



Fedora Commons™

Technical Update 2008

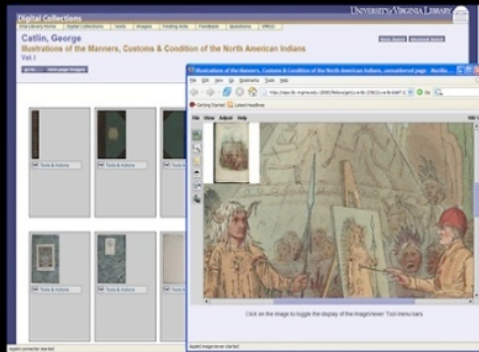
Sandy Payette, Chief Executive
Dan Davis, Chief Software Architect

April 27, 2008

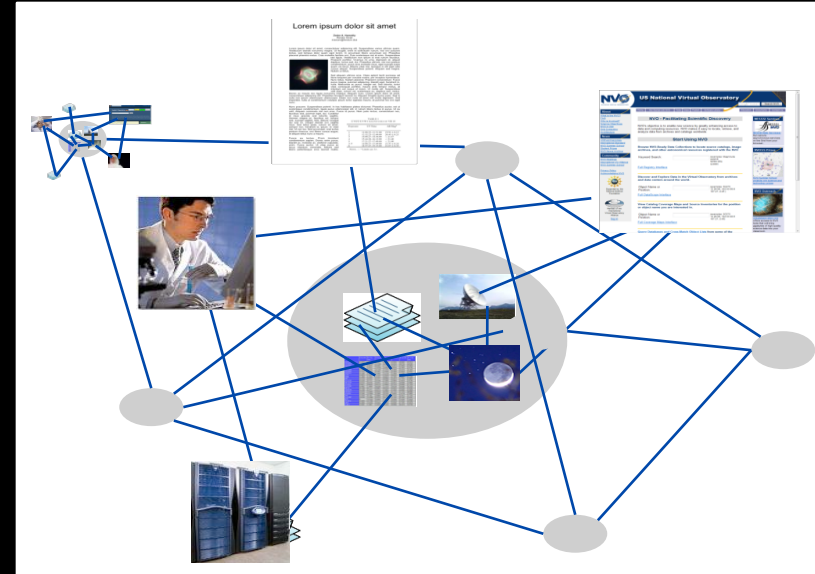


Mission-Driven Use Cases

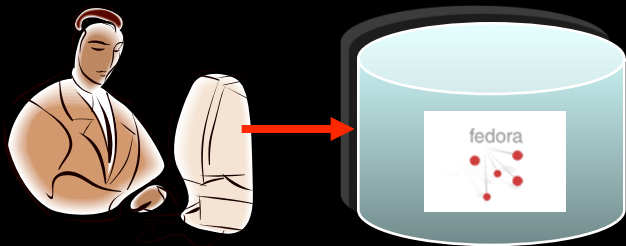
Scholarly and Scientific
Research and Communication



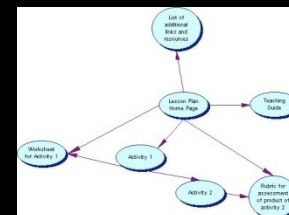
Data Curation, Linking, Publishing



Preservation and Archiving



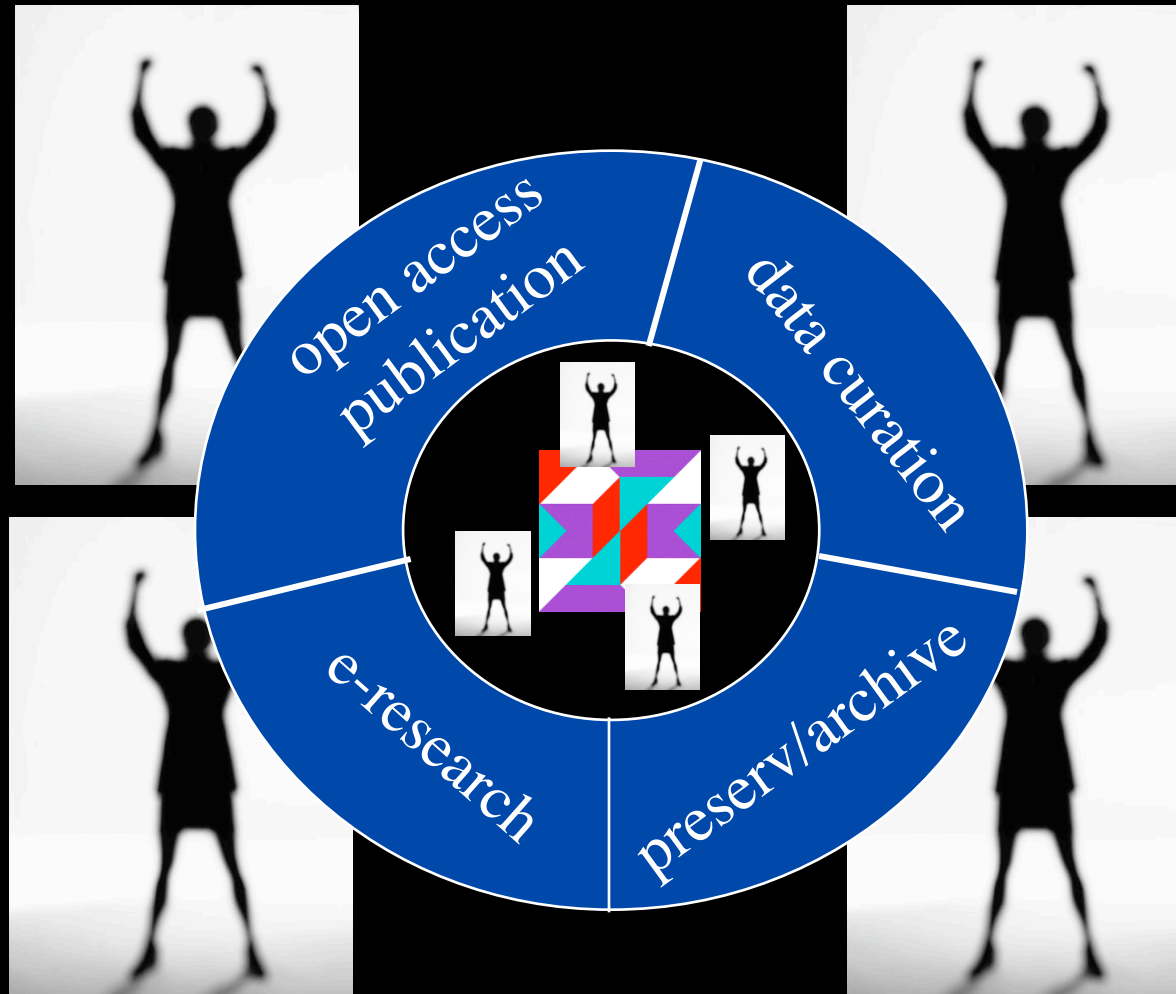
Knowledge Spaces



and more ...

Moving forward... use cases must drive.
What do users really want us to achieve?

FC – 2008
Community
Solution
Councils



These councils will inform Roadmap process.

Fedora Commons Technology Roadmap V0.9

Vision

Overview

Fedora Commons was incorporated in May 2007 and startup funding from the Gordon and Betty Moore Foundation was granted in July 2007. Since that time, all business functions have been created and the new organization has been staffed. Fedora Commons has been granted federal and New York status 501(c)3 status. The Fedora software was developed as a joint project of Cornell University and the

Themes and Priorities

Release Plans

Projects

Fedora Commons' software development has been divided into multiple projects, each producing components or services. We are moving in a direction of Fedora Commons being the home for a set of inter-related open source software projects that produce components or software libraries that fit nicely into software bundles or integration into larger information systems. Software is

Fedora Commons Open Source Projects

Fedora Commons Open Source Projects

- **Fedora Repository Project**
 - The original Fedora Project
- **Fedora Middleware Project**
 - Service integration and enterprise-orientation for repositories
- **Akubra Storage Project**
 - New storage plug-in architecture; transactional file system;
- **Topaz Project**
 - Fedora Commons incubating; core components for semantic-enabled apps
- **Mulgara Triplestore Project**
 - Independent, but FC supports developer; highly scalable triplestore

Fedora Commons open source projects can be integrated together.

Fedora Repository Project

Atom (2008)

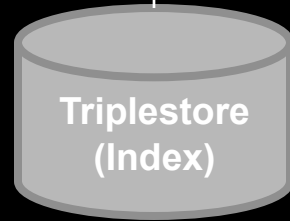
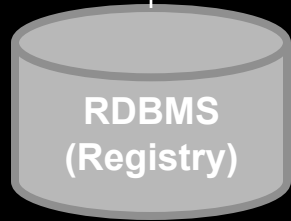
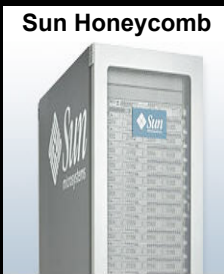


OAI-ORE (2008)

new formats

*Fedora APIs
(SOAP and REST)*

*Additional APIs:
SWORD (2008)
APP (full) ?
JSR 170 ?
Other ?*



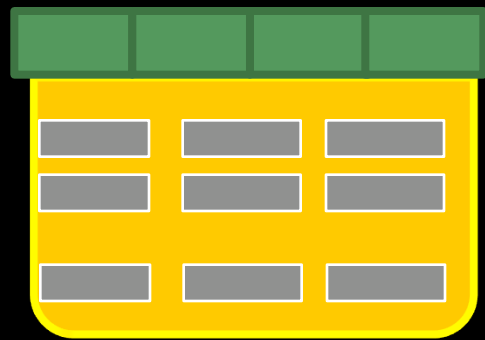
new plug-in option



Fedora Middleware Project

First, we are providing **simple messaging** (via ActiveMQ in Fedora 3.0)

Fedora Repository Service



repository publishes events

Simple
JMS

GSearch

OAI

Ingest

More...

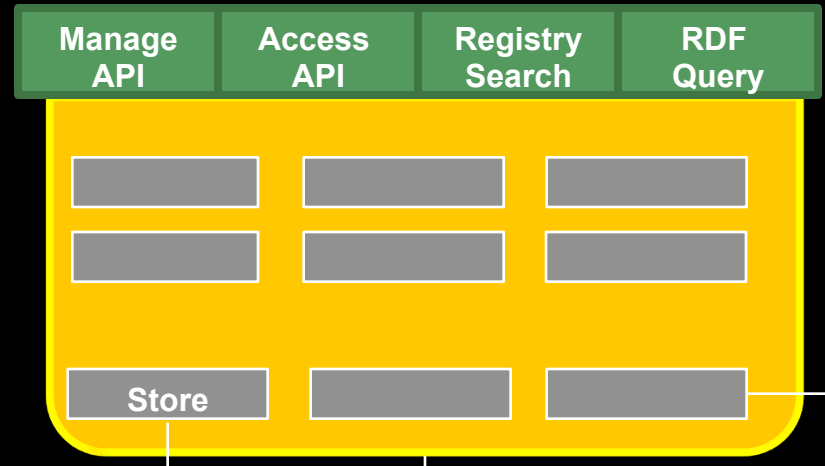
services
listen and
consume
events or
other
messages

Next, **lightweight** integration with **workflow** engine(s); orchestration

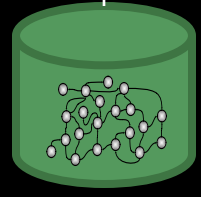
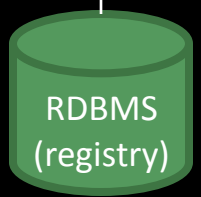
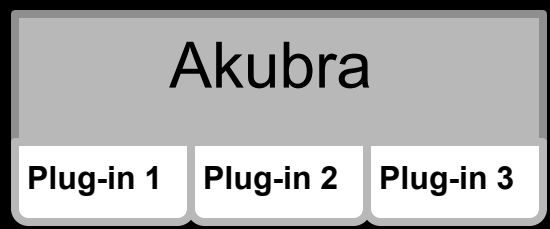
Finally, **enterprise** integration in ESB or J2EE environment as needed

Akubra Project ... backend storage interoperability

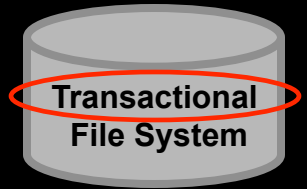
Fedora Repository Service



New pluggable storage framework

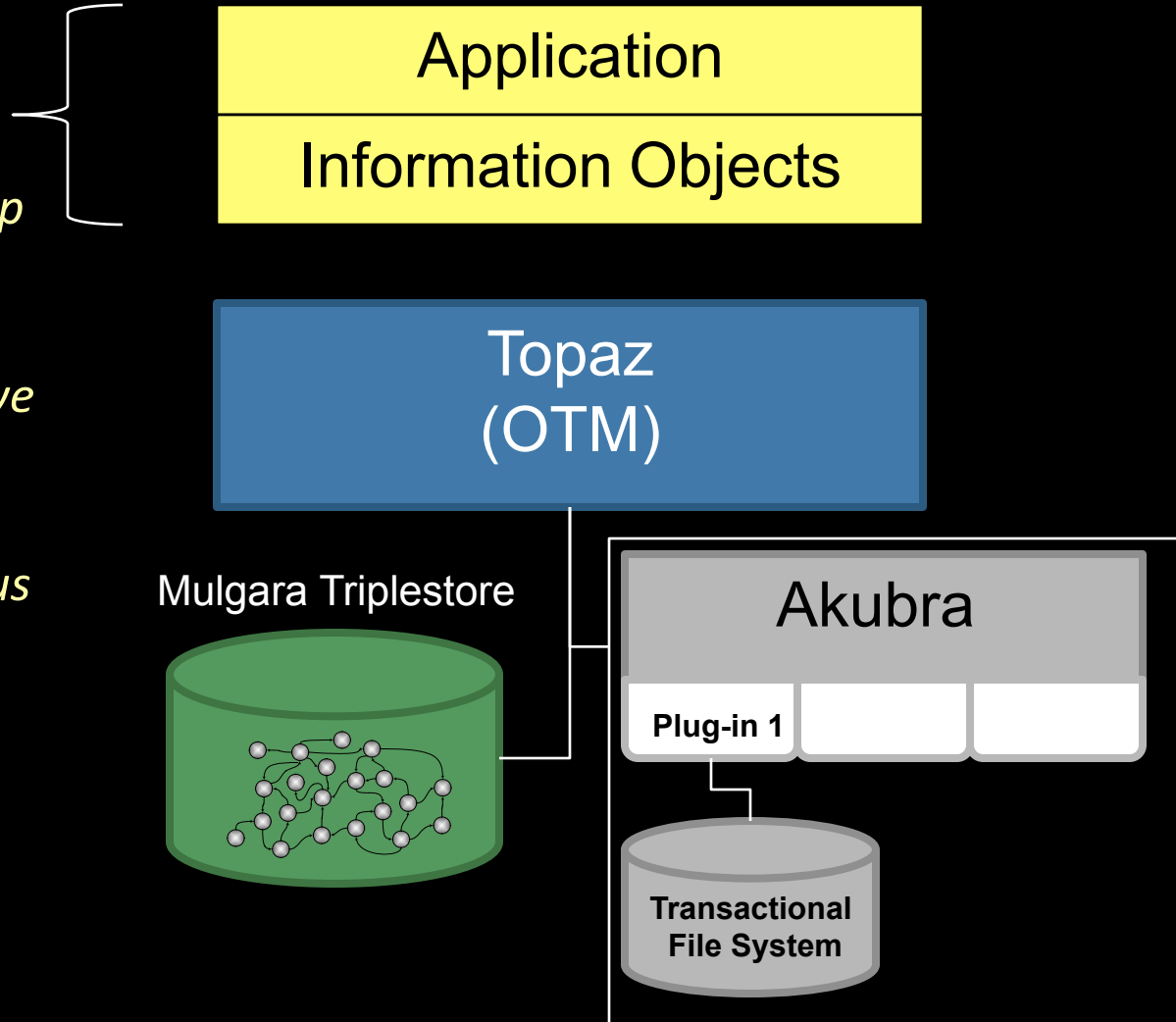


Triplestore (Mulgara/MPTStore)



Topaz Project ... app-level objects and semantic mapping

Working on light-weight ways to let app developers define object types, and have behind scenes mapping to triplestore, plus "blobstore"



Information objects mapped into triples and persisted in Mulgara.

Content bytestreams ("blobs") and persisted in repository or other store

Fedora Commons

Roadmap - Themes

Roadmap – Active Themes

- Ease of use
 - Support for simple applications with low barriers to entry (solution bundles)
 - Support new lightweight interfaces and Web APIs
 - (e.g., Atom Publishing Protocol)
 - Improved business object generation and persistence
 - Model-driven Content Management
- Re-use and interoperability
 - Of scientific and scholarly objects
 - Enablement through standards and protocols (e.g., OAI-ORE)
 - Adoption of simple web APIs (e.g., SWORD)
 - Repository interoperability

Roadmap – Active Themes

- Data curation and data archives
 - Durable digital objects
 - Preservation enabled archives
- Access and Publication
 - Integration of datasets with publications
 - Open Access
 - Durable linkage, annotation and citation
 - Sharing of historic scientific journals and data in support of improved scholarly/scientific communication

Roadmap - Active Themes

- Semantic Technology
 - Innovative uses of semantic technologies for scientific and scholarly collaboration
 - Graph-Orientation
 - Object-Triple Mapping and Query Technology
 - RDF Database (triple-store) Technology
- Infrastructure, Integration and Deployment Technologies
 - Transactions, Journaling, Replication
 - Pluggable storage sub-system integration
 - Ease of deployment and manageability of large scale installations
 - Middleware integrations: Messaging , Workflow/BPE , and Security

Please check out the new Roadmap at:

<http://www.fedora-commons.org/resources/roadmap.php>

Now...Questions?

Fedora Commons

Roadmap – Software Release Plans

Fedora Repository

Feature	Action						Available					Notes
	FR	A	T	M	FM	O	Q108	Q208	Q308	Q408	2009	
Simplified Registry	D		I				X					- Supported by CMA - Increases scalability and ingest rate
Sun ST5800 LLStore Plug-in	I					D	X	X				- Joint work with Sun - Fedora v2,v3
Content Model Architecture	D				I			X				- Includes simple reference CM language
REST Management API	D		I			D		X				- Contributed by MediaShelf - Experimental in v3.0
Mulgara Plug-in	I		I	D				X				- Support for latest version of Mulgara triplestore
Relationships API	D							X				- Add and remove object relationships without editing the RDF in RELS-EXT datastream
Dynamic Services	D							X				- Via CMA, provides a new way to bind services to objects - Replaces the former "Disseminator" approach
SOLr Support						D		X				- Contributed by GSearch
Atom Object Serialization	D					I		X				- Available via Ingest and Export on Fedora APIs - Serializes single Fedora digital object
ORE Object Serialization	D					I		X				- Available via Ingest and Export on Fedora APIs - Serializes single Fedora digital object
SWORD - Deposit API	D					I			X			- Expose the SWORD API to enable interoperability for digital object deposit into repository
Akubra Plug-in	I	D	I						X			- Deprecates LLStore Plug-in; - JTA Backend
Advanced ORE									X			- Serializes network of inter-related Fedora digital objects.
Service Façade Framework Refactoring									X			- Uniform interface for front-end APIs - Enables repository as a JAR
JTA Compliance									X			- JTA Front end
Lightweight Batch Ingest									X			- Includes batch modification
Replication Services											X	- Between Fedora repositories; other repositories via ORE

Fedora Middleware

Feature	Action						Available					Notes	
	FR	A	T	M	FM	O	Q108	Q208	Q308	Q408	2009		
Mellon ESB Study	I				D	D	X						- Group study of open source offerings for Enterprise Service Bus (informs design)
RepoMMan Support	I				D	D	X						- Informs design; ; possible re-use or re-distribution of components or examples - http://www.hull.ac.uk/esig/repomman/
Messaging (JMS) Integration	I				D	I		X					- Repository as publisher of Events in Atom - Services can act as subscribers
GSearch JMS Subscriber	I				D	I	X						- Search service automatically updated via JMS
Proai JMS Subscriber	I		I		D	I			X				- OAI provider service automatically updated via JMS
Lightweight Pipeline Ingest	I		I		D	I				X			- Both attached content and referenced content
Lightweight Workflow (BPE)	I		I		D	I				X			
Middleware Security	I		I		D	D					X		- Includes XACML and other technologies - Evolve with community partners (e.g., Muradora)
JTA Compliance	I	I	I		D	I						X	- Requires Repository and Akubra JTA compliance - Middleware Transaction Manager
Enterprise integration: Workflow/BPE within ESB for Preservation and Archiving	I				D	D						X	- This will be driven by user demand - If lightweight approach meets needs, may re-evaluate.

Akubra

Feature	Action						Availability					Notes
	FR	A	T	M	FM	O	Q108	Q208	Q308	Q408	2009	
Pluggable Storage Framework Design	I	D	I				X	X				- Fedora v3.0 for comment
Simple Transactional File System Plug-in	I	D	I					X				
Multiplexed Storage Framework Design	I	D	I					X				
Multiplexed Storage Framework	I		I						X			
Sun ST5800 Plug-in	I		I			D		X				- Joint work with Sun - Fedora v3.1
IA Petabox Plug-in	I	D	I			D			X			- Joint work with Internet Archive
Hierarchical Plug-in	I	D	I			D				X		- Needs one or more partners with HFS products
aDORe Plug-in	I	I	I			D				X		- Joint work with LANL
Advanced Sun ST5800 Plug-in	I	D	I			D				X		- Joint work with Sun - Supports registry in ST5800 - Able to delegate tasks to Storage Beans - Support for call back acknowledgements
Advanced Transactional File System Plug-in	I	D	I			D					X	- Possible joint work with Sun - Supports use of native transactional file systems