

U.S. Government Printing Office

FDsys Update

Spring Depository Library Council

April 16, 2007

Presentation Outline

- Project Overview and Status
- FDsys Communications Update
- Release 1B Content Submission
- Metadata and Content Packages
- Release 1B Access and Delivery
- Questions and Answers

Challenges to GPO's Mission

- Access to government published information is now widely expected to be electronic.
- Digital information needs to be authentic and verified to be the correct version.
- Digital information needs to be available for access almost immediately.
- Information needs to be preserved, making it available for generations to come.

FDsys Capability Overview

- FDsys will automate the collection and dissemination of electronic information from all three branches of government.
- Information will be:
 - permanently available in electronic format
 - authenticated and versioned
 - accessible for Web searching, viewing, downloading and printing
 - available for conventional and on-demand printing

FDsys Release Schedule



Release 1:

- Accept digital information from all three branches of the Federal Government
- Update to GPO Access
- Information storage to support permanent public access
- Authentication of information received and delivered
- Version tracking of publications



Release 2 and 3:

- Preservation processing of information to support access into the future
- Information harvesting tools to collect information on agency websites
- Automated version tools
- Extended storage to support harvested and legacy publications as required.
- Enhanced information authentication



FDsys Program Status

- Release 1B, the internal pilot, is in the development phase – detailed internal testing will start in late May.
- Initial Release 1B functionality has been demonstrated in early April.
- Beta testing of Release 1B is planned for this summer.
- The System Design Review for Release 1C, the first public launch, will be completed May 8th.

FDsys Communications Update

- Outreach began with awareness and needs assessment.
- Outreach is currently centered around communicating with stakeholders and assuring that the system meets their needs.

FDsys Communications Update

- Briefing with the Legal Community
- Congressional Working Group
- Interagency Council on Digital Content Submission (ICDCS)

FDsys Communications Update

Future Outreach:

- Conferences
- Federal Electronic Document Systems Group (FEDS)
- Focus groups
 - Library Community
 - Federal Agencies
 - 508 Community

FDsys Communications Update

Beta Testing for Release 1B:

- Beta testing will take place during the summer
- Initial two week testing period with additional testing opportunities prior to Release 1C
- Contact us at pmo@gpo.gov

Release 1B Overview

- Content Submission
- Content Packaging and Metadata
- Content Access and Delivery

Content Submission

- Provides mechanisms for FDsys to receive content and metadata that is:
 - Deposited from Federal agency publishers
 - Harvested from Federal agency Web sites
 - Converted from tangible formats by GPO and its digitization partners.

Release 1B Content Submission

- Provides an interface that enables Federal Agency and Congressional Publishers to deposit content and metadata into FDsys.
- Captures all order information related to the content to support GPO procurement processes.

Release 1C Content Submission

- Enables bulk submission of content and metadata from Federal Agency and Congressional Content Originators.
- Captures all order information and integrates with GPO's procurement processes.
- Provides enhanced interfaces for Content Originators (e.g., Congress, OFR).
- Provides contextual help to all users.



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Getting Started

Order Product for Print

Upload Files

Intent to Publish

**GPO Contact Info:
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(202)555-0987

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My Current Jobs

Title	Job ID	Contract Type	Delivery Date	Agency No.	Files Uploaded	Submission Status	
GSA Letterhead	67689	One Time Buy	11/19/2007	7-51360	No	Not submitted to GPO	Delete
Disaster Response	67633	143-S	04/08/2007	7-22260	Yes	Submitted to GPO	Delete
GSA Letterhead	67689	One Time Buy	11/19/2007	7-51360	No	Not submitted to GPO	Delete
Healthier You	12345	None	01/01/2008	7-14785	No	Not submitted to GPO	Delete



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- General**
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- Proofs**
- Delivery**
- Summary**

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Contact name:	Mehai Lotfi
Contact telephone:	202-512-2370
Contact e-mail:	lmehai@gpo.gov
Contact fax:	202-515-2370
Publishing agency:	office test
Bureau or office:	agencyName
Contract type:	
Agency supplied number:	agencySuppliedNumber
Jacket number:	jacketNumber
Term contract number:	termContractNumber
Print order number:	printOrderNumber
Job ID:	jobId
GPO procurement office:	gpoProcurementOfficeCodeNumber
Request GPO print in-house:	false
Request press sheet inspection:	false
Charge method:	TODO
Line of accounting:	TODO
Strap with agency supplied number:	strap
Previous jacket/requisition or job ID:	previousJacketReqJob
Price OK requested:	priceOkRequested
Additional info:	additionalInformation

General Information

Contact name:

Contact telephone:

Contact e-mail:

Contact fax:

Publishing agency:

Bureau or office:

Contract type:

Agency supplied number:

Jacket number:

Term contract number:

Print order number:

Job ID:

GPO procurement office:

Request GPO print in-house

Request press sheet inspection

Charge Method:

Strap with agency supplied number:

Previous jacket/requisition or job ID:

Price OK requested:

Additional info:


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Name	Primary Phone	Secondary Phone	Email	Actions
Lotfi	202-512-2370		lmehai@gpo.gov	Edit Make Primary

- Electronically Delivered**
- Manually Delivered**

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Software programs used to design/develop content				
Name of Program	Version	Supplied in	Additional info	Actions
name	version	suppliedIn	additionalInfo	Edit Remove

Government Furnished Materials (GFM) [Save](#)

Color, Fonts & Bleed [Edit](#)

- Color: -
- Fonts: -
- Do files require bleeds? -
- Additional info: -

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Upload File **Upload Directory**

Browse...

Add File

Uploaded Publication Files

File Name	File Size	Action
FDsys_BPI_Logical_Model_22.pdf	19,137 KB	Delete
ClassLoadingInOC4J_WP.pdf	444,276 KB	Delete
Documentum_Object_Definition_v6.xls	178,176 KB	Delete

Are the files in native format?:

Are the files in highest fidelity?:

Have the files been optimized?:

Are these files capable of being edited?:

OK

Cancel

Choose file

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DAccount-04-05-07	int-clear-fdsysEnv
DFC_Session_Management_Whitepaper	Internet
Documentum_Object_Definition_v6	Internet (2)
Documentum_Query_Mgr	MyClearCase
eclipse-3.2	ORACLE_AS_install
Enterprise_Information_Model_Entity_Diagram_v2	spring-forward-2006-web-framev
FDsys_BPI_Logical_Model_22	sqldeveloper
FDsys_BPI_Physical_Model_22	Start SOA suite (2)
FDsys_BPI_SQL_DDL_19	startupconsole-2007-03-29-19-0
FDsys_DDL_22	StrutsInAction
FDsys_Logical_Model_18	UIcount-04-05-07
FDsys_Physical_Model_18	
FDsys_SQL_DDL_18.ddl	
fdsysEnv-1b	
installNotes	

File name:

Files of type: All Files (*.*)

Open Cancel


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Publication title:

Publishing agency:

Date issued:

Date created:

Author/creator:

Publication URL:

ISBN/ISSNs:

Rights owner:

Structure info:

Intended output:

GPO Contact Info:**GPO ASU Team 6****Julie Smith**

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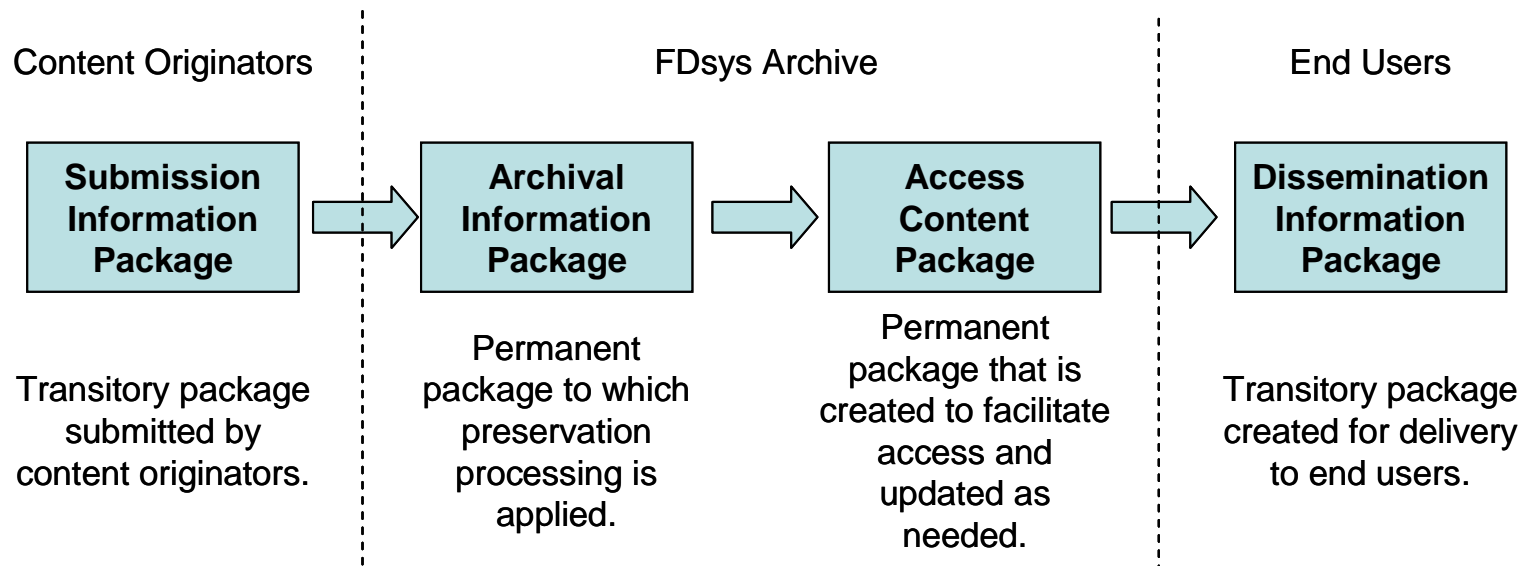
Metadata and Content Packages

- Data about data
- Popular Web sites have placed metadata in the public consciousness
 - Flickr
 - LibraryThing
 - Del.icio.us.

What is a package?

- Content and metadata – together forever 
- FDsys follows the OAIS reference model.
- Design based on content packages, where metadata is aggregated in conceptual containers.

Information Package Lifecycle

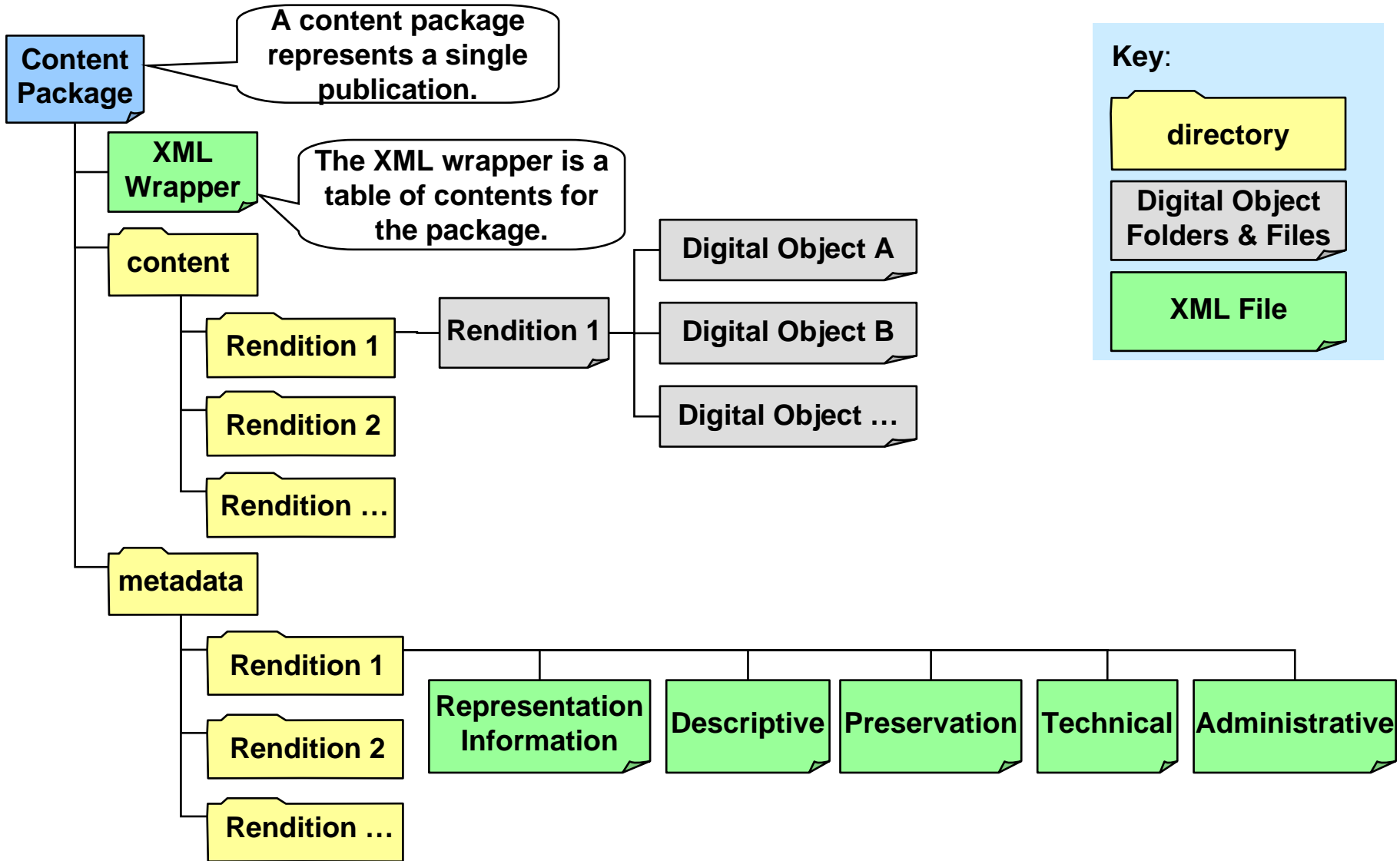


METS: Data about Metadata

- Standardized framework for holding and exchanging metadata
- Common practice in the preservation community
- Produced by the Library of Congress Standards Office and the Digital Library Federation
- Well understood and supported

Content Metadata

- METS and FDsys schema registry allow us to update or add new schemas.
- METS has places to reference the three types of metadata: descriptive, administrative, and structural.



Key:

- directory
- Digital Object Folders & Files
- XML File

Descriptive Metadata

- Descriptive metadata is information about the intellectual content, similar to a standard bibliographic record
- Each package in FDsys will have a MODS record
- Metadata in other schemas submitted to the system will be associated and used

Administrative Metadata

- Administrative metadata is information for handling, maintenance, and archiving of an object
- Each representation and each digital object in the system will have a PREMIS object entity file to record information necessary for preservation processes.
- PREMIS records chain of custody and provenance information
- Other schemas in the administrative metadata section will include schemas for technical information

A Layered Approach

- Packages have content at the core, and at any point it can be enriched with metadata
- A publication is submitted to FDsys with metadata
- In some cases, FDsys can extract metadata from content
- When a publication is cataloged, the MARC record is translated into MODS for FDsys

Access and Delivery

- Provide access to content and metadata stored in the system.
- Deliver content and metadata to users in formats that meet their needs.

Release 1B Access and Delivery

- Provide a foundation for building improved access to publications within scope of GPO's dissemination programs.
 - Provide simple search and advanced results
 - Parse pilot content and extract metadata
 - Provide access to content, metadata, and packages
 - Solicit community feedback on basic user interfaces

Release 1C Access and Delivery

- Provide features necessary to subsume and enhance GPO Access application functionality.
 - Advanced Search
 - Dynamic Browse
 - Full ILS Integration
 - Granularity
 - Relationships
 - Optimized Formats for Delivery
 - Robust User Interfaces



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Publisher: Environmental Protection Agency, Office of Science and Technology



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1. **Designation of Biobased Items for Federal Procurement**

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Resource: Federal Register, Vol. 71 No. 223, Rules and Regulations section, Pages 67031-67032

Date Issued: November 20, 2006

Agency: Department of Agriculture, Office of Energy Policy and New Uses

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 Resource: Federal Register
 Date Issued: November 20, 2006
 Agency: Department of Agriculture
 Sub-Agency: Office of Energy Policy and New Uses
 Volume: Vol. 71
 Issue Number: No. 223
 Page Number Range: 67031 – 67032
 Section: Rules and Regulations
 CFR Citation: 7 CFR Part 2902
 Action: Final rule; establishment of effective date
 URL: <http://www.URL.gov>
 Provenance: Submitted by the Office of the Federal Register on November 19, 2006.
 Publisher: National Archives and Records Administration, Office of the Federal Register
 Language: English
 ISSN: #####
 Digital Origin: Born Digital

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Download Content and Metadata as a Package: [ZIP](#)

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Content	Metadata
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Questions and Answers

- Contact us by email pmo@gpo.gov
- Visit the FDsys Website
<http://www.gpo.gov/projects/fdsys.htm>

The U.S. Government Printing Office (GPO) Future Digital System (FDsys) will preserve, authenticate, provide version control, and provide access to digital content from all three branches of the U.S. Government. FDsys will be a comprehensive, systematic, and dynamic means for preserving digital content free from dependence on specific hardware or software. The system will automate many lifecycle processes for digital content and make it easier to deliver content in formats suited to customers' evolving needs. FDsys will be released for agency and public use in late 2007.

Digital content managed in FDsys will include all common text, graphical, audio, and video formats used in government publishing, and FDsys will accept deposited content that is furnished in a wide variety of formats and media. Harvested content, with accompanying metadata, within the scope of GPO's dissemination programs is gathered from Federal agency Web sites. Converted content is digital content created from a tangible product, typically by scanning legacy print publications.

The long term focus of the Future Digital System will be on deposited content. As the amount of deposited content submitted to GPO increases, there will be a gradual decrease in the need for legacy conversion and harvesting. Regardless of its source, content that is ingested into FDsys is managed as an information package.

FDsys users will be able to discover and retrieve the content they want by searching the content or by searching metadata, information about the content. Library-standard descriptive metadata linked to FDsys will also be available in GPO's *Catalog of U.S. Government Publications*, an application with which FDsys will share descriptive information.

Digital Content Management Goals

In order to meet GPO's strategic goals, FDsys will:

- Support GPO's business processes and enable improvements to their efficiency, quality, effectiveness, and timeliness;
- Ingest content in a variety of digital content creation formats;
- Store and manage content in a manner that is independent of any particular hardware and software component over long periods of time;
- Provide content storage scalability sufficient to hold a complete collection of in scope publications, including converted hard copy, web harvested, and deposited content;
- Accommodate future digital formats;
- Preserve digital content for future use;
- Ensure the authenticity of the content that GPO preserves;
- Provide access to content descriptions and metadata;
- Provide access to the content in a manner that is consistent with current technology and the changing expectations of GPO's diverse user communities.

Supports Publishing Agency Needs

FDsys will be GPO's point of entry for Federal agency printing and information business. Content originators (agencies which create and publish content) will be able to enter and track orders, retrieve their content for re-use at any time, have their content output in a variety of digital formats on demand, and ultimately engage in collaborative authoring, digital proofing, and other pre-

press activities. Agencies' public information dissemination needs will be fulfilled by having their content permanently accessible on FDsys. FDsys will comply with Section 508 of the Americans with Disabilities Act of 1973.

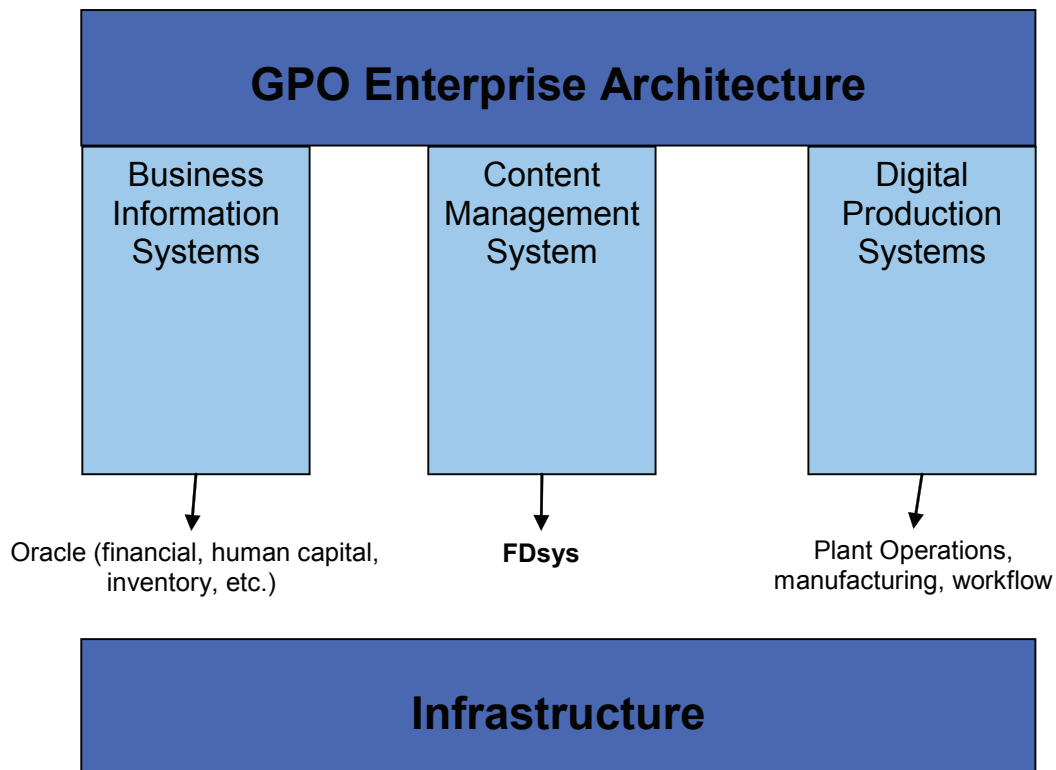
Digital Preservation

FDsys will be GPO's archive for preserving digital content. The system design is based on the Reference Model for an Open Archival Information System (OAIS), ISO standard 14721:2003. The OAIS model has been adapted and used in other research collaborations and institutional settings and provides a framework for achieving the scalability, extensibility, and interoperability required for a system of FDsys' magnitude.

GPO Information Systems

GPO's enterprise computing architecture is represented by the "three pillar" model shown below. While this short paper is focused on FDsys, significant developments are also underway in each of GPO's other IT pillars.

- The Business Information Systems Pillar manages and maintains all transactional data, known as business process information, financial and billing data, and human resources. The principal development effort in business systems is with Oracle applications.
- The Content Management System pillar includes FDsys, the Integrated Library System, and various legacy applications.
- The Digital Production Systems pillar, including a Commercial-Off-The-Shelf (COTS) manufacturing workflow system and legacy applications, controls production planning, estimating, tracking, shop floor management and record keeping for GPO Plant Operations, accepts digital content and jobs from FDsys, and outputs digital printing and digital media.



techline

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FDsys Status

The FDsys Team is working intensively to complete the design and implementation phase of FDsys Release 1B pilot development. In March, Harris and GPO completed the Critical Design Review (CDR). This two day design review covered design aspects of the FDsys pilot scheduled for completion in June 2007.

The purpose of the pilot is to test the concepts and design for key system components. For Release 1B, GPO identified various technology areas for different components within the system, and began an open process for accepting materials from vendors describing capabilities specific to FDsys needs. Using these capability statements, the FDsys team conducted extensive market research, including an evaluation of products in GPO's inventory. All material submitted by the vendor community was reviewed by the FDsys team. The following components were selected by Harris for the Release 1B pilot.

Component	Description	Vendor
Content Management System (CMS)	Underlying software to support and track content throughout its information lifecycle within FDsys.	EMC/ Documentum
Search	Performing queries on content and metadata so that content may ultimately be retrieved from storage and delivered to users.	FAST
Identity Access & Management Suite	Infrastructure to allow user administration, security, authorization and identity verification capabilities.	Oracle
Enterprise Service Bus	Infrastructure element that will assist in allowing component reuse in a service-oriented architecture.	Software AG
Application Server	Infrastructure element to allow centralized application development and deployment.	Oracle

The next program review for Release 1B will be the Test Readiness Review (TRR), which will verify that the release is ready for formal testing and approval.

In parallel to the Release 1B pilot, Harris and GPO are completing the initial design phases of Release 1C, the first public release of FDsys. Release 1C System Requirements Review (SRR) has been completed and system development activities are underway. The next program review for this release will be the System Design Review (SDR), which is the first of three design reviews for Release 1C and will focus on technology selections and architectural design.

Associated with each rendition are several metadata files, including PREMIS and MODS records, expressed in XML.

- Representation Information - original metadata and other information, objects, or application names and versions that are required to render the publication at a specific level of accuracy. The representation information should also include enough metadata for certification, version control, access, and preservation to take place.
- Descriptive - metadata that allows users to discover the content, such as information about the author, publication date, version, etc.
- Preservation - metadata needed to accurately describe the content, verify its fixity, and provide an understanding of the environment (context) in which the content was created.
- Technical – metadata required to accurately render the content, include file attributes, format, etc. For example, an AIP may contain an electronic journal, information about how the journal is structured (by pages or sections) and formatted.
- Administrative – metadata about the origin of the content (provenance), dates when system processes occurred, and access rights for viewing the content

Structuring packages in this way facilitates ingest, preservation, content management, and access, by creating a common structure and ensuring that the information needed to manage content is always associated with that content.

FDsys Beta Testing

The 1B prototype will be rigorously tested for user acceptance and full compliance with the FDsys Requirements Document v3.1. This testing process will include both internal and external system users.

The first public release of FDsys, Release 1C, will be deployed in December 2007. This date will allow GPO to apply lessons learned from the Release 1B pilot. Consequently, users will experience more mature functionality in the first public release.

All FDsys Releases will require extensive testing prior to deployment. If you are interested in volunteering for beta testing of Release 1B, please send an email to pmo@gpo.gov with your name and institution.

Upcoming Presentations and Events:

Coalition for Networked Information (CNI), April 2007

Depository Library Council Meeting, April 2007

Association for Information and Information Management (AIIM): April 2007

Society for Imaging Science & Technology (IS&T) Archiving Conference, May 2007

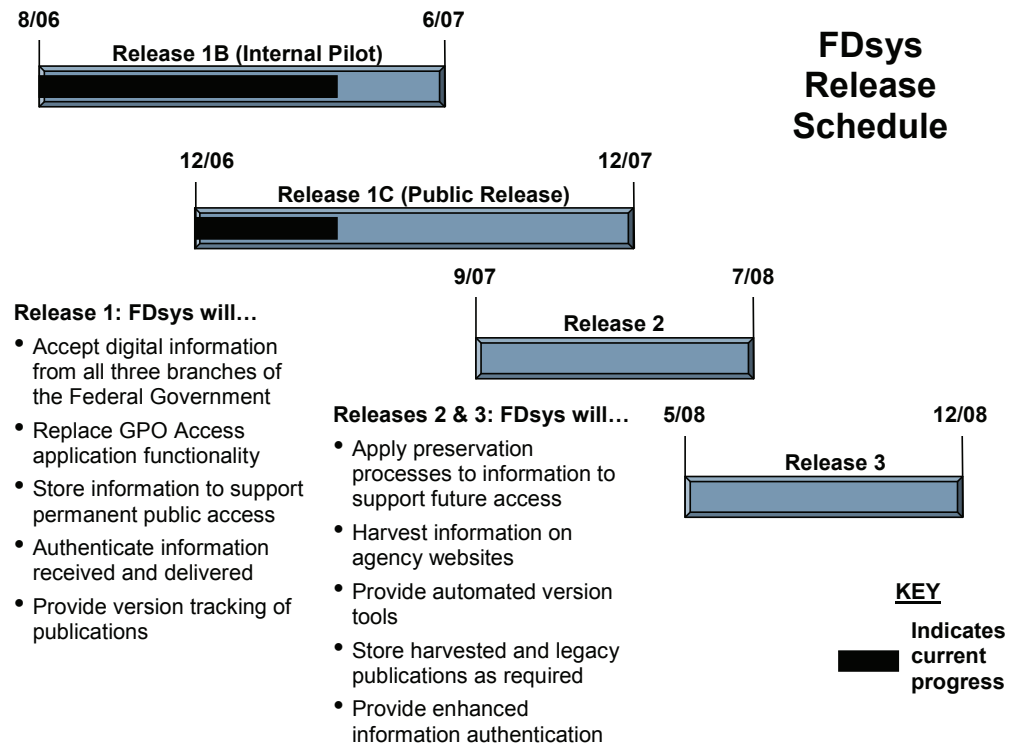
Special Libraries Association, June 2007

American Library Association, June 2007

The Government Printing Office (GPO) is transforming from a print-centric agency to one that delivers Federal information products and services from a digital platform. The Future Digital System (FDsys) will enable GPO to manage content in digital form. This document contains current information on the status of FDsys development.



Contact Information pmo@gpo.gov
<http://www.gpo.gov/projects/fdsys.htm>



FDsys Information Packages

FDsys system design is based on the Open Archival Information System (OAIS) reference model, an ISO standard for information transfer systems. Using the OAIS reference model provides a framework for understanding and sharing long term digital preservation and information access strategies for a system of FDsys' size and scope by standardizing concepts and terminology. This model does not prescribe exactly how to design a system that will take in information, preserve it, and provide access to it, but rather it gives us a common way of talking about functions a system like FDsys should perform.

A central concept in OAIS is that the content being submitted to the archive for preservation and access needs to be associated with its metadata in an information package. In the FDsys design, a package contains the digital object that is being preserved in whatever formats were submitted and metadata records about that object and its format, related by a binding XML file. An information package contains one edition or issue of a single publication, and information packages for other published editions or versions of a publication are linked together so that a user may find the specific version of the publication they wish to use.

When content is submitted to FDsys a Submission Information Package (SIP) is created to facilitate what OAIS calls "ingest", which is basically the step in the lifecycle of a package where the archive assumes responsibility. At ingest, the SIP becomes the Archival Information Package (AIP), which is used for long-term preservation. From the AIP, an Access Content Package (ACP) is derived, which includes such renditions of the content which will facilitate efficient and effective public access. The ACP is a GPO innovation that is designed to separate the read only, delivery oriented renditions (for example, screen or print optimized PDF and HTML formats) of a publication from their long term archival renditions (which includes the original and preservation formats). The AIP is stored in a trusted repository environment and insulated from daily use. User requests for access are directed to the ACP, from which a Dissemination Information Package (DIP) is created to satisfy a user request for a specific format the content. The DIP is also transitory in nature, and is not retained in FDsys.

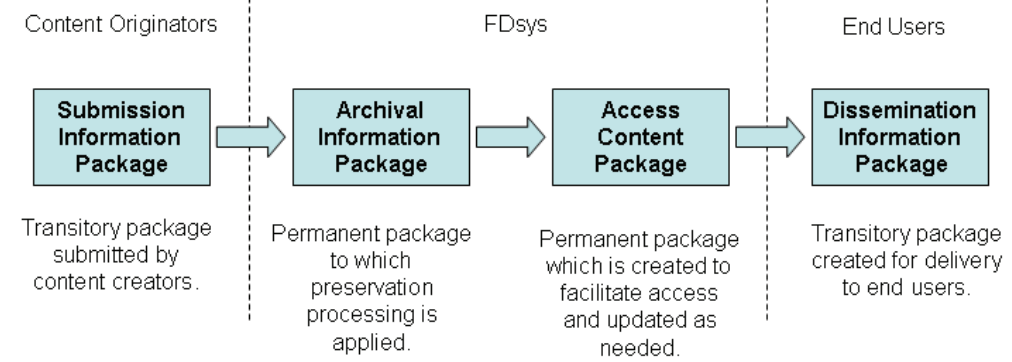


Figure 1. Information Package Lifecycle in FDsys

The different content packages (i.e., SIP, AIP, ACP, DIP) share a common structure. For example, an AIP is composed of content digital objects and metadata about the digital objects, and a binding metadata file (aip.xml) that relates the digital objects and metadata together to form a system-compliant AIP. GPO has adopted version 3.2 of the Metadata Encoding and Transmission Standard (METS) for the aip.xml file, and GPO will specify profiles and extension schema for METS as required.

A package can include many format or "renditions" of the content, and each rendition can be composed of one or many individual files. For example, a single package may include three renditions: a page layout format in which the document was created, including the document file and four image files; a press-optimized PostScript rendition; and a screen-optimized PDF rendition.

The files and folders making up each rendition are stored in their own folder within the package structure. The folder structure of the rendition is preserved within the information package so that the document may be successfully opened using the original software in the future. Metadata specific to each rendition is stored in its own parallel folder within the information package. Each metadata file is tied to the whole document, a single rendition, or a single digital object in a rendition. Descriptive metadata may be tied to the publication as a whole. Format information may be tied to a rendition. Conversion information may be tied to a single conversion file. The FDsys information package structure is illustrated in **Figure 2. Representative AIP Package Structure.**

Figure 2. Representative AIP Package Structure.

