



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

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THE COMING REVOLUTION IN SCHOLARLY COMMUNICATIONS & CYBERINFRASTRUCTURE

GUEST EDITORS **LEE DIRKS AND TONY HEY**

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Lee Dirks and Tony Hey

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**CyberInfrastructure
Partnership**

CyberInfrastructure Technology Watch
<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)





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mashu@fordum.dtu

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| 1 | 11:08:22-11:31:00 | 19.95 ± 0.12 |
| 2 | 12:32:29-12:49:00 | 20.45 ± 0.20 |
| 3 | 14:08:27-14:36:00 | ~ 21.47 |
| 4 | 15:44:26-16:32:00 | ~ 21.40 |
| 5 | 17:21:27-17:48:00 | ~ 21.40 |
| 3,5 | 14:08:27-17:49:00 | 21.57 ± 0.24 |
| 6 | 18:57:27-19:13:00 | 21.07 ± 0.35 |

NOTE. — * Limits are $\pm 1\sigma$.

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| enim. Fusca auctor. Ut vitae purus ac | 3-5 | 14.08.27-17.49.00 | 28.57 < 0.34 |
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NOTE. — *Lectus ac An.

Have open access, institutional
repositories, and the web solved all
our problems?

Challenges for the Next Generation of Scholarly Communication Systems

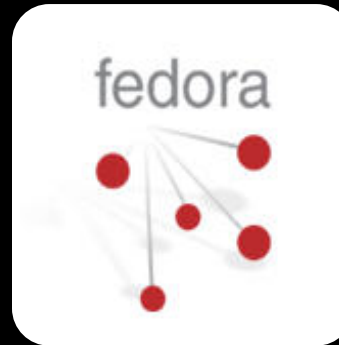
- Web 2.0 applications with durable information underpinnings
- Scholarly and scientific workflows
- Data curation
- Data and publication linking
- Re-use of scholarly and scientific resources
- Interoperability - protocols and standards to enable information access , exchange, linking in distributed 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, records managers, and museum curators who present, access, or preserve digital content.

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 information spaces.

Download Fedora 2.2.1
JAR Installer (72 MB)

[View the Fedora Commons Video](#) First in a Series

Top Ten Reasons to Choose Fedora

Click on any item to learn more.

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. [Flexibility, both small 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](#)
Ithaca, New York — September 10, 2007

[Colorado Alliance Seeks Proposals for User Interface Design and Development](#)
Denver, Colorado — August 16, 2007

[Gordon and Betty Moore](#)

FEDORA COMMONS

HTTP://WWW.FEDORA-COMMONS.ORG



Fedora Commons Non-Profit

Purpose Statement from Articles of Incorporation

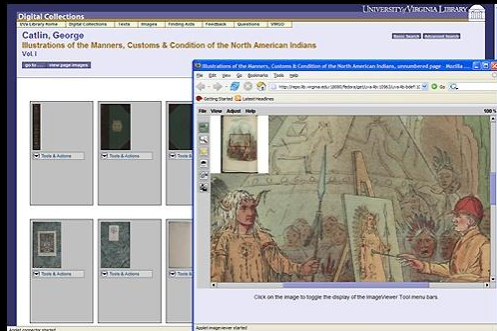
The purpose of Fedora Commons is to provide sustainable technologies to help individuals and organizations create, manage, publish, share, and preserve digital resources upon which we form our intellectual, scientific, and cultural heritage; to provide open-source software that integrates key functionality 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 Technology Perspective



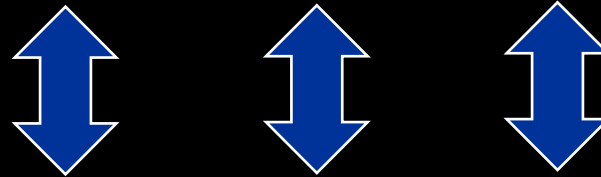
Digital Libraries



Scholarly Applications



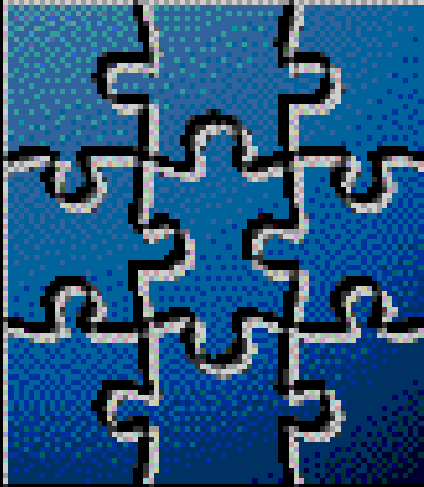
Web 2.0 Applications



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

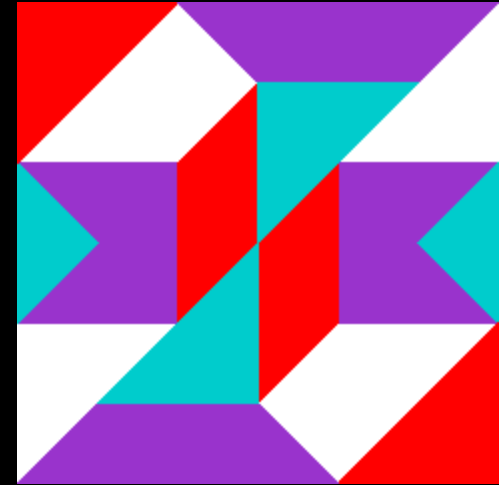
Jigsaw



One pre-defined outcome

vs.

Tangram



Fedora
Repository



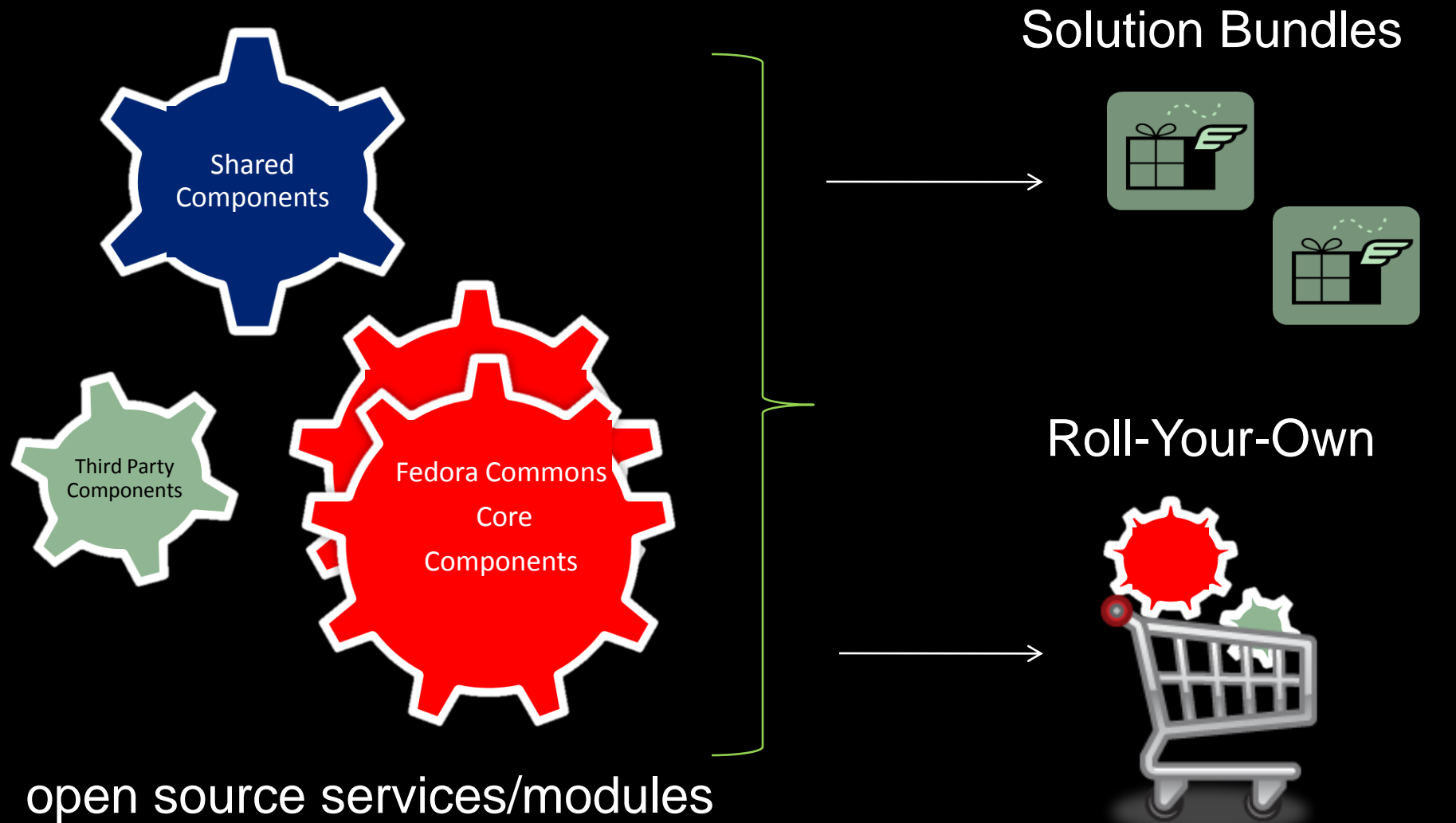
Search

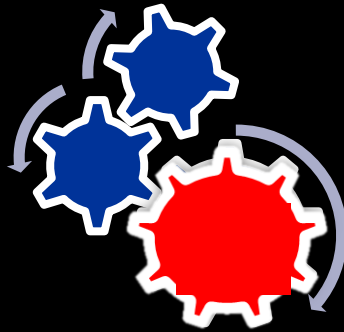
Many possible outcomes

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)





What open source components is Fedora Commons currently developing and/or integrating to support scholarly/scientific process?

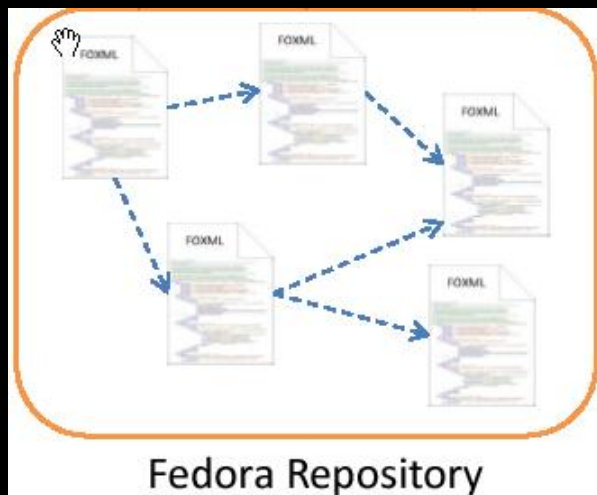
- Repositories
- Authentication/Authorization
- Search Services
- OAI and exposure/re-use services
- Semantic Technologies and RDF
- Workflow engines
- Ingest services
- Authoring tools
- Annotation services
- Preservation services
- Collaborative and social networking applications
- Publishing applications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



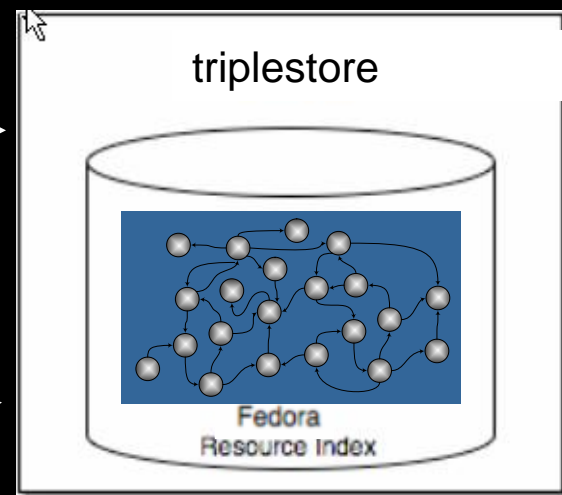
The Fedora Repository Service

- 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

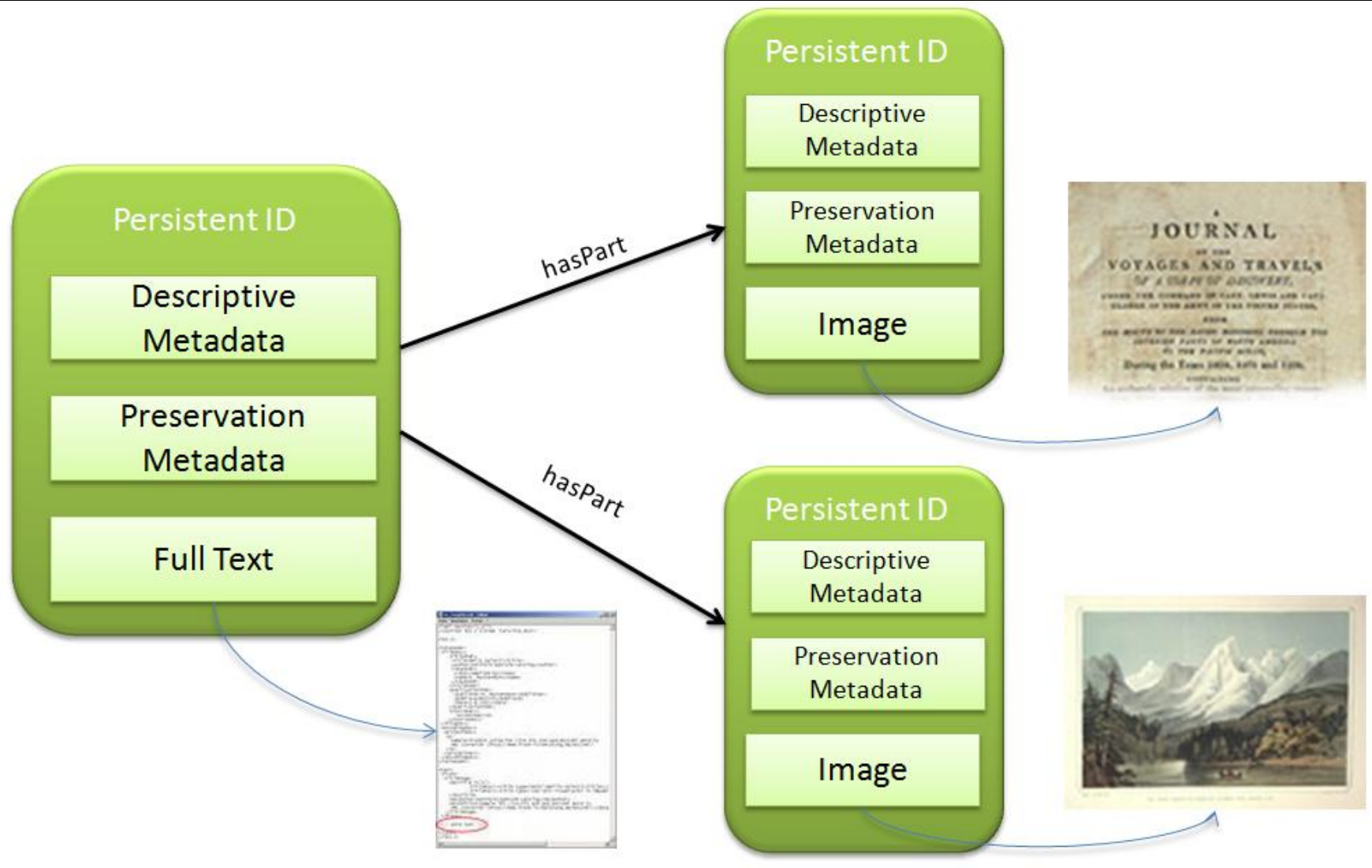


RDF Graph Index

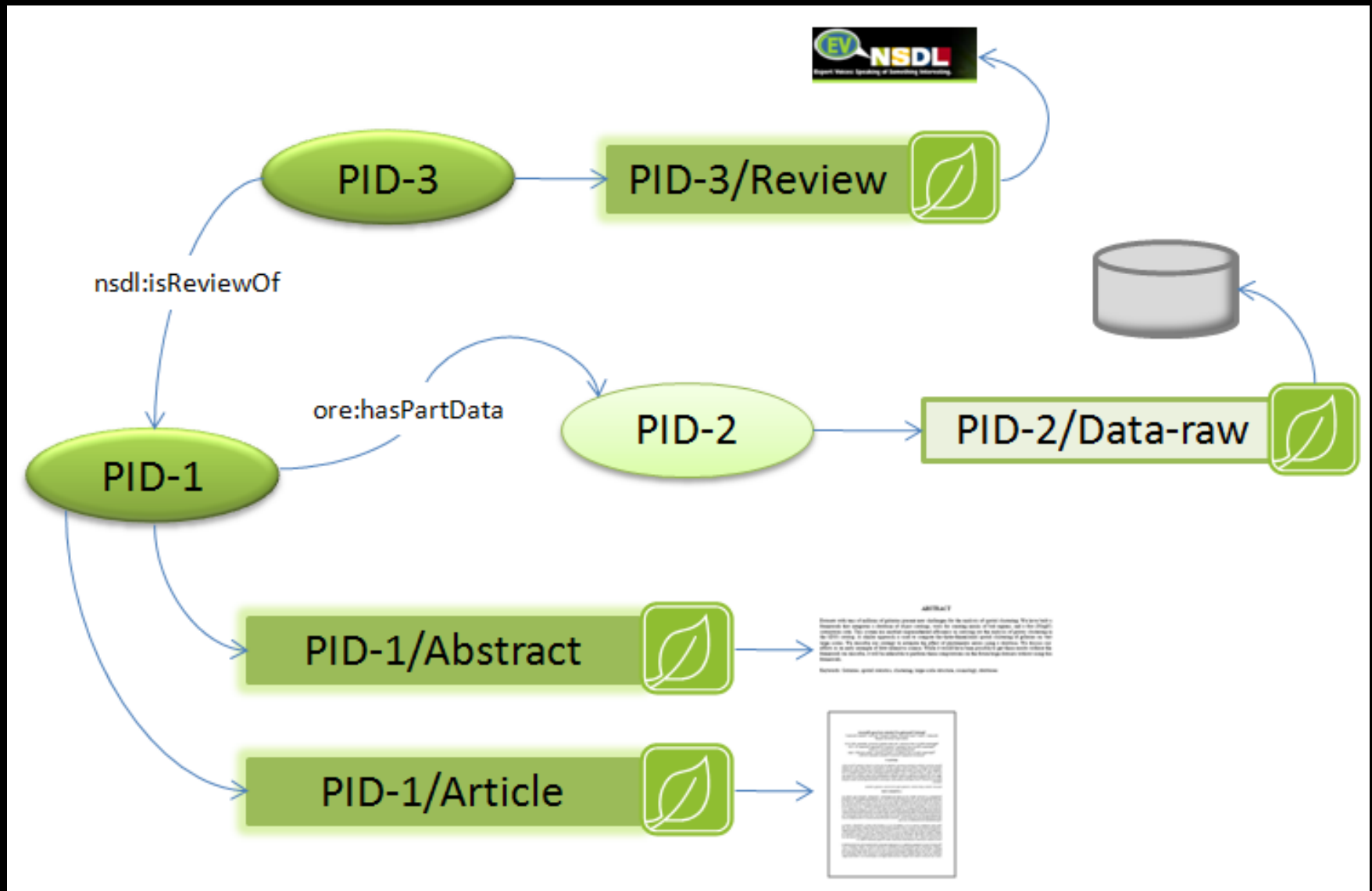


Relationships
Essential Properties
Dublin Core

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

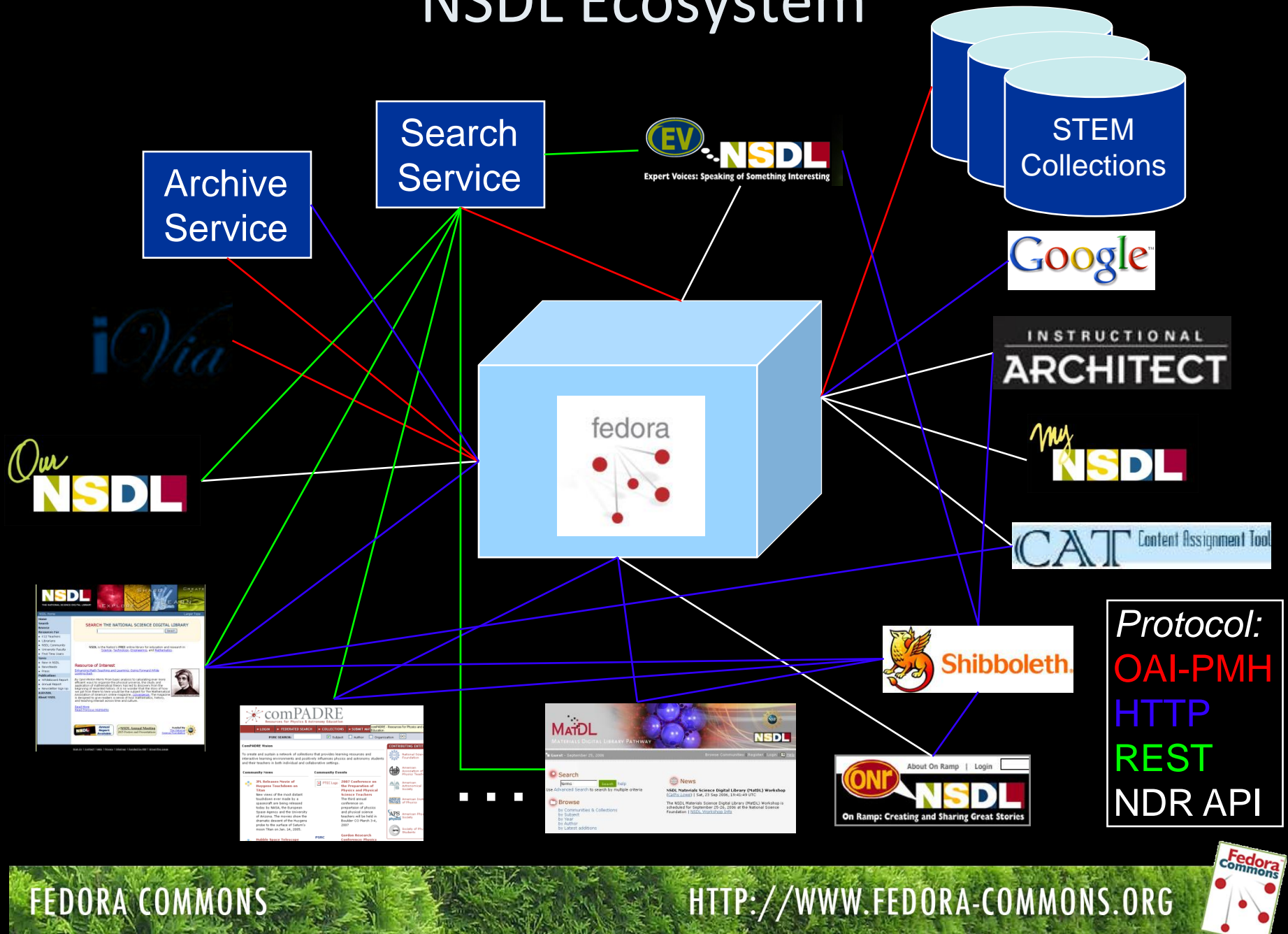
Expert Blogs and Wikis on top of Fedora Repository

The screenshot displays the NSDL 2.0 website interface. At the top, the NSDL logo is accompanied by the tagline "Expert Voices: Speaking of Something Interesting". A search bar and navigation links for "NSDL", "Blogs", and "more options" are visible. Below the header, the page is divided into several sections:

- WhoSays**: A section with a green header, containing sub-sections for "K-12 TEACHERS", "UNIVERSITY FACULTY", and "LIBRARIANS". Each sub-section features an "NSDL Expert Voices Intro" post dated Nov. 2nd, 2005, 9:35 pm, written by "admin". The "LIBRARIANS" section is circled in red, and a red arrow points to it from the left.
- OUR NSDL**: A section with a blue header and the tagline "Create, Annotate, Organize".
- Navigation**: A list of links including "Main Page", "Community portal", "Current events", "Recent changes", "Random page", and "Help".
- Search**: A search bar with "Go" and "Search" buttons.
- Toolbox**: A list of links including "What links here", "Related changes", "Special pages", "Printable version", and "Permanent link".
- AboutOurNSDL**: A section with a white header and a "Contents [hide]" link. It lists five items: "1 MediaWiki Version", "2 NSDL Data Repository Extension", "2.1 MediaWiki Repository Manager", "2.2 NSDL MediaWiki Resource Manager", "3 NSDL Search Popup", "4 Third Party Plugins being used", and "5 OurNSDL skin".

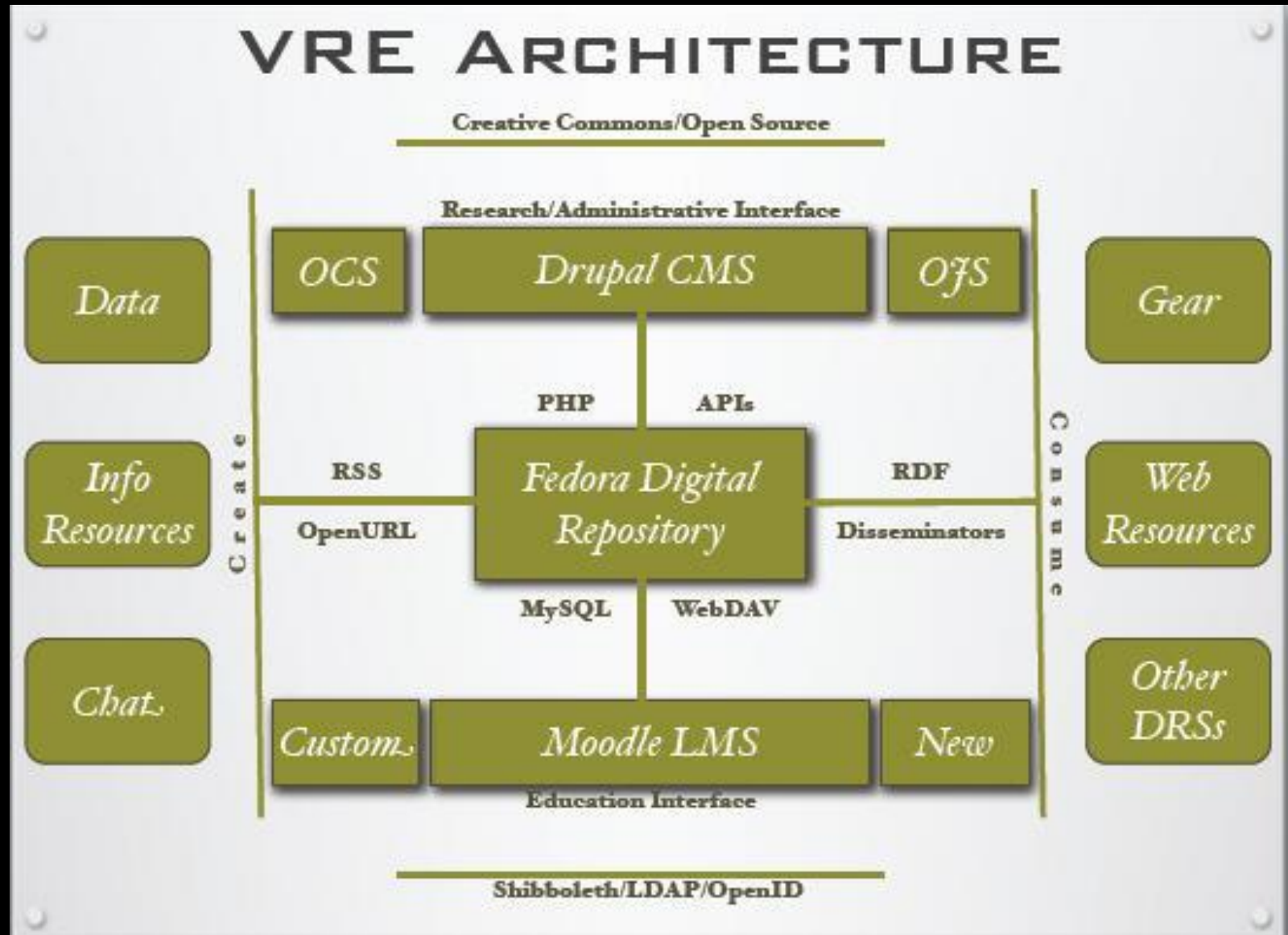
At the bottom left, there is a banner for "FEDORA COMMONS" with a green background and white text.

NSDL Ecosystem



Islandora (U of PEI)

Small universities are getting skin in the game!



PLoS ONE and Topaz Open Access Publishing and Collaboration

PLoS ONE : Publishing science, accelerating research - Mozilla Firefox

File Edit View Go Bookmarks Tools Help

http://www.plosone.org/home.action

Technorati Search f... Fedora System Docu...

PLoS PATHOGENS Advancing Our Understanding of Microbial Pathogenesis

PLoS one BETA Publishing science, accelerating research

RSS Feedback

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Recently Published

- Acceptance of Anti-Retroviral Therapy among Patients Infected with HIV and Tuberculosis in Rural Malawi Is Low and Associated with Cost of Transport
- Factors Affecting Frequency Discrimination of Vibrotactile Stimuli: Implications for Cortical Encoding
- Modularity and Intrinsic Evolvability of Hsp90-Buffered Change
- Requirement of TORC1 for Late-Phase Long-Term Potentiation in the Hippocampus
- Genetic Influences on Exercise Participation in 37,051 Twin Pairs from Seven Countries

Most Annotated

What is PLoS ONE?

A new way of communicating peer-reviewed science and medicine.

- Annotations – add and share your comments
- Discussions – join the conversation
- More functionality coming soon

Your feedback will help us shape PLoS ONE.

Gene Specific Product Directory

Explore by Subject

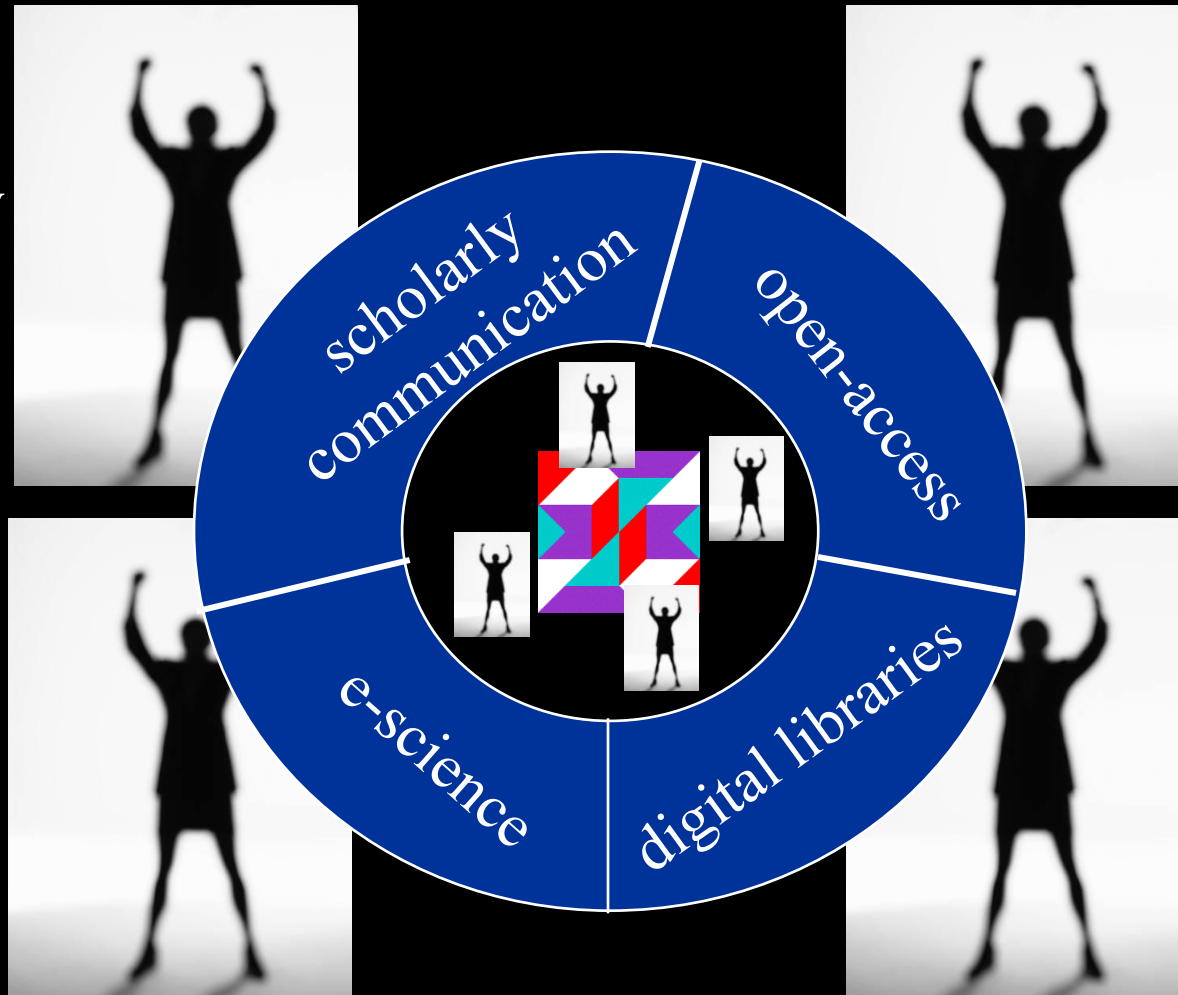
Fedora Commons Community Perspective



How Can Fedora Commons Help?

Focus on Outreach and Collaboration

Nurture
Community
Leadership



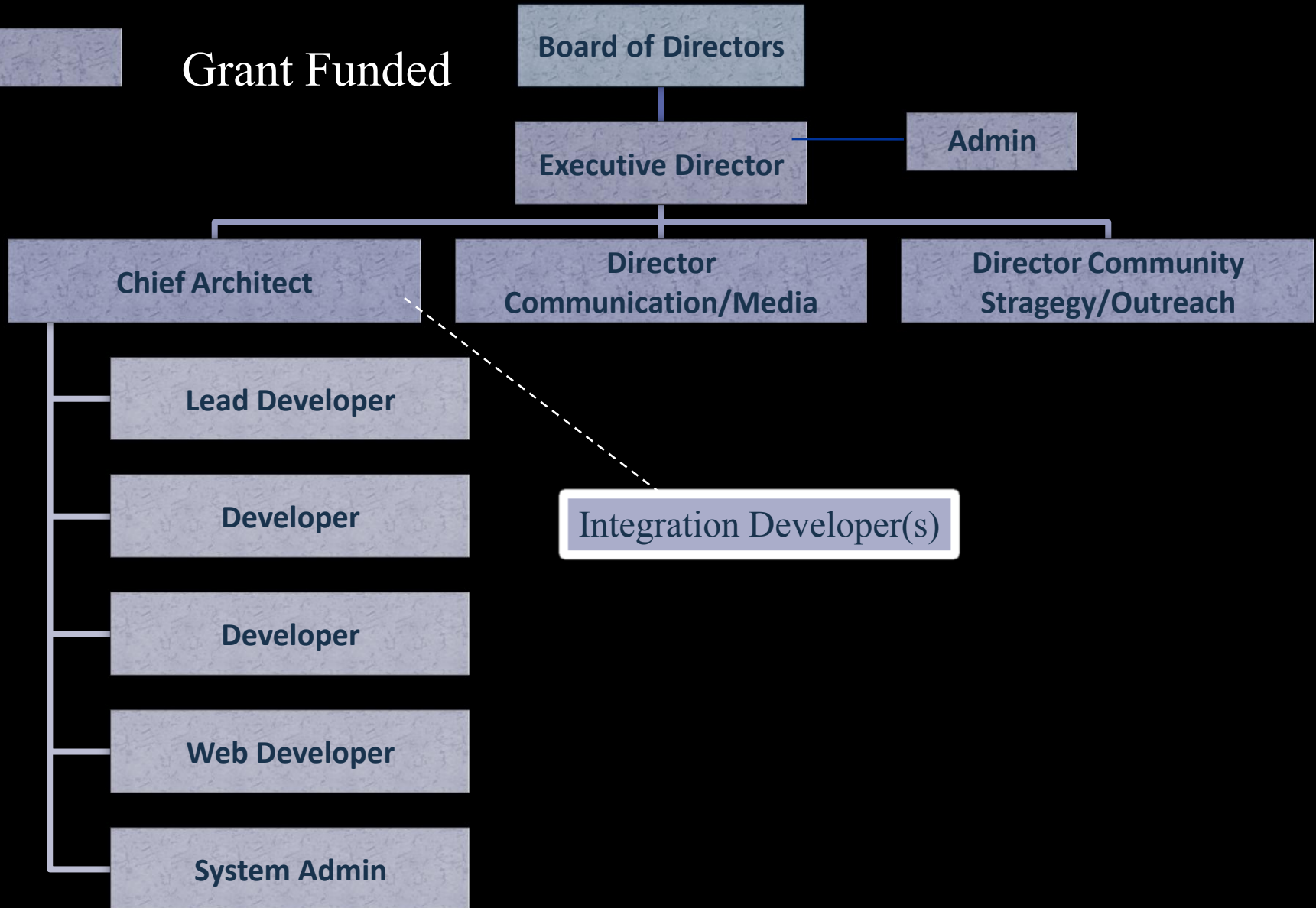
A Few Strategic Partnerships to Watch

- 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)

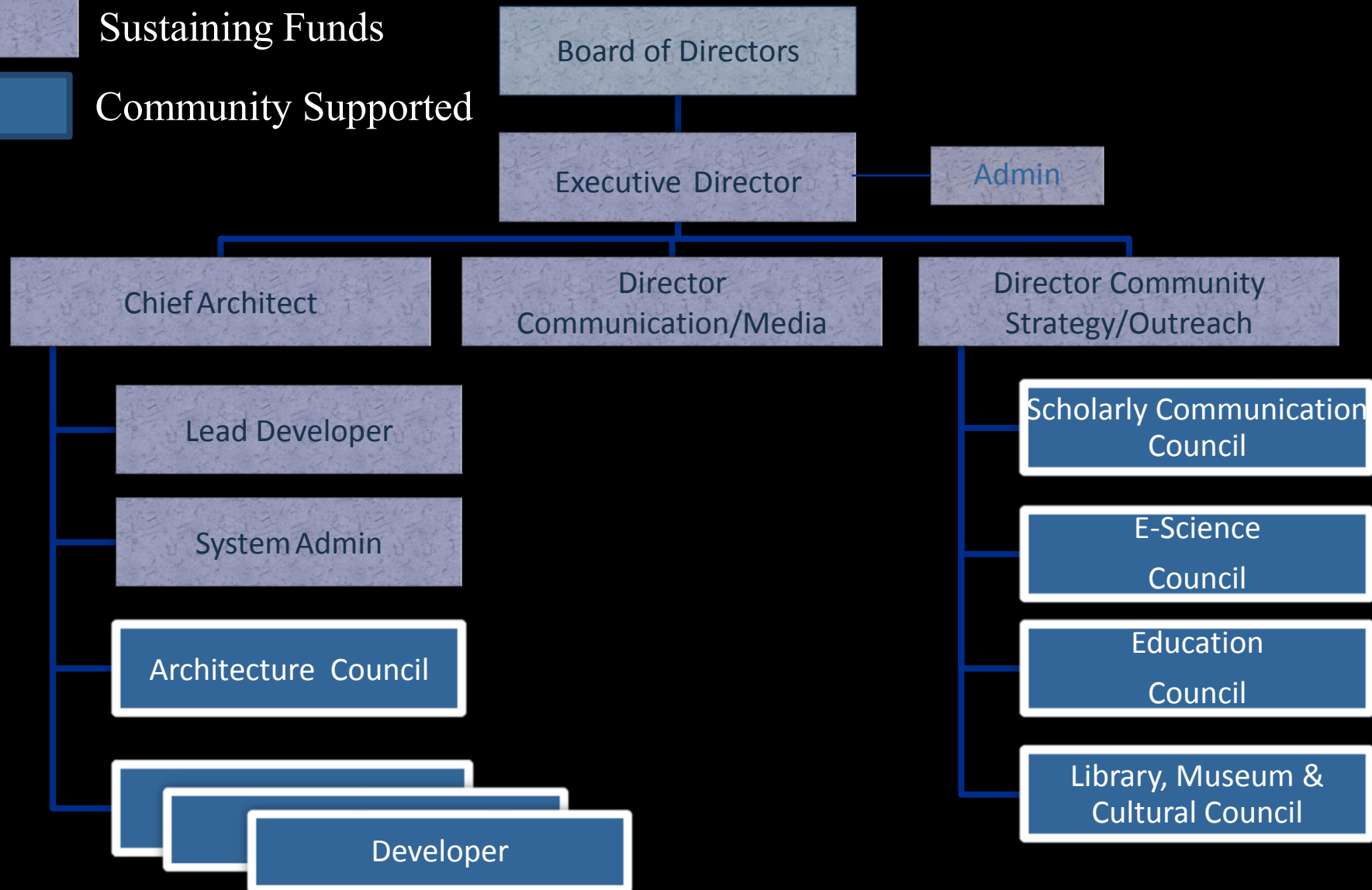
Grant Funded



Baseline Steady State (2009-2011)

 Sustaining Funds

 Community Supported



Fedora Commons

<http://www.fedora-commons.org>

