understanding that an enterprise needs to capture in order for the end users to have a successful search experience.

Search functionality is a growing process that must be constantly evaluated against the users' needs. Business owners have a role in deploying search engines, which can aid in the success of

their implementation. They should monitor results and adjust a search engine's performance based on usage trends and customer satisfaction in order to align results to what is expected by the customer. Because of the various options and degrees of capability associated with search engine functionality, it is best to identify the user requirements to align a solution with the business needs of the organization and implement a flexible search engine that can satisfy a majority of the user's needs. Appendix D contains additional details on search indexing.

Once the requirements are understood, there are different degrees of search engine capabilities that can be utilized by an enterprise Web environment in order to bring information and data to the end users. This strategy reviews the following options for search solutions:

- Simple Keyword and Boolean Search
- Customizable Search Criteria
- Cross-site Search Capability
- Natural Language Search Functionality

These capabilities are mutually exclusive of one another and a typical solution could utilize one or more of these search features depending on the user requirements. Their versatility and varying levels of complexity are illustrated in the diagram below:

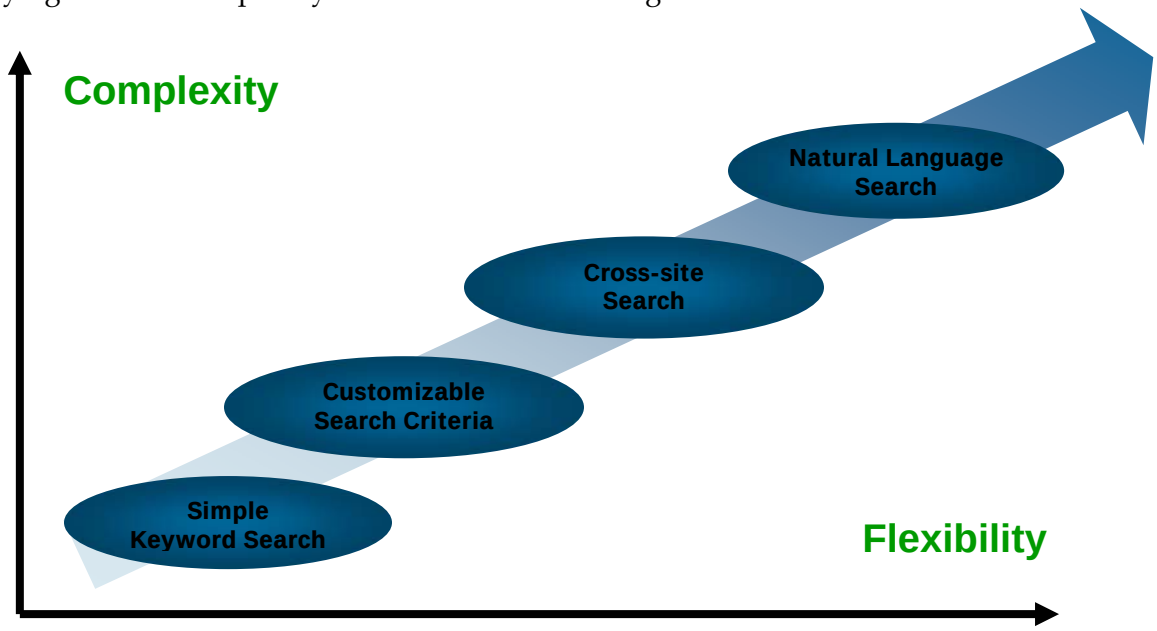


Figure 5.1 - Search Capabilities

5.1.1 Simple Keyword and Boolean Search

The most basic of searches that can be submitted by the online user community is the "simple keyword search." A user types in a word and the search engine retrieves results based on a specific algorithm that is run against the use of that word in the content that is indexed and stored within the database(s) to which the engine is attached. Results are displayed to the user

in the order of most relevant choices first. Simple keyword searches are best used for casual online users with general inquiries. For example, a student types in "FAFSA" and the user should see a link to the "FAFSA on the Web" website. Simple keyword searches can also be accompanied by Boolean logic such as "AND" or "OR" to help users narrow their search results.

5.1.2 Customizable Search Criteria

Another way in which an enterprise's search capability can provide value to the customer is to include the option of advanced search criteria that the user can elect to apply to a given query. By offering a list of customizable criteria, the search engine empowers the user to pre-filter the query results down to those that best align with the desired outcome. This functionality improves the Web usage experience for the customer by accelerating access to search results that better align with the customers' needs.

To be successful, the customizable search criteria need a properly architectured platform from which to run. The storage of website content and the metadata describing that content need to be structured in a manner that supports the criteria options proposed in the advanced search fields. For example, the search engine software cannot allow the user to search by "Last Update Date" if the data storage solution does not contain a way to derive that information. In this instance, significant coordination is required in order to best align the search requirements with the data storage and management strategy. These strategies should supplement one another and not limit the user's ability to find information.

The benefits of instituting customizable search criteria include:

- Improved online experience by giving the user control over the interface.
- Better search results that more closely align with the users' search objectives.
- Streamlined database queries that execute with better performance.

5.1.3 Cross-site Search

For organizations that house information in multiple locations, a way to facilitate knowledge sharing across sites is through robust search engine capabilities that can retrieve content across the enterprise for a variety of user types. The range of knowledge that organizations can deliver is the key to empowering their user community and supporting their strategic vision.

To institute cross-site search capability, an organization needs an integrated data storage and management strategy to organize content from across the enterprise and store these items from different websites in a central location. This allows a search engine to leverage the data storage configuration to provide access to specific application content without requiring the user to search multiple times on individual sites. Cross-site search also requires certain access control mechanisms to manage the availability of application specific content for a variety of user types so as not to release content to an unintended audience group.

Cross-site search capability is necessary in order to bring back all the relevant information to an end user in a single session. For example, there are a variety of locations that contain content that is pertinent to a student's ability to receive and repay aid. A student could be browsing the Students Portal early on in the lifecycle and want to know about how servicing and loan consolidation works. This student may not know about www.dl.ed.gov yet because he is just beginning to get exposed to the world of financial aid. He suspects that a search on the Students Portal will provide him with the information or at least direct him to where he can find it. In order to meet this student's needs, a search engine solution should be able to review content not just on the Students Portal but also bring back content that exists on other FSA websites.

The benefits of enabling cross-site search capability are:

- **Increased productivity** – by reducing the time users would have to spend trying to find information.
- **Increased effectiveness** –by integrating all of the information and tools relevant to an end user together in one source, the end user can easily find and use information which is relevant to their end task.
- **Improved customer satisfaction –** by reducing the confusion of where to find information.

5.1.4 Natural Language Search Capability

One step at increasing the functionality of an enterprise search capability is to build off of the simple keyword search functionality and make the research process more practical to the users. One manner to accomplish this is to provide a search engine that enables the user to ask the questions for which the search is being initiated. Question-based search capability requires the search engine to parse the keywords from the question and apply an algorithm based on natural language definition in order to correctly identify the results that best align with the question's intent. It is a dynamic way to interact with a group of "Frequently Asked Question" (FAQs). Instead of searching a list of FAQs, the user submits the question to the search engine and lets the engine do the work. Intelligent search engines can structure their data storage and metadata collection techniques around relevant business processes so as to facilitate the correct retrieval of information. For example, a financial partner may enter a question about the Guaranty Agency Financial Report (GAFR), "What are the changes to the guaranty agency reporting process?" and be directed to a link on the Financial Partners Portal that brings the user a memo addressing this year's GAFR enhancements.

5.1.5 Conclusion

By enabling comprehensive search functionality and improving the classification of data and content, an organization can expand its ability of providing the right information to the right person at the right time. An organization could improve the user experience by enabling a centralized location for enterprise content that can provide reliable search results on a consistent basis. That functionality would align with the user's original intention for conducting a search. A detailed set of taxonomies are needed to provide organization to unstructured Web content.

In order to meet a variety of customer needs and improve the user experience, an organization should consider robust search engine capabilities that will:

- Respond effectively to a variety of user's needs by minimize the time used to search for a particular answer.
- Provide the ability to search multiple repositories/content sources during a single search.
- Support improved metadata categorization of content across the enterprise that best aligns with the users' needs.
- Allow flexible search criteria that can meet the needs of a variety of users.

5.2 *Option Assessment*

The following tables present assessments of the search functionality described above with respect to business process impact, flexibility, level of effort and user impact.

Business Process Impact	Does the option have the potential of introducing significant cross-lifecycle business process improvements?	Negative Business Process Impact ⟷ Positive Business Process Impact

Points	**Comments**
Assists integration efforts across the enterprise.	• Brings content to the user regardless of customer type or placement in the financial aid lifecycle.
Improved response time and increased productivity.	• The faster the users can get the answer they are looking for the better customer satisfaction will be. • Less time searching means more time accomplishing other tasks.
Contingent on the success of the content management solution applied.	• Business process impacts vary depending on the content management solution applied to the enterprise. • The taxonomy structure applied to content when it is created partially affects its ability to be retrieved by the search engine.

Table 5.1 - Search Business Process Impact Assessment

Flexibility	Does the option offer improved flexibility for Web usage? Can the option support both existing legacy systems and potential future systems?	Not Flexible ⟷ Highly Flexible

Points	**Comments**
With the proper configuration and data storage, the entire enterprise can utilize the same search engine.	• If the business needs require it, the same search engine can be applied to multiple sites. • Different user types to ask different questions but utilize the same search engine.
Search capabilities can be intuitive to a user's needs.	• Some search functionality such as natural language definition and even spell checking try to understand the user's intentions.

Table 5.2 - Search Flexibility Assessment

Level of Effort	Will significant effort (time and resources) be required to realize this option? Will the amount of effort required to maintain the Web environment be reduced?	Significant Effort Required — Minimal Effort Required

Points	Comments
Depends on the users' requirements and the installation approach taken.	• The level of effort for instituting search capability is more tied with the level of effort to configure a content management solution and establish a data storage strategy that the search engine can run against.
Extensive content aggregation needed to facilitate better search query results	• Content repositories scattered throughout the enterprise. Consolidation of content and resources needed to enable cross FSA aggregation of financial aid information.

Table 5.3 - Search Level of Effort Assessment

User Impact	To what extent will the end user experience improvements with this option?	Negative Impact to User — Positive Impact to User

Points	Comments
Enhanced search engine capability provides better value to the customer.	• Results better satisfy the intended goal of the original search. • Faster access to FSA information. • Customizable criteria offer a variety of options to the end user.

Table 5.4 - Search User Impact Assessment

Score Summary

Business Process Impact	Flexibility	Level of Effort	User Impact
4	5	3	4

Table 5.5 - Search Assessment Scoring

6 What reusable Web assets could be utilized to improve efficiency?

Given the wide range of website functionality in use at FSA, the business owners recognize the need for a consistent approach to developing an enterprise website infrastructure. This will help ensure quality customer service while facilitating an efficient use of resources. Currently, resources are distributed across multiple systems that operate on a variety of platforms. Trying to maintain such a diverse infrastructure creates multiple redundancies. Even with something as technically simplistic as content presentation, FSA maintains a variety of webpage layout designs with an inconsistent use of fonts, colors and graphics.

The purpose for reusable capabilities is to develop the technology once so that it can be deployed throughout the enterprise with minimal intervention to specific application websites or system environments. Reusing certain components can limit the amount of redundant development efforts while supporting a reduction in operational and maintenance costs. These goals can be achieved when a technical change needs to be made to a common component. It can be made centrally and distributed to those areas of the enterprise that utilize it without triggering significant rework by different business entities that leverage the same component.

This strategy explores the following reusable capabilities to better streamline FSA's resources and improve the efficiency of the technology that enables FSA's business:

- Web services
- Common "Look and Feel"
  - Stylesheets
  - Templates
  - Portlets
  - Uniform Tool Sets
- Uniform Technical Architecture Platform

6.1 Web Services

As organizations have evolved into creating more service-orientated architectures to deliver business functions to their customers, portal technology has become more prevalent for web-enabling self-service capabilities. The users need easy access to the most desired business functions to facilitate their workflow management. Because FSA utilizes the portal framework to deliver content and services to Students, Schools and Financial Partner, these portals are appropriate venues to leverage Web services to facilitate additional web-enabled self-service capabilities.

Web services are software components that use open standard communication protocols to interact with other applications over the Internet for service-orientated architectures. One of the greatest benefits of Web services is their reusability across an enterprise. Web services software components are built once and can be invoked by multiple applications with minimal interaction and coordination between the Web service developer and application owner requesting the service. This is accomplished by the Web services common publishing

methodology whereby a central repository contains all the necessary information to connect to a Web service. Web service reusability is propelled by the fact that the protocols are based on Internet standards and their implementation feasibility is platform agnostic. This means that any application within the enterprise that has access to the published material on the Web service can integrate its application logic to call the Web service functionality based on specifications outlined by the organization. Gartner identifies that Web services will play a crucial role in the development of Web infrastructures and portals are one means to bring Web services to the end user: "Portals will be one of the critical success factors in the deployment of Web services. In addition, a portal will provide the user interface/presentation layer for Web services."[8]

Additional details on the standards used to implement Web services are documented in the Web Services Strategy (123.1.8); however, the following diagram is a high-level architecture for Web services and its integration with Web applications.

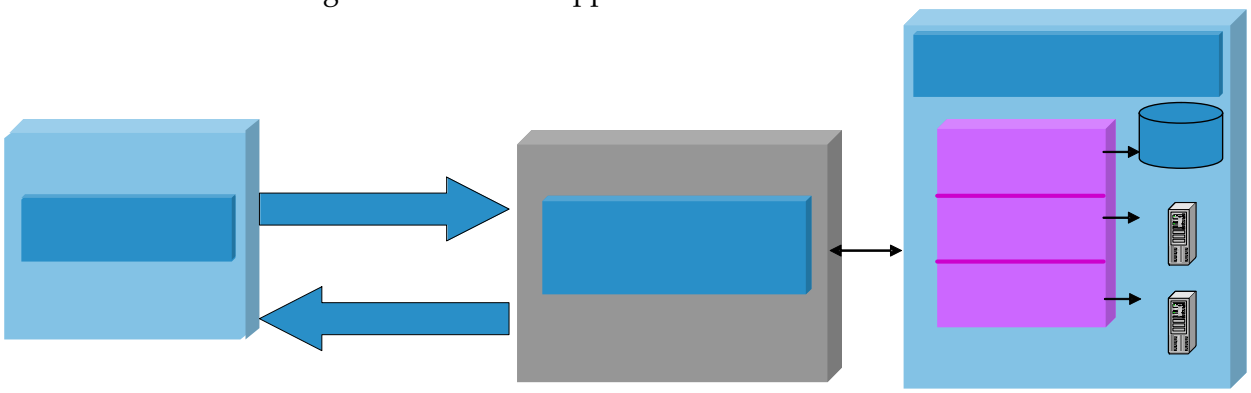


Figure 6.1 - Web Services Architecture

Some of the benefits of implementing Web services include:

- Sharing services across applications, channels, departments and agencies.
- Optimizing and streamlining processes.
- Automating current processes.
- Leveraging existing infrastructure.
- Enhancing staff performance and productivity.
- Reaching a larger customer base.
- Reducing time of delivery.

One business example of how FSA can benefit from providing additional Web services capabilities is with the Estimated Family Contribution (EFC) calculator. A borrower's FAFSA application leverages the EFC logic that is housed in the Central Processing Application (CPS) in order to determine eligibility for aid. This logic is custom to CPS but beneficial for multiple channels like students and schools. Exposing this business function to multiple channels with Web service technology and providing access to the Web service via the portals is a way that

[8] © Copyright Gartner, Inc. Source: "Portlets Help 'Tame' the Delivery of Web Services." October 25, 2002.

FSA can share one service to multiple parties without duplicating development efforts. The same Web service is called by each channel so the logic is centrally housed but loosely coupled to other applications so any changes can be uniformly distributed to the enterprise units that utilize the Web service.

6.1.1 Option Assessment

The following tables present assessments of the Web services capability with respect to business process impact, flexibility, level of effort and user impact.

Business Process Impact	Does the option have the potential of introducing significant cross-lifecycle business process improvements?	Negative Business Process Impact ← → Positive Business Process Impact

Points	**Comments**
Increased operational efficiency and quality of service	• Increased accuracy of information gathered. • Ability to collect data only once – i.e. sharing the data gathered across departments. • Increased efficiency by automating current processes. • Improved performance and productivity, enabling users to focus on higher value services.
Supports integration across teams.	• Teams supporting different lifecycle goals can share commonly needed services to increase business productivity
Implementation of new technology will require enterprise coordination and governance.	• Limited exposure and practice with Web service capabilities. • Large learning curve to new technology. • Requires consistent approach to utilizing industry standards.

Table 6.1 - Web Services Business Process Impact Assessment

Flexibility	Does the option offer improved flexibility for Web usage? Can the option support both existing legacy systems and potential future systems?	Not Flexible ← → Highly Flexible

Points	**Comments**
Provides a flexible and agile infrastructure supporting a loosely coupled architecture.	• Improved consistency across departments. • Ability to add new services easily and cost effectively.

Table 6.2 - Web Services Flexibility Assessment

Level of Effort	Will significant effort (time and resources) be required to realize this option? Will the amount of effort required to maintain the Web environment be reduced?	Significant Effort Required ← → Minimal Effort Required

Points	**Comments**
Improved Return on Investment.	• More efficient use of system resources and extended life of existing technology and infrastructure

Level of Effort	Will significant effort (time and resources) be required to realize this option? Will the amount of effort required to maintain the Web environment be reduced?	Significant Effort Required ... Minimal Effort Required

Points	Comments
	investments. • Cost savings by enabling a transaction to be processed without manual intervention
Current portal architecture supports additional Web services.	• The ITA infrastructure contains the necessary components to enable Web services capabilities.
Security implications of exposing Web services externally.	• Increased effort required to properly secure access to Web services for trading partner systems. • Applications outside of the ITA environment might need to create mechanisms for handling Web service requests.

Table 6.3 - Web Services Level of Effort Assessment

User Impact	To what extent will the end user experience improvements with this option?	Negative Impact to User ... Positive Impact to User

Points	Comments
Better access to the most desired services and business functions.	• Web services give the user access to reliable information on a consistent basis. • Creates standardization across the enterprise and enables FSA and its customers to do its job in a more effective manner. • Empowers the customer by creating more web-enabled self-service capabilities.

Table 6.4 - Web Services User Impact Assessment

Score Summary

Business Process Impact	Flexibility	Level of Effort	User Impact
4	5	3	4

Table 6.5 - Web Services Assessment Scoring

6.2 Common "Look and Feel"

The following usability principles should drive the "look and feel" of an organization's enterprise website environment:

- It should be designed in a way that is intuitive to the user.
- Information should be presented in a consistent manner without unnecessary functionality or content.
- It should not inhibit the users from realizing their end goals.

The current Web enterprise at FSA provides a disruptive user experience. There is a constant variation that exists in FSA's use of fonts, colors, graphics, logos, navigational structure and menu options. Users have varied and inconsistent experiences across a number of disparate sites when trying to do business with FSA in the course of a single session.

There are a variety of ways an organization can structure a common "look and feel." The capabilities are usually simple to implement and reusable across an enterprise. During the Web Usage working sessions, the Technical Strategies core team identified options that could be used to improve the user experience by applying consistency across the enterprise Web environment:

- Standard, enterprise-wide webpage stylesheets.
- Consistent application of content templates for delivering information.
- Custom portlet technologies and reusable common services (RCS).
- Similar online tool sets for uniform customer experience.

6.2.1 Stylesheets

Stylesheets are technical overlays to a graphical user interface or Web page that describe how content is to be presented to the user. Stylesheets can be used to dictate the type of fonts that can be used on a page, the size and position of graphics as well as many other content presentation elements. When created and applied in a standardized format, stylesheets can help govern an enterprise's look and feel to make the user experience more consistent and seamless across multiple websites.

Stylesheets are a common tool for Web development. FSA websites utilize this functionality in a number of locations. Many sites employ different stylesheet files to organize the layout of their Web pages. Stylesheets are more effective if they are uniformly applied to an enterprise Web environment. Each page can call the same stylesheet file so the enterprise can present content in a similar fashion. This concept also supports any effort to provide seamless navigation across multiple sites of an enterprise. Cascading Stylesheets (CSS) is one mechanism for documenting and enforcing guidelines for fonts, colors and other style components used on a webpage. In addition, XSL (Extensible Stylesheet Language) can be used to format and present XML documents into a format that is readable by a Web browser.

Finally, stylesheets, as a reusable capability, reduces rework across an enterprise. When a change is made to the specifications defined in the stylesheet, it can be made once to the file and automatically applied to those pages that use the same stylesheet. Each page does not have to be updated individually.

6.2.2 Templates

Content structuring relates to not only defining but also applying structure to content. Achieving consistent content structure can be done through the use of templates. The use of templates requires a separation of content from the layout of the webpage. Structure is not defined by the content management system, but must be defined and maintained by the content authors, users and other stakeholders. As a part of design, the website layout and structure of

each content area are defined and the corresponding templates are developed. The templates are then used to facilitate content authoring by allowing content authors to enter content (including metadata, such as author, date and description) into forms or authoring environments based on those templates. As a result, templates force content to follow a prescribed format thereby molding otherwise unstructured content into a standardized, repeatable structure.

The use of templates enables non-design professionals to focus on content, as opposed to aesthetic design, thereby allowing individuals from throughout the organization to author content. The content management system should interface to authoring software to allow users to work in best-of-breed authoring tools with which they are already familiar.

To ensure integrity of the content entered by authors, the validity and structure of the content must be confirmed. This can be achieved though the creation of Document Type Definitions (DTD). The DTD provides guidance for proper structure of content. It can be viewed as a set of rules and definitions - or schema - to which content must conform. The DTD is created by the user and can be used to perform real-time validation of content entered by authors as well as translation of that content into plain text marked-up with XML.

Using templates is a very efficient approach to enforcing structure. The extent to which templates can be used is dependent on the content management solution that an enterprise employs to deliver content. Templates are used today with the content management tool set utilized by the portals and a limited number of other FSA websites. The full potential of utilizing templates as a reusable component is not being realized. Most sites do not use the same templates. This inhibits FSA's ability to portray a common "look and feel." Templates should be applied universally in conjunction with the roll out of an enterprise content management solution to standardize the delivery of information and services.

6.2.3 Portlets

Portlets are reusable software components that are plug-and-play instruments often utilized by a Web infrastructure. Currently, the architecture supporting the portals environment and a few supplemental websites that also utilize the FSA ITA infrastructure employ a number a custom portlets. Portlets are part of ITA's Reusable Common Services (RCS) offering. These components that are being shared have been created once and incorporated into the designs of various websites. They are reusable pieces of code that are flexible enough to be applied to multiple styles of Web designs. The value behind creating portlets is that developers can easily use the framework provided by the portlet to rapidly develop Web pages and activate the intended functionality. It also enables a common "look and feel" if a user will access the same portlet on multiple sites. For example, all three portals employ the Search portlet that was custom built by the ITA team. Each portal website utilizes the same Java-based Search portlet to connect the users to the same search engine without knowing the specific search engine syntax.

6.2.4 Uniform Tool Sets

This strategy has already addressed the benefits of using a uniform search engine and an enterprise content management tool set as reusable components across the enterprise. In addition to these areas, the Web environment can also employ other uniform tools in order to encourage consistency across the enterprise and provide customer insight. Such tools may include:

- Online business intelligence (BI) capabilities.
- Uniform Web trend analytical tools.
- Customer Feedback mechanisms.

Online business intelligence (BI) capabilities

The current Web infrastructure utilizes a uniform tool set to support the reporting needs of a variety of users by providing online access to some of the data marts. This consistent reporting capability adds significant value to the user experience by only requiring the user to learn one skill and allowing it to be applied across a number of business processes. For example, the objective of the Financial Partner's (FP) Data Mart is to provide executive information and decision support capabilities around several key business functions, which include Risk Management, Customer Relationship Management, Compliance Management, and Portfolio Management. Utilizing the same BI tool set, an external Guaranty Agency user may execute a report from the Financial Partners data mart to measure portfolio characteristics and then create a custom, ad-hoc report to run from the same data mart to measure key performance indicators for a particular geographical region. Although Data Marts will be addressed in the Data Storage, Management and Access Strategy (123.1.10), the consistent use of BI tool sets through an online graphical user interface is just another example of a reusable capability that can be applied to a Web environment to promote a common "look and feel" for the user experience.

Uniform Web trend analytical tools

Another tool that can be used across the enterprise is an analytical tool that gathers and reports Web usage statistics. A tool that analyzes Web usage can offer reporting capability that identifies patterns in website traffic. These tools can also provide customer insight into the enterprise's Web usage by reporting on certain visitor behavior (such as the entry page from which the user accessed the site). An organization can take the feedback from the analysis and make enhancements to its websites' performance and usability.

Customer Feedback mechanisms

Online feedback collection provides the ability to collect quantitative and/or qualitative data about how users interact with a live website. Collecting online feedback allows website managers to get a "pulse" for where users are going and how they feel about their experience. Online surveys capture subjective feedback from users as they interact with the website. They can be comprised of multiple choice and or open-ended questions to capture opinions of the user's experience. Results generated are similar to those of a paper-based survey. These methods should be considered as complementary to more extensive usability testing in order to gather complete insight into a customer's Web usage experience.

Conclusion

The implementation of any of these procedures has both business and customer benefits. The application of uniform tool sets allows an organization to achieve a better return on their investment and improve the economies of scale within the enterprise by installing the same tool sets in multiple locations for a variety of users. For example, FSA leverages the same BI tool set for access to multiple data marts for a Financial Partners, Lenders, and internal FSA reporting requirements.

Beyond the business benefits that can be achieved through the use of uniform tool sets, there is also significant value that can be brought to the user experience by consistently using a set of standardized tools. Multiple online tool sets require the end user to learn a variety of functionality. This can lead to confusion and disgruntled customers. The users may also encounter difficulty in finding the data they need in a timely fashion to accomplish their business objectives. Any tool set that is accepted by an enterprise should be highly flexible and robust enough to handle a variety of business requirements while supporting a positive user experience.

6.2.5 Option Assessment

The following tables present an assessment of a common "look and feel" for an enterprise Web environment with respect to business process impact, flexibility, level of effort and user impact.

Business Process Impact	Does the option have the potential of introducing significant cross-lifecycle business process improvements?	 Negative Business Process Impact — Positive Business Process Impact

Points	**Comments**
A common "look and feel" exhibits a united front and supports efforts to market FSA as a single business entity.	• Uniform content presentation shows one FSA doing business with the entire financial aid community. • Common "look and feel" supports the idea of creating a marketable identity to increase program integrity.
Reusability, extensibility, and interoperability of reusable common services (RCS) like Web services and portlets.	• Individual components of the RCS can be mixed and matched to meet specific application needs. • The RCS software architecture can be leveraged by other applications that need similar infrastructure and services. • Integration with new and existing systems is facilitated through open standards.
Using templates introduces the challenge of retrofitting existing legacy content to align with the defined template structures.	• This might impose a burden on applications with substantial, relatively free-form content.

Table 6.6 - Common Look and Feel Business Process Impact Assessment

Flexibility	Does the option offer improved flexibility for Web usage? Can the option support both existing legacy systems and potential future systems?	Not Flexible — Highly Flexible

Points	Comments
Stylesheets and templates are flexible ways to apply guidelines for content presentation.	• Any type of webpage can call a stylesheet. • Templates are set up by the content management tool and can be applied to multiple pages.
Portlets are "plug and play" instruments.	• Portlets are reusable pieces of code that are flexible enough to be applied to multiple Web pages.
Flexibility of uniform tool sets depends on the tool set adopted by the enterprise.	• Varying degrees of flexibility depending on the product selected. • In order to leverage the same templates across the enterprise the sites must be running off the same content management solution.

Table 6.7 - Common Look and Feel Flexibility Assessment

Level of Effort	Will significant effort (time and resources) be required to realize this option? Will the amount of effort required to maintain the Web environment be reduced?	Significant Effort Required — Minimal Effort Required

Points	Comments
Stylesheets and templates are simple technical solutions to defining an enterprise's "look and feel."	• Stylesheets define content presentation once and the files can be applied in multiple locations. • Content management tool sets help the Web environment define the templates that are needed.
Lower costs, faster development and reduced delivery risks.	• ***Pre-built*** architecture components with well-defined interfaces that enable critical functionality in enterprise applications. • Reduces costs and speeds development through separation of responsibilities between developers and designers.

Table 6.8 - Common Look and Feel Level of Effort Assessment

User Impact	To what extent will the end user experience improvements with this option?	Negative Impact to User — Positive Impact to User

Points	Comments
Common "look and feel" reduces the disruptive behavior of the current user experience	• Common "look and feel' supports efforts to achieve seamless navigation. • Users better understand where they are and how they can accomplish their end goals.
Supports a consistent user experience across an enterprise.	• Some portlets like a login or search feature may appear multiple times before the same user.
Applying a common "look and feel" reduces the learning curve of online users.	• By leveraging the same tool set across the enterprise the user encounters similar functionality in multiple locations. Users learn one skill and apply it in

User Impact	To what extent will the end user experience improvements with this option?	Negative Impact to User ... Positive Impact to User
Points	**Comments**	
	multiple locations.	

Table 6.9 - Common Look and Feel User Impact Assessment

Score Summary

Business Process Impact	Flexibility	Level of Effort	User Impact
4	4	4	5

Table 6.10 - Common Look and Feel Assessment Scoring

6.3 Uniform Technical Architecture Platform

Another area to look to consolidate resources and utilize reusable Web assets is the technical architecture platform. There is not a single technical architecture from which the enterprise Web environment runs. The current Web usage at FSA is housed on a variety of technical platforms and many websites are maintained by different teams. Consolidation and uniformity has begun with the move towards utilizing the ITA platform for the deployment of the portals and a few other FSA websites (e.g. IFAP). Having these sites created, deployed and maintained under the same technical architecture has allowed them to utilize some of the same software and hardware components and reduced the amount of rework required to develop and maintain the websites. It also supports integration efforts within FSA by requiring coordination between business owners and developers from different teams.

Instituting an enterprise technical architecture from which to run the Web environment has a number of business benefits. It reduces costs by minimizing the number of products that are needed to run the environment. It also centralizes the coordination for maintenance operations so it is easier to solve technical problems that may occur by applying a uniform fix to the entire environment and improves the speed at which changes can be made. In addition, the knowledge capital that can be shared among resources within the same architecture environment can be leveraged by multiple resources.

6.3.1 Option Assessment

The following tables present an assessment of a uniform technical architecture platform for an enterprise Web environment with respect to business process impact, flexibility, level of effort and user impact.

Business Process Impact	Does the option have the potential of introducing significant cross-lifecycle business process improvements?	Negative Business Process Impact ... Positive Business Process Impact

Points	Comments
Applying a uniform technical architecture to the enterprise Web infrastructure improves coordination across development teams.	• Interdependencies between application systems are better handled on an integrated platform. • The sharing of resources can be better applied to websites on a uniform technical platform.
Possible changes to the current business processes for deploying and maintaining websites.	• Maintenance releases will need strict coordination as the number of websites housed on the same platform increases.

Table 6.11 - Uniform Technical Architecture Platform Business Process Impact Assessment

Flexibility	Does the option offer improved flexibility for Web usage? Can the option support both existing legacy systems and potential future systems?	Not Flexible ... Highly Flexible

Points	Comments
New websites can be easily added to the same technical infrastructure.	• Adaptable to hardware and software changes. • Centralized distribution for updates. • Collaborative, efficient maintenance.
Improves the ability to share enterprise data among multiple websites.	• If all the websites are hooked up to the same integrated platform then the method of sharing the same data to different users utilizing different interfaces is easily duplicated.
Limited flexibility to a diverse set of technologies	• Integration is more difficult if sites are running separate hardware and software configurations. • The enterprise technical architecture needs to be flexible enough to handle a diverse set of technical requirements from multiple teams.

Table 6.12 - Uniform Technical Architecture Platform Flexibility Assessment

Level of Effort	Will significant effort (time and resources) be required to realize this option? Will the amount of effort required to maintain the Web environment be reduced?	Significant Effort Required ... Minimal Effort Required

Points	Comments
Significant cost savings by maintaining a single technical architecture platform.	• The number of products and vendors are reduced. • The cost of maintaining a variety of Web servers housed in different locations is reduced.
Moving existing websites under a new technical platform takes a significant amount of coordination.	• Software configurations may need to be altered to run existing websites under a new platform. • Moving websites to a common platform takes significant coordination between business owners and maintenance teams in order to share resources.

Table 6.13 - Uniform Technical Architecture Platform Level of Effort Assessment

User Impact	To what extent will the end user experience improvements with this option?	Negative Impact to User ... Positive Impact to User

Points	Comments
A uniform technical architecture promotes seamless navigation for the user.	• Reusable capabilities for a common "look and feel" are more easily applied and enforced within the same architecture.
A majority of the changes associated with applying a uniform technical architecture would go unnoticed by the end user.	• The positive impacts are more realized in the business area of cost savings and operational efficiency.

Table 6.14 - Uniform Technical Architecture Platform User Impact Assessment

Score Summary

Business Process Impact	Flexibility	Level of Effort	User Impact
3	3	3	3

Table 6.15 - Uniform Technical Architecture Platform Assessment Scoring

7 Recommendation

The following section provides a summary of the recommendations presented in this deliverable. The creation of a Web Usage recommendation requires consideration of FSA business needs, industry trends, customer service best practices, usability guidelines, and an understanding of the potential return on investment from changes to the status quo. The rationale for change to the current state of Web usage at FSA must focus on the following:

- Bridging gaps that were identified by FSA.
- Meeting FSA's business objectives.
- Enabling FSA's key decision factors.
- Achieving desired benefits:
  - Improving operational efficiencies.
  - Providing better customer service.
  - Increasing the self-service capabilities.
  - Driving integration procedures that best align with business processes.

This recommendation is only one portion of the overall Data Strategy and it takes into consideration FSA cross-lifecycle business processes. The Web Usage Strategy requires a thorough understanding of all the components that go into the Data Strategy effort in order to realize its full business value. This "big think" approach helps to ensure that a solution option has acceptable trade-offs across all of FSA. It should be noted that no single solution fits all requirements, and furthermore the implementation of a new strategy and architecture requires a carefully planned and iterative approach.

The Web Usage Strategy is the second of five strategies from the Technical Strategies team. The recommendations are made with respect to the larger picture of Data Strategy across all five of the Technical Strategies, however each piece must be broken down to understand the value of an end solution. The final deliverable produced by the Technical Strategies team will highlight the complete Technical Strategy vision and will "assemble" the five individual strategy components. Alignment with the Data Strategy vision is necessary, and the technologies should enable the business while bringing new capabilities and efficiencies to fruition.

The recommendation below builds off the analysis of the technical options examined above and their ability to help FSA achieve its overall business goals, fill outlined gaps and integrate with an overall data vision. Web Usage is a key piece of the strategy as it enables FSA to do business with such a large customer base and has a large impact on a student's ability to get financial aid.

7.1 Recommendation Summary

For FSA to reach its target state and achieve its highest priority Web usage business objectives, it is recommended that the organization:

1. Increase the amount of Web-enabled self-service capabilities.
2. Expand upon the FSA Standard Web Framework.

3. Consolidate the number of FSA websites.

Increase the amount of Web-enabled self-service

A simplified website infrastructure and portal framework provide a great foundation for FSA to move towards a service-oriented architecture whereby business process functions are technically enabled and made available to the user community via the Web. A lot of FSA services have a Web component to them, but it is the integration across the enterprise and the interplay of these Web-based services to the backend systems that FSA needs to build upon to achieve its target state.

Providing access to information and services is one of FSA highest priorities across all elements of the Data Strategy effort. The Web Usage Strategy recommends the following:

- Simplify on-line business processes.
- Implement Web access controls and an identity management system.
- Share access credentials to promote a seamless navigation across the enterprise.
- Coordinate with the enterprise content management solution and data architecture recommendations to manage and administer access to general content versus specific privacy data and secure online actions.
- Leverage external/internal integration services capabilities.
- Enable the integration of enterprise feedback/interaction capabilities.

Any efforts made to achieve these goals should consider the guidelines set forth by the Security Architecture and Enrollment and Access Management teams as well as the recommendations made in the upcoming Data Storage, Management and Access Strategy (123.1.10 due September 30, 2003).

To enable FSA's business objective of collecting customer touch points, FSA can consider requiring the users to identify themselves as early on in the customer experience as possible in order to establish an initial connection with the customer. Through the login feature and additional reporting capabilities of Web usage statistics, FSA can monitor customer behavior on its sites. This will allow FSA to identify areas of improvement in the usability of its websites.

To promote a seamless navigation experience, an initial goal could be to leverage Web access controls and setup a single sign-on solution that prompts users to login once at the application level. So if a user then requests an additional Web page or service, the system should take the user there without requesting a user ID and password again. Once general content is centrally stored and easily accessible to the general user (see the content management recommendation below), FSA can pull back the login functionality to a more centralized location and align the enterprise login solution with the single point of entry.

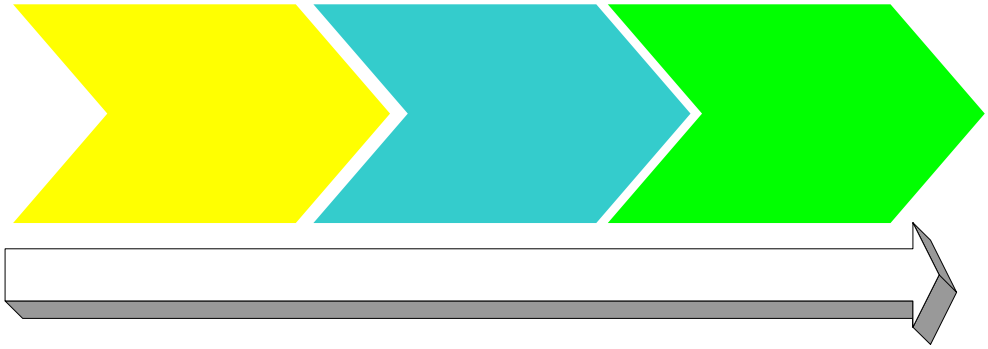


Figure 7.1 - Enterprise Login Process

In addition to seamless access to application functionality, FSA could utilize Web services as means to deliver common services to the user community. Web services can leverage the portal architecture to bring common business services to FSA's user community by publishing the service for use by multiple channels. Web services support the integration of the Web environment because they offer a consistent and efficient means to bring one service to multiple entities through Internet standards. For additional information on Web services, refer to the Web Services Strategy (123.1.8).

Some of the benefits of implementing Web services include:

- Optimizing and streamlining processes by sharing services across channels.
- Increasing efficiency by automating current processes and leveraging existing infrastructure.
- Providing a loosely couple architecture that supports multiple services and business needs.

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Expand upon the FSA Standard Web Framework

There are several components that can make up a typical Web infrastructure, many of which FSA can leverage to help mature its use of the Internet to bring information and services to the user community. To promote enterprise integration, FSA should expand upon its standard framework to incorporate an enterprise Web Usage framework such as the one illustrated below. This technical framework provides enablers to consolidating websites under a portal architecture, provides more web-enabled self-service capabilities, and improves customer satisfaction by enabling easier access to the most desired business functions.

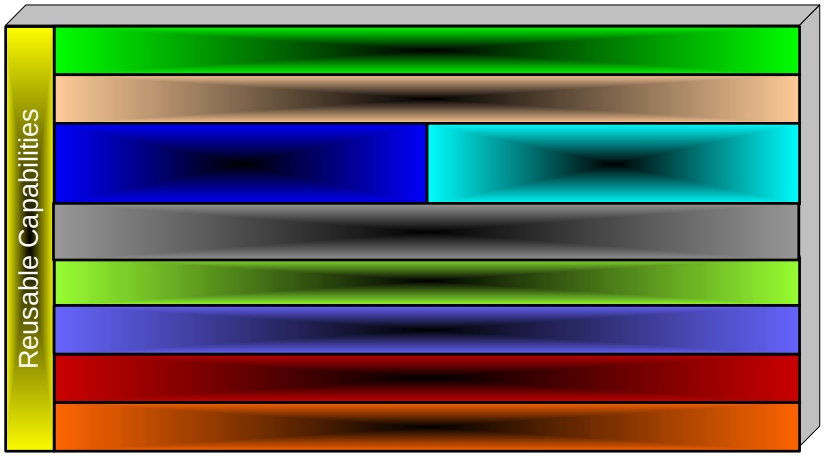


Figure 7.2 - Web Usage Framework

Simplifying Web usage at FSA can be accelerated by the use of a common technical architecture platform from which to develop, deploy, and manage the entire Web environment. This structure will allow common reusable services to be applied to FSA websites to maximize efficiency. For example, the portals can leverage the same stylesheets and similar templates to present and deliver content from a centralized content repository. This uniformity allows pieces of the website functionality to be built once and deployed to multiple entities while minimizing the amount of redundancy in maintenance efforts and improving consistency for the user experience.

FSA should consider building upon the consolidated Web structure and institute an enterprise content management (ECM) solution that delivers content through the portals to the business channel users. These users would benefit most by an ECM solution that can leverage a highly integrated content repository system that manages content across the enterprise for all stages of the financial aid lifecycle. Because some general content is managed at the application level, FSA should first consider separating the general content from the privacy data and secure online processing in order to support the entry and navigation recommendation mentioned above. The ECM could allow application systems to individually maintain but collectively share information so multiple channels are not creating and maintaining similar content.

It is crucial that the ECM solution work in tandem with the enterprise search capability to further deliver content on demand. The search functionality must be intelligent enough to bring back the most pertinent results on a consistent basis. It must also align with the business requirements of the user community and offer flexible, customizable search functionality that can be utilized by a variety of users within the enterprise.

Finally, by combining the dynamic and personalized capabilities of an ECM solution with the delivery platform of a portal architecture, FSA can produce an integrated customer view that presents all the relevant information and system access that is pertinent to an individual's business needs. Additional benefits of a standard Web framework include:

- Increases in efficiency of delivery to the user community.
- Allows for the reuse of content across the enterprise.
- Increases cross-application knowledge sharing.
- Enhances search capabilities by leveraging improved content categorization.
- Reduces the loss of knowledge capital from turnover of information owners.
- Users find what they are looking for at a faster rate.
- Consistent responses from FSA on customer inquiries. Different users receive the same search results for the same search question.
- Flexible search capability - Because of the variety of search needs across the enterprise, integrated, customizable search functionality provides flexibility for diverse user needs.
- Improved taxonomy of resources that are better aligned with business needs.
- Promotes standardization and consistent application of resources.

Consolidate Websites

A more simplified and highly integrated enterprise approach to Web usage will help FSA better do business with its customers that utilize the Internet to find information on financial aid or access online services related to the financial aid process. FSA has a number of customers that require a variety of services and the Internet is means to enable FSA's products and services. Key elements for web consolidation include the following:

- Create a marketable home page (with appropriate communications).
- Simplify navigation among all FSA web sites.
- Standardize URL naming convention.
- Design a common "look and feel" for all web sites/pages.

FSA could create a more marketable home page for all of its customers as well as the general public. This could provide a single location for end users to begin their interaction with FSA. For example, when someone conducts a search on the Internet for Federal Student Aid, they could be pointed to this FSA home page.

Information that FSA provides over the Internet should be organized according to the business processes that are enabled by FSA's Web products and services. This allows users to access information and services at a faster rate. Although this is partially achieved today with the portals for each business channel, there are still a large number of places where the same users need to go to interact with FSA. This effort can be accomplished by first identifying areas that can be consolidated and then phasing in the content and functionality as appropriate for each business channel.

Building off of its home page, FSA could standardize its URL naming convention across the enterprise so access to websites is more intuitive and easily manageable by the users. Together these steps could help FSA achieve its top business objective of creating "simple, function-based websites that allow easy access to desired functions." FSA services could be consolidated into the portal framework in order to improve integration across the enterprise, lighten the burden

on the users' navigational experience and improve operational efficiencies by bringing information and services from one organization under a single Web umbrella.

FSA could provide additional customer value by creating a simplified navigation scheme with a common "look and feel" across enterprise websites. This relatively simple concept has a large impact on customer usability and ease of navigation, which improves accessibility and helps users better achieve their online goals. The faster the users can get information, the more knowledgeable they become and subsequently the better chance they have at receiving aid. The diagram below illustrates how a student could navigate to the information and services he needs under a consolidated Web environment:

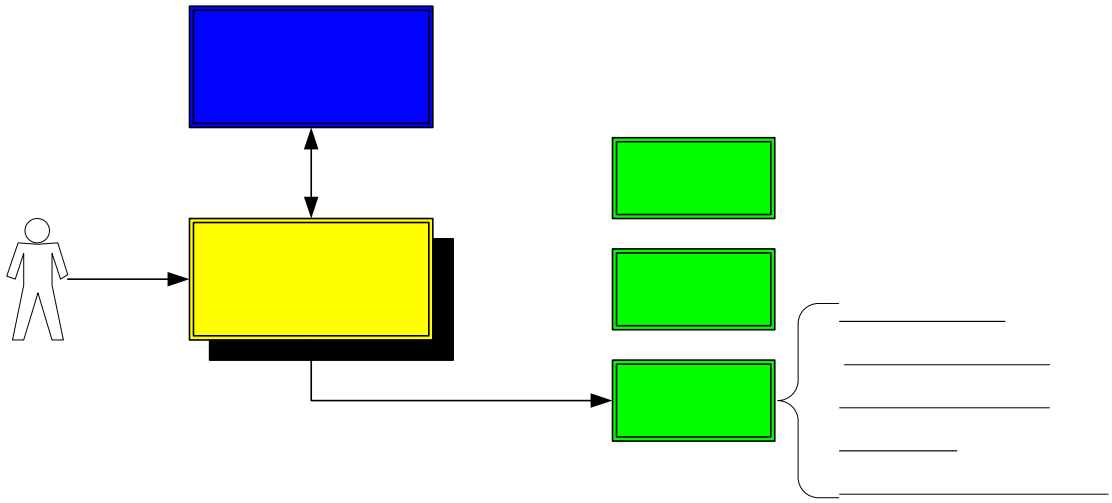


Figure 7.3 - Proposed Web Usage Student Experience

A simplified portal architecture provides the following benefits for FSA:

- Stronger marketing position and improved program integrity.
- Central point of reference and common starting point for users.
- Allows greater flexibility to support a range of knowledge within the user community. New users have a common starting point while more knowledgeable users can bookmark direct access to the pages they need.
- Intuitive usability focused on the business need of the users.

The diagram below illustrates how each component of the recommendation integrates with one another to bring an enterprise approach to Web usage at FSA:

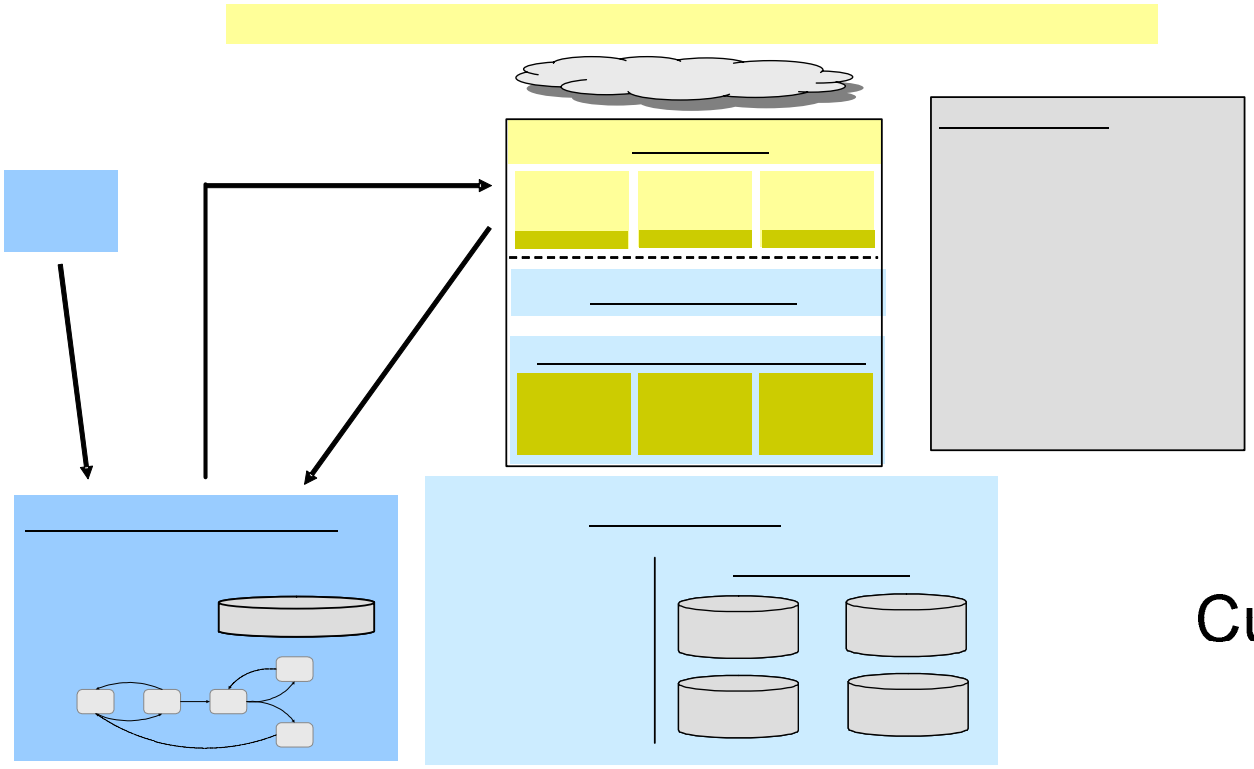


Figure 7.4 - Web Usage Integration

The benefits that can be gained by implementing the proposed solution include:

- Improved user experience through simplified access to key business functions.
- Improved customer satisfaction by enabling faster completion of the users' online objectives.
- Increased efficiency in business operations by providing customer access to Web-based self-service capabilities.
- Improved integration with enterprise applications and other FSA initiatives.
- Decreased development and maintenance costs resulting from standards and maximum reuse.

Business Process Example:

To afford a better understanding of the implications related to the above recommendation, this strategy reviews a potential future state for a typical student Web experience. The following section provides insight into how the Web Usage Strategy could enhance the student Web experience and provide access to more personalized information. This example case validates concepts outlined in the Web Usage Strategy. A detailed evaluation of the process would need to occur before any implementation recommendations could be substantiated.

Proposed Student Web Usage Experience

Utilizing elements presented in the recommendation, the "student of the future" could have a more streamlined, integrated Web experience. Once the user navigates to one of the portals,

they could be able to view all the static content that currently resides on multiple FSA Web applications. Through the implementation of an Enterprise Content Management (ECM) solution, Web content could be centrally managed and deployed to a single website. This could allow the user to find out all of the information they need without having to navigate through multiple sites or remember different URL's.

When the user establishes an account with FSA to perform transactions over the Web, he or she could utilize FSA's standard Web access controls so that he or she does not have to logon multiple times to multiple systems. Once logged onto the FSA website, the user could receive a mix of static and personalized information, as shown below for students:

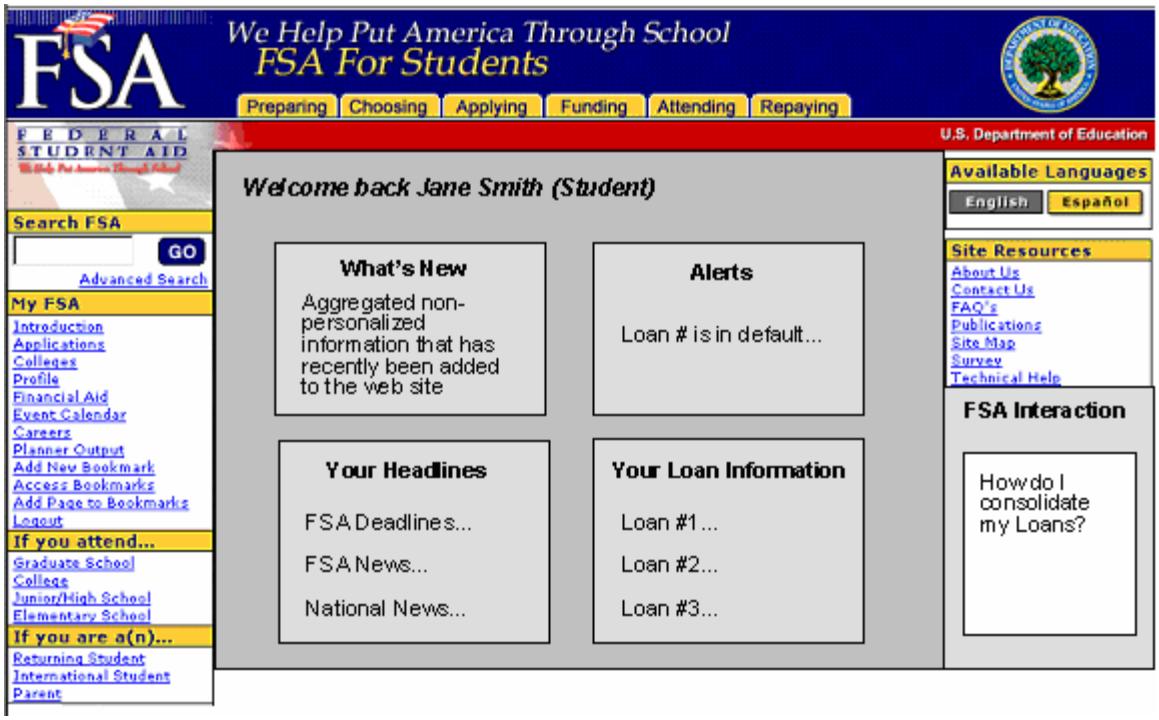


Figure 7.5 - Conceptual Web Usage Student Experience

In the scenario above, Jane Smith, a college student with a Direct Loan has just logged onto the FSA website. She could navigate through a lot of useful Financial Aid information, download publications, or view her personal loan information. She could also access other FSA systems directly, although it would be transparent to her that she has physically moved to a different FSA website because of the common look and feel among enterprise websites.

Because Jane could find everything she needs very quickly on the FSA website, she would no longer need to call the FSA help desk to ask questions. And if FSA were to implement a standard Web framework that leverages repeatable processes to support Jane's Web experience, operational costs could be greatly reduced.

7.2 Bridging the Gaps

The following table illustrates how this overall recommendation fills the gaps as derived from the overall Web usage business objectives:

Business Objective Rank	Gap Description	Fulfilled by Recommendation	Explanation
1	Limited web-enabled self-service capability.	✓	A service-based architecture provides the platform to deliver self-service capabilities. Web services are a means by which FSA can deliver this capability to a wide array of customers.
	Limited access to desired business functions.	✓	Simplifying the portal architecture to encompass additional Web functionality.
	Not all of the enterprise search requirements are adequately met by the current solution.	✓	New integrated, enterprise search capability with customizable criteria is more in line with current business needs.
2	Limited customization capability utilized.	✓	Portal architecture and integrated sign-on solution allows varying degrees of customization.
	Minimal use of integrated personalized messaging and alert functionality.	✓	ECM, portal architecture and integrated sign-on solution allows varying degrees of personalization.
	Several sites display only static content.	✓	Simplified portal architecture reduces the number of "static content only" sites.
	Varied use of dynamic content.	✓	ECM can deliver dynamic content according to business rules defined by the enterprise.
3	No ability to identify and track a particular customer across the lifecycle.	✓	A single, integrated sign-on solution allows the enterprise to identify and track users.
	Some aggregate Web trend capability but limited customer insight.	✓	FSA can use the customer tracking points to provide insight into Web usage statistics and lifecycle progress.
	Limited feedback mechanisms enabled through the Web.	✓	Additional feedback mechanisms can be delivered to the customers via the portals.

Business Objective Rank	Gap Description	Fulfilled by Recommendation	Explanation
4	Varied use of graphics, fonts, colors, navigational menus and content positioning.	✓	Stylesheets and templates drive the consistent use of content presentation elements.
	No enforced FSA standards for "look and feel."	✓	Centrally mandated stylesheets and templates create standardization for "look and feel" for the enterprise.
5	Entry points for channels exist across multiple URLs.	✓	Simplified portal architecture and standard URL schema reduce the number of entry points and consolidates existing functionality.
	No consolidated location that contains links to all FSA sites.	✓	A more comprehensive FSA home page provides access to the necessary links.
6	Multiple logins required.	✓	Logins reduced to one time per user for seamless navigation.
	Limited role-based authentication.	N/A	The Web environment will maintain a login feature but the security and access considerations are handled by the Security Architecture and Enrollment and Access Management teams.

Table 7.1 - Recommendation Gap Bridging

7.3 Alignment with Business Objectives

Fundamentally, technology that improves business process makes sense. However, it is the realization of the business value that supports change from the status quo. The matrix below reviews each of the previously defined FSA Web Usage business objectives. Although an assessment of the gaps should help ensure that the business objectives are reasonably met, a specific review of the business objectives is outlined below to ensure the true business needs are enabled by the strategy recommendations. Explanations of the assessment criteria can be found in Appendix A: Business Objective Accommodation Criteria.

Rank	Business Objective	Objective Fulfilment	Explanation
1.	Create simple, function-based websites that allow easy access to desired functions and search capabilities throughout the entire lifecycle.		• Restructuring website infrastructure simplifies access to online services. • Using the portal architecture as a deliver point for services provides access to desired business functions.

Rank	Business Objective	Objective Fulfilment	Explanation
			• Integrated, enterprise search capability provides cross-application search throughout the customer lifecycle.
2.	Provide dynamic content and personalization for unique customer experience.		• Enterprise Content Management (ECM) enables the portals to deliver dynamic content based on customer type. • Working together, ECM and more robust login functionality make personalization possible for creating unique customer experiences.
3.	Provide the capability to collect/view FSA customer's touch points.		• Enterprise login solution helps FSA identify and track customers. • Work flow capabilities as outlined in the Internal Data Strategy creates access to additional identification points across the lifecycle. • The Data Storage, Management and Access Strategy will address additional details for collecting customer touch points.
4.	Leverage a common "look and feel" while maintaining individual customer needs.		• Centrally governed standards and enterprise-wide stylesheets dictate "look and feel." • Coordination between application systems and business channel owners support individual customer needs.
5.	Establish a single entry point (one URL to remember) for new FSA customers.		• Establishing a more integrated, marketable FSA home page offers a single point of entry for new users.
6.	Share certificates with external sites (shared authentication/ credentials with Third Party).		• This requires significant coordination with managers of Third Party sites. FSA should identify those sites it wishes to share authentication with and review requirements to fulfill this objective.

Table 7.2 - Recommendation Business Objective Fulfillment

7.4 Conclusion

Each of the recommendations above help mold a Web Usage future state for FSA whereby customer satisfaction can be improved and operational expenditures reduced while better fulfilling the business objectives. This recommendation also supports broader government initiatives such as the Expanded Electronic Government initiative of the President's Management Agenda that states that the eGovernment Strategy: "…will work to:

- Create easy-to-find single points of access to government services for individuals.

- Automate internal processes to reduce costs internally within the federal government by disseminating best practices across agencies."[9]

The integrated portal framework provides the customer access layer to information and data housed within FSA's internal systems. Certain Web usage elements, such as an integrated customer view, require specific coordination between the other Technical Strategies areas such as Internal Data Exchange and Data Storage, Management and Access in order to be successful. The Web Usage Strategy builds off the recommendation proposed in the Internal Data Strategy (123.1.9) and together they help FSA align with the goals of the Enterprise-wide Data Strategy effort. Establishing a connection between the portal framework and the integrated services provides a user interface to data that resides on FSA's backend systems. One of the goals of the Internal Data Exchange recommendation is to provide a method of transport and aggregation of data that can then be made available across the enterprise. And it is the portal layer that can expose this information to the user via the Web.

[9] http://www.whitehouse.gov/omb/budget/fy2002/mgmt.pdf

Appendix A: Business Objective Accommodation Criteria

The table below provides a rating scale that explains the measures and criteria used to evaluate how well a particular technical solution satisfies FSA's business objectives. These indicators appear in the Executive Summary and Recommendation sections with respect to both the current and the recommended states for the Web Usage (Portals) Strategy.

Rating Indicator	Synopsis	Criteria
	Fully Accommodated Objective	The business objective is being completely satisfied.
	Well Accommodated Objective	The business objective is mostly satisfied.
	Partially Accommodated Objective	Some business objective criteria in place, but the business objective is only partially fulfilled.
	Minimally Accommodated Objective	Few parts of the business objective are satisfied.
	Capability Not Accommodated	The solution does not have this element in place and the business objective is not met.

Business Objective Accommodation Criteria

Appendix B: Design Considerations and Usability Guidelines

The following usability objectives are taken into consideration within this Web Usage Strategy. They also serve as design considerations for improving usability and constructing an enterprise Web environment with seamless navigation. In addition to the points outlined below, Web development at FSA needs to consider Section 508 guidelines and the minimum software and hardware configurations used by the user community in order to support universal accessibility.

Usability Objectives	Description and Sample Guidelines
Speed	How much time does it take for users to complete a task? - Minimize number of screens required to complete the task. - Reuse known user data to pre-fill fields or shorten dialogs.
Response time / Performance	How much time does the system take to respond to input or action from the user? - Use graphics only when necessary. - Make sure that key information is displayed when a page first downloads.
Intuitiveness	How fast can users who have never seen the interface learn it sufficiently well to accomplish basic tasks? - Provide a clear, strong match with the mental model the user has about the task. - Use metaphors, keep things simple to reduce the amount of information the user must deal with
Efficiency of navigation	How easy is it to find information? How flexible is the system in creating different paths to information? - Provide multiple navigation paths to allow the user to access multiple parts of application. - Vertical navigation allows dialogs to be split into smaller pieces, giving more control to the user. - Reduce the amount of content on a single given page to minimize the length of the page
Error prevention	How does the system help users prevent mistakes? When users make mistakes, how do they recover from these errors? - Use confirmation/preventive windows and pre-populating input fields based on known data - Feedback can be used to tell the user where they currently are, what is being done and what has been done so far.
Memorable	If users have used the system before, can they remember enough to use it effectively the next time or do they have to start over again learning everything? - Consistency with other existing applications and sites. - Use meaningful and consistent navigation tools, such as use of icons and that relate well to the command they execute will help users remember how to navigate.

Usability Objectives	Description and Sample Guidelines
Consistency	Does the system maintain its "look and feel" in all pages of the site? Does the system look and behave like the other sites or applications the users have used? - Use consistent page layouts, windows and formats for forms, buttons, and tables across the application.
Security	Does the site reflect and accommodate security restrictions? - Display informational windows for secured areas. - Give indications that users are entering secured areas or are dealing with sensitive information. - -Minimize the number of times a user must enter a User ID and password to enter an application - - Strive for single-sign on to multiple applications especially when implementing a portal
Subjective satisfaction	How much does the user like using the system? How appealing does the interface look and feel? - Use graphics, color and other things that make the site good-looking. Utilize "out of the box" functionality as well as customized gadgets and capabilities to create stickiness

Usability Guidelines

Furthermore, several parameters must be considered when designing the content repository:

- Create a solid data model that will support content and metadata storage requirements as well as content inter-relationships. This involves defining the types of content to be managed, as well as content relationships. Content types could range from simple text files to more complex audio or video files.
- Define metadata requirements – both common content attributes, such as author, creation date, and expiration date, as well as special attributes, such as department, region and purpose.
- Verify conversion requirements by determining the formats in which content is created and published.
- Consider scalability requirements. The content repository must be able to support both current and future user, data, and query volumes. This should include determining archiving strategies as well as versioning approach, i.e. whether multiple versions of content must be supported.
- Evaluate content publishing requirements. Delivery mechanisms can range from static to dynamic. (This topic is covered in Section 4)
- Determine delivery channels to be supported. Consider extending the data model to accommodate alternative delivery channels which may require additional metadata. (Apart from the Web these might include cell phones, PDAs or IVR for call centers.)

Appendix C: Content Management and Delivery Framework

Several process considerations must be addressed in conjunction with the development and management portion of the content management framework. These processes must be addressed, regardless of the type of content being managed. The paragraphs below highlight key processes.

Access control and management – For all management environments, access and privileges must be managed and controlled. Before access and privileges can be granted from a technical standpoint, the access and privilege management process must be defined. The following questions must be addressed: Who is to have access? What are the privileges to be granted, and to which individuals? Who is to be able to create, read, update, delete, and approve content? What process needs to be in place to support versions and versioning? What is the process for adding new users and for granting privileges? These questions must be addressed, regardless of the specific type of content being managed.

Workflow – Related to access control is the process consideration of workflow. For each type of fragment, content workflow and review processes must be defined. The workflow process must be defined before it can be enabled through a technical system. Sufficient privileges must be granted in order for reviewers—or perhaps additional developers—to have appropriate access to content that is "in progress." This content should only be readable by those involved in the review or final development process. During design and implementation of a work flow process, attention should be paid to mechanisms for logging/tracking the status of a fragment as it moves through the review process. This is particularly important if a single-threaded or serial work flows process (i.e., a reviewer must approve an item before it is passed along to the next reviewer) is implemented, as opposed to a multithreaded or parallel process (i.e., reviewers simultaneously and independently review content).

As highlighted previously, one of the more critical aspects of workflow definition efforts is to address globalization. Determinations need to be made about where content will originate, what the global, regional and possibly country or local creation and approval processes will be. Fundamental, initial decisions must be made in these areas in order to drive successful workflow definitions and therefore successfully content management processes and systems.

CRUD (Create, Read, Update, and Delete) process – Each of these processes must be defined and then enabled, regardless of the type of fragment being stored or managed. This relates closely to the access and control process, as individuals must have the privilege to execute the processes for which they are responsible. Although a common repository may store the objects being managed, separate products will likely be used to create and update the object. For example, an image file may be stored in a repository, but would be created and accessed using a separate product, as opposed to the product supporting the repository (i.e., the image viewer).

Metadata capture – When a fragment is stored, standard metadata must also be captured with it. This "data about data" is valuable in the processes of management, access, and use of fragments. Examples of metadata include author, date of creation, topic, and type. It is through this metadata that objects can be effectively classified and used.

Common taxonomy – In order to further support consistent classification of objects and to enable effective search and retrieval, a common taxonomy is needed for certain types of metadata. A taxonomy defines the fields that will be filled in to categorize an object, and the keyword values—or choices—for each field. Existing taxonomies should be considered when fields such as topic and type, listed above, are decided upon for a given repository. A common set of values /choices should be developed for each area of the taxonomy. When designing the content management system and the taxonomy for the system, the following areas of metadata should be considered:

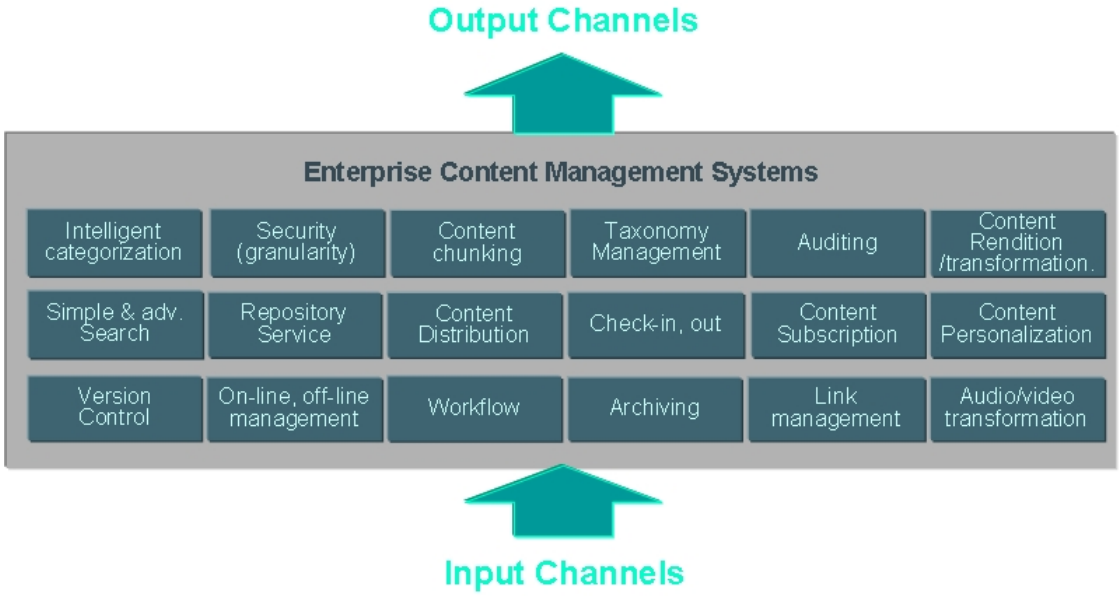
- **Administrative/Control/Identification** (e.g., creation date, author, version, status/state, ID number)
- **Structure** (i.e., hierarchical relationship of the objects, like a bill of material, as-designed, as-delivered)
- **Relationships** (i.e., semantic, concept links)
- **Effectivity** (i.e., when is this object effective, such as for a time period, version, etc.)
- **Applicability** (i.e., in what circumstances is this used, such as application, model, product line, segment)
- **Characteristics** (derived from the content itself – inherent to the content –such as moment of inertia, size, shape, volatility)
- **Rights** (i.e., ownership, copyright, distribution) & Entitlements (i.e., to access and use)

For each area of the taxonomy, a conscious decision should be made as to whether the field is required, whether multiple values will be accepted, and whether the values "all of the above" or "none/not applicable" or "other" should be provided. The process for management of the taxonomy areas and keyword values must also be defined including the approach to working through documents categorized as "other." (The "other" choice would be selected when the specific value the contributor wished to use was not provided, but, in the opinion of the contributor, should have been.)

Logic *within* the content – In the Framework and the description of the Framework, the content or fragments and the templates with associated rules are described as separate areas. This is in keeping with the notion of separation of static content from structure or presentation and logic. There are, however, powerful examples of the inclusion of logic or rules with the content fragment. For example, a major world newspaper publisher provides an online version of their newspaper. Integrated into the content that is developed and provided to the actual online publisher is logic to provide glossary definition of terms. Complex or potentially unknown terms have the glossary code associated with them so that users can quickly click and get a definition; this glossary code is embedded as part of the content fragments. This approach

of integration of simple logic with actual content has powerful potential ramifications, particularly in light of instant electronic commerce. It should therefore be considered that content fragments may actually be content fragments with logic or rules included – interactive content.

The diagram below illustrates how these elements make up the Enterprise Content Management system:



Appendix D: Search Indexing

The key to a successful search engine is its ability to index the content it receives. An index server is like a giant catalog containing a copy of everything that the search engine reviews. If a Web page changes, then this catalog is updated with the new information. A Web page's content is not available to those searching on the Web until it has been indexed by the search engine. Indexing allows various analytical business rules to be applied to the content, thus storing the metadata in a more retrievable form. The larger the index, the more likely the search engine will be a comprehensive record of the enterprise Web content. Search engines with larger indexes can cover more enterprise content and consequently, customers have a greater chance of finding what they are looking for.

Appendix E: Meeting Minutes – Working Session #1

Date: Tuesday, 07/29/2003

Time: 3:00 pm until 5:00 pm

Location: 221C

Objectives: The objectives of the first working session were to review business objectives and gaps, understand key decision points, establish assessment criteria, and refine options to satisfy business objectives for Web Usage.

Attendees:

Name	Business/System Area	E-Mail	Phone (Work)	Attendance
Terry Hardgrave	Pearson	Terry.hardgrave@ed.gov	202.377.3238	X
Denise Hill	FSA/CIO	Denise.hill@ed.gov	202.377.3030	X
Corwin Jennings	Ombudsman	Corwin.jennings@ed.gov	202.377.3291	X
Matt Fontana	Financial Partners	Matteo.Fontana@ed.gov	202-377-3005	X
Shyam Pai	CIO	Shyam.Pai@ed.gov		X
Chris Paladino	Integration Partner	Chris.D.Paladino@Accenture.com		X
Merlina Rigo	Financial Partners	Merlino.Rigo@ed.gov	202-377-3352	X
Denise Merchant	Schools	Denise.Merchant@ed.gov	202-377-3523	X
Wayne Chang	Integration Partner	Wayne.Chang@ed.gov	202-962-0739	X
Heather Stevens	Integration Partner	Heather.M.Stevens@Accenture.com	202-962-0845	X
Kyle Michl	Integration Partner	Kyle.A.Michl@Accenture.com	202-962-0750	X
Daniel Ryan	Integration Partner	Daniel.F.Ryan@Accenture.com	202-962-0734	X
Roger Hartmuller	Integration Partner	Roger.L.Hartmuller@Accenture.com	202-962-4160	X
Christine Williams	FSA/EITM	Christine.williams@ed.gov	202.377.3571	X
Marty Winslow	EDS	Marty.winslow@ed.gov		Phone
Terry Woods	FSA/CIO	Terry.woods@ed.gov	202-377-3023	X
Allison Gurnitz	Integration Partner	allison.gurnitz@cgconsultgroup.com		X

Action Items from Previous Meeting Minutes
N/A

Discussion Points

No.	Key Decision(s)	Options	Working Session Result
1.	a. How will navigation around the enterprise websites be simplified and more efficient? What role do the Portals play?	• Provide access to a single URL listing all links to enterprise websites. • Provide access to Business Channel Portals that manage business functions and financial aid information across the enterprise. • Create a single FSA site for establishing a common starting point for new users.	A single point of entry to all FSA websites that links to all business channels' products and services.
	b. What steps need to be taken to "brand" FSA as a single entity?	• Common URL scheme across the enterprise • Single set of style guidelines for the enterprise website • A marketable FSA home page	1. Marketable FSA homepage 2. Use style guidelines to enforce common "look and feel." (make it look like one entity) 3. Need a marketing and communication strategy – get prominence in commercial search engines. 4. Common URL scheme is a nice to have in the long term.
	c. What kind of search functionality is needed by FSA users?	• Simple keyword search • Customizable search criteria • Intelligent search • Cross application search • All of the above	All of the above.
	d. How should content repositories be managed for search retrieval?	• Cross – application • Business entity • Lifecycle stage	Business based logical categories developed from user feedback and lesson learned.
	e. What kind of search sorting capabilities could benefit the users?	• Sort by date • Sort by page/document popularity • Sort by topic relevance	All of the above. Review the business need to add sorting capability by application.
	f. What kind of material needs to be indexed so it can appear in search results?	• Documents (Microsoft docs, .pdfs.) • Web pages (e.g. urls) • Images (e.g. gif, .jpeg) • Database search items	All of the above. Any reasonable format accessible via the Web should be able to be indexed. The extent to which documents and images are "tagged" was placed in the parking lot.
2.	a. How will website content be managed by FSA?	• Single enterprise-wide content repository. • Multiple, integrated repositories aligned with business processes (i.e. lifecycle stage) but leveraging similar tool set. • Multiple repositories by application.	Centralized repository with logical partitions with the ability to own and manage localized content. Some central management require through single database, single CM tool, standardized style pages and enterprise artifacts (e.g. logos).
	b. How will Web content be provided to the user?	• Custom Dynamic Content • Static Content • Mix	Mix.
	c. How should the content management tool set handle secure content versus	• Role-based visibility of data • System-based access to sensitive	Update option to read "dynamic role-based visibility

No.	Key Decision(s)	Options	Working Session Result
	unsecured content?	content • Both	of data." Secure content should be handled with both role-based and systems based visibility restrictions. Application of security considerations should be consistent with access control mechanisms from the enterprise and consistent with the Web page viewing capabilities.
	d. Do you want personalized messaging as part of a dynamic content solution?	• Yes • No • Maybe	Yes, but explore options further to identify to what level personalization should be applied to Web usage at FSA.
	e. Do you want a customizable interface where a user specifies content presentation and component usage (news, weather, stocks etc...)?	• Yes • No • Maybe	Yes.
3.	a. How will FSA customer touch point information be obtained?	• Additional login capabilities to monitor access • Managed by customer service applications • Monitoring of business functions – additional triggers and flags set by business milestones (e.g. submitting the FAFSA)	None of the above. Collecting touch points at the website level does not satisfy FSA's business intent behind this objective. Lifecycle touch points are captured by application and this objective needs to be revisited by the Data Storage Strategy.
	b. How will customer satisfaction be improved by the Web experience?	• Real-time Interactive Customer Service (e.g. Chats, Web casts) • Common Web Master/Single POC • Improved online Feedback Mechanisms (e.g. surveys)	Maximize the amount a customer can accomplish on the Web with the minimal amount of locations to get it done. Fast, simple and accurate.
4.	a. What reusable capabilities will be utilized by the Web enterprise to improve the user experience?	• Web services – Common capabilities • Pre-built, reusable functional services – Common presentation of capabilities • Stylesheets – Common presentation of content • Templates – Common Presentation of Content	All of the above.
	b. What additional uniformity should exist in the enterprise?	• Uniform Tech Arch Platform (Development and Production) • Uniform Search Engine • Uniform Content Management tool set • Uniform online BI tool set (Will be covered in detail in DM/DW)	All of the above. Add "standard business processes" as an option.
5.	a. How will users access the portals and other FSA websites?	• See Question 1a	See question 1a.

Parking Lot:

1. Security considerations need to be addressed once the group determines solution
2. Access/Sign-on/Enrollment/Authentication
3. User experience

4. Portal Technology
5. External versus internal pages for search considerations (design consideration – what are the technology restrictions? Access control lists)
6. Ability to export search results to XLS spreadsheet for sorting
7. Tagging information in the documents in order for them to appear in a search (corporate Thesaurus)
8. Text mining tools help to surface content organization
9. Review tracking customer touch points when doing all Technical Strategies
10. Web content can be applied to other channels – IVR – need additional coordination with content management solution.

New Action Items

Action Item	Owner	Date Due
The group should review a list of portal websites prior to next weeks meeting. Examples provided include: eBay, Fidelity, and the World Bank.	Group	8/4/03

Next Meeting Time
Monday, August 4 – 2-4pm.

Suggested Agenda Items
None at this time.

Appendix F: Meeting Minutes – Working Session #2

Date: Monday, 08/04/2003

Time: 2:00 pm until 4:00 pm

Location: 103B1-B2

Objectives: The objectives of the first working session were to review business objectives and gaps, understand key decision points, establish assessment criteria, and refine options to satisfy business objectives for Web Usage.

Attendees:

Name	Business/System Area	E-Mail	Phone (Work)	Attendance
Denise Hill	FSA/CIO	Denise.hill@ed.gov	202.377.3030	X
Corwin Jennings	Ombudsman	Corwin.jennings@ed.gov	202.377.3291	X
Chris Paladino	Integration Partner	Chris.D.Paladino@Accenture.com		X
Merlina Rigo	Financial Partners	Merlino.Rigo@ed.gov	202-377-3352	Phone
Kyle Michl	Integration Partner	Kyle.A.Michl@Accenture.com	202-962-0750	X
Daniel Ryan	Integration Partner	Daniel.F.Ryan@Accenture.com	202-962-0734	X
Marty Winslow	EDS	Marty.winslow@ed.gov		Phone
Terry Woods	FSA/CIO	Terry.woods@ed.gov	202-377-3023	X
Allison Gurnitz	Integration Partner	allison.gurnitz@cgconsultgroup.com		X

Action Items from Previous Meeting Minutes
N/A

Discussion Points

The group reviewed the key decisions matrix and potential solutions that were discussed at the previous meeting. There was a consensus that the matrix captured the points raised at the last meeting. Some additional comments were noted:

1. The review of some storyboard examples revealed:

   1) The need for users to have direct access to online application systems ("bookmarks")
   2) Home page needs to handle generic users/search.
   3) SSO should be applied once per session but not until login is required and it must last throughout the session even if the user logs out of one piece of web functionality.

2. The solution is that documents and images could be tagged. How to tag these items and store them for content/search retrieval is to be addressed during design.

3. The options for content management will be assessed based on a number of criteria which include but are not limited to:

- Best practices alignment
- Industry trends.
- Business Process Impact
- User Impact

4. There are two parts to addressing this objective - Provide the capability to collect/view FSA customer's touch points.

- Application level
- Website level.

Application level addresses where the customer is across the lifecycle and the web usage addresses "click stream" and trends that can be leveraged by personalization techniques.

5. For the sixth objective which was added back to the matrix – (Share certificates with external sites (shared authentication/credentials with Third Party).) - need to solve issue with internally sharing credentials before certificates can be shared externally. A separate FSA effort is examining the ability to share certificates/ credentials among HHS, HUD, ED and Labor.

New Action Items

Action Item	Owner	Date Due
None.		

Next Meeting Time
Undetermined.

Suggested Agenda Items
None at this time.