

David Wilcox @d\_wilcox Tom Cramer @tcramer

## 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.

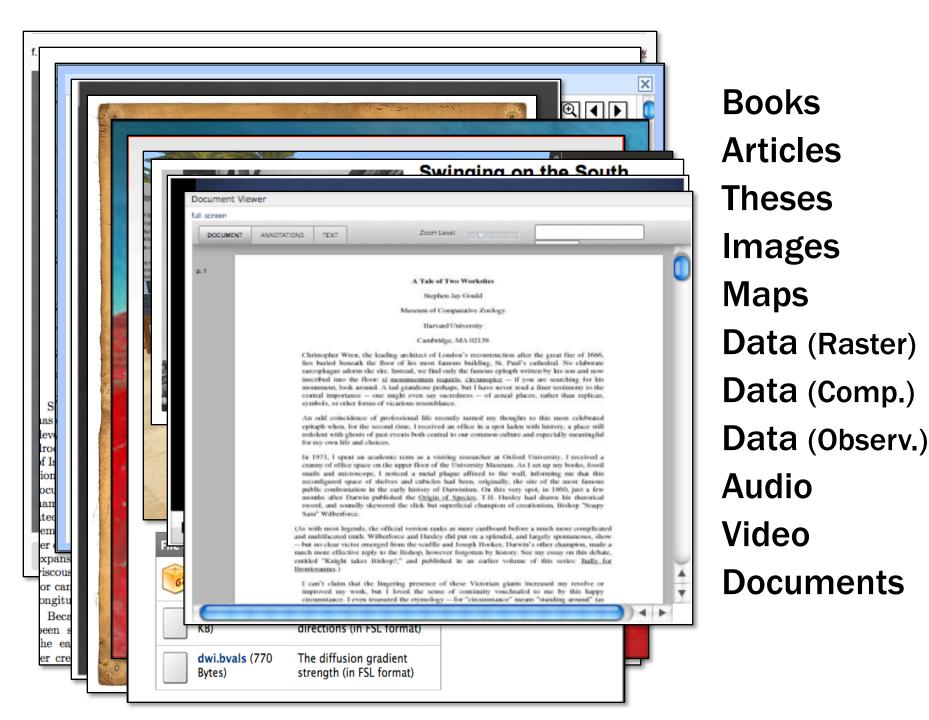


### Fundamental Assumption #1

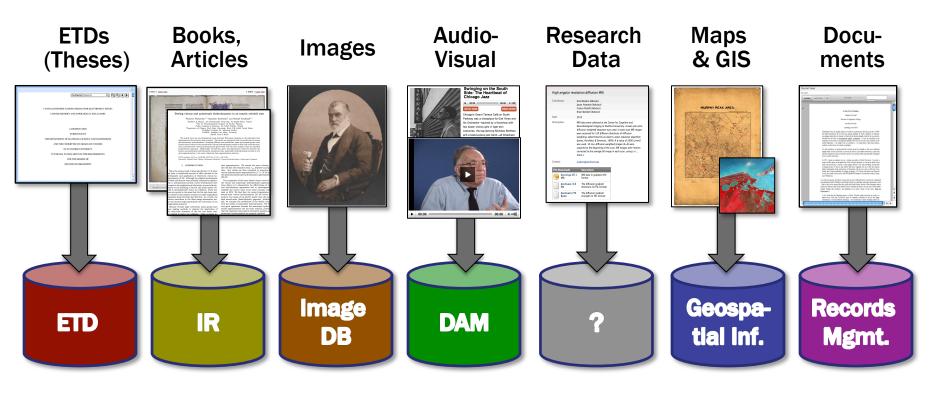
No single system can provide the full range of repository-based solutions for a given institution's needs,

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





### Point Solution Approach ...Welcome to Siloville



Management

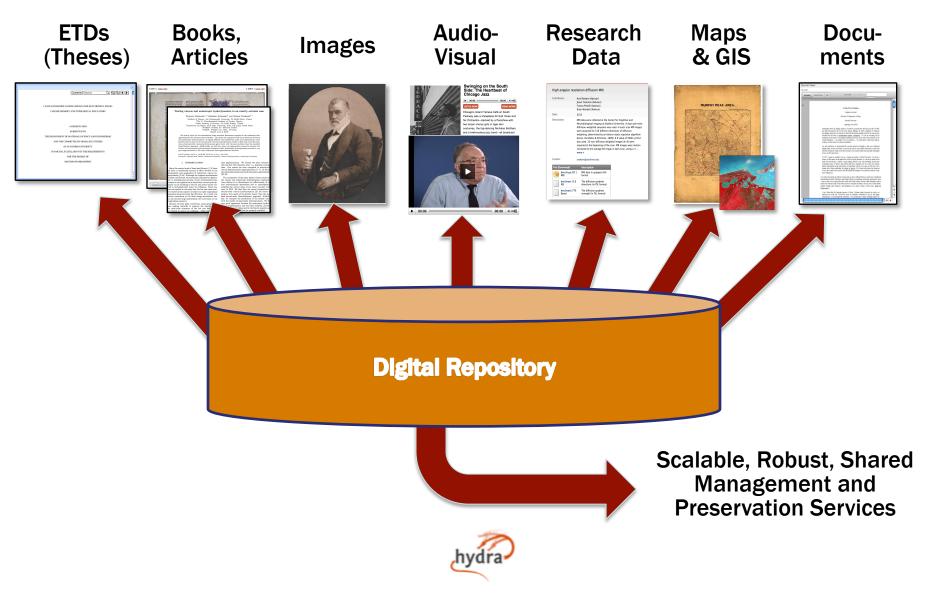
Access

**Preservation(?)** 

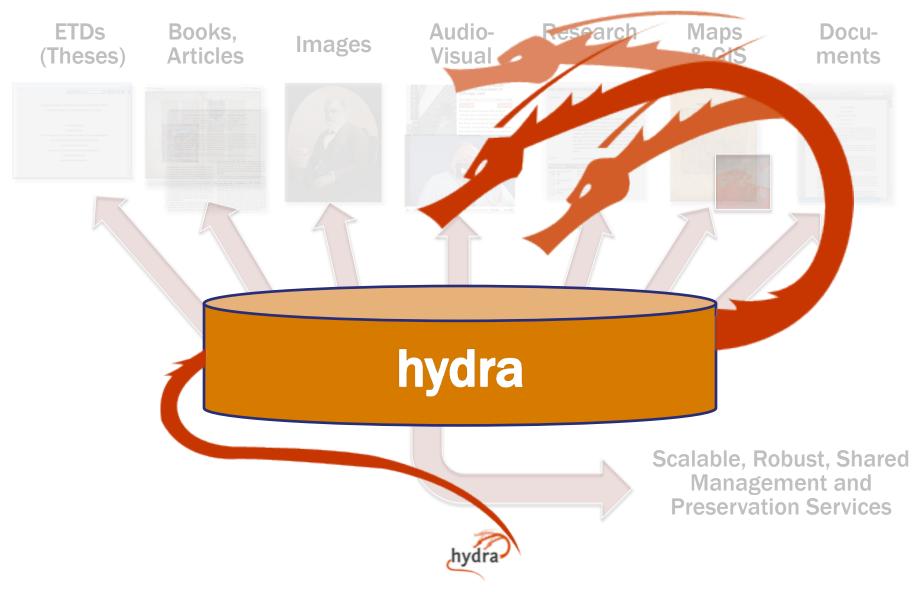
**Effective?** 



### **Repository-Powered Approach**



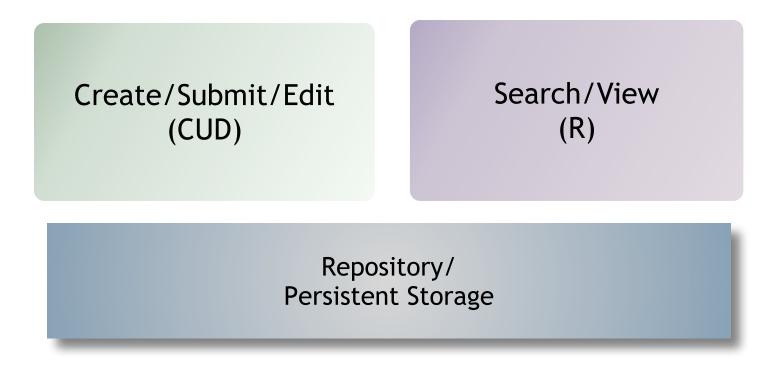
# One Body, Many Heads...



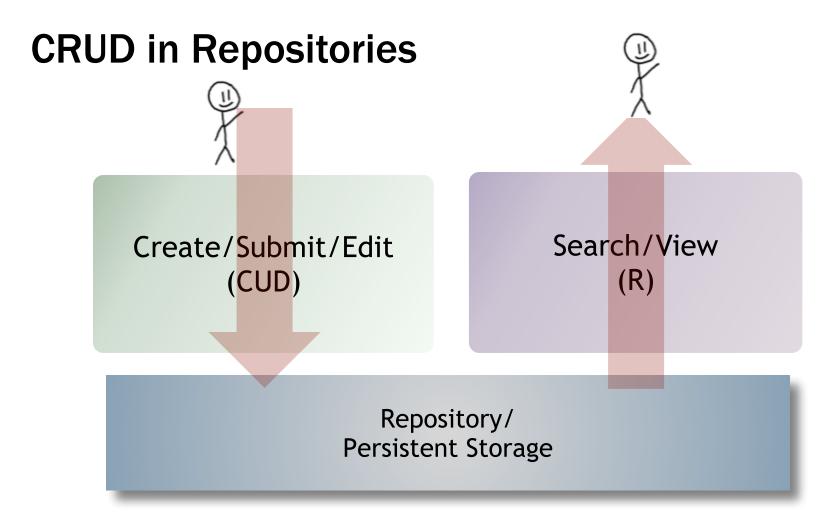
# Hydra Technical Framework



### **CRUD** in Repositories

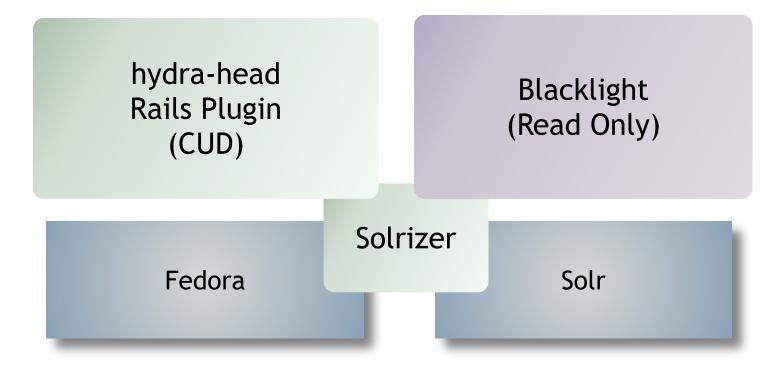








### **Major Hydra Components**





# A Note on Fedora

- Flexible, Extensible, *Durable* Object Repository Architecture
  - Flexible: model and store any content types
  - Extensible: easy to augment with apps and services
  - Durable: foundation of preservation repository
- Proven, sustained and successful digital repository
  - 100's of adopters; 13 years of development, 4 releases
  - Vibrant community & funding under DuraSpace
- Fedora 4.0 released in Dec '14; co-evolving with Hydra



# 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



### Hydra's Core Gems

Hydra App

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

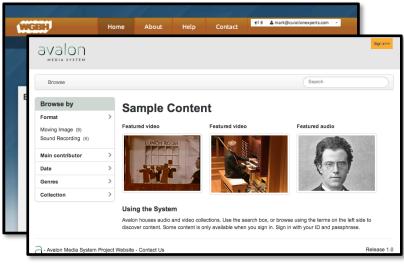
DSL (domain specific language) for easy mgmt of XML metadata

Applies ActiveModel pattern to working with Fedora objects

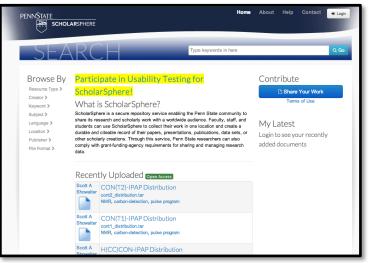
Client API for consuming Fedora's REST API via Ruby

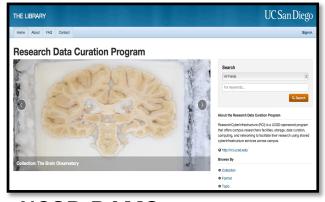
hydra-head **OM** (Opinionated Metadata) **ActiveFedora** rubydora **Fedora** 

### Hydra Heads of Note



### Avalon & HydraDAM for Media



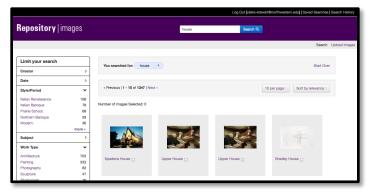


### **UCSD DAMS**

hydra



### **BPL Digital Commonwealth**



### Northwestern Digital Image Lib.

### Sufia

### Hydra-based Applications at Stanford

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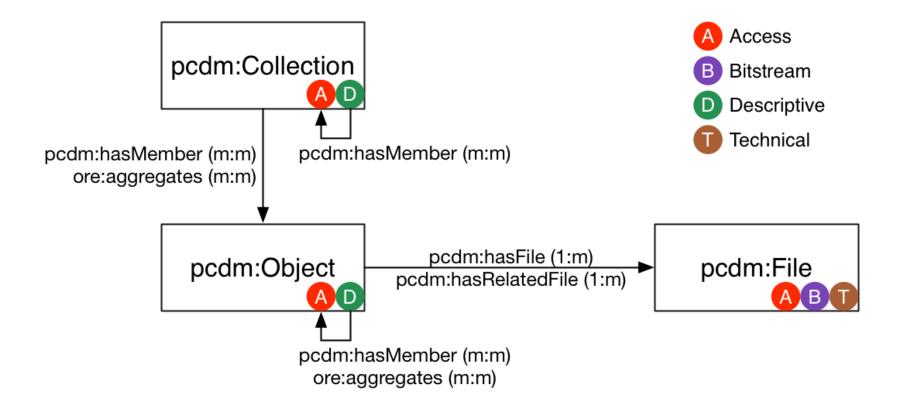
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Argo – Repository Reporting and Management

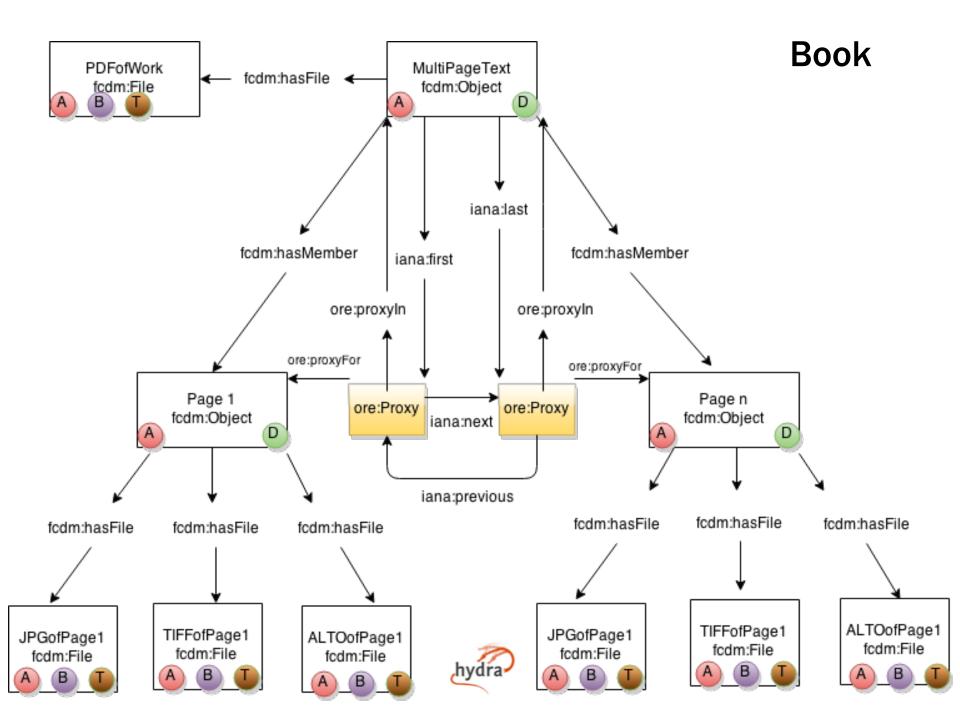
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SDR – Web UI (aka Hydrus)

### **Portland Common Data Model**







### Why PCDM?

- **1.)** Best practices in data modeling
- 2.) Code interoperability
- 3.) Data interoperability



### **Getting Started**

https://wiki.duraspace.org/display/hydra/Developers

### **On-line Resources and Tutorials**

#### For New and Potential Adopters:

- new adopters and potential adopters may find the pages here useful: http://projecthydra.org/
- See Hydra Heads (Known Implementations) for more information about each of the Hydra Heads.
- A Hydra Head interactive tutorial has been developed see under the 'For developers' section below.

#### For Architecture Level:

 See the Duraspace projecthydra wikis for information at the architecture level: http://wiki.duraspace.org/display/hydra/

#### For Developers:

- Code is hosted on Github: https://github.com/projecthydra
- Github's wikis for projecthydra git repositories are targeted to developers: https://github.com/projecthydra/hyd head/wiki

# Hydra Community Framework



### **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.



# 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 distributed, collaborative, open source effort from the start
- Initially a joint development project between Stanford, Univ of Virginia, and Univ of Hull
- Hydra Partners are the backbone of the project
  - Coalition of the willing
  - No fees or dues
  - Apache-style consensus and governance
- Steering Group provides administration, continuity, and serves as backstop when needed
  - But no central planning, no Project Director, no "one" architect



# **Hydra Partners**

- Stanford University
- DuraSpace
- Columbia University
- London School of Economics
- Data Curation Experts
- Duke University
- University of Cincinnati
- University of Oregon (Oregon Digital)
- Tufts University
- Digital Public Library of America

- University of Hull
- University of Notre Dame
- Penn State University
- Rock and Roll Hall of Fame
- WGBH
- Yale University
- Princeton University Library
- Oregon State University (Oregon Digital)
- Duoc UC

- University of Virginia
- Northwestern University
- Indiana University
- The Royal Library of Denmark
- Boston Public Library
- Virginia Tech
- Cornell University
- Case Western Reserve University
- University of Alberta

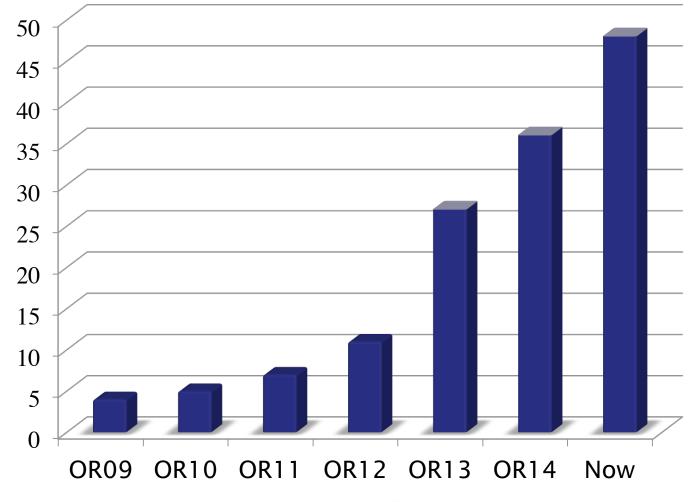


# **Code Licensing**

- All Hydra code is available under Apache License, Version 2.0
- All code commitments are being managed through Contributor License Agreements
  - Individual so each developer is clear about what they are contributing
  - Corporate so each institution is clear about what it is contributing
- Code contributors maintain ownership of their IP
  - ...and grant a non-exclusive license to the project and its users



### Hydra Partners and Known Users





**OR = Open Repositories Conference** 

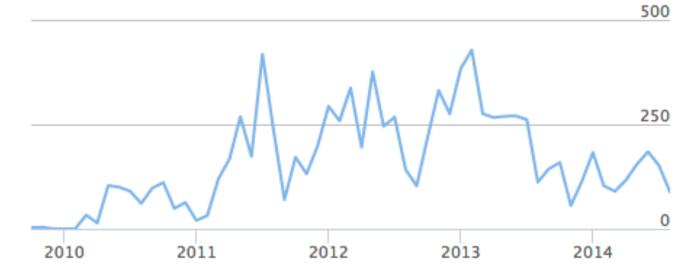
### **A Growing Worldwide Presence**



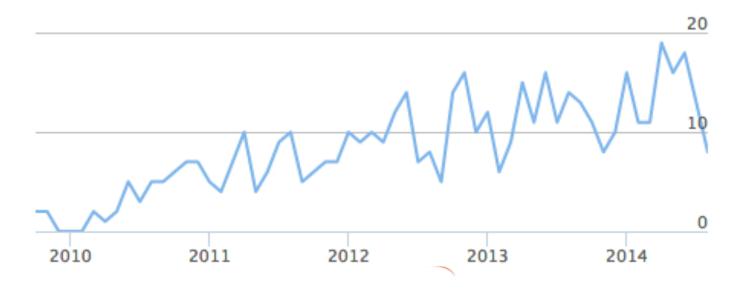


### Commits per Month

# Trending



### **Contributors per Month**



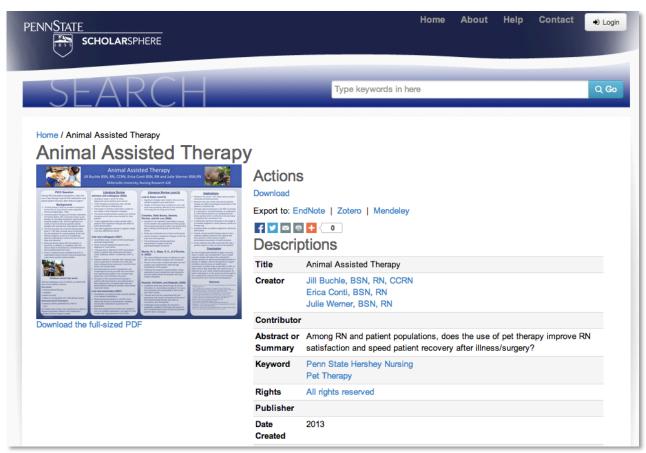
# Hydra Heads: Institutional Repositories

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### **University of Hull**



# Hydra Heads: Institutional Repositories



ScholarSphere / Sufia @ Penn State



## **Partners & Implementations**

https://wiki.duraspace.org/display/hydra/Partners+and+Implementations



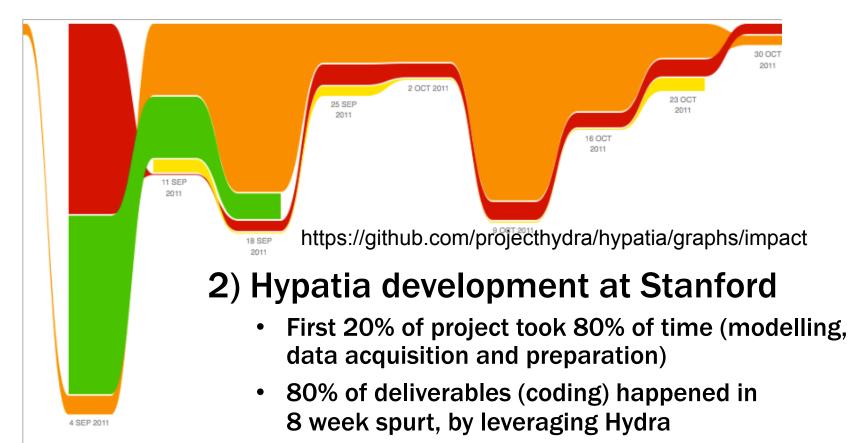
### **Sustainability**

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



### If You Want To Go Fast <u>...go alone.</u> ...use Hydra

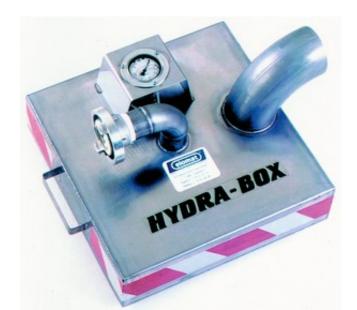
1) Notre Dame deployed a video cataloging head in 6 weeks, from scratch



# **Hydra Heads: Institutional Repositories**

### Hydra-in-a-Box

- \$2M grant from IMLS, Institute for Museum & Library Services
- Goals:
  - Turnkey solution for institutions large and small
  - Metadata enrichment
  - Hosted service





## Sustainability...



- For institutions Partners help shoulder the load
- For other projects Post-project maintenance & governance
- For leveraging funders' investments Adoption by growing user community

