

# blacklight

Leveraging a Rich Discovery Interface in Open Repository Architectures

Tom Cramer Chief Technology Strategist Stanford University Libraries



- Overview
- Key Features & Capabilities
- Technology
- Blacklight & Repositories
  - Including Hydra
- Community

#### Blacklight



Blacklight is an open source, "next generation" discovery application that works equally well for digital repositories as library catalogs.

In an open repository environment, it provides a ready-made, feature-rich interface for asset discovery & delivery, cleanly separated from the underlying repository or data store(s).

## **The Features You'd Expect**



- Relevance ranked results
- Personalization (bookmarks, tags)
- Export via Atom, RSS, SMS, Email, Zotero, etc.
- Streamlined UI
- And much more...

### **Plus Four Key Capabilities**



- **1.** Support for any kind of record or metadata
- 2. Object-specific behaviors
  - Books, Images, Music, Video, Manuscripts, Finding Aids, <any>
- 3. Tailored views for domain or disciplinespecific materials
- 4. Easy to augment & over-ride with local modifications

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Format	Format: 📗 Book
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Author	At the Library: 💥 Green » Media-Microtext (Lower Level) » ZMS 2320
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Last 10 years (91) Last 3 years (91) [remove] Refine Pub Year	3. Fringe nations in world soccer Published: 2008
2008 (91)[remove]	At the Library: V Green » Stacks » GV943.9 .S64 F75 2008
more	Format: Book
Торіс	
Location	
Call Number	
Organization (as Author)	4. Soccer in a football world : the story of America's forgotten game
Region	Author/Creator: Wangerin, David.
Fra	Published: 2008

Next Generation Catalog Stanford University - SearchWorks



#### UW · Forward

Over 8 million UW-System library items. Choose your school. Get searching.

#### **UW Rock County**

Enter - UW Colleges Library Catalog

Two Year Campuses	Four Year Campuses
UW-Baraboo/Sauk County	UW-Eau Claire
UW-Barron County (Rice Lake)	UW-Green Bay
UW-Fond du Lac	UW-La Crosse
UW-Fox Valley (Menasha)	UW-Madison
UW-Manitowoc	UW-Milwaukee
UW-Marathon County (Wausau)	UW-Oshkosh
UW-Marinette	UW-Parkside
UW-Marshfield/Wood County	UW-Platteville
UW-Richland	UW-River Falls
UW-Rock County (Janesville)	UW-Stevens Point
<u>UW-Sheboygan</u>	UW-Stout
UW-Washington County (West Bend)	UW-Superior
UW-Waukesha	UW-Whitewater

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#### Union Catalog University of Wisconsin – Forward

VIRGO	About the new VIRGO	
	General View Music View Ask / Librarian	
BROWSE BY:	Keywords 😂 Search	-155
Library	🖨 Print View	
Special Collections (10,681)	Q You searched for:	
Location	No Keywords	-
	Subject Photography x	
Charlottesville (Va.) (10,681)	Digital Collection     Holsinger Studio Collection     X	
Format	Source > UVA Library Digital Repository ×	
	Displaying items 1 - 20 of 10,681 Start over	
Photographs (10,681)	Sort by Date Received \$\$ Show 20 \$ per page	
Author	<b>1</b> 2 3 4 5 6 7 8 9 534 535 <b>Next</b>	
Holsinger, Rufus W. (9,780) Holsinger, Ralph W. (901)	1. Mrs. C.M. White; Holsinger Studio Collection, 1889 - 1939 Add to Marked List	
Subject	Title       Mrs. C.M. White       Preview of Mrs. C.M. White; Holsinger Studio Collection, 1889 - 1939         Series       Holsinger Studio         Collection, 1889 - 1939	
Holsinger Studio (Charlottesville, Va.)	Creator Holsinger, Rufus W., 1866-1930	
(10,681) Photography (10,681)	2. Dr. J.S. Grasty; Holsinger Studio Collection, 1889 - 1939 Add to Marked List	
Portraits (5.626)	Title Dr. J.S. Grasty         Preview of Dr. J.S. Grasty; Holsinger Studio Collection, 1889 - 1939           Sories         Helsinger Studio	

#### Fedora Front End + NGC University of Virginia - Virgo

#### RAO National Radio Astronomy Observatory

**NRAO Theses Database** 

NRAO Home > NRAO Library > NRAO Theses Database



Scientific Papers Repository National Radio Astronomy Observatory





Image & Special Collections North Carolina State University

#### **BROWSE:** • choose category

openvault 🛲 ault

#### Browse our Series and Collections >

#### **ARCH:**

big bird

#### NARROW:

#### **TOPIC:**

- Vietnam (5)
- Vietnam (Democratic Republic)
- Mặt trận dân tộc giải phóng miền nam Viêt Nam (4)
- United States--History--1945- (4) Vietnam War,
- 1961-1975--Personal narratives (4)
- United States--Politics and government (3)
- Vietnam (Republic) (3) Vietnam War, 1961-1975 (3)
- Vietnam War, 1961-1975--Personal narratives, American (3) Vietnam--History--1945-1975 (3)

> more (90)

#### **PEOPLE:**

- Acheson, Dean, 1893-1971 (2)
- Clifford, Clark M., 1906-1998 (2) Johnson, Lady Bird, 1912-2007
- Johnson, Lyndon B. (Lyndon Baines), 1908-1973 (2)
- McPherson, Harry (2)
- Murphy, Robert D. (Robert Daniel), 1894-1978 (2) Roosevelt, Franklin D. (Franklin
- Delano), 1882-1945 (2)
- Rostow, W. W. (Walt Whitman), 1916- (2)



7 results for big bird

1981

۲ Interview with Clark M. Clifford, Christian, George, 1981

SAVE SELECTED RECORDS SAVE THIS SEARCH

Θ Interview with Frank (Fred) Hickey, 1981



۲

.....

View as:

List



Tuu Ky, 1981 Denis Healey, 1986 [Part 1 of 3]



Members login: username

#### Video Repository WGBH – Open Vault



New members register here

Show 10 per page

Gallery

Forgot login? Click here

71



#### Scientific Papers Index US Department of Agriculture - AgNIC

# **Technology Stack**



# Got Solr?

#### Solr Admin (dmss)

sulwebappdev1.stanford.edu:8100

cwd=/home/dsgprod/app-solr/apache-tomcat-5.5.26 SolrHome=/opt/home/dsgprod/app-solr/work/dmss\_solr/

Solr	[SCHEMA] [CONFIG] [ANALYSIS] [SCHEMA BROWSER] [STATISTICS] [INFO] [DISTRIBUTION] [RINC] [LOCCINC]
App server:	[JAVA PROPERTIES] [THREAD DUMP]
Make a Query	[FULL INTERFACE]
Query String:	solr
Assistance	[DOCUMENTATION] [ISSUE TRACKER] [SEND EMAIL] [SOLR QUERY SYNTAX]
	Current Time: Mon Dec 14 11:44:46 PST 2009
	Server Start At: Thu Oct 22 13:48:34 PDT 2009

# **Digital Medieval Manuscripts**

Naked solr index without the Blacklight frontend.

DMSIndex [prototype]	saint	in All Fields 🗘 (Search	)	Login   Search History
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Swiss Medieval Manuscripts (58) Roman de la Rose Digital	« Previous Next »		1 2 3 4 5	5 6 7 8 9 15 16
Library (5) Lund Medieval Manuscripts (4) Goodspeed Manuscript Collection (2) Oxford Medieval Manuscripts (0)	1. Paris, Bibliothè Collection: Manuscript Identifier: Manuscript Title: Origin Date: Origin Place:	que Sainte-Geneviève, 1126 Roman de la Rose Digital Library 1126 Roman de la Rose 14th century France		
Institution Settlement	Material: Links:	parchment Description   Images		
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Genevieve (2) Bibliothèque cantonale jurassienne (2) Special Collections Research Center (2) Bibliothèque de l'Arsenal (1)	3. St. Gallen, Stifts Collection: Manuscript Identifier: Manuscript Title:	sbibliothek, Cod. Sang. 414 Swiss Medieval Manuscripts Cod. Sang. 414 Bréviaire noté de Saint-Gall, du premier t	ype, partie d'hiver	

Digital Medieval Manuscripts Stanford University – DMS Index





#### **Repository Administrative UI** Stanford University – Stanford Digital Repository

## The "Code Silo" Problem





### The "Code Silo" Problem





#### **Well-Structured Code**



- Blacklight 2.0 was a substantial refactoring to make the code portable
  - Core functions, common to all installations, located in a plugin
  - Local modifications made in the Ruby on Rails application container
  - Over-rides facilitate customization for local needs
- Vendor drops are straightforward
- GIT to facilitate branching and merging

### **Easily Tailored**



BL's modular code structure supports local customization and over-rides without the need for forking code.

- Look and Feel
- Layout
- Custom behaviors
- Augmented with widgets
- Basis for more extensive development

# A Note on Ruby on Rails



- 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

#### **Test Coverage**

- Full test coverage is a core community principle
  - Unit tests with Rspec
  - Acceptance tests with Cucumber
  - Continuous integration testing with Hudson
- Tests ensure...
  - Quality
  - Compatibility
  - Clarity of code and function
  - Confidence

# Testing is a Core Community Principle

See http://projectblacklight.org/?page\_id=2

- "All contributed code must have full test coverage before it is committed.
- "Tests must be committed at the same time code is."
- "All bugs and development tasks will be tracked in JIRA."
- "All code must be documented before it's committed."

# BL's Current Test Coverage is 90%

Name	Total lines	Lines of code	Tota	al coverage
TOTAL	2073	1357	90.55%	
ntrollers/application_controller.rb	59		96.61%	
app/controllers/bookmarks_controller.rb	59	6	100.00%	
app/controllers/catalog_controller.rb	200	137	96.00%	
app/controllers/feedback_controller.rb	37	24	35.14%	
app/controllers/saved_searches_controller.rb	44	34	79.55%	
app/controllers/search_history_controller.rb	25	21	76.00%	
app/controllers/user_sessions_controller.rb	43	20	100.00%	
app/controllers/users_controller.rb	13	8	100.00%	
app/helpers/application_helper.rb	354	246	90.96%	
app/helpers/bookmarks_helper.rb	3	2	100.00%	
app/helpers/catalog_helper.rb	44	29	90.91%	
app/helpers/feedback_helper.rb	2	2	100.00%	
app/helpers/saved_searches_helper.rb	2	2	100.00%	

http://hudson.projectblacklight.org/hudson/job/blacklight-plugin/99/rcov/

## Scalability: SearchWorks = known upper bound

SearchWorks Usage: April – December, 2009



- SearchWorks currently has > 6 Million records
- Peak daily load is now > 50,000 visitors

# **Blacklight for Repositories**

- Repository-agnostic, content-aware, feature-rich, turnkey, access interface
- Aggregate content from multiple repositories, link back to source systems
- Foundation for more extending to build more elaborate access systems
- Hydra: The "R" in CRUD
- Administrative UI



#### **Object Specific Behaviors - Coins** University of Virginia - VirgoBeta

ctions	#3 of 10 results for Degree: PhD, Status: Submitted				
ubmitted 2/22/2009 3:20pm	<u>« Prev</u> <u>Next »</u>				
elected 2/24/2009 12:39pm	Name: <u>Shester, Geoffrey G.</u>				
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- John R. Doe	Dissertation Title: Sustainability in small-scale fisheries: A	In analysis of ecosystem impact	ts, fishing behavior, and		
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	cover.jpg High-res version of cover image	125K	2/26/2009 2:52 pm		
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and take place along a vast proportion of the world's coastline. Their local, decentralized nature poses unique challenges for research, data collection, and management, particularly in developing nations. As a

result, a focus on large, industrial fisheries has discounted the potential impacts of small-scale fisheries, leading to an assumption that they are generally more sustainable. My research on two remote fishing

cooperatives in Baja California Sur, Mexico asks to what extent these small-scale fisheries are sustainable, and in cases where significant ecological impacts do occur, I offer and compare several distinct conservation approaches. While engaging fishermen to participate directly in the data collection, I begin by conducting a series of studies that examine how small-scale fisheries interact with marine ecosystems. I quantitatively assess potential ecological effects including bycatch of non-target species and damage to seafloor habitats resulting from several common fishing practices and find that the type and magnitude of

Degree, School, **Program**, Auxiliary Files, Abstract and overall layout are all ETD-specific

#### **Object Specific Behaviors – Electronic Theses Stanford University – ETD App**

		Un	₩ IVERSITY OF Hull
H Home   Library   eDo	cs About Contact		Login   Search History
Hydra Project	Green	in All Fields 💌 Search	
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Author/Creator	🖌 Keyword > Green		x
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	Sort by relevance 💌		Show 10 🕑 per page
	1. Content models i	n the Hydra Project	
	Title:	Content models in the Hydra Project	A
	Author/Creator:	Green, Richard A	
	Genre:	Examination paper	
	Subject:	Hydra	
	Language:	English	
	2. An investigation of consultation	of the factors which influence the degree of patient involvem	ent in the physiotherapeutic
	Title:	An investigation of the factors which influence the degree of pat involvement in the physiotherapeutic consultation	ient A
	Author/Creator:	Green, Angela Jane	
	Genre:	Thesis or Dissertation; PhD	
	Subject:	Postgraduate Medical Institute; Physiotherapy	

**Repository Front End** University of Hull

# The "R" in Repository Front End CRUD

Hydra is an effort that is developing and packaging an application framework to sit atop Fedora, and tailoring the use of this framework for specific institutional repository & digital library solutions.

\* Deposit

- \* Manage / Edit Objects
- \* Set Permissions / Access Levels
- \* Browse
- \* Search
- \* View Object

Blacklight provides the search, browse & viewing capabilities

#### **ETD Application**

#### Search for student, advisor, title, department. Search Start over | (Search/browse selections display here) 1 - 10 of 12345 results sorted by author 💌 **Browse ETD collection** « Prev Next » Degree Masters (5,605,751) Author/Title PhD (266,989) Alter Susan Elizabeth School Business (532, 536) Earth Sciences (836,431) modern DNA Education (632, 536) Engineering (5,505,751) Plumlee, Megan H Humanities & Sciences Law (632, 536) Medicine (690,959) perfluorochemicals Shester, Geoffrey G Status Submitted (6,431) Rejected (969) Verified (2.636) participatory research methods Available (32,536) Brosi, Berry Justice Embargoed (532) Bee communities, pollination, and Withdrawn (36) Carr, Adrianne Elizabeth effects Ward, Gillian Statistics in ecological modeling; Jones, Nicole Louise

Next sten Degree Advisor PhD Palumbi Ster Demographic and evolutionary processes in baleen whales inferred from ancient and Masters Daily, Gretchi Occurrence and photochemical fate of emerging contaminants: Nitrosamines and PhD Loaque, Keith Sustainability in small-scale fisheries: An analysis of ecosystem impacts, fishing behavior, and spatial management using PhD Daily, Gretch landscape context in tropical countryside PhD Loaque, Keith Physics-based simulations of hydrologicresponse and cumulative watershed Masters Hastie, Trevo presence-only data and boosted MARS Masters Monismith, S Thompson, J The role of wind-waves and currents on vertical mixing in shallow water bodies: Implications for phytoplankton distribution Cornwell, Will Ackerly, David D. 5-15-2009 Masters Causes and consequences of functional

Block Barbara A

#3 of 10 results for Degree: PhD, Status: Submitted Actions « Prev Next » Submitted 2/22/2009 3:20pm Name: Shester, Geoffrey G. Rejected 2/24/2009 12:39pm Degree: PhD Margin spacing is incorrect. Please reformat so margins are 1" on all Advisor: Loague, Keith sides, then resubmit. - John R. Doe Resubmitted 2/26/2009 2:55pm Thesis or Dissertation (PDF) • Reject (return to student to resubmit) • Comment (no change in status) • Verify (sign off and send to library for final processing) Your comment here Abstract Verify Cancel

#### Search & Browse powered by Blacklight

and leaf decomposition

Weng Kevin Chi-Min

Search

Search for student, advisor, title, department.

Submitted

Embargoed

Available

5-01-2009

Start over | Back to search results

Major: School of Earth Sciences: Interdisciplinary Program in Environment and Resources (IPER)

Logout

Dissertation Title: Sustainability in small-scale fisheries: An analysis of ecosystem impacts, fishing behavior, and spatial management using participatory research methods

Shester-Sustainability-in-small-scale-fisheries.pdf		1,060K	2/26/2009 2:51 pr		
Supplementa	al files				
cover.jpg	High-res version of cover image	125K	2/26/2009 2:52 pm		
video.avi	Video of interviews	2,325K	2/26/2009 2:52 pm		
data.xls	Data for survey appendix B	325K	2/26/2009 2:52 pm		
illustration.jpg	Full-size illustration from page 75	600K	2/26/2009 2:52 pm		

Anthropogenic impacts to ocean ecosystems have been well documented throughout the globe, highlighting commercial fishing as a primary threat to marine life populations and habitats. Small-scale commercial fishing operations provide more than half of the world's seafood, employ over 90% of all fishermen. and take place along a vast proportion of the world's coastline. Their local, decentralized nature poses unique challenges for research, data collection, and management, particularly in developing nations. As a result, a focus on large, industrial fisheries has discounted the potential impacts of small-scale fisheries, leading to an assumption that they are generally more sustainable. My research on two remote fishing cooperatives in Baja California Sur. Mexico asks to what extent these small-scale fisheries are sustainable, and in cases where significant ecological impacts do occur. I offer and compare several distinct conservation approaches. While engaging fishermen to participate directly in the data collection, I begin by conducting a series of studies that examine how small-scale fisheries interact with marine ecosystems. I quantitatively assess potential ecological effects including bycatch of non-target species and damage to seafloor habitats resulting from several common fishing practices and find that the type and magnitude of impacts are significantly different across small-scale fishing gears. Set gillnets have higher bycatch and habitat impacts than other fishing gears, representing a major priority for small-scale fishery conservation I also analyze fine-scale fishing behavior in the lobster fishery to help explain why some fishermen are more successful than others and how marine habitat characteristics and resource distribution influence their gear placement strategies. Observable trap movement behaviors on a limited number of fishing trips

#### **ETD-specific viewing behavior**



Archival Papers (Fedora Repository) Stanford University - SALT



#### Archival Papers – Detail View Stanford University - SALT



Log Out [ archivist1 ]

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	Search			Add a	ın artio	cle 🔻
Limit your search Title addict (2) among (2) associ (2) case (2) diseas (2) loan (2) program (2) type (2) 1 (1) 116 (1) more »	You searched for: No Keywords Displaying <b>all 20</b> items				St	art over
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	Title Overreporting of Deaths From Coronary Heart Disease in New York City Hospitals, 2003	Creator	Deposited Sun Jul 04 16:27:34 UTC 2010	<b>Type</b> Article	files	Status Created
	Costs and Savings Associated With Community Water Fluoridation Programs in Colorado		Mon Jul 05 01:14:27 UTC 2010	Article	3	Created
	Epidemiology of Travel-associated Pandemic (H1N1) 2009 Infection in 116 Patients, Singapore		Mon Jul 05 02:31:13 UTC 2010	Article	2	Created
	Health Status of Visitors and Temporary Residents, United States		Mon Jul 05 02:49:06 UTC 2010	Article	2	Created
	Interventions to Promote Successful Re-Entry Among Drug-Abusing Parolees		Mon Jul 05 03:08:56 UTC 2010	Article	3	Created
	Hepatitis C for Addiction Professionals		Mon Jul 05 03:10:48 UTC 2010	Article	1	Created

**Repository Interface** Hydra Project – Hydrangea

### **Multi-Institutional Project**

- Originated at UVa in 2007 as a research project
  - Moved to production as "Virgo Beta" in 2008
- Stanford adopted in Jan 2009
  - Deployed SearchWorks on Blacklight in Aug '09
- Currently dozens of installations
- ~ 10 committers from a half dozen institutions

#### Community



The Blacklight Strategic Advisory Group gives committed institutions the forum to coordinate, advise and support development. Current members:

- Columbia University
- Johns Hopkins University
- Stanford University
- University of Hull
- University of Virginia
- University of Wisconsin
- WGBH

### Conclusion



- Rich search & viewing application
- Works for any type of digital asset
- Runs out of the box
- Separates application from data store
- Aggregate records from multiple sources into one discovery layer
- Easily customized views
- Vibrant open source project

#### More



- http://projectblacklight.org
- GitHub
- blacklight-development@googlegroups.com
- Minneapolis Camp (October)
- DLF Fall Forum, Palo Alto, CA (Nov 1-3)