

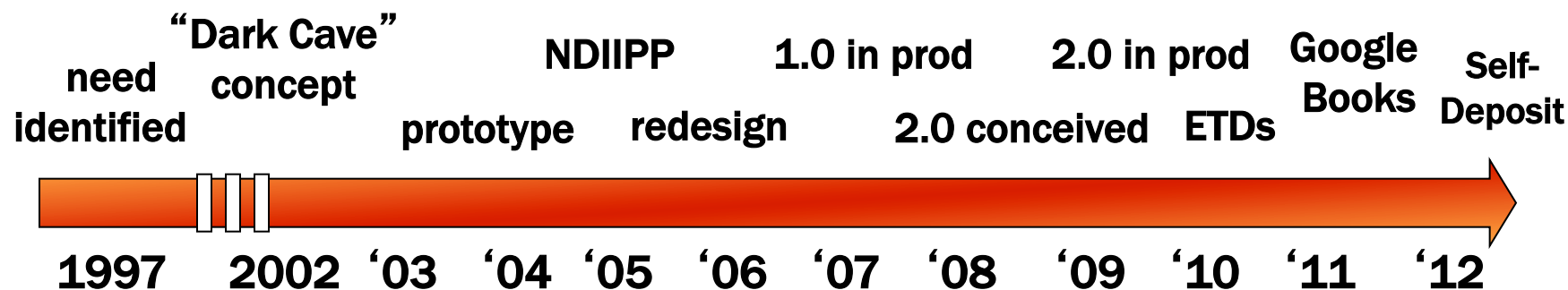


STANFORD UNIVERSITY LIBRARIES

**The Stanford
Digital Repository
(SDR), Fedora & Hydra**

SDR is...

- a core Library service
- Stanford’s digital preservation system
- an increasingly robust digital asset management & access system
- in production since Dec 2006



SDR Preservation Core

The Stanford Digital Repository (SDR) provides services to make scholarly resources

available over the long term

by helping ensure their

integrity,

authenticity, and

reusability.

To fulfill its mission, the SDR must be

secure, sustainable and trustworthy.

Management

- Digitize
- Deposit
- Describe
- License
- Embargo
- Version

DOR Services

Argo

Digital Object Registry (DOR)

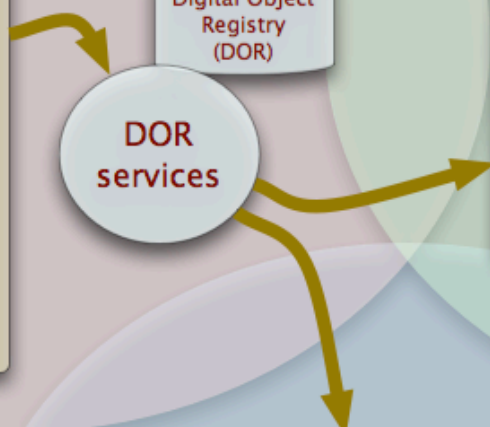
DOR services

Access (Discovery & Delivery)

- Searchworks
- PURL services | Viewing apps
- Delivery services
- Files | Images | Media | Geo | Data
- Digital Stacks

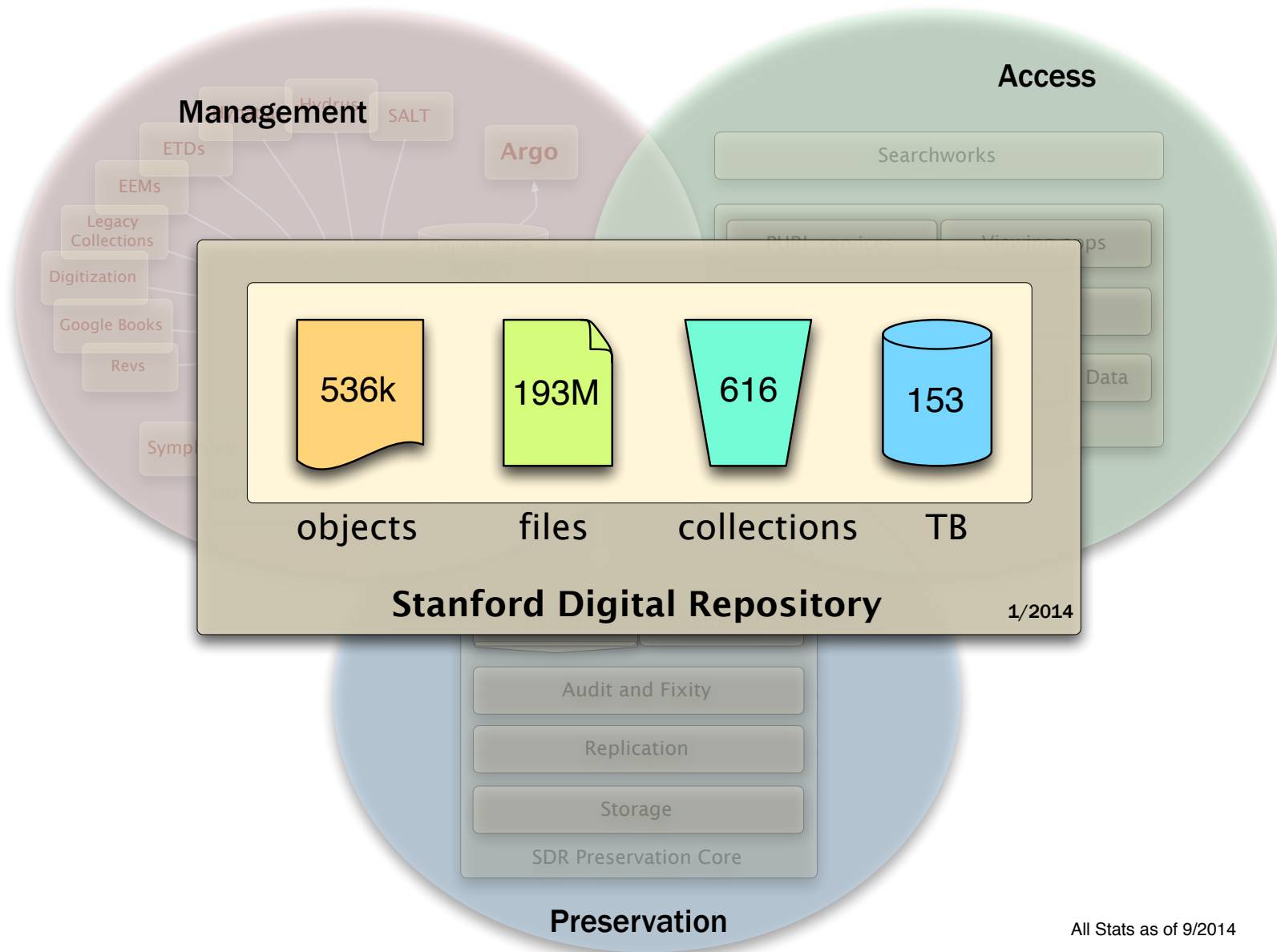
Preservation

- Ingest | Retrieval
- Audit and Fixity
- Replication
- Storage
- SDR Preservation Core



The Stanford Digital Repository

Contents as of Sept 2014



E.g., Google-Scanned Books

Download, process and preserve scanned volumes in SDR for...

- local indexing,
- text mining,
- selective delivery, and
- long-term access.

The screenshot shows a Google search for "history of stanford" on the Google Books platform. The search results page displays the front cover of the book "The Stanford Album: A Photographic History, 1885-1945" by Margo Baumgarten Davis, Margo Davis, and Roxanne Nilan. The cover features a black and white photograph of a long, arched hallway with people walking. The title "THE STANFORD ALBUM" is prominently displayed at the top, with the subtitle "A Photographic History, 1885-1945" below it. The page includes a "GET PRINT BOOK" button, a note that no eBook is available, and links to various retailers like Amazon.com and Barnes&Noble.com. There are also links to find the book in a library and to write a review. At the bottom, there is a disclaimer: "This is a preview. The total pages displayed will be limited."

E.g., Monterey Jazz Festival

- Festival founded in 1958: longest running jazz festival in the world.
- Rich collection of recordings from inception, spanning over 50 years, in varying states of condition & decay.
- Archives held at Stanford's Archive of Recorded Sound
- ~800 audio recordings, 1.6 TB audio files in SDR
- ~250 video recordings, 22 TB video files in SDR

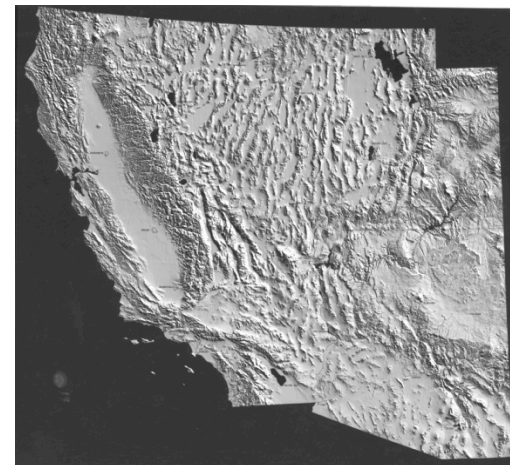
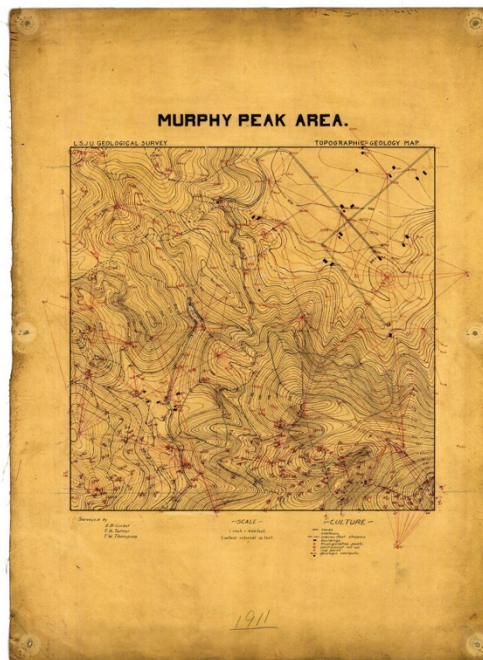


Access:

- complete database of digital recordings online at collections.stanford.edu/mjf
- Access via in-site visit to ARS
- New commercial releases on MJF Records

E.g., National Geospatial Digital Archive

- Some 27,000 “at risk” geospatial objects
- TIFFs, GeoTIFFs, Shapefiles, Digital Elevation Models, Digital Orthophoto Quadrangle files



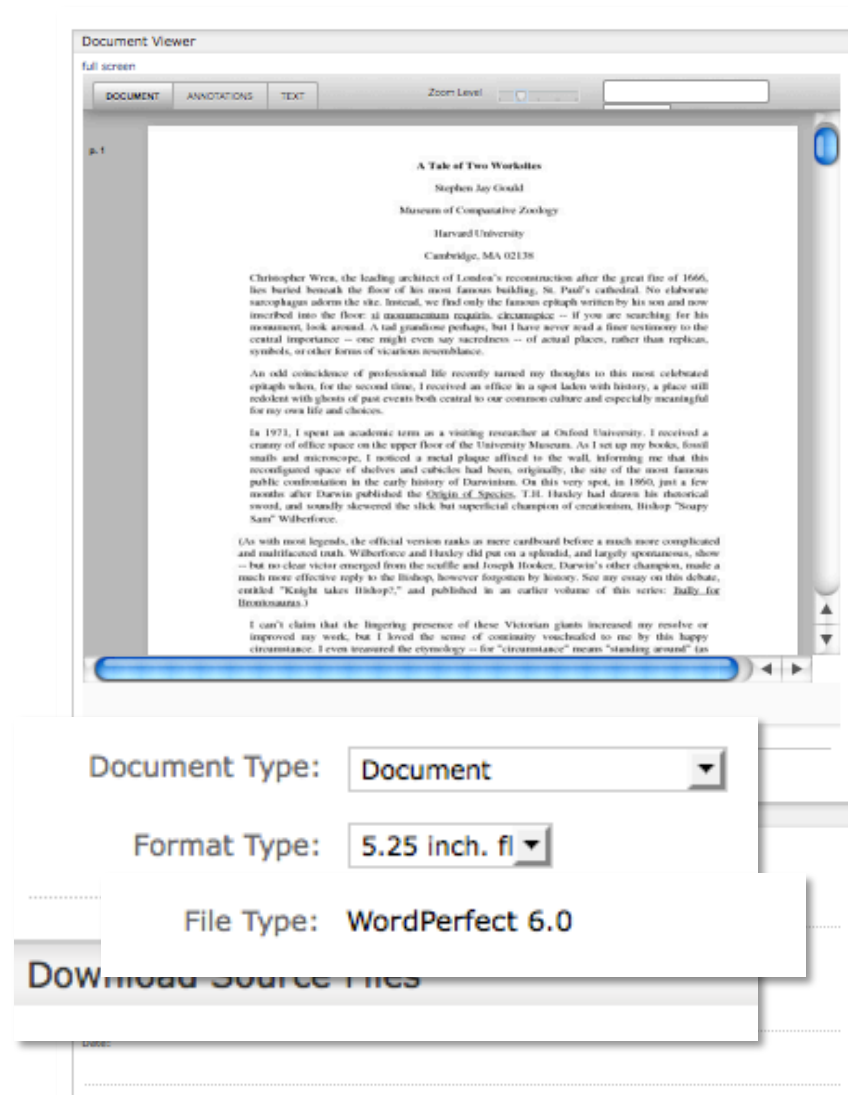
E.g., Preserving Virtual Worlds



**Stanford University Libraries
Second Life Open House,
31 July 2009**

E.g., Forensically Extracted Born Digital Files

- Digital Forensics lab extracting original computer files from legacy media
- Actively building pipeline from extraction to preservation store
- Support for both immediate and deferred archival processing & description



Technology

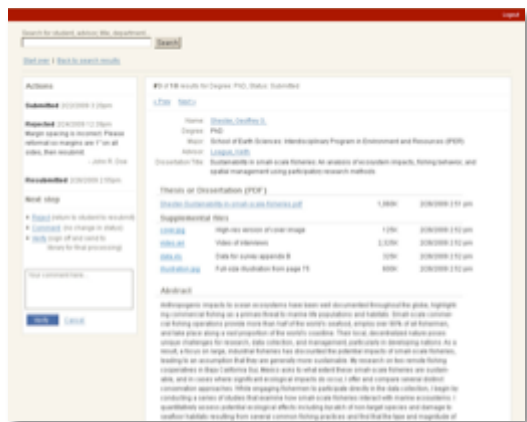


IBM Enterprise Tape Library



NetApp 6080 Disk

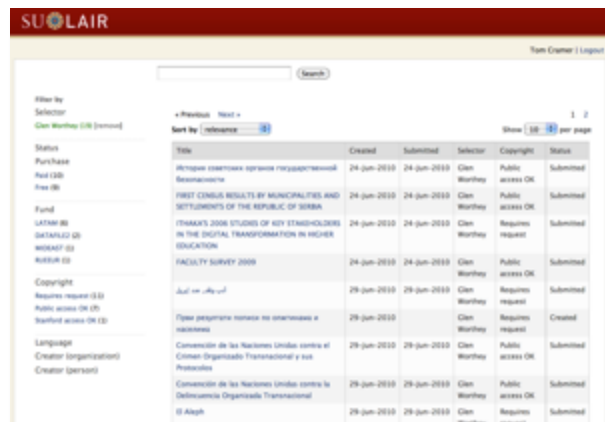
Hydra-based Applications at Stanford



ETD's – Electronic Theses & Dissertations



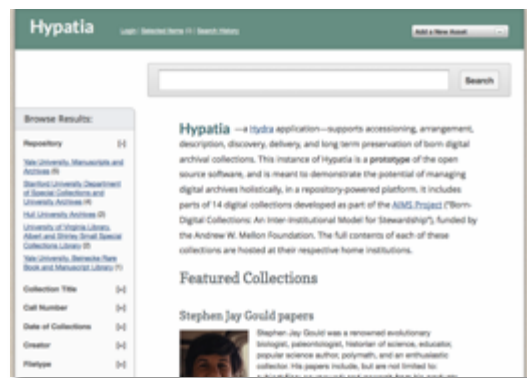
SALT – Self-Archiving Legacy Toolkit



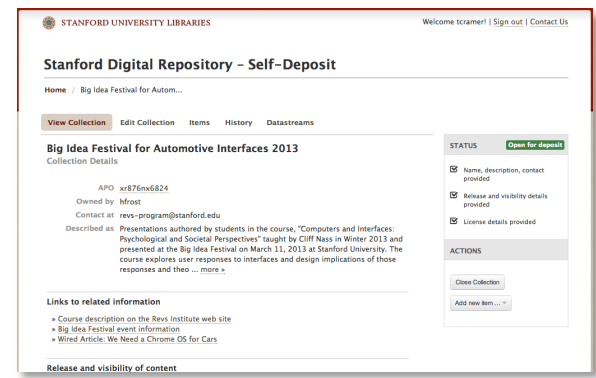
EEMs – Everyday Electronic Materials



Argo – Repository Reporting and Management



Hypatia – Archives & Special Collections



SDR – Web UI (aka Hydrus)

Access Environments

Stanford Digital Repository

A microfluidic biochip based on magnetoresistive detection of nanoparticles

Creator: Felderman, Carlos Jebediah

Description: The detection of quasi-magnetic nano-particles (QMNP) is a promising alternative to optical detection via fluorescence in biomolecular assays because microscopic quantities of QMNP can be detected with simple and inexpensive magnetoresistive sensors such as spin valves. The goal of this dissertation was to develop and demonstrate a biochip based on this detection principle. The particular novelty of this work is the extensive demonstration of magnetic biochips in real assays, the establishment of a compatible microfluidic fabrication process, and the development of a simple mathematical model which explains the experimentally observed signal scaling trends.

Submitted to the Department of Materials Science and Engineering.
Thesis (Ph.D.)—Stanford University, 2010.

[View in SearchWorks](#)

File (Download)	Description
Felderman 2009 Stanford PhD Dissertation-augmented.pdf	Body of dissertation
Felderman 2008 PNAS Publication.PDF (271.7 KB)	This file is an open-access publication of some of the magnetic biochip assay results.
Felderman 2008 PNAS Publication Supplement.PDF (759.4 KB)	This file is an open-access publication supplement which shows photos, e.g., of the magnetic biochip readout hardware.
Felderman 2006 Conference Poster.pdf (5.2 MB)	This file is a conference poster detailing the magnetic biochip research progress in 2006.
Felderman 2009 Wolfram Mathematica (K) Code Example.txt (1.7 KB)	This file is a copy-and-pastable code for Wolfram Mathematica, which calculates the nanoparticle-sensor interaction according to the mathematical model presented in chapter 6.

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International Image Interoperability Framework

<http://iiif.io>

PURL (Persistent URLs) Landing Pages

STANFORD UNIVERSITY LIBRARIES

SearchWorks TEST

Your search: the search term entered: **Image Collections Andor Manuscripts**

1 Results 1-1 of 100 | Next >

Sort by relevance

250 per page

Collection	Thumbnail	Thumbnail	Thumbnail	Thumbnail	Thumbnail
Part 1: Manuscripts	414 images	86 images	160 images	58 images	122 images
Part 2: Manuscripts	132 images	152 images	130 images	122 images	122 images
Part 3: Manuscripts	28 images	144 images	122 images	100 images	122 images
Part 4: Manuscripts	144 images	122 images	122 images	122 images	122 images

Image Galleries

Hypatia

Search

Browse Results:

Repository: **Hypatia**

Hypatia — a Hypatia ePlatform — supports accessioning, arrangement, description, discovery, delivery, and long term preservation of born digital archival collections. This instance of Hypatia is a prototype of the open source software, and is meant to demonstrate the potential of managing digital archives holistically, in a repository-powered platform. It includes parts of 14 digital collections developed as part of the AHDS Project ("Born-Digital Collections: An Inter-institutional Model for Stewardship"), funded by the Andrew W. Mellon Foundation. The full contents of each of these collections are hosted at their respective home institutions.

Featured Collections

Stephen Jay Gould papers

Stephen Jay Gould was a renowned evolutionary biologist, paleontologist, historian of science, educationist, popular science author, polymath, and an enthusiastic collector. His papers include, but are not limited to:

Embeddable Web Widgets

PURLs (Persistent URLs)

Citation information (from Dublin Core)
Navigation

Stanford Digital Repository

A microfluidic biochip based on magnetoresistive detection of nanoparticles

Creator: Felderman, Carlos Jebediah

Description: The detection of quasi-magnetic nano-particles (QMNP) is a promising alternative to optical detection via fluorescence in biomolecular assays because microscopic quantities of QMNPs can be detected with simple and inexpensive magnetoresistive sensors such as spin valves. The goal of this dissertation was to develop and demonstrate a biochip based on this detection principle. The particular novelty of this work is the extensive demonstration of magnetic biochips in real assays, the establishment of a compatible microfluidic fabrication process, and the development of a simple mathematical model which explains the experimentally observed signal scaling trends
 Carlos Jebediah Felderman.
 Submitted to the Department of Materials Science and Engineering.
 Thesis (Ph.D.)--Stanford University, 2010.

[» View in SearchWorks](#)

File (Download)	Description
Felderman 2009 Stanford PhD Dissertation-augmented.pdf	Body of dissertation
Felderman 2008 PNAS Publication.PDF (271.7 KB)	This file is an open-access publication of some of the magnetic biochip assay results.
Felderman 2008 PNAS Publication Supplement.PDF (759.4 KB)	This file is an open-access publication supplement which shows photos, e.g., of the magnetic biochip readout hardware.
Felderman 2006 Conference Poster.pdf (5.2 MB)	This file is a conference poster detailing the magnetic biochip research progress in 2006.
Felderman 2009 Wolfram Mathematica (R) Code Example.txt (1.7 KB)	This file is a copy-and-pastable code for Wolfram Mathematica, which calculates the nanoparticle-sensor interaction according to the mathematical model presented in chapter 6.

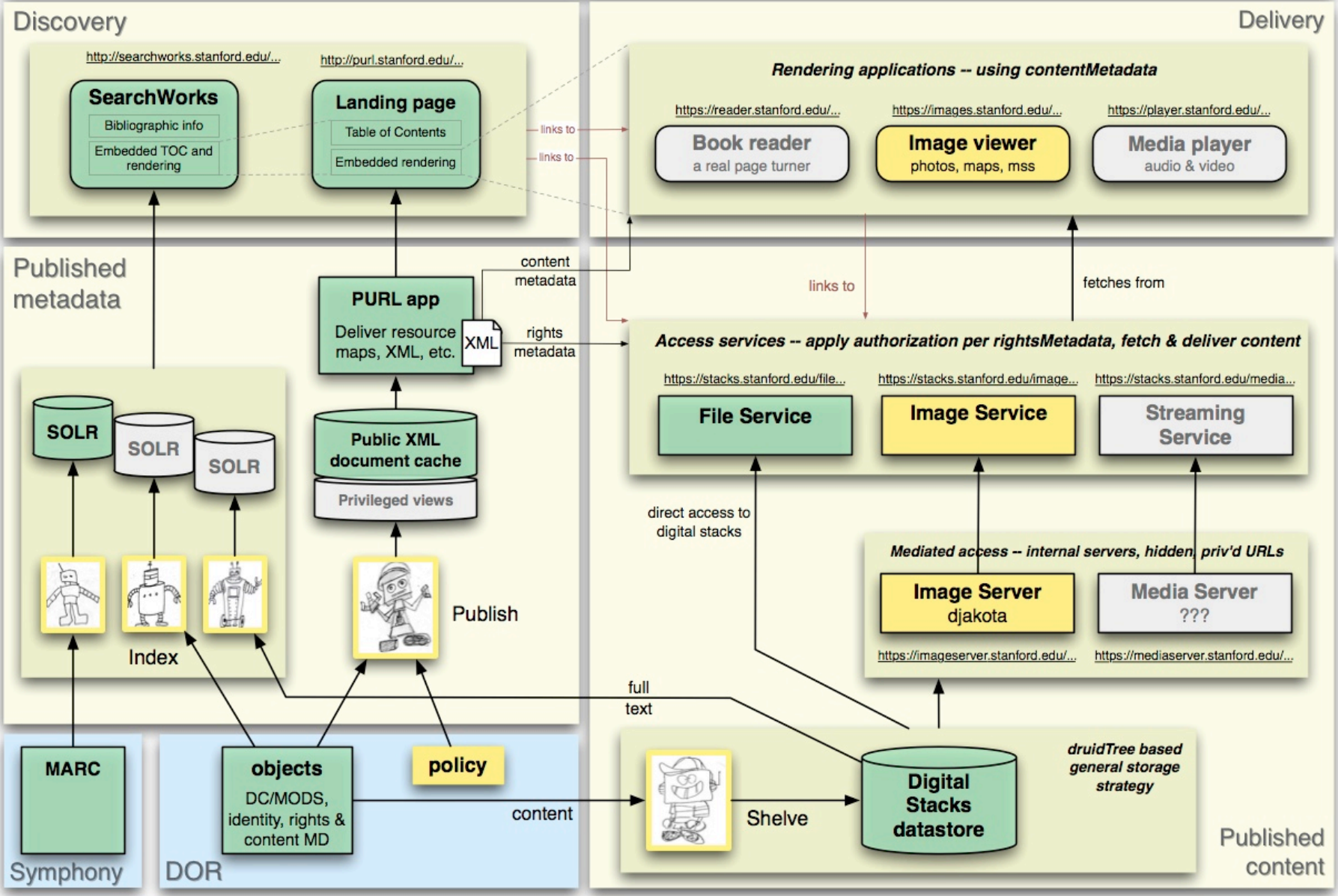
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Content (varies by content type)
Rights and Usage statements

Stanford Digital Access Services



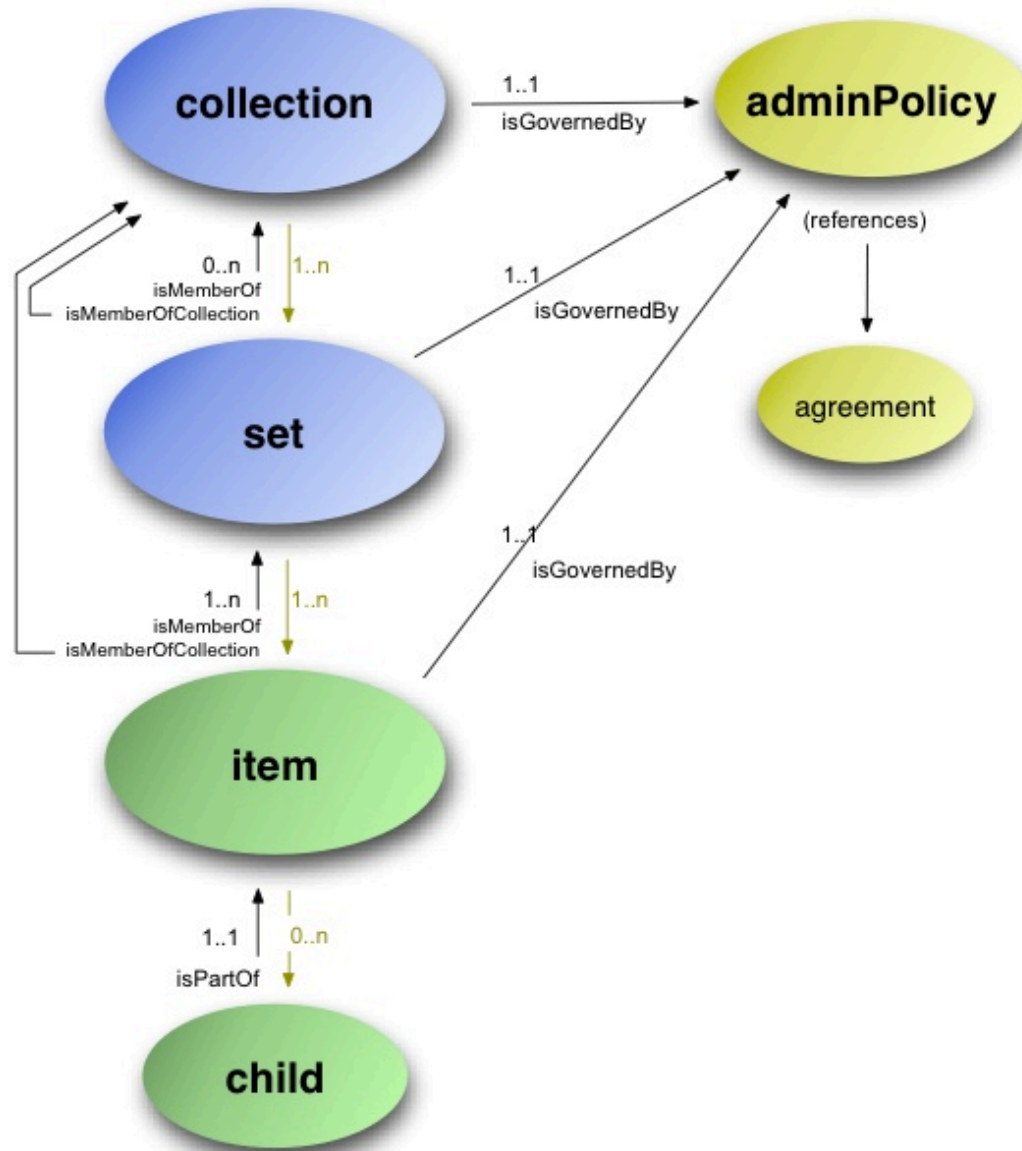
Standard Data Streams

DOR datastream	Source	Description	Fedora Control Group
identityMetadata	Stanford	Core identifying information: title, creator, source and other identifiers, tags, etc.	Internal XML
descMetadata	Hydra	Currently MODS xml	Managed Content
technicalMetadata	Hydra	JHOVE generated metadata describing the content files that make up the digital object.	Managed Content
sourceMetadata	Hydra	Information identifying the source of the scanned object	Managed Content
rightsMetadata	Hydra	Holds human and machine readable expressions of Access and Use permissions/restrictions.	Managed Content
provenanceMetadata	Hydra	Contains a block of provenance information for each agent that handled the record.	Managed Content
contentMetadata	Hydra	Information about object structure, file sequence and type, and checksums.	Managed Content
RELS-EXT	Fedora	RDF triples describing selected object attributes and inter-object relationships.	Internal XML

Standard Data Streams - continued

DOR datastream	Source	Description	Fedora Control Group
versionMetadata	Stanford	A summary history of versions that have been accessioned/archived	Internal XML
workflows	Stanford	The workflows datastream is a view into all the workflows defined for an object, current and past. It is a concatenation of individual workflow XML in a <workflows> document container.	Redirect Referenced Content
DC	Fedora	Dublin Core XML, reflects author, title and identifier information here to take advantage of Fedora indexing for their administrative tools only.	Internal XML
embargoMetadata	Stanford	Operational metadata for managing embargo settings, extensions and release	Internal XML
events	Stanford	A lightweight history of events relating to the management of the object, e.g., embargo extensions and release.	Internal XML
<i>varies</i>	Stanford	Applications may have their own datastream(s) to manage local settings and other pertinent information.	Internal XML

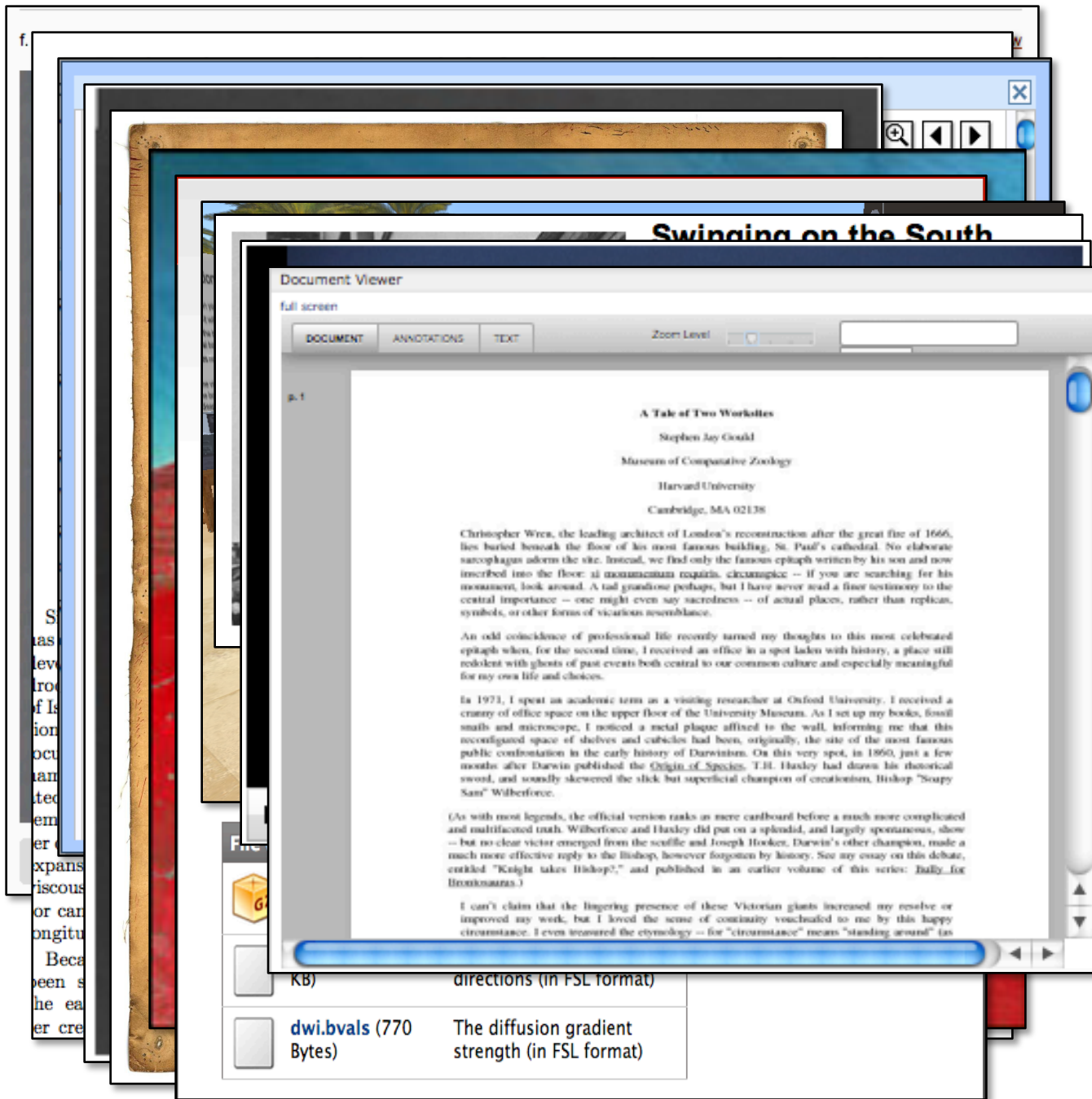
Basic Object Model





What Is Hydra?

- A robust repository fronted by feature-rich, tailored applications and workflows (“heads”)
 - ⇒ *One body, many heads*
- Collaboratively built “solution bundles” that can be adapted and modified to suit local needs.
- A community of developers and adopters extending and enhancing the core
 - ⇒ *If you want to go fast, go alone. If you want to go far, go together.*



Books
Articles
Theses
Images
Maps
Data (Raster)
Data (Comp.)
Data (Observ.)
Audio
Video
Documents

Point Solution Approach ...Welcome to Siloville

ETDs
(Theses)

Books,
Articles

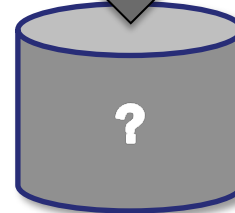
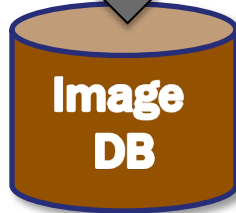
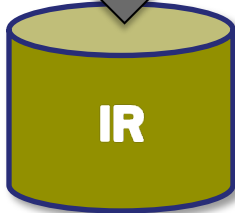
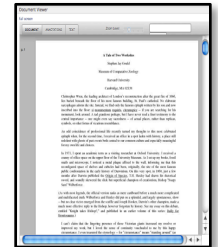
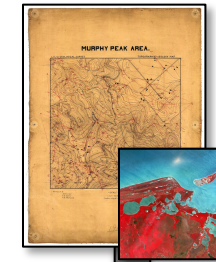
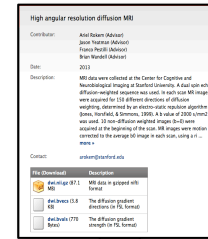
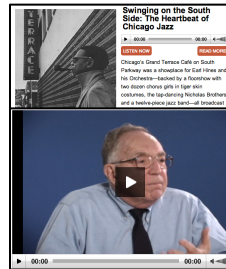
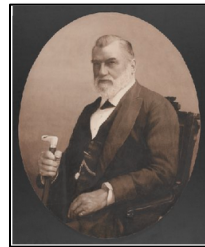
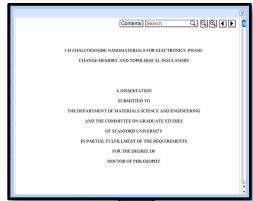
Images

Audio-
Visual

Research
Data

Maps
& GIS

Docu-
ments



Management

Access

Preservation(?)

Effective?

Sustainable?

Repository-Powered Approach

ETDs
(Theses)

Books,
Articles

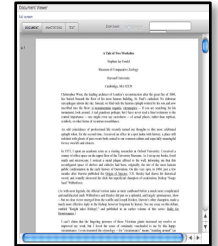
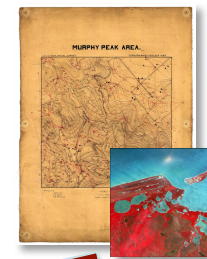
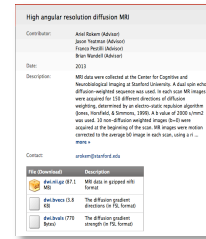
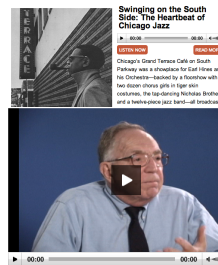
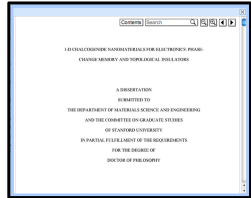
Images

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Data

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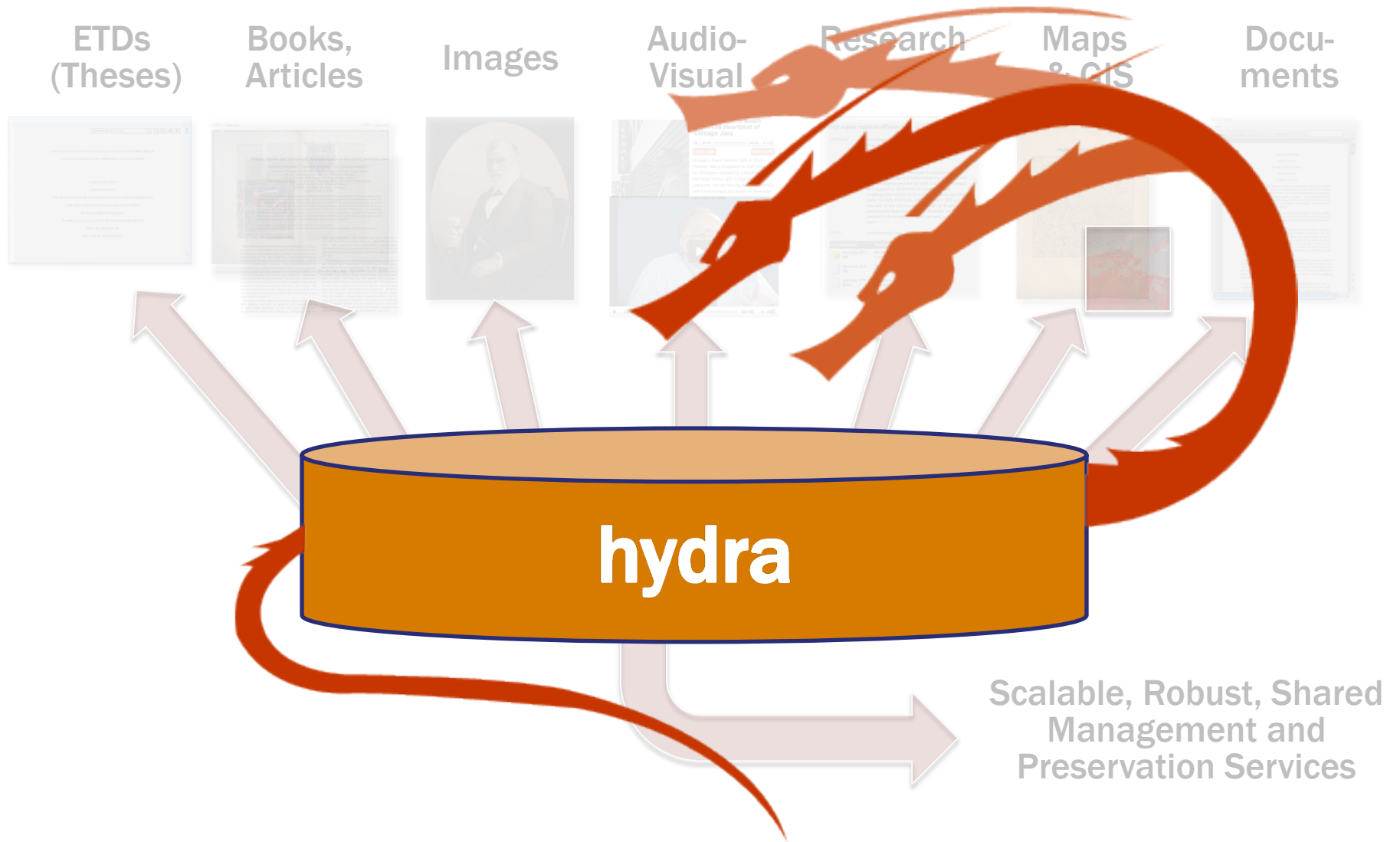
Docu-
ments



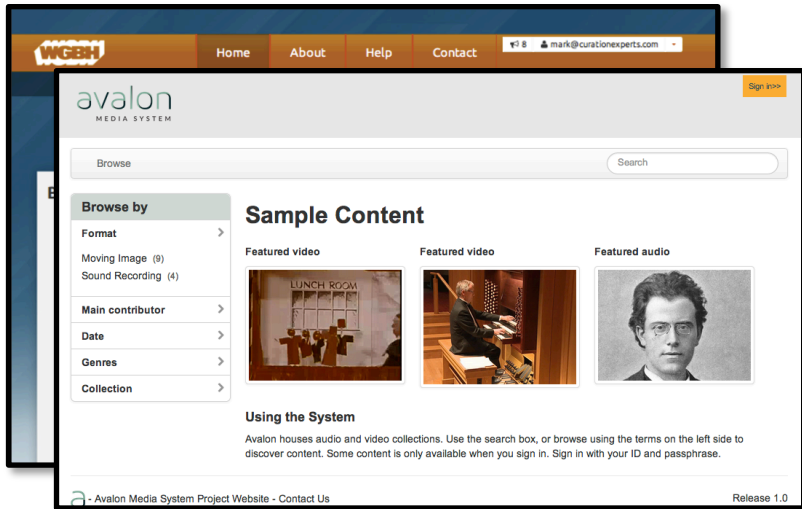
Digital Repository

Scalable, Robust, Shared
Management and
Preservation Services

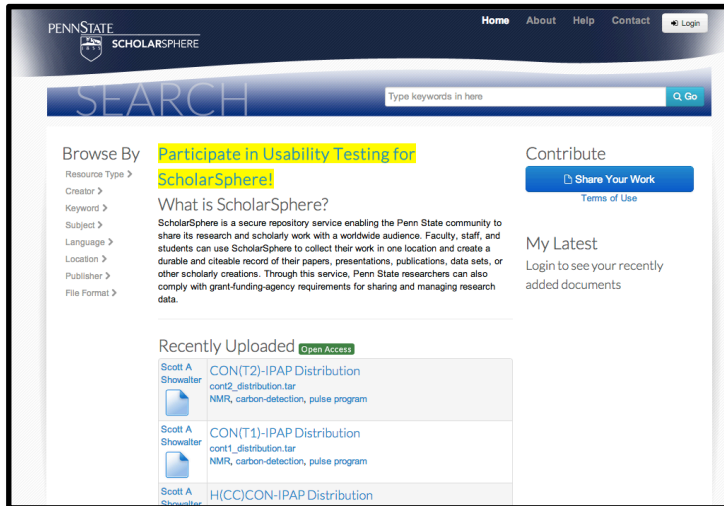
One Body, Many Heads...



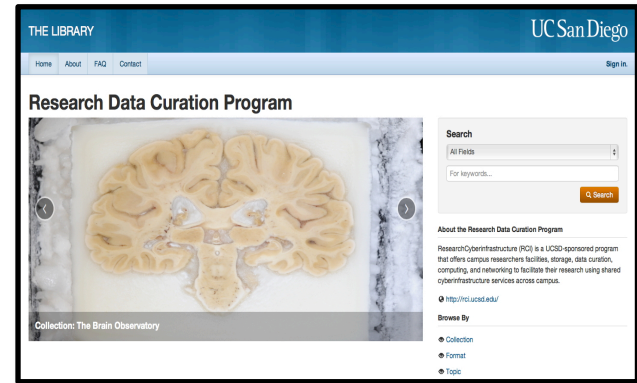
Hydra Heads of Note



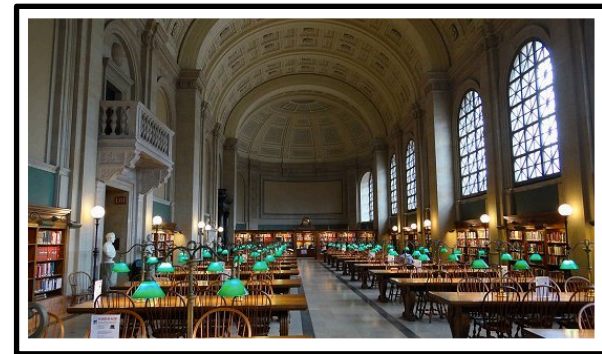
Avalon & HydraDAM for Media



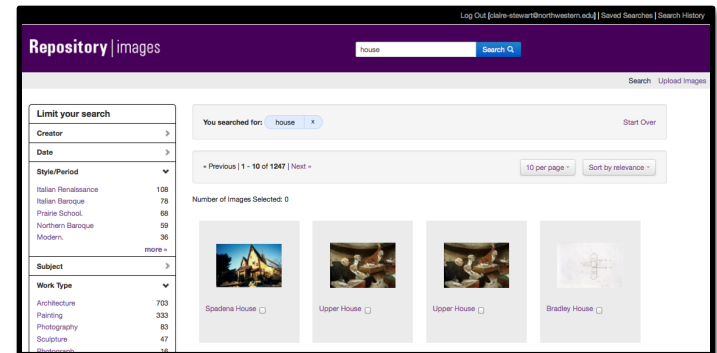
Sufia



UCSD DAMS

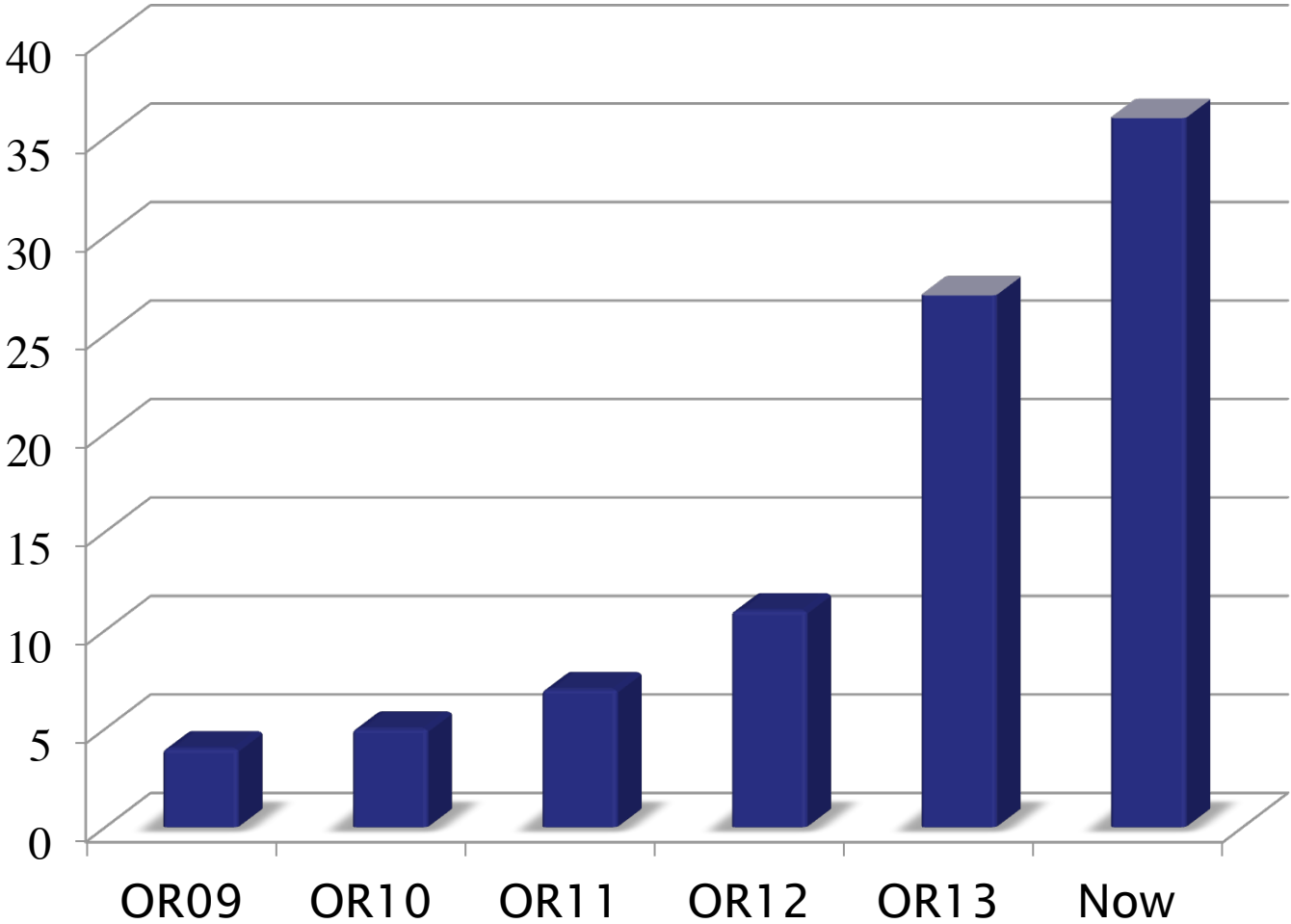


BPL Digital Commonwealth



Northwestern Digital Image Lib.

Hydra Partners *and Known Users*



OR = Open Repositories Conference

Hydra Technical Framework

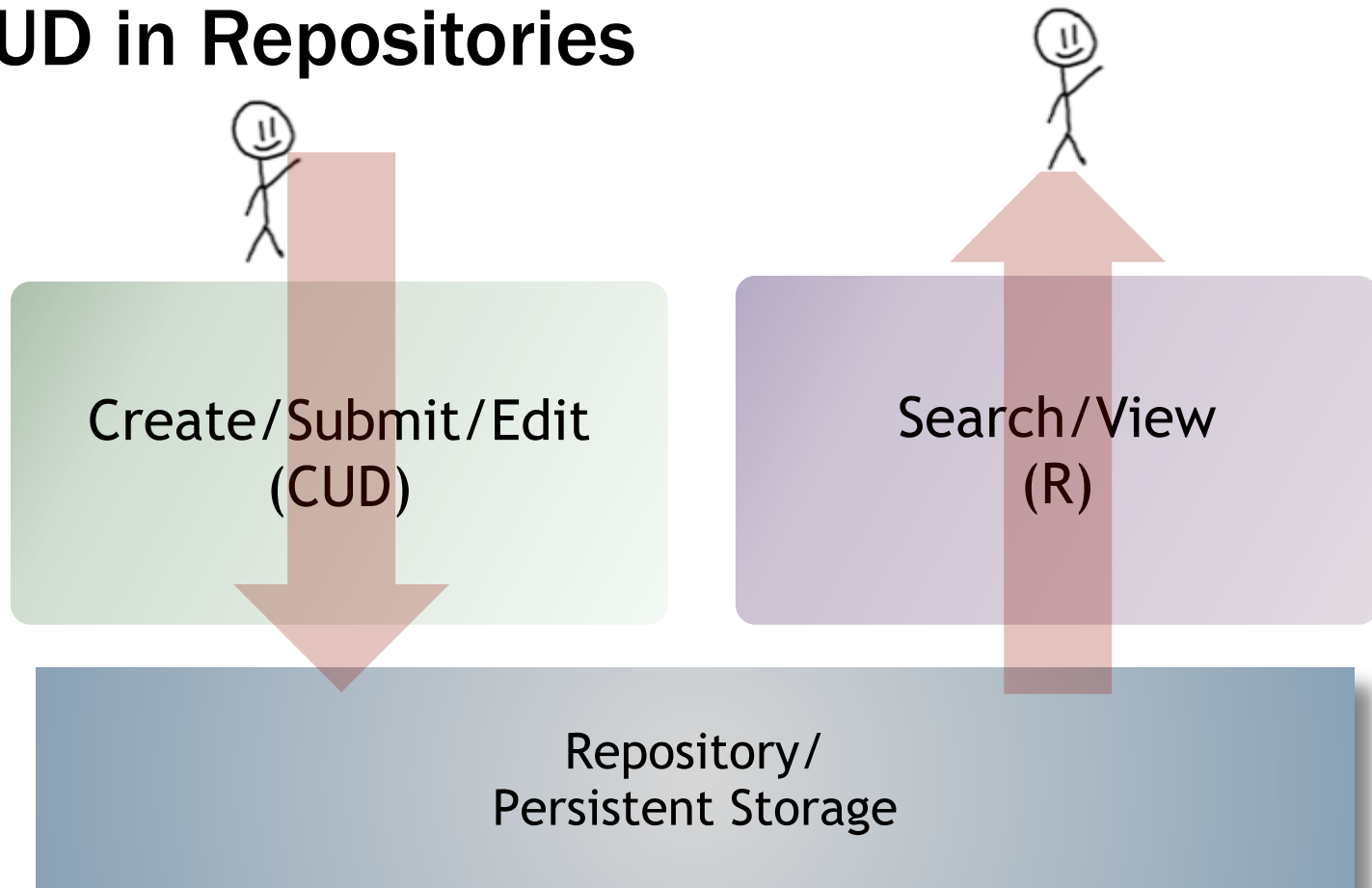
CRUD in Repositories

Create/Submit/Edit
(CUD)

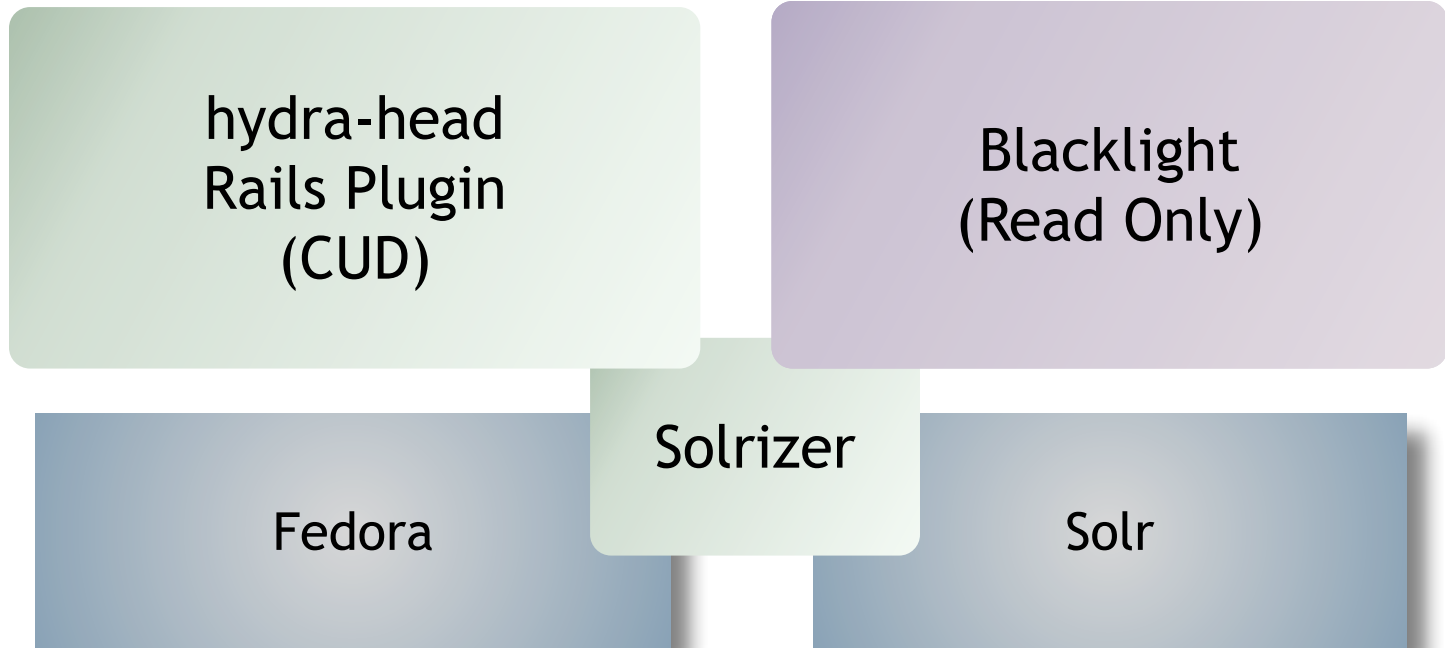
Search/View
(R)

Repository/
Persistent Storage

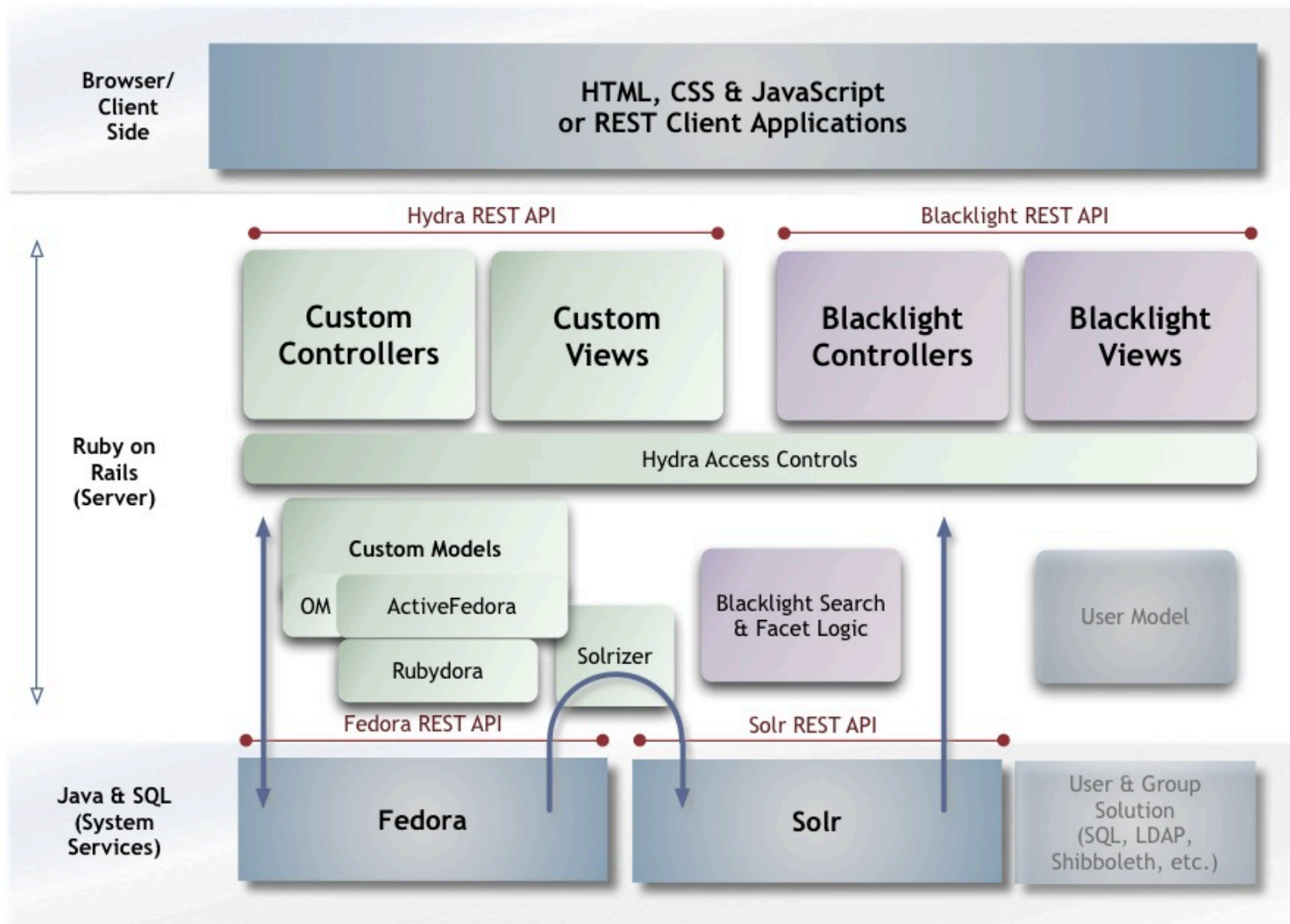
CRUD in Repositories



Major Hydra Components



The Hydra Stack



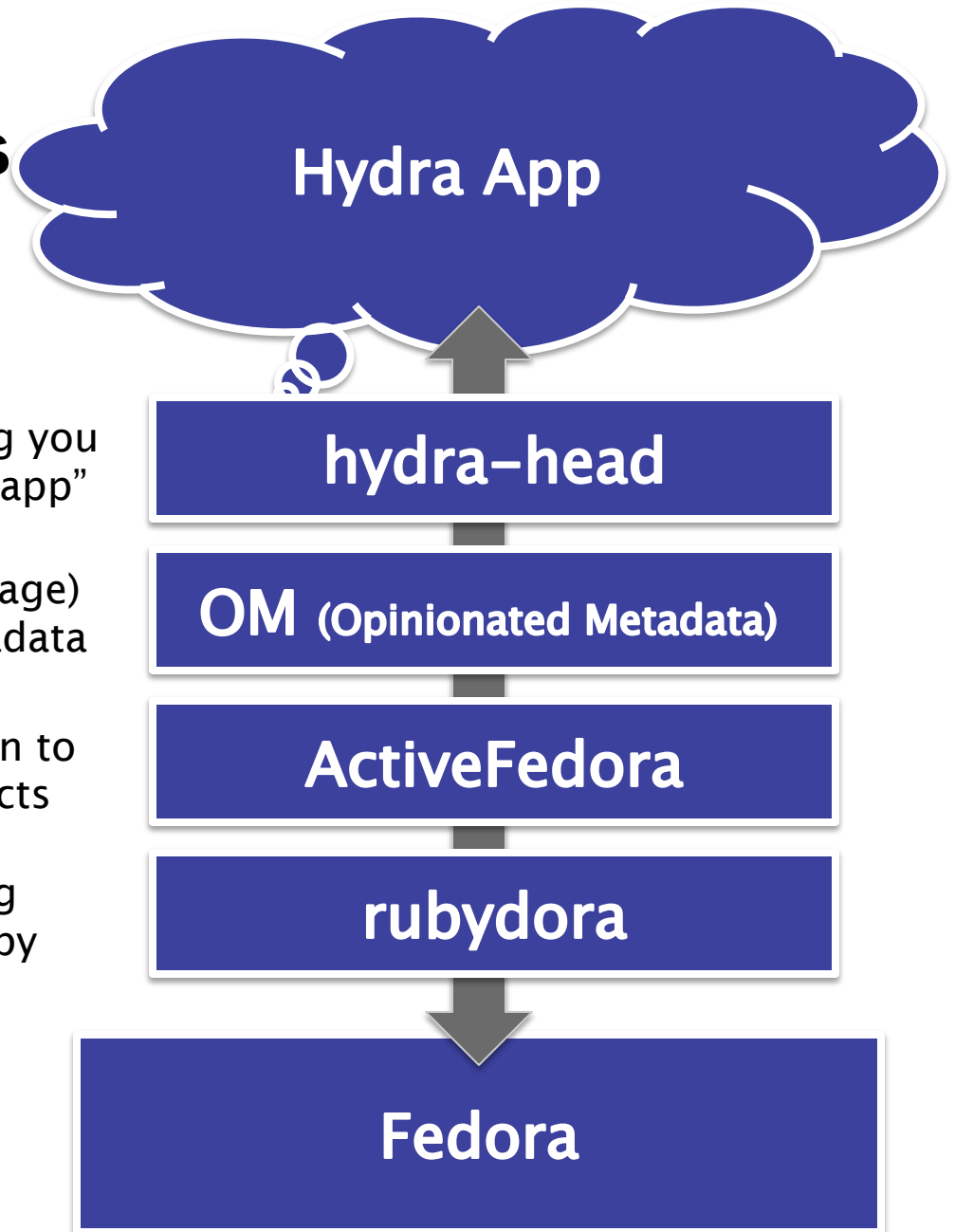
Hydra's Core Gems

Rails engine with “everything you need to build a user-facing app”

DSL (domain specific language) for easy mgmt of XML metadata

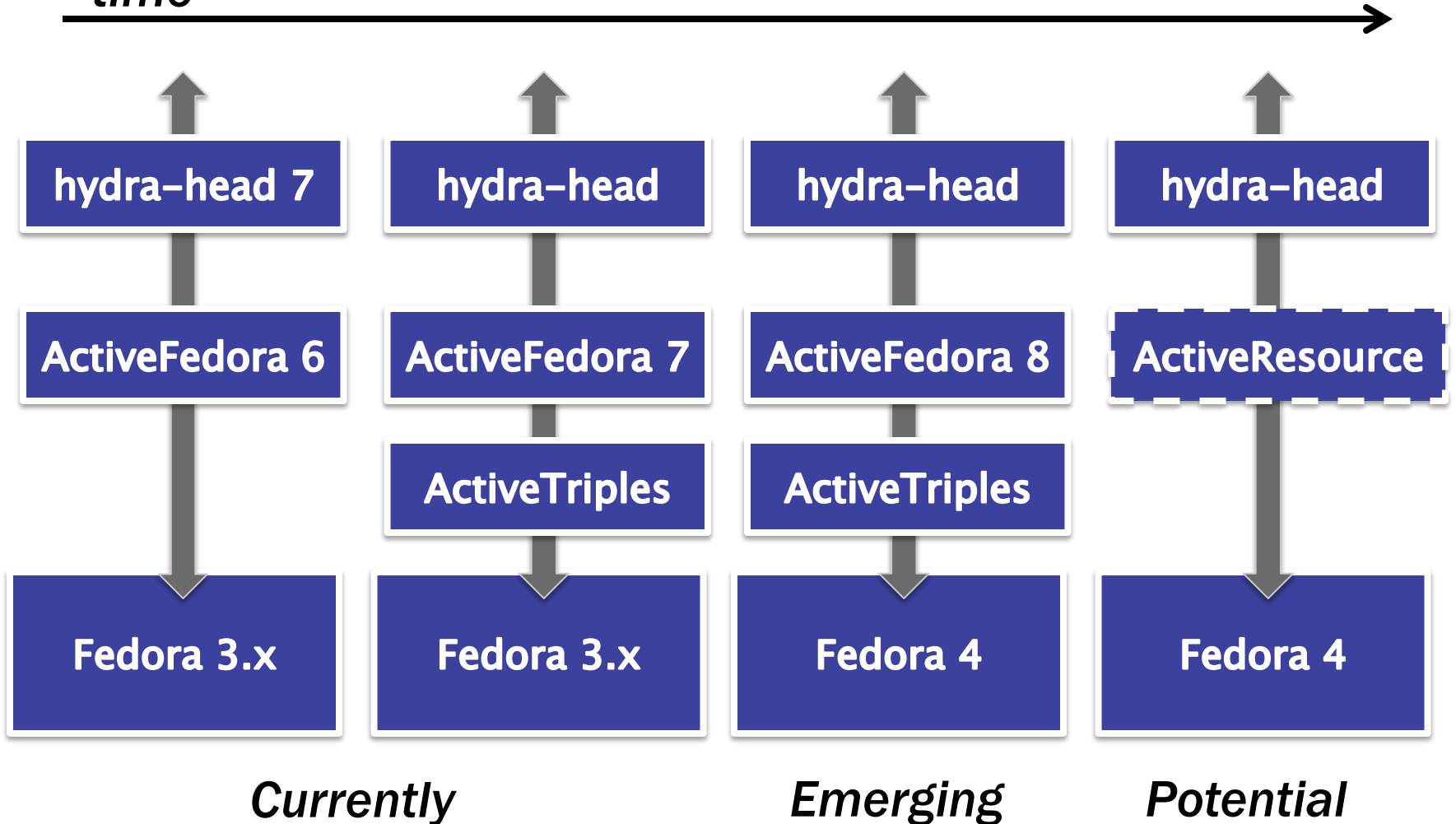
Applies ActiveModel pattern to working with Fedora objects

Client API for consuming Fedora's REST API via Ruby



Hydra's Core Gems

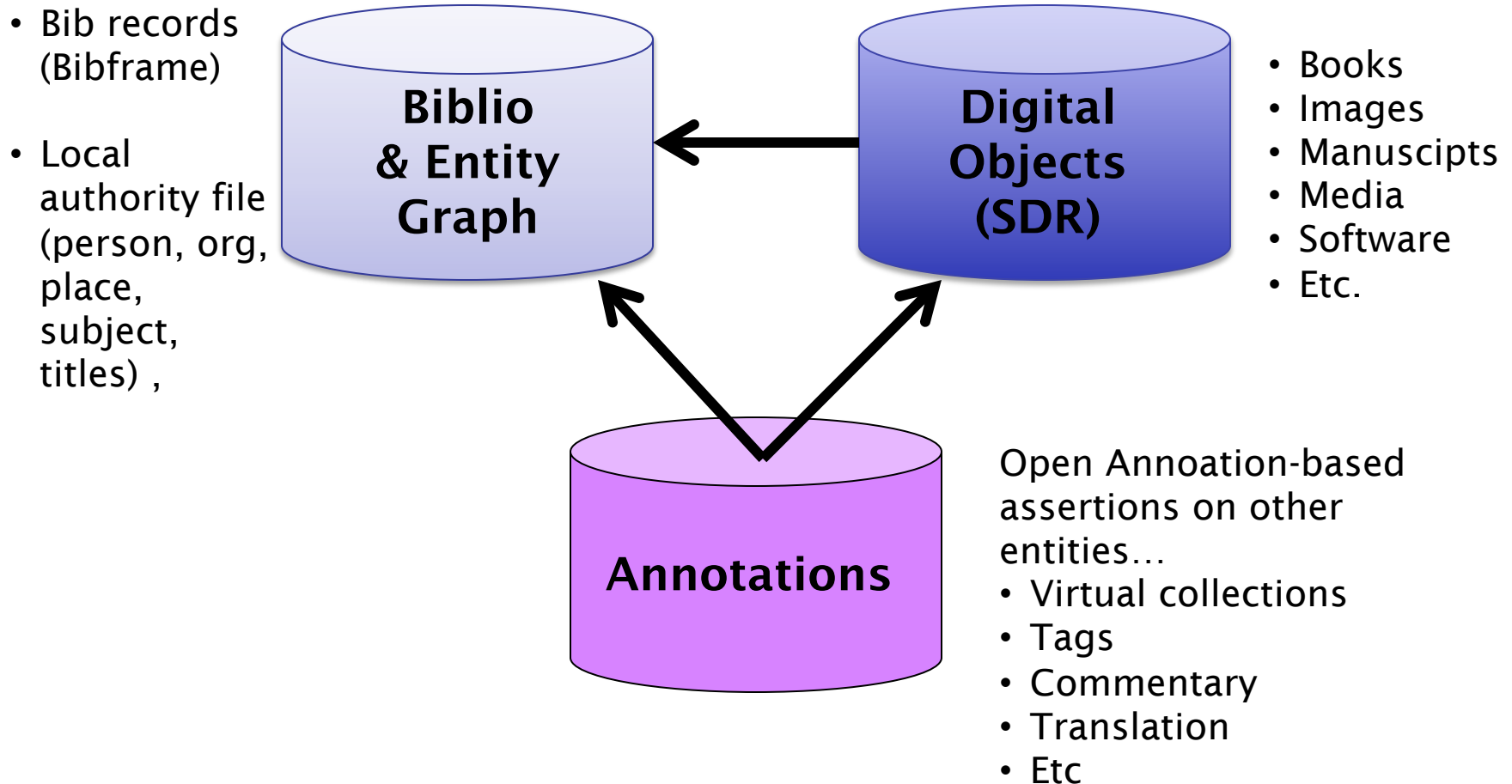
time



Three Active Hydra-Fedora 4 Pilots

- **Penn State University / ScholarSphere**
- **UCSD DAMS**
- **Stanford / Annotation Management**

Project Cerberus at Stanford



Project Cerberus at Stanford

