



# ESS Images

Improving Management of Flexible Digital Collections Using Hyrax

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# Agenda

1. Project History
2. Completed work
3. Work in progress



1.

# Project History

# Legacy Services

- Variations Scores

- CONTENTdm

The screenshot shows a digital viewer interface for a musical score. The title is "SONATA" by Beethoven, Op. 10, No. 12. The score is displayed in two systems, with the first system starting at measure 12. The interface includes a left sidebar with a table of contents for "Sonate per pianoforte" and a top navigation bar with "Page 1:220", "Prev", and "Next" buttons.

The screenshot shows the website for "The Indianapolis News". The page displays a grid of 20 thumbnail images representing newspaper pages from various dates in 1989, ranging from 1989-12-07 to 1989-12-20. The interface includes a search bar, a "Browse Items in Indianapolis News" section, and a "Narrow your search by:" section with filters for Subject, Type, and Date.



# PLUM → Pages Online

## Plum. A Hydra head to support digitization workflows

massive coverage 100% code climate 4.9 ready 100% license Apache 2.0

Plum is a Hydra head based on CurationConcerns, with two types of works:

- ScannedResource: a book or other resource composed of one or more scanned pages
- MultiVolumeWork: a book set, sammelband or other resource composed of multiple

### Features

- Drag-and-drop tools for reordering FileSets and editing structure
- Generating IIF manifests for Collections and Works based on that structure
- Building PDFs of Works based on their IIF manifests
- Performing OCR with Tesseract
- Simple state-based workflow
- Retrieving external metadata from our finding aids and catalog web services

### Dependencies

- **Redis**
  - Start Redis with `redis-server`, or if you're on certain Linuxes, you can do this via:
- **Kakadu**
  - The installer doesn't work on MacOSX 10.11 (El Capitan), but the files `kakadu_compre` extracted from the download packages and used by manually installing them in `/usr/local/lib`, respectively.
- **Tesseract**
  - Version 3.04 is required. You can install it on Mac OSX with `brew install tesseract`. On Ubuntu you'll have to compile it.
- **RabbitMQ (Optional)**
  - Start with `rabbitmq-server`
  - Used for publishing create/update/delete events for systems such as Pomegranat

### Running the Tests



INDIANA UNIVERSITY

## Pages Online

Type keywords in here

Show all items

Log in

All Works Collections

Previous | 1 - 10 of 110 | Next

Sort by relevance | 10 per page

Limit your search

- Type of Work
- Collection
- Creator
- Subject
- Publication Place
- Publisher
- Date Created
- Pages

1.

Sonate per pianoforte = Sonates pour piano = Sonatas for piano



**Subject:** Sonatas (Piano)  
**Creator:** Beethoven, Ludwig van, 1770-1827  
**Publisher:** Ricordi  
**Date Created:** 1919  
**Resource Type:** Multi Volume Work  
**Identifier:** http://purl.dlib.indiana.edu/iiif/manifests/score/AEK3910  
**Pages:** 649

Select an action

2.

Indiana University Libraries cookbook



**Publisher:** [Indiana University, Bloomington Libraries]  
**Resource Type:** Scanned Resource  
**Identifier:** http://purl.dlib.indiana.edu/iiif/general/IAE0860  
**Pages:** 224

Select an action

3.

The happy cooker. Volume II



**Publisher:** Big Red O Quickprint  
**Resource Type:** Scanned Resource  
**Identifier:** http://purl.dlib.indiana.edu/iiif/general/IAE0859

Select an action



INDIANA UNIVERSITY BLOOMINGTON

# ESS: Enterprise Scholarly Systems



## Enterprise Scholarly Systems

IU's Enterprise Scholarly Systems (ESS) initiative is a new collaborative effort amongst the libraries at IU Bloomington and IUPUI in Indianapolis and IU's central IT organization, University Information Technology Services. Implemented as a virtual organization spanning all three entities, the goal is to create an enterprise repository infrastructure for IU's eight campuses based on Hydra and Fedora.

IUB/IUPUI Libraries roles:

- Software development
- User support and consultation
- Research and development

UTIS roles:

- Production hosting of Fedora and associated services
- Production hosting of Hydra heads
- Online and preservation storage

U  
I  
T  
S

**Hydra-in-a-Box**

IU developers working on general HyBox code and Mediated Deposit

**Paged Media PuMPkin**

Based on Plum from Princeton University

**CBRC Center for Biological Research Collections**

Based on Sufia 7

**HydraDAM2 with WGBH Boston**

Digital Preservation Repository including Asynchronous Storage

**Avalon**

Audio-Video Media Presentation

L  
I  
B  
R  
A  
R  
Y

Development Environment

Test Servers

Software Development Teams

**IUB**  
Indiana University Bloomington

**IUPUI**  
Indiana University-Purdue University Indianapolis

**Other Campuses**  
IU East  
IU Fort Wayne  
IU Kokomo  
IU Northwest  
IU South Bend  
IU Southeast

Contribute resources to development teams

### Benefits

- Developers spend more time on development and less time on infrastructure
- Better policy compliance
- Disaster Recovery and Business Continuity
- Improved Monitoring and Security
- Central Funding of Storage
- Easier integration with other enterprise IT services
- Leverage consistent infrastructure across campuses

### Potential Services

- Shared Services across multiple campuses
- Virtual Services using Docker to replicate applications
- Spotlight supported Exhibits



# NEW CHARGE

November 2018

Expand Paged Media  
Project to include image  
collections features

CONTENTS

Volume 1

TOC Thumbnails

- Volume 1
  - [Front Cover]
  - [Title Page]
  - Contents
  - Sonate Nr. 19
  - Sonate Nr. 20
  - Sonate Nr. 22
  - Sonate Nr. 24
  - Sonate Nr. 25
  - Sonate Nr. 26
  - Sonate Nr. 27
  - Sonate Nr. 28
  - Sonate Nr. 29
  - Sonate Nr. 30
  - Sonate Nr. 32
  - Sonate Nr. 33
- Volume 2

[View record in IUCAT](#) [Open large viewer](#)



# HYRAX

A really great re-starting point!





2.

# Completed Work

# ESSI File Manager

Apply labels, ordering, and pagination

The screenshot displays the ESSI File Manager interface. On the left is a dark sidebar with navigation options: Hyrax, nhomendaindiana.edu, ACTIVITY (Your activity, Reports), REPOSITORY CONTENTS (Collections, Works), TASKS (Review Submissions, Manage Embargoes, Manage Leases), CONFIGURATION (Settings), and Workflow Roles. The main content area is titled 'File Manager' and shows a grid of document pages. Each page card includes a title (e.g., 'Page 1'), a file identifier (e.g., '(VAE0494-00001.tif)'), a thumbnail image, and an 'OCR' status (checked). Below the thumbnail is a list of options: Single Page, Non-Paged, Facing pages, Thumbnail, and Representative Media. On the right side, a 'Toolbar' panel contains settings for Sorting (Sort Alphabetically), Labeling (Start With: 1, Unit Label), Paginate (selected), Foliate, Front Label, Back Label, Front First, Back First, Bracket, Apply, Viewing Direction (selected: left-to-right), and Viewing Hint (selected: individuals).



# ESSI Structural Editor

## Add hierarchical structure

The screenshot displays the ESS I Structural Editor interface. The top navigation bar includes the Hyrax logo, the user's name (rhomendaindiana.edu), and the current page path: Home / Dashboard / Works / A midsummer night's dream... / Edit Structure. The left sidebar contains navigation menus for Activity, Repository Contents, Tasks, and Configuration. The main content area is titled "Edit Structure" and shows a hierarchical structure for a document. The structure is organized into sections, each with a plus sign and a label: "Front Matter", "i", "ii", "Table of Contents", "iii", "iv", and "Score Section 1". Each section has a corresponding thumbnail image. The "Table of Contents" section is highlighted. On the right side, there are two panels: "Viewing Options" with a "Hide Thumbnails" button, and "Save Structure" with an "Add a Section" button and a "Save changes" button.



# ESSI Search Within

Based on community work around IIIF

The screenshot displays a web-based IIIF viewer interface. At the top, there is a navigation bar with buttons for 'Add to collection', 'Feature', 'Edit', 'File Manager', 'Edit Structure', 'Attach Child', and 'Delete'. Below this, a dark-themed viewer window is shown. The viewer has a left sidebar labeled 'CONTENTS' with a list of thumbnails and their corresponding identifiers (e.g., 'vae0336-0...Q. 2'). The main viewing area is titled 'Additional testing' and shows a document page with the text 'on' and 'personnel of Indiana', where 'Indiana' is highlighted in blue. Below the text, it says 'Page 1'. The viewer includes navigation controls like 'Image 1 of 4', 'Go', and arrows. At the bottom, a search bar shows '6 results found for 'Indiana' Clear' and 'Next Result'. The footer of the viewer shows 'page vae0336-01-001.tif of -'.



3.

# Work in Progress

# Flexible Metadata in Hyrax – A Short History

- **By default, Hyrax assumes uniform metadata across all items.**
- **Adding new fields requires changes in code. Lots of changes!**



# Flexible Metadata in Hyrax – A Short History

## Dog Biscuits and Scooby Snacks

- **Dog Biscuits and Scooby Snacks are two related attempts to implement flexible metadata.**
- **Put metadata field descriptions into configuration files rather than code.**
- **Changing fields required application restarts.**



# Flexible Metadata in Hyrax – A Short History

## M3 Specification

- **The Machine-Readable Metadata Modeling Specification (M3) Group has been working on a standardized way to specify metadata profiles**
- **Based on Dog Biscuits and Scooby Snacks**
- **Will provide an easy way to share metadata across repositories or institutions**
- **See <https://github.com/samvera-labs/houndstooth>**





# A Big Problem

Many Collections +  
 Multiple Legacy Software Platforms +  
 Each with their own Metadata Application Profile =  
**WE NEED HELP WITH METADATA!**

	A	E	F	L	AE	AF	AN
1	ns1:name	ABSTRACT	ACCESSION_NUMBER	ALTERNATE_ID	CALL_NUMBER	CAPTION	COORDINATES
3	Archives of African American Music and Culture Collectio	Description/No	Accession Number	Additional Version ID	Call number	Caption	
5	Ben-Hur - Wallace II Collection	Notes	Acquisition number	Alternate ID	Call number		
6	Birch Bayh Photo Collection	Abstract	Accession Number		Call number	Caption	
7	Black Filmmakers Hall of Fame Photograph Collection	Description	Collection No.	Alternate ID	Shelf No.	Caption	
8	Building a Nation: Indiana Limestone Photograph Collecti	Description		Alternate ID	ILCO ID number	Caption	Lat,Lon
14	Frank McCloskey Photo Collection	Abstract	Accession Number	Alternate ID	Call number	Caption	
17	Gilder mss	Notes	Acquisition number	Alternate ID	Call number	Caption	
18	Glenn A. Black Laboratory of Archaeology Ethnohistory M	Abstract		Docket Number	Call number	Caption	
19	Glenn A. Black Laboratory of Archaeology Photographs	Description		Alternate ID	Catalog number	Caption	
20	History of the IU Libraries	Abstract	Collection ID	Original file name	Item ID	Caption	
22	Indiana Historic Maps	Notes			Call number	Imprint	Coordinates
23	International Maps	Abstract	Title Control Number		Call number	Caption	Coordinates
24	IU East Campus Archives Image Collection	Description	Accession/Collection No.	Alternate ID	Call number		
25	IU Liberian Stamp Collection	Free Text Descr	Accession Number	Alternate ID	Call number	Caption	
27	Johnny Otis Collection	Description/No	Accession Number	Additional Version ID	Call number	Caption	
28	Josef Gugler African and Middle Eastern Film Collection	Description	Collection No.	Alternate ID	Shelf No.	Caption	
29	Karen Shearer Collection	Description/No	Accession Number		Call number	Caption	
31	Kumasi Central Market and Ghana Field Images	Description	Accession Number	Alternate ID	Call number	Caption	
32	Lee Hamilton Photo Collection	Abstract	Accession Number		Call number	Caption	
33	Lilly Library Image Collections	Notes				Caption	
34	Lilly Library Maps	Notes			X		X
36	Malcolm Fleming World War II Photographs	Abstract	Accession Number			Caption	
37	Molla Nasreddin Cartoon Archive, 1906-1918	Description		Original Filename		Caption	






# A Big Problem

- Existing solutions still require editing configuration files and/or generating code
- We need a truly flexible approach that allows service managers to create collections for a variety of users

 NOTCH8 to the rescue!





# Flexible Metadata Modeling




 Hyrax English ▾  80001477153@iu.edu 

80001477153@iu.edu

ACTIVITY

-  Your activity >
-  Reports




REPOSITORY CONTENTS

-  Collections
-  Works
-  Flexible Metadata Profiles

Home / Dashboard / Flexible Metadata Profiles

## M3 Profiles

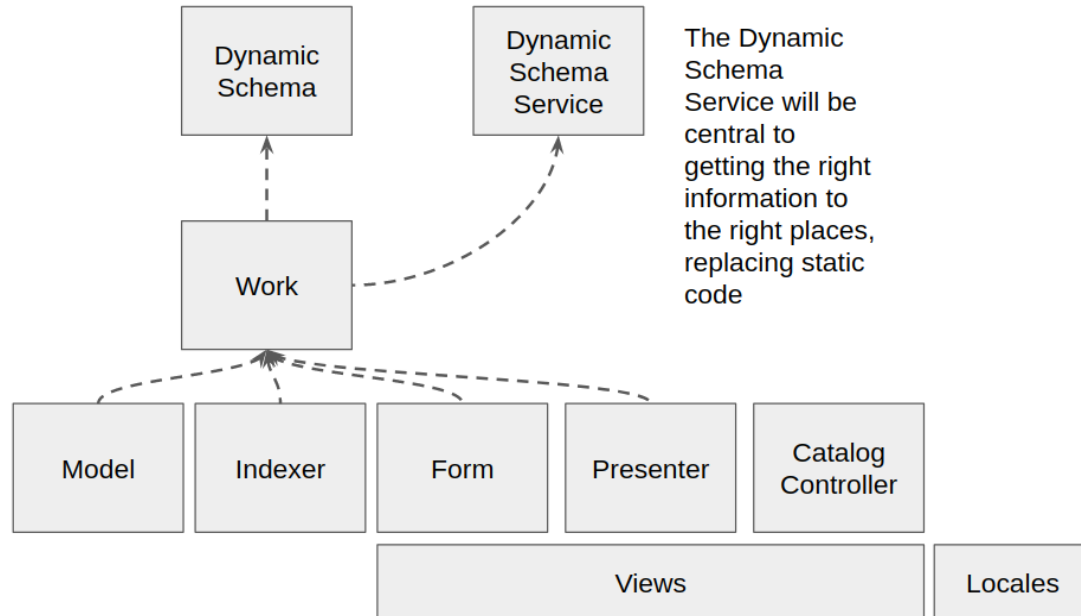
[Import Profile](#)

Name	Version	Profile Type	Created At	Updated At	
ESSI Profile	0.1	concept	Oct 17, 2019	Oct 17, 2019	  



# Flexible Metadata Modeling

## WORKING WITH WORKS



# Workflow Integration

- Out of the box, Hyrax assumes individual upload of items via the web
- We have very stable mechanisms for bulk upload, storage (SDA) and derivative creation
- We are working to integrate these to allow flexibility for item ingestion



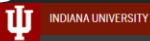
# Branding and Collections

- **Collection Administrators will be able to customize collections without developer assistance**

The screenshot displays the ESSI (Electronic Scholarly Publishing) website interface. At the top, there is a dark red header with the Indiana University Psi logo and the text "INDIANA UNIVERSITY". Below this, the "ESSI" logo is on the left, and navigation links for "About", "Help", "Contact", and "Login To CAS" are on the right. A search bar with the placeholder "Enter search terms" and a "Go" button is centered. The main content area features a large background image of a starry night sky over a mountain range. A prominent heading reads "Lorem ipsum dolor sit amet", followed by a paragraph of placeholder text: "View an IUPUI page, mei partem indoctum id. View a collection page, pri expetendis repudiandae ei, et ornatus theophrastus mea. Ex sed ludus populo putent, in nec novum oblique fuisset. Novum possit ad per, duo id purto laudem tistique, mei ut inani noluisse disputationi. View a collection details page." Below the text is a red button labeled "Share Your Work". At the bottom, there are two tabs: "Featured Works" (selected) and "Recently Uploaded". To the right, there are tabs for "Explore Collections" and "Featured Researcher". A collection card is visible, showing a blue cube icon and the text "Test Collection 2 May 2019".



# Image collections



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Hyrax

Home About Help Contact

Search Hyrax Enter search terms

Home Hoagy Carmichael Photograph...

## Hoagy Carmichael Photograph Collection



This collection consists of photographs from the Hoagy Carmichael Collection at the Archives of Traditional Music as well as images of artifacts and objects within the collection. For more information about the Hoagy Carmichael Collection, please contact Archives of Traditional Music staff.

### Collection Details

Total items 1  
Size 21.6 MB

Search subcollections and works in this collection



Works (1)

Sort by: relevance Results per page: 10 Refresh

Title

 Howard Carmichael standing on telephone pole, Montana ca. 1910.  
Is part of: Hoagy Carmichael Photograph Collection

Howard Carmichael standing on telephone pole, Montana ca. 1910. Public Deposited

Add to collection

Howard Carmichael standing on telephone pole, Montana ca. 1910.



### MORE INFORMATION

#### About the item

Title

Howard Carmichael standing on telephone pole, Montana ca. 1910.

Rights statement

<http://rightsstatements.org/vocab/NKCC/1.0/>

Date modified

10/02/2019

Series

Early Period 1. Carmichael family and friends (late-1800s to 1920s-1930s), including Hoagy Carmichael as a child.

Identifier

ATM-MC2-3-1-61



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# Newspaper collections

Home / Indiana University...

## Indiana University Southeast Newspaper Collection

INDIANA UNIVERSITY SOUTHEAST

### The Southeast Horizon

Volume 49, Number 13

This collection is testing digitized newspapers in ESSI.

Collection ID  
Total items  
Size

Search subcollections and works in this collection

Works (1)

Sort by: **relevance** Results per page: **10** Refresh

Title

**Southeast Horizon Volume 49 Number 13**  
Is part of: [Indiana University Southeast Newspaper Collection](#)

### Southeast Horizon Volume 49 Number 13

Public Deposited

Add to collection

CONTENTS

Southeast Horizon Volume 49 Number 13

Page 1  
Page 2  
Page 3  
Page 4  
Page 5  
Page 6

page Page 2 of -

Search within this item: Enter Keyword

More information

About the item

Title  
Southeast Horizon Volume 49 Number 13

Creator  
IU Southeast

Rights statement  
<http://rightsstatements.org/vocab/InC-EDU/1.0/>

Date modified  
10/02/2019

Holding location  
Southeast Library - New Albany  
4201 Grant Line Rd

Last modified  
10/02/2019

Open large viewer





# Archival paged content

The screenshot shows a web browser window displaying a digital archive of a document. The document is titled "Address Lists, 1936-1966; Indiana University Mortar Board Alumnae Club records, 1936-1966". The main content area shows a list of "HONORARIES OF I.U. CHAPTER" with names and addresses. A search overlay is present at the bottom, showing "1 result found for 'roboters'".

Address Lists, 1936-1966; Indiana University Mortar Board Alumnae Club records, 1936-1966 - Google Chrome

Not secure | webapp-devel.dlib.indiana.edu/pages\_dev/concern/scanned\_resources/tb8515n473.uv#?c=0&m=0&s=0&cv=1&xywh=...

Image 2

CONTENTS << Address Lists, 1936-1966; Indiana University Mortar Board Alumnae Club records, 1936-1966 >>

TOC Thumbnails

- Archival Item 1
  - 1.1
  - 1.2
- Archival Item 2
- Archival Item 3

MORE INFORMATION

HONORARIES OF I.U. CHAPTER

Mrs. John Mueller (Mrs. Kate H.)  
Mrs. E.W. Fox (Mrs. Joanna) 111  
Mrs. Bert Young (Mrs. Grace) 111  
Mrs. Fannie Lee Weatherwax, Pat  
Prof. Gretchen A. Kemp, 718 E. 8  
Dr. Eunice **roboters**, 1801 East H  
Mrs. Forrest Ellis (Prof. France  
Mrs. Ralph Collins (Dorothy) 25  
Mrs. John Hendricks (Mrs. Cecil  
Mrs. Granville Wells, 1321 E.10  
Mrs. Edith Boyer Schuman (Mrs. )

LOCAL MEMBERS (\* means alumna of I

\*Mrs. Marjorie Hull Bullock (Mrs. M  
\*Mrs. Lois Armstrong Hendricks (Mrs  
\*Mrs. Susanna Howe Nolan (Mrs. Val)

page 2 of 15

Previous Result 1 result found for 'roboters' Clear Next Result



Thanks:

- Indiana University Purdue University Indianapolis
- Notch8
- Newspaper Works (Boston Public Library, University of Utah via IMLS)

<https://github.com/IU-Libraries-Joint-Development/essi>



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