Enhanced Media Playback in Hyrax App Using Avalon Components

Chris Colvard Indiana University

Brian Keese Indiana University

Samvera Connect 2018

A Brief History of Avalon

- One of the first Hydra Samvera Solution Bundles
- Solved a core problem (audio and video access)
- But it only focused on time-based media
- Grew quickly but grew up alone
- Currently in production at 10+ institutions



Current Avalon implementers



Щ INDIANA UNIVERSITY











Fenway Library Organization









avalon 5

- Playlists and markers
- Ingestion API
- Captions

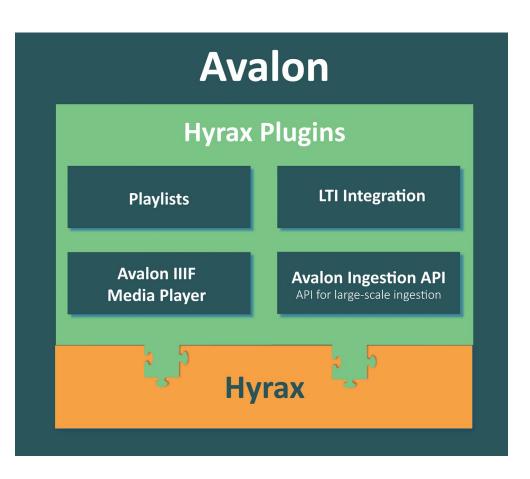


avalon 7 (2+4)

So what will Avalon 7 look like?

- Use Hyrax as a starting point
- Contributions to Hyrax Core, Plugins, Work Type, and Custom code

• Avalon bundles it all up



Creating small, reusable components

- Embeddable IIIF-AV player
- Transcoding and streaming
- Playlists including segments and annotations
- Avalon-style leases
- LTI support (e.g. Canvas)
- Ingest API

IIIF for Audio/Video



What is IIIF?

International Image Interoperability Framework

A community that develops shared APIs, implements them in software, and exposes interoperable content.

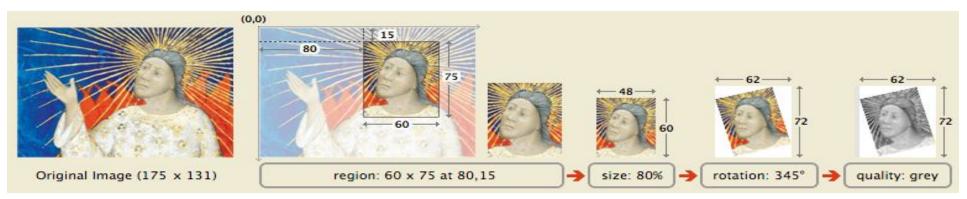


Why? Interoperability!

- Many servers, many clients, many applications
- Publish once, reuse often
- Combine content from across repositories!

Image API

"Facilitate systematic reuse of image resources in digital image repositories maintained by cultural heritage organizations."



http://www.example.org/image-service/abcd1234/80,15,60,75/pct:80/345/grey.jpg

Example: Mirador

http://projectmirador.org/demo/



Presentation API

"Provide the information necessary to allow a rich, online viewing environment for primarily image-based objects to be presented to a human user, likely in conjunction with the IIIF Image API."

Example: Pages Online

<u>https://pages.dlib.indiana.edu/concern/s</u> <u>canned_resources/ddf65v887r</u>

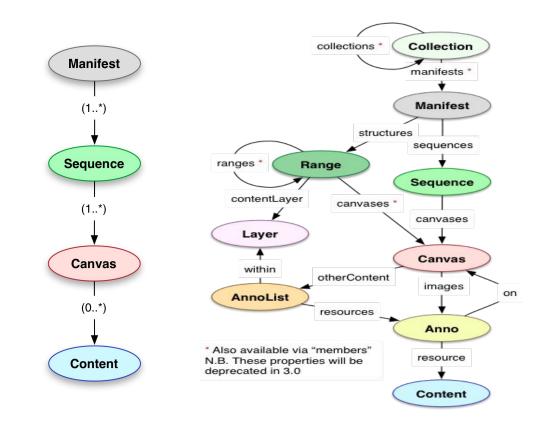
IIIF A/V "Extend to A/V the benefits of interoperability and the growing ecosystem of clients and servers that IIIF provides for images."

Presentation API Version 3.0

- Extend canvas to have time dimension
- Remove assumptions of only images
- Annotating canvases on canvases
- Switch from Open Annotation to W3C Web Annotation Standard

Presentation API

- JSON-LD manifest
- Descriptive information
- Shared canvas
- Static content or from Image API server



How would Avalon use IIIF?



Use Case: Archival Film

Repository | audio + video

Browse



Sign in Help

Search

Use Case: Consortial Licensed Video

Item Details

Start over 🕱 Add Star

Cathedrals of Culture

Authors

- Wenders, Wim
- Glawogger, Michael, 1959-2014
- Madsen, Michael, 1971-
- Redford, Robert
- Olin, Margreth, 1970-
- Aïnouz, Karim

Related Subjects

- Architecture and society
- Philharmonie (Berlin, Germany)
- Rossiĭskala natsional'nala hiblioteka
- Salk Institute for Biological Studies
- Operahuset (Oslo, Norway)
- Centre Georges Pompidou

 Format
 Online; Online Video

 Creator
 Wenders, Wim; Glawogger, Michael, 1959-2014; Madsen, Michael, 1971-; Redford, Robert; Olin, Margreth, 1970-; Aïnouz, Karim

 Date
 2014

 Summary
 Six acclaimed filmmakers bring their own visual style and artistic approach to the exploration of six different landmark buildings, showing us how they reflect our culture and guard our collective memory. The buildings featured are the Berlin Philharmonic Hall, the National Library of Russia, Halden Prison, the Salk institute, the Oslo Opera House, the Centhe Pompidou.

 Six 26-minute episodes of a made-for-TV documentary series.

~

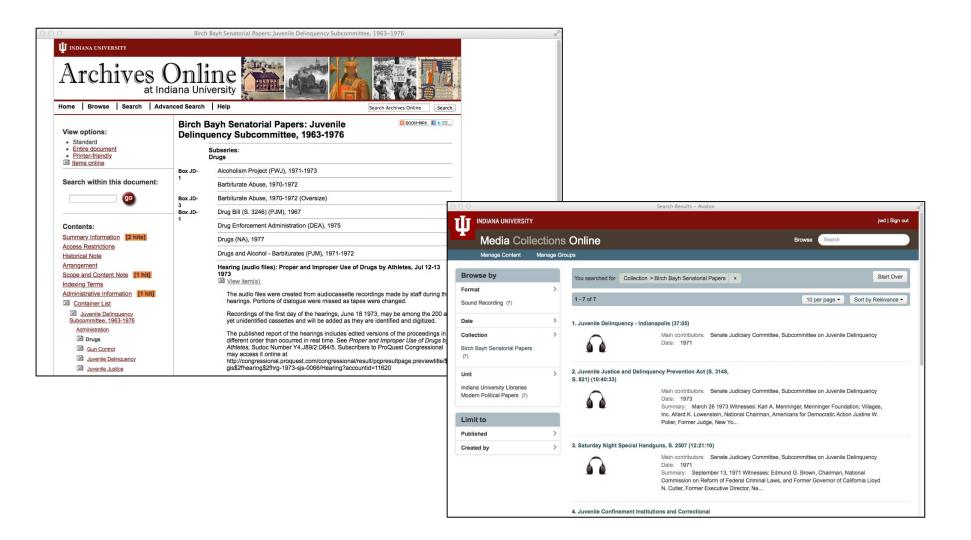
See more

Item Actions

Watch Online



Use Case: Media Within Archival Collections



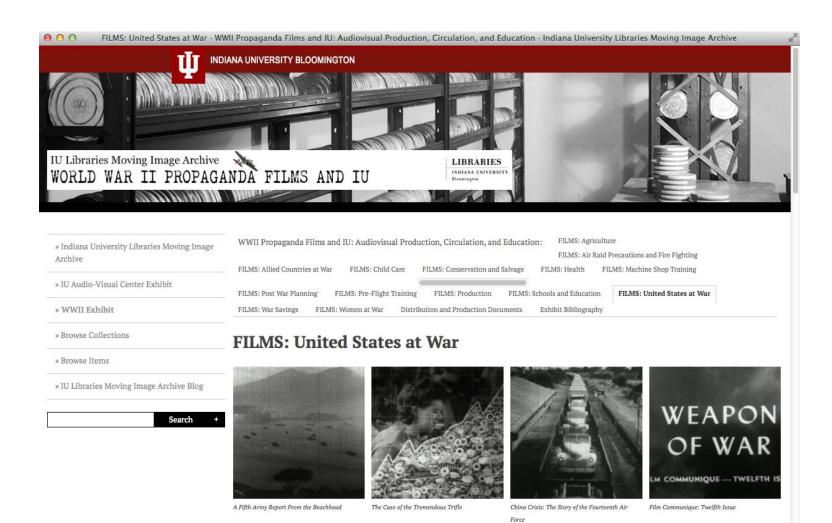
Use Case: Video Reserves in Learning Management System

MEDIA	♠ > SBX_MEDIA					
9				j-r	rudder@northwestern.edu Si	ign out @ Help
uncements						
ments	Repository aud	o + video				
sions						
ences						
Reserves	Browse Media in Canva	as			Search	
Media						
96	Browse by	You searched for	External Group > Media in Canvas ×		Start Over	
ations	Format	>	*			
	Moving Image (1)	1 - 2 of 2		10 per page - S	ort by Relevance -	
	Sound Recording (1)					
es 1		1. Marching Band, 1	1957 (16:31)			
	Date		Main contributors: Northwestern	University (Evanston, III.). M	larching	
	Genres		Band		() have been a second s	
	Collection		Date: 1957			
vas Resources	Unit					
103001003	Unit					
		2. Clarinet Master C	lass 1990-06-21 (2:09:02)			
		\frown	Main contributors: Brody, Clark; M	Marcellus, Robert; Smith, Gr	regory	
		Á À	Date: 1990-06-21			

Use Case: Mass Digitization

			a content.mdpi.iu.edu	0	
INDIANA U	NIVERSITY				jwd Sign out
MDP	l Inter	nal Content Access	3	Browse S	earch
Manage C	Content I	Manage Groups Manage Selected	Items (0)		
Browse By		« Previous 1 - 10 of 36,234 Next	»	Sort by Relevance -	10 per page -
Format	*			Select All	
Sound Record- ing	30,917		F THE BULL FIGHT RING LA FIESTA BRAVA (36:18)		
Moving Image	5,317		/lain contributors: Unknown Date: unknown/unknown		
Main contributor	>				
Date	>	2. ITORERO! LA FIESTA BRAVA, N	Aain contributors: Unknown	Select	
Genres	>		Date: unknown/unknown		
Collection	>		1. 10		
Unit	>		k 16mm/24fps Positive Transfer (31:06) Aain contributors: Unknown	Select	
Language	>	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Date: unknown/unknown		
Limit to					
Published	>				
Created by	>	4. "1928" (50:57)		Select	
External Group	>		Main contributors: Olsen, George, 1893-1971. Date: 1966 (Creation date: 1927)		
Date Digitized	>		1000 (Didation date, 1021)		

Use Case: Online Exhibits



23

Use Case: Online Publishing



Use Case: Online Publications

Gravity's Reverb: Listening to Space-Time, or Articulating the Sounds of Gravitational-Wave



CULTURAL ANTHROPOLOGY - The Journal - The Society - Fieldsights - Initiatives

(i) A https://culanth.org/articles/849-gravity-s-reverb-listening-to-space-time-or

Detection



twentieth century sci-fi movies (see Taylor 2001 on space-age music).



Peer Reviewed Open Access

🗉 🚥 🖾 🗘 🤉 Search

Search

Log In | Contact Us | Join SCA



Use Case: Music Pedagogy

	bkeese Sign out
Media Collections Online	Browse Search
Manage Content Manage Groups Manage Selected Items (50) Playlists	
	Autoplay On Copy Playlist Edit Playlist
Chopin, Sonata ("Funebre") in B-flat Minor, Op. 35, IV. Finale (Presto) [01:23] null	≙ M544 Exam 1 2016
 Source Item Details Tristesse de Chopin Date 1960 Main contributor Chopin, Frédéric, 1810-1849. Contributor Sebök, György. Publisher Erato	 1. Chopin, Sonata ("Funebre") in B-flat Minor, Op. 35, IV. Finale (Presto) 01:23 2. Mussorgsky, Pictures at an Exhibition, Con mortuis in lingua mortua 02:09 3. Franz Liszt, Sonata in B Minor (1853) 02:14 4. Franck, Prelude, Chorale & Fugue, Fugue 02:07 6. Brahms, Piano Sonata No. 3 in F minor, Op. 5, I. Allegro maestoso 7. Alkan, Sonatine op.61, Scherzo-Minuet 03:39 8. Alkan, Sonatine op.61, Scherzo-Minuet 03:39
Subjects Piano music; Polonaises; Waltzes; Sonatas (Piano) Collection Variations Unit	
Music Library Physical Description 1 sound disc : analog, 33 1/3 rpm ; 12 in. Notes Title from container.	

Use Case: Music Pedagogy

	bkeese Sign out
Media Collections Online	Browse Search
Manage Content Manage Groups Manage Selected Items (50) Play	lists
Unpublish Edit Delete	
00:00	59:19 Q () Pictures at an exhibition / Mussorgsky.
	"Dante" sonata / Liszt, Isolde's Liebestod
	Share / Wagner-Liszt
Sections	
● 1. CD 1 (59:19)	
	1987 (Creation date: 1986)
Mussorgsky, Pictures at an Exhibition	Main contributor
1. Track 1. Promenade (01:24)	Mussorgsky, Modest Petrovich, 1839-1881.
2. Track 2. The Gnome (02:30)	Contributor
3. Track 3. Promenade (00:54)	Douglas, Barry, 1960-
4. Track 4. The Old Castle (04:31)	
5. Track 5. Promenade (00:31)	Publisher
6. Track 6. Tuileries (Children Quarreling at Play) (00:58)	RCA Red Seal
7. Track 7. Bydlo (02:55)	Subjects
8. Track 8. Promenade (00:52)	Suites (Piano); Piano music; Piano music, Arranged; Operas;
9. Track 9. Ballet of the Unhatched Chicks (01:13)	Excerpts, Arranged
10. Track 10. Samuel Goldenberg and Schmuyle (02:28)	
11. Track 11. Promenade (01:19)	Collection
12. Track 12. LimogesThe Market (01:22)	Variations
13. Track 13. Catacombs (Sepulchrum romanum) (02:29)	Unit
14. Track 14. Con mortuis in lingua mortua (02:10)	Music Library
15. Track 15. The Hut on Hen's Legs (Baba Yaga) (03:12)	Diversity Description
16. Track 16. The Great Gate at Kiev (05:08)	Physical Description 1 sound disc : digital, stereo. ; 4 3/4 in.
17. Track 17. Liszt, "Dante" Sonata (18:13)	i sound disc : digital, stereo. ; 4 3/4 m.
18. Track 18. Wagner-Liszt, Isolde's Liebestod (07:10)	Notes
	The 1st work a suite; the 3rd an opera excerpt, transcribed
	by Liszt.

0/0/0/1

Use Case: OHMS

UK	Avalon Au	dio in OHMS		
	Indiana Uni	Indiana University Library		
	00:00	30:23 (1)		
0				
ST: Today's date is February 16, 2017. My name is S	teven Towne, university	Transcript Index		
		- Search this Transcript -		
archivist here at IUPUI. Today I am interviewing Sara		Keyword Go		
10 IU Bicentennial Oral History Project. This interview is			_	
digitally. I would like to ask your permission to record				
digitally and to have it transcribed as part of the Bicer	-			
internet. Is thatdo we have your permission for that?				
SH: You have my permission.aaa				
ST: Great. I also have a release form before you for b				
Indiana University to use this recording. It does not pr				
interview in any way you choose. If you wish to place the interview you may do so on the release form. Is the interview you may do so on the release form.				
are merilen yearnay as so on the release form to a	hat permissible with you?			
ST: Good, let's get started with some background que St. Los to the started with some background que	estions. Where were you born?			
 SH: I was born in Shelbyville, Indiana. 				
w Rights Statement		© 2012 Louie B. Nunn Ce University o	enter for Oral History of Kentucky Libraries	
w Usage Statement			powered by OHMS	
nowledgment			OFINIS	

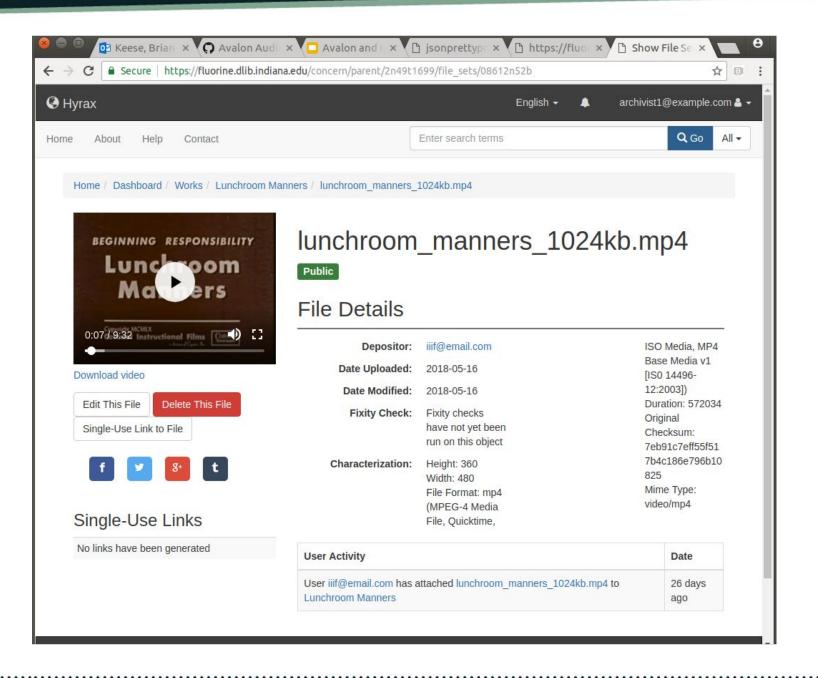
.....

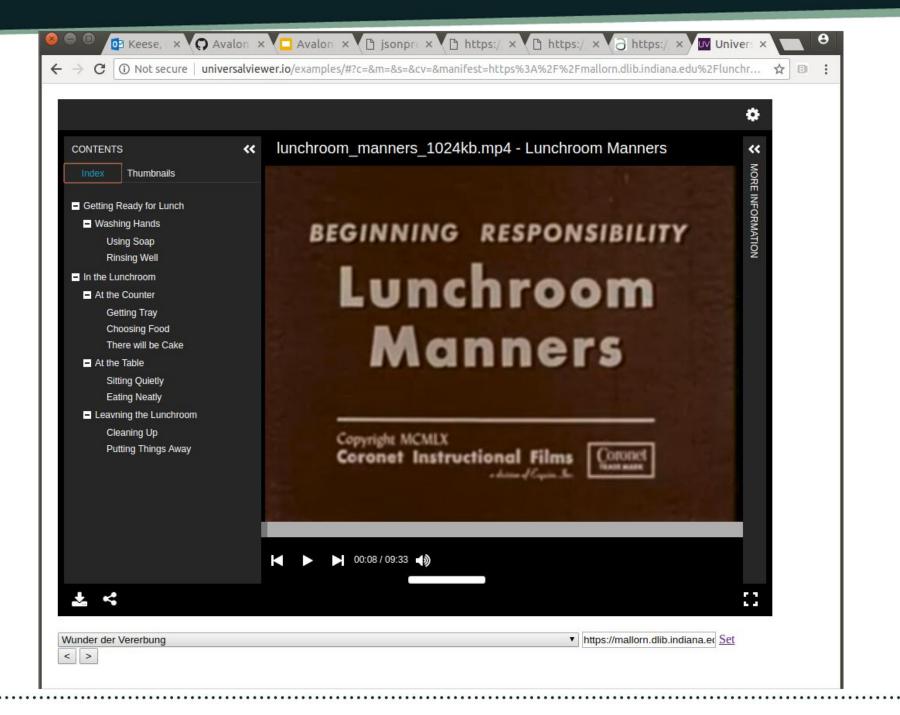
MEDIA SY

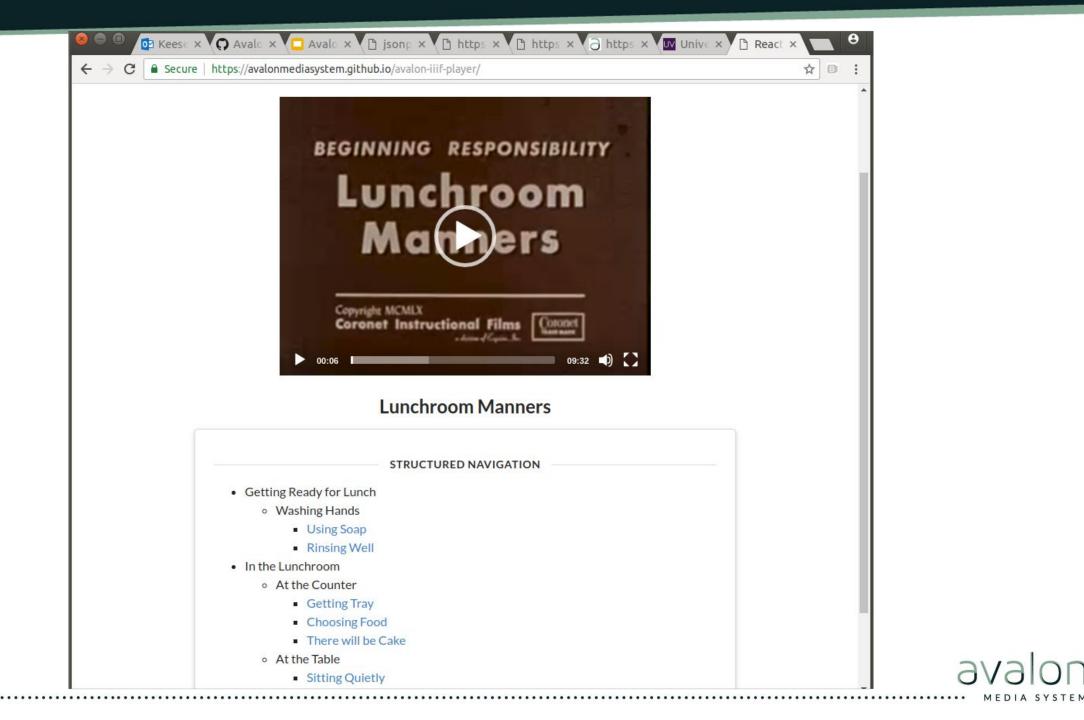
Avalon 7.0 + IIIF A/V

- IIIF Presentation 3.0 manifest endpoints
- IIIF Presentation 3.0 media player
- Implement playlists using IIIF
 Presentation 3.0

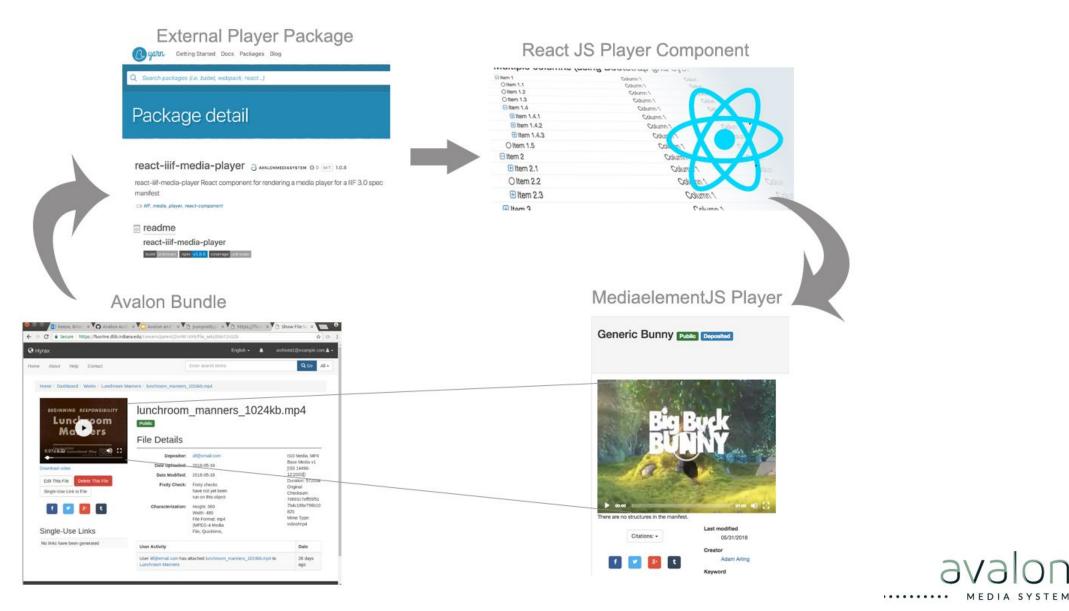








Avalon IIIF Media Player



Transcoding



Opencast Matterhorn

Lecture capture software

Existing OSS with international community

Flexible workflow pipeline with Admin UI

But...

Differing use cases Totally different stack (Java OSGI) Heavyweight Hard to install Barrier to adoption



Needs

- Support multiple encoding backends Lightweight Creates multiple derivatives Flexible for different institution's needs
- Encourage instead of hinder adoption



Introducing ActiveEncode

(Modeled on ActiveJob)



ActiveEncode Basic Usage

ActiveEncode::Base.engine_adapter = :ffmpeg

ActiveEncode::Base.create("file:///usr/local/bundle/gems/active_encode-0.4.1/spec/fixtures/fireworks.mp4",{ outputs: [{ ffmpeg_opt:"-s 640x480", label:"mp4", extension:"mp4" }] })

=> #<ActiveEncode::Base:0x000000007aee3e8 @input=#<ActiveEncode::Input:0x000000007aecef8 @url="file:///usr/local/bundle/gems/active_encode-0.4.1/spec/fixtures/fireworks.mp4", @width=960.0, @height=540.0, @frame_rate=29.671, @duration=6.024, @file_size=1629578, @audio_codec="mp4a-40-2", @video_codec="avc1", @audio_bitrate=69737, @video_bitrate=2092780, @created_at=2018-10-09 12:58:45 +0000, @updated_at=2018-10-09 12:58:45 +0000, @id=298>, @options={:outputs=>[{:ffmpeg_opt=>"-s 640x480", :label=>"mp4", :extension=>"mp4"}]}, @id="8378768a-7b88-494a-a37e-a4f87aa9c54e", @created_at=2018-10-09 12:58:45 +0000, @updated_at=2018-10-09 12:58:45 +0000, @current_operations=[], @output=[], @state=:running, @percent_complete=1, @errors=[]>

ActiveEncode::Base

Class Methods

create
find
default_options
engine_adapter
engine_adapter=

Instance Methods

new create! cancel! reload created? cancelled? completed? running? failed?

ActiveEncode::Base

Fields

id innu

input

output

options

state

current_operations percent_complete

errors

Callbacks

before/after/around create before/after/around cancel after_find after_reload



Custom encode job

class CustomEncode < ActiveEncode::Base</pre>

after_create do

logger.info "Created encode with id #{self.reload.id}"

end

def self.default_options(input)
 {preset: 'avalon-skip-transcoding'}
 end
end



Encoding Backends

Current

Matterhorn (will be deprecated soon) FFmpeg Amazon Elastic Transcoder Zencoder (prototype)

Future

???



Workshop Time

<u>https://github.com/avalonmediasystem/connect2018-workshop</u> /blob/master/README.md



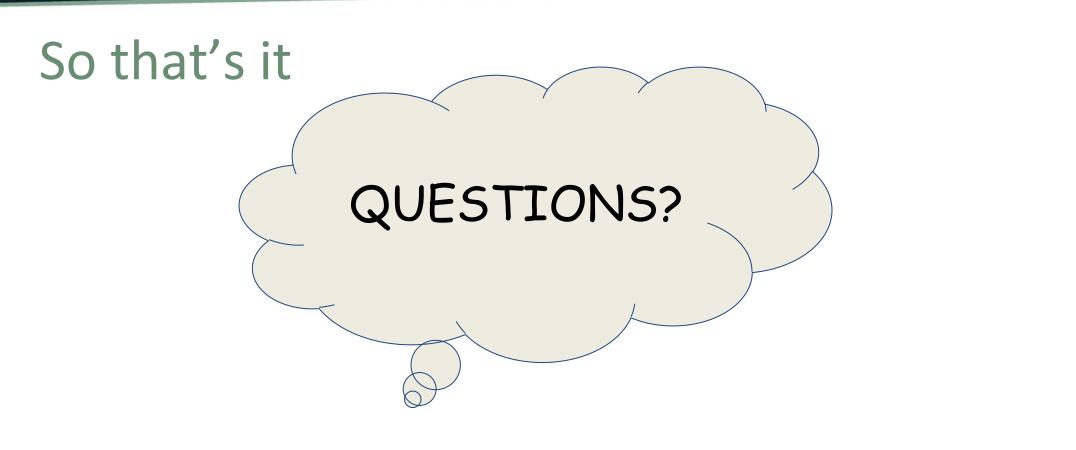
avalonmediasystem.org

avalon-discuss-l@indiana.edu

github.com/avalonmediasystem

waffle.io/avalonmediasystem/

samvera.slack.com/messages/avalon



thanks for hanging with us

cjcolvar@indiana.edu

bkeese@indiana.edu