Fedora Commons: Taking on the Challenge of the Next Generation of Scholarly Communication

Sandy Payette
Executive Director
Fedora Commons

November 7, 2007
DLF, Philadelphia, PA
THE COMING REVOLUTION IN SCHOLARLY COMMUNICATIONS & CYBERINFRASTRUCTURE

GUEST EDITORS: LEE DIRKS AND TONY HEY

1 Introduction
Lee Dirks and Tony Hey

FEATURED ARTICLES

5 The Shape of the Scientific Article in the Developing CyberInfrastructure
Clifford Lynch

11 Next-Generation Implications of Open Access
Paul Ginsparg

19 Web 2.0 In Science
Tim Hannay

26 Reinventing Scholarly Communication for the Electronic Age
J. Lynn Flinn and Philip E. Bourne

32 Interoperability for the Discovery, Use, and Re-Use of Units of Scholarly Communication
Herbert Van de Sompel and Carl Lagoze

42 Incentivizing the Open Access Research Web: Publication-Archiving, Data-Archiving and Scientometrics
Tim Brody, Les Gavrin, Yves Gingras, Chawki Hajjem, Stevan Harnad, and Alma Swan

51 The Law as CyberInfrastructure
Brian Fitzgerald and Kylie Pappalardo

58 Cyberinfrastructure For Knowledge Sharing
John Wilbanks

67 Trends Favoring Open Access
Peter Suber

CyberInfrastructure Partnership

http://www.ctwatch.org/
Scholarship and Research is Changing

- Influenced by:
  - High performance computing and connectivity
  - Peta-scale data storage
  - Advanced data mining and data storage
  - Web services, Web 2.0
  - Open Access movement

- Evolution towards:
  - Highly collaborative
  - Network-based
  - Data-driven

- Visible in science & engineering but also in humanities and social sciences

- And, there are increasing links between these formerly separated fields (unleash the inter-disciplinary potential)
Lorem ipsum dolor sit amet
Have open access, institutional repositories, and the web solved all our problems?
Challenges for the Next Generation of Scholarly Communication Systems

- Web 2.0 applications with durable information underpinnings
- Scholarly and scientific workflows
- Data curation
- Data and publication linking
- Re-use of scholarly and scientific resources
- Interoperability - protocols and standards to enable information access, exchange, linking in distributed world
- Open access
- Publications integrated with data, really...
- Enterprise SOA for scholarly communication
  - Within one institution
  - Across multiple institutions
How Can Fedora Commons Help?
A Brief History...

Fedora Project
Phase 1
• Digital Repository
• Web services
• XML

Fedora Project
Phase 2
• SOA
• More Services
• Semantic Technologies

Fedora Commons
• Platform for Durable Information
• Data (curation, linking to publications)
• Bridge Web and Enterprise Architecture

2001 2005 2007+
Fedora Commons, 501(c)(3) Non-Profit

Fedora Commons provides sustainable technologies to create, manage, publish, share and preserve digital content as a basis for intellectual, organizational, scientific and cultural heritage by bringing two communities together.

Communities of practice that include scholars, artists, educators, Web innovators, publishers, scientists, librarians, archivists, publishers, record managers, and museum curators who present, access, or preserve digital contents.

Software developers who work on the cutting edge of open source Web, semantic and enterprise content technologies to ensure that collaboratively created knowledge is available now and in the future.

Open Source Technology

Storage Repository technologies to ensure longevity and integrity for any kind of digital content.

Semantics Semantic technologies to contextualize and inter-relate digital content from many sources.

Services Collaborative technologies to enable the creation of innovative, collaborative spaces.

Download Fedora 2.2.1 JAR Installer (7 MB)

Top Ten Reasons to Choose Fedora

1. Store whatever you want
2. Easy access
3. Express relationships
4. Free open source software
5. Enables permanence
6. A supportive community
7. Extensibility
8. Maturity
9. Scalability, both cost and

News

Cultural Heritage, Learning and Research at UPEI
Prince Edward Island, Canada — September 21, 2007

People on the move: A Fedora-based Open Access Repository To Provide a World of Information on Forced Migration
Buffalo, New York — September 10, 2007

Colorado Alliance Seeks Proposals for User Interface Design and Development
Denver, Colorado — August 10, 2007

Gordon and Betty Moore
Fedora Commons Non-Profit
Purpose Statement from Articles of Incorporation

The purpose of Fedora Commons is to provide sustainable technologies to help individuals and organizations create, manage, publish, share, and preserve digital resources upon which we form our intellectual, scientific, and cultural heritage; to provide open-source software that integrates key functionality for supporting the full lifecycle of digital information; to enable access over the World Wide Web and other delivery systems.

- Supporting universities and research institutions
- Supporting open access publishing
- Supporting libraries, museums, and cultural institutions
- Supporting educational institutions
- Supporting archives and records management organization
Fedora Commons enables creation of flexible, robust repository-based platforms to enable creation, management, re-usability, and durability of scholarly, cultural, and scientific information.
Paradigm: Open-Ended Modularity

Jigsaw

One pre-defined outcome

Tangram

Many possible outcomes

Fedora Repository

Search
Fedora Commons - Software

- **The Main Course**
  - Repository and key enabling services

- **A la carte**
  - A “commons” for tools and applications that are directly related to mission

- Fedora Commons to be custodian of the software, ensure its longevity; facilitate its evolution, ensure its quality, and keep it “on-mission”
Open Source Software to Build Durable Information Platform(s)

- Shared Components
- Third Party Components
- Fedora Commons Core Components
- Solution Bundles
- Roll-Your-Own

open source services/modules

FEDORA COMMONS
HTTP://WWW.FEDORA-COMMONS.ORG
What open source components is Fedora Commons currently developing and/or integrating to support scholarly/scientific process?

- Repositories
- Authentication/Authorization
- Search Services
- OAI and exposure/re-use services
- Semantic Technologies and RDF
- Workflow engines
- Ingest services
- Authoring tools
- Annotation services
- Preservation services
- Collaborative and social networking applications
- Publishing applications
- More …
The Fedora Repository Service

- Flexible Digital Object Model, with versioning
- Durable digital object store; XML wrappers; file-based
- Web services to manage and access
- Focus on interoperability
- Graph index of repository to bring relationships “alive” and query-able

XML-based Digital Object Repository

Fedora Repository

RDF Graph Index

triplestore

essential properties

Dublin Core

Relationships
Digital objects modelled with compositional semantics
RDF graph view of digital objects for publication, data and review
A peek at what people are already doing with Fedora Commons technologies...
Fedora-based information platforms that enable collaborative spaces and information durability...
NSDL 2.0
Expert Blogs and Wikis on top of Fedora Repository
Islandora (U of PEI)
Small universities are getting skin in the game!
PLoS ONE and Topaz
Open Access Publishing and Collaboration
Fedora Commons
Community Perspective
How Can Fedora Commons Help?

Focus on Outreach and Collaboration

Nurture Community Leadership

- scholarly communication
- open-access
- e-science
- digital libraries
A Few Strategic Partnerships to Watch

- Fedora Commons with JHU: data curation
- Fedora Commons with ORE: object re-use and exchange
- Fedora Commons with Sun: archival storage
- Fedora Commons with PLoS: open access publication
- Fedora Commons with Cornell: digital asset management
- Fedora Commons with ARROW/DART: e-research
- Fedora Commons with NSDL: semantic digital library and Web 2.0
- Many more (existing... and you can be here too!)
Fedora Commons – Initial Organization (2007)

Board of Directors

Executive Director

Admin

Chief Architect

Director Communication/Media

Director Community Strategy/Outreach

Lead Developer

Developer

Developer

Web Developer

System Admin

Integration Developer(s)

Grant Funded
Fedora Commons
http://www.fedora-commons.org