



# **One Body, Many Heads for Repository-Powered Library Applications**

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# Repositories make strange bedfellows



University of Virginia, 2008

**Virginia, Hull, Stanford & Fedora Commons /  
DuraSpace find common cause: leverage the  
power of a repository for the full range of  
application needs at our respective  
institutions.**



## **Fundamental Assumption #1**

**No single system can provide the full range of repository-based solutions for a given institution's needs,**

**...yet sustainable solutions require a common repository infrastructure.**

## **Fundamental Assumption #2**

**No single institution can resource the development of a full range of solutions on its own,**

**...yet each needs the flexibility to tailor solutions to local demands and workflows.**



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# Hydra Philosophy – Community

- An open architecture, with many contributors to a common core
- 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.”

*One body, many heads*

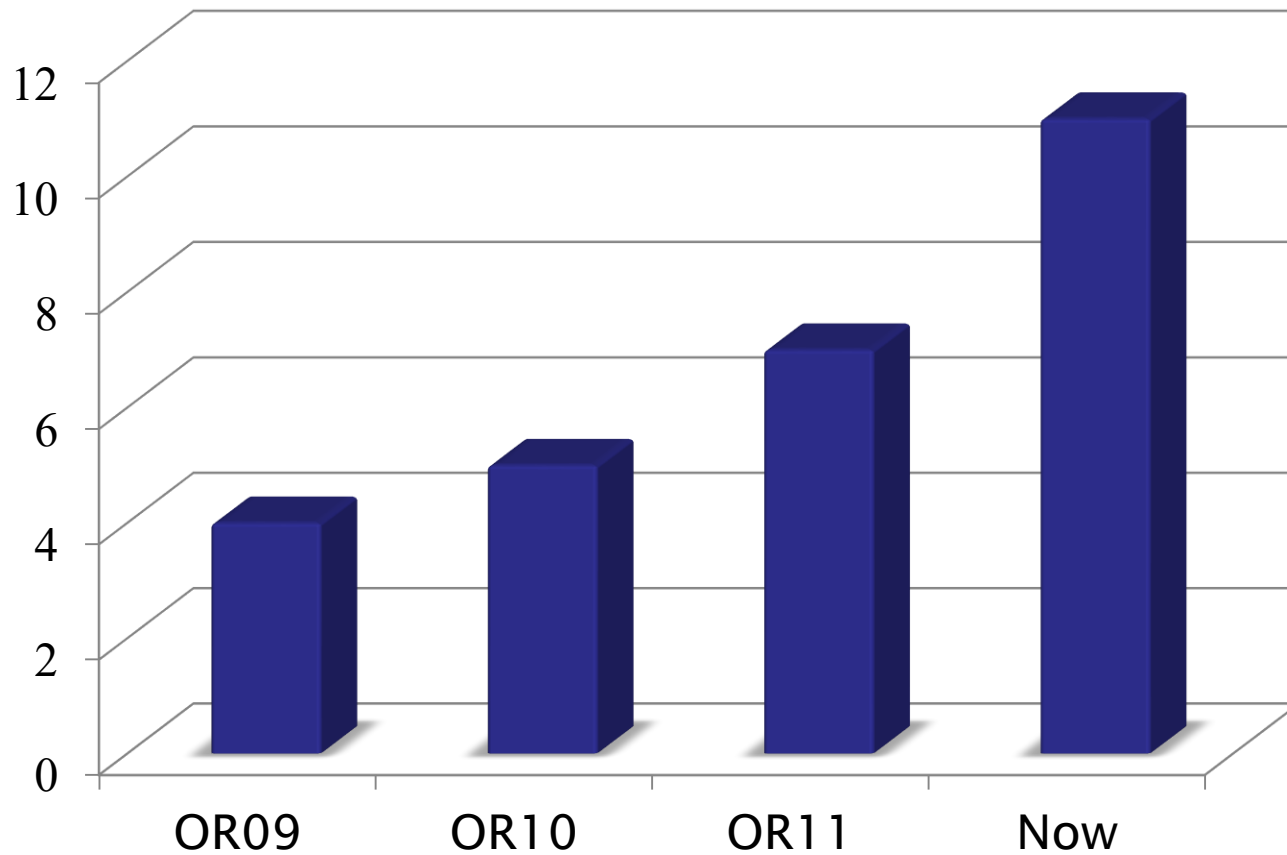


# Community

- **Conceived & executed as a collaborative, open source effort from the start**
- **Initially a joint development project between Stanford, Univ of Virginia, and Univ of Hull**
  - **Close collaboration with DuraSpace / Partnership with MediaShelf, LLC**
  - **Now includes Northwestern/Notre Dame/ Columbia**
  - **LSE and University College Dublin are amongst adopters**
- **Complementary strengths and expertise**



# Actively Participating Institutions



*OR = Open Repositories Conference*

# Community Model

## Hydra Steering Group

- small coordinating body
- collaborative roadmapping (tech & community)
- resource coordination
- governance of the "tech core" and Hydra Framework
- community mtce. & growth

*Currently*

- DuraSpace
- Hull
- MediaShelf
- Stanford
- Virginia

## Hydra Partners

- shape and direct work
- commission "Heads"
- functional requirements & specs
  - UI design & spec
  - Documentation
  - Training
- Data & content models
  - "User groups"

### Founders

- Duraspace
- Hull
- Stanford
- UVa

## Hydra Developers

- define tech architecture
- code developement
- integration & release

Committers

Contributors

Tech. Users



# Managing the community

- **Founding partners have an MoU governing how the community is managed**
  - Subsequent partners have signed up to this MoU through a partner agreement addendum
- **All code contributions are being managed through Code Licensing Agreements**
  - Individual – so each developer is clear about what they are contributing
  - Corporate – so each institution is clear about what they are contributing
- **All Hydra code is available under Apache Licence, Version 2.0**



# Sustainability

*grants* *abused*  
**No animals were harmed**  
**in the making of this film.**  
*project / community*



If you want to go fast...

~~...go alone.~~

*...use Hydra?*

- Notre Dame deployed a video cataloguing head in 6 weeks, from scratch
- Ohloh.net stats (as of July 2012)
  - 16 regular contributors in last 12 months (26 in total)
  - Top 10% of open source teams
  - ~8 person years of development



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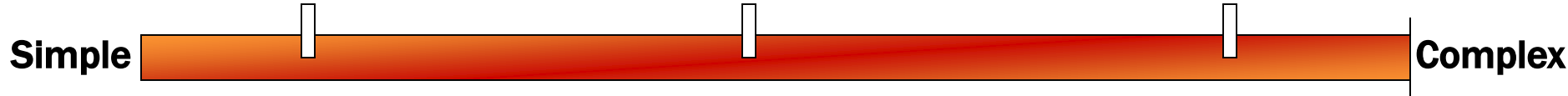


# For instance...

## ETD Deposit System

## General Purpose Institutional Repository

## Digitization Workflow system



- Generally a single PDF
- Simple, prescribed workflow
- Streamlined UI for depositors, reviewers & readers

- Heterogeneous file types
- Simple to complex objects
- One- or two-step workflow
- General purpose user interfaces

- Potentially hundreds of files type per object
- Complex, branching workflow
- Sophisticated operator (back office) interfaces

# Hydra Philosophy – Technical

- Tailored applications and workflows for different content types, contexts and user interactions
- A common repository infrastructure
- Flexible, atomistic data models
- Modular, “Lego brick” services
- Library of user interaction widgets
- Easily skinned UI

*One body, many heads*



# Content Framework

- Key to enabling re-use of Hydra repository solutions is a common baseline to how objects are structured
  - Objects must include rights metadata
  - Objects must include a statement of what content models the objects adhere to
  - That's it!
- The Hydra community has developed some basic building block content models (the Lego brick approach)
  - Combine and/or extend these to meet your needs

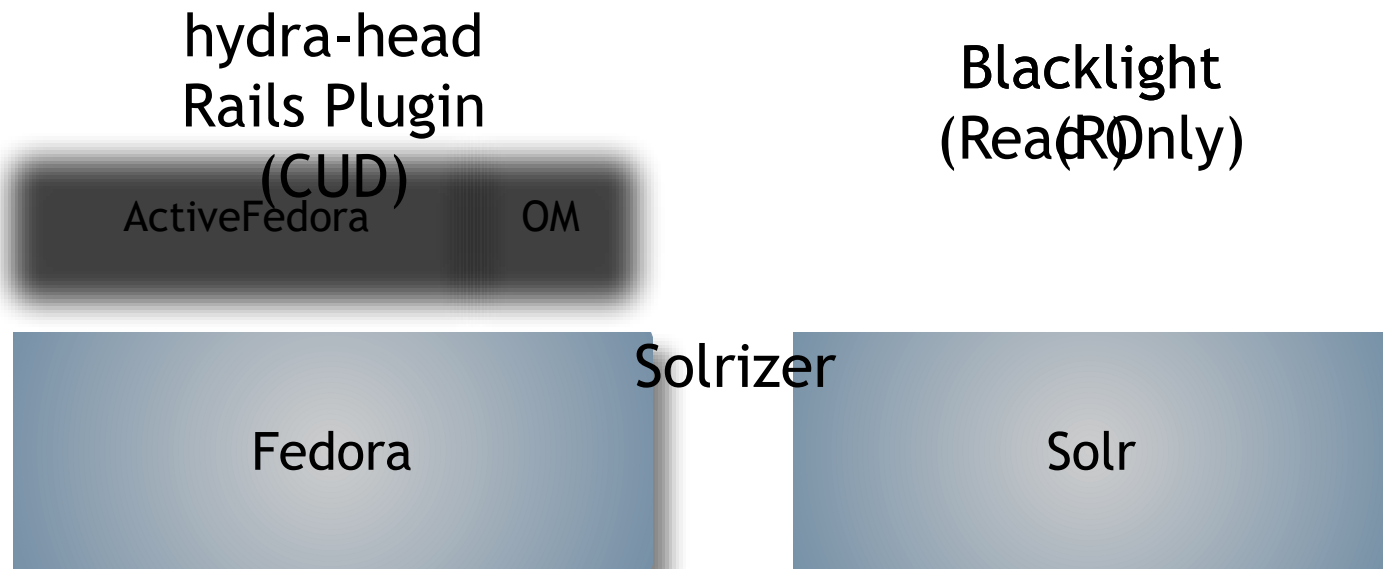


# Technical Framework - Components

- **Fedora** provides a durable repository layer to support object management and persistence
- **Solr**, provides fast access to indexed information
- **Blacklight**, a Ruby on Rails plugin that sits atop solr and provides faceted search & tailored views on objects
- **Hydra Plugin**, a Ruby on Rails library that provides create, update and delete actions against Fedora objects



# CRUD in Repositories

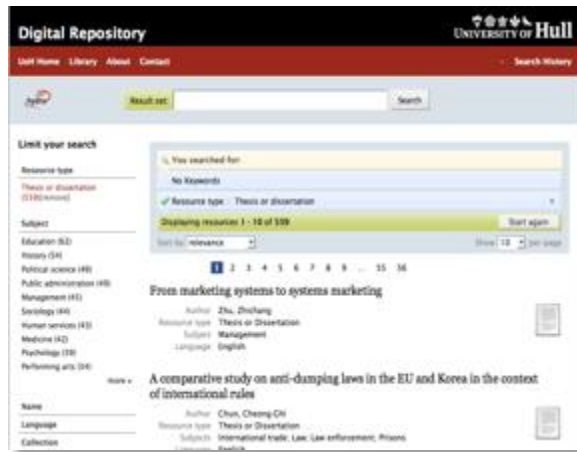


# A Note on Ruby on Rails

- ***Rapid*** application development for web applications: “Convention over configuration”
  - 10x productivity
- **Supportable:** MVC (Model-View-Controller) and Rails framework make code well-structured, predictable
- **Testable:** Rspec and Cucumber give powerful, automatable, testing tools
- **Learnable:** Stanford went from 1 to 8 Ruby savvy developers in one year (no new hires)
  - 1 week learning curve to basic proficiency



# Emerging Solution Bundles



## Institutional Repositories

University of Hull

University of Virginia

Penn State University



## Images

Northwestern University  
(Digital Image Library)



# Emerging Solution Bundles



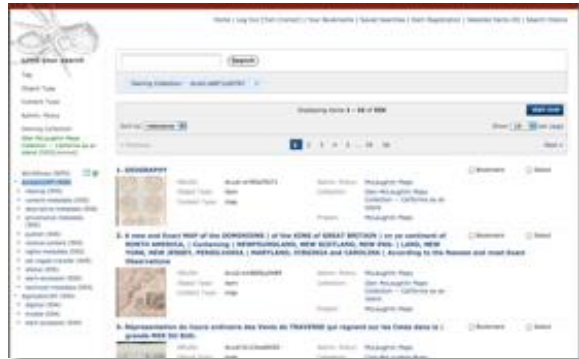
**Archives & Special Collections**  
**Stanford University**  
**University of Virginia**  
**Rock & Roll Hall of Fame**



**Media**  
**Indiana University**  
**Northwestern University**  
**Rock & Roll Hall of Fame**  
**Etc.**



# Emerging Solution Bundles



## Workflow Management (Digitization, Preservation)

Stanford University

University of Illinois – Urbana-Champaign

Northwestern University

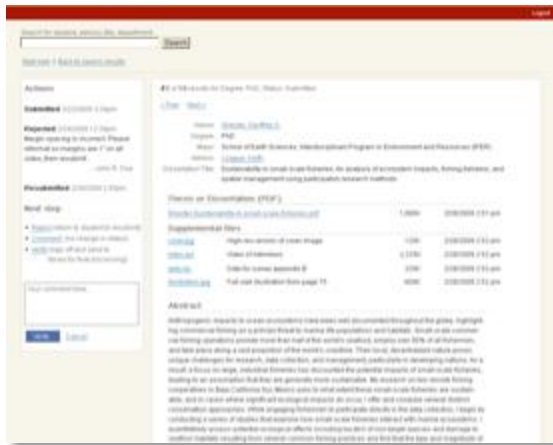


## Exhibits

Notre Dame



# Emerging Solution Bundles



**ETDs**  
**Stanford University**  
**University of Virginia**  
**Etc.**



**(Small) Data**  
*everyone...*



# Philosophies

- Building a framework, not an application (variation is part of the plan)
- Opinionated software
- Invest time & resources into collaborative community (face time!)
- Trainings & workshops
- Openness, transparency (code, designs, discussions)
- Commit to contributing back to core
- Design for re-use





<http://projecthydra.org>