



Variations on Video: Building the Next Generation Library Media Management System

IU Digital Library Program Brown Bag

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Presentation Outline

- Background, motivations, and project structure
- Technical architecture
- Development and requirements process
- Q&A



Background: Variations



Variations

Digital Music Library

- Open source digital music library system developed by IU DLP and Music Library
- In use at IU since 1996 (in various forms)
- Used at a dozen institutions, mainly for streaming audio course reserves
- @IU, current version online since 2005, now with ~20,000 digitized albums; in heavy daily use



Variations beyond IU

Open source at variations.sourceforge.net since 2009
thanks to IMLS National Leadership Grant

Indiana University

Tri-Colleges

(Haverford, Swarthmore, Bryn Mawr)

Ohio State University

University of Maryland

New England Conservatory

Dartmouth College

University of Miami

Baylor University

Southern Methodist University

University of North Texas

Bowling Green State University

Oberlin College

University of Connecticut

Kenyon College

Calvin College

New York University

Yale University

Youngstown State University



Variations on Video

- Planning grant from IMLS
 - \$50,000 National Leadership Grant
 - August 2010 – June 2011
- Implementation grant from IMLS
 - \$948K National Leadership Grant
 - October 2011 – September 2014
- Partnership with Northwestern University + others



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SERVICES



Project Objectives

- Develop a digital audio/video management and delivery system, focused on needs of libraries and archives
- Follow an agile, open source development model
- Leverage existing technologies, where feasible
- Communicate and market the project broadly to increase awareness and grow the community of users and developers



Motivators

- Demand from Variations implementers and other institutions
- Increased video digitization and creation at IU
- IU Media Preservation Initiative
- IU IT strategic plan: *Empowering People*
- No existing system serves needs of libraries
- History of involvement in open and community source software
- Desire to create a sustainable foundation for Variations development and maintenance

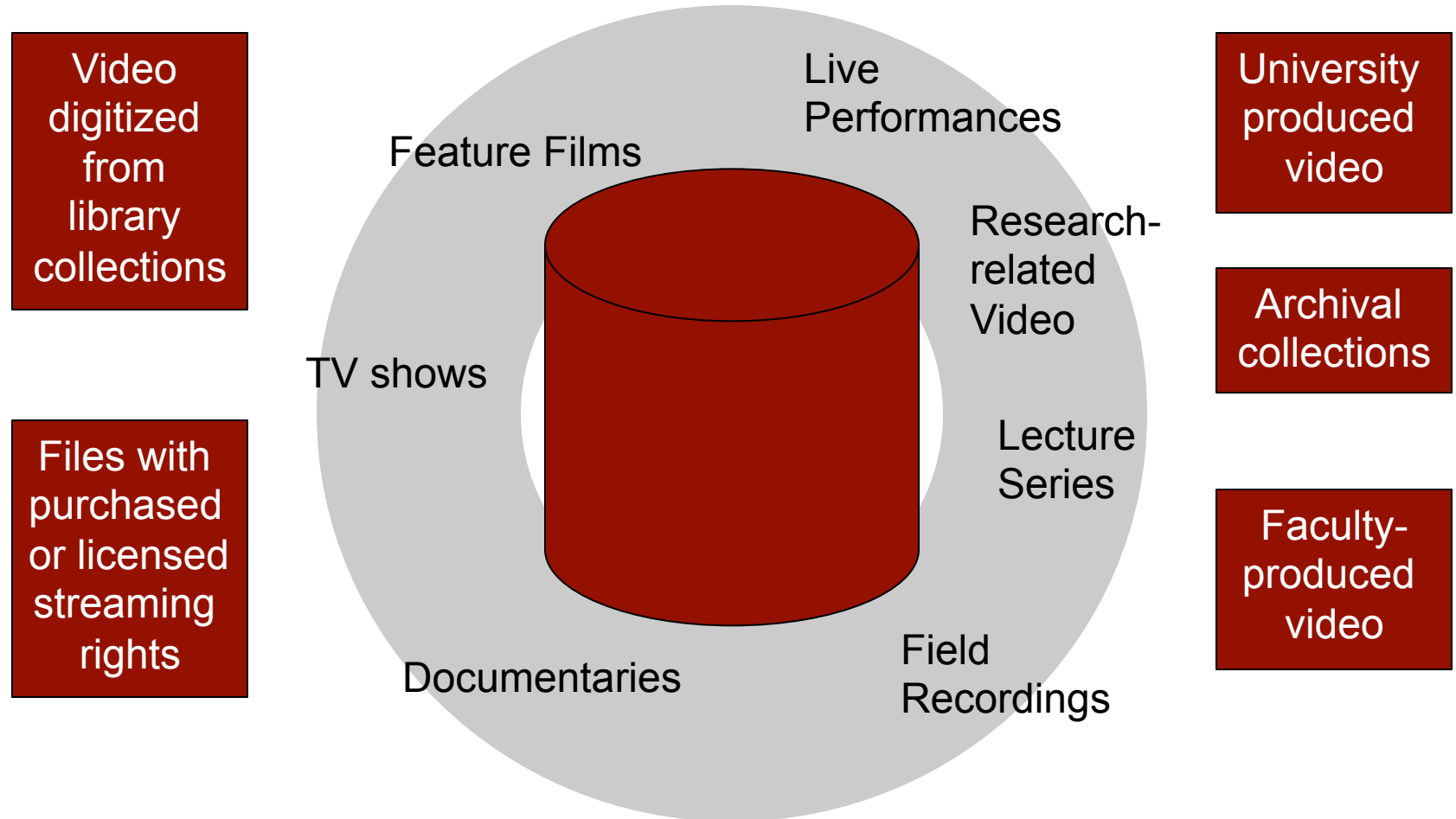


What needs are we trying to serve?

- Libraries and archives (and museums?)
- Wide variety of audio/video collections, uses, and access needs
 - Licensed educational video collections
 - Video/audio e-reserves
 - Archival collections
 - Open access collections
- Research and teaching & learning use
- Long-term management and access
- Tie-in with preservation







Variations on Video: Content





Variations on Video: Scope

- Access to managed collections
 - Video, audio
 - Focus on libraries, archives
 - Research, teaching, and learning use
 - Variety of access control requirements
 - Integration with preservation repository services
- Ad-hoc faculty/student uploads 
- Classroom capture 
- Live streaming 
- Working digital assets – media production 



Existing Solutions Insufficient

- Institutional and digital library repositories
 - e.g. DSpace, Fedora, Digital Commons, ContentDM
- Web video services
 - e.g. YouTube, Vimeo
- Streaming servers
 - e.g. Flash Media Server, Real Helix, Wowza, Red5
- Classroom lecture capture
 - e.g. Echo360, Mediasite, Opencast Matterhorn
- Digital asset management systems
 - e.g. OpenText, NetXposure
- Online video environments
 - e.g. Kaltura, Brightcove



Basic Functionality

- Video file upload/ingestion
- Transcoding
- Descriptive metadata entry / bulk upload
- Basic structural metadata
- Discovery
- Delivery and navigation
- Reuse



Results of Planning Process

- More interest out there than we had thought
- Focus on ingest, management and delivery rather than on sophisticated analysis and annotation, at least initially
- A modular approach is required
- Investigation of opportunities to leverage work of other projects where possible, such as Fedora, Hydra, and Opencast Matterhorn



Project Partners and Collaborators





Current Status

- Grant received October 2011
- Hiring staff at IU and Northwestern
 - Phuong Dinh hired at IU in January
 - One more developer to be added at IU and one at Northwestern
- Re-engaging partners
- Putting development and communication processes in place
- Technical investigations
- User story development



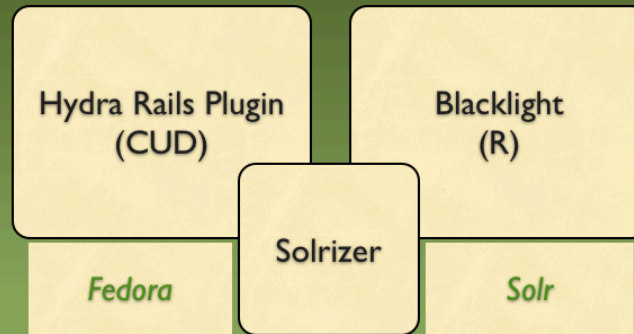
Architecture

- Hydra Framework
- Opencast Matterhorn
- Streaming Server



Hydra Framework

Hydra Architecture



<http://projecthydra.org>





Opencast Matterhorn

Lecture Capture & Administration



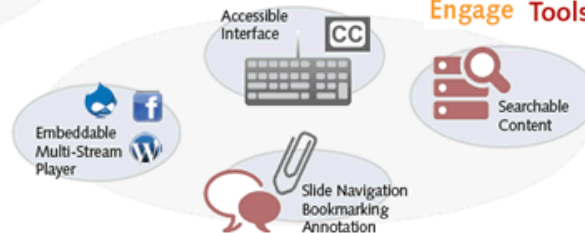
Ingest & Processing



Distribution Management



Engage Tools



<http://opencast.org/matterhorn/>



Architecture Revisited

■ Hydra Framework

- ❑ Search for free
- ❑ Rich toolset for quick development
- ❑ “One body, many heads”

■ Opencast Matterhorn

- ❑ Flexible processing pipeline
- ❑ Highly modular

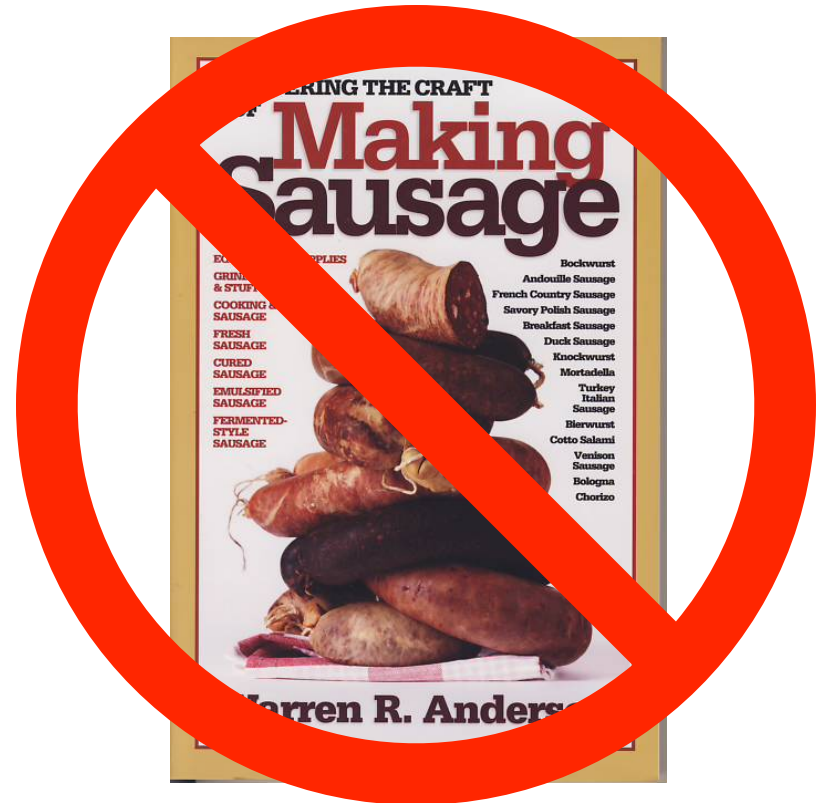
■ Streaming Server

- ❑ Red5 – open source and support in Matterhorn
- ❑ Flash Media Server – popular and iOS support



VoV Development Process

- Open
- Agile
- Distributed
- User-centered





Open

- Product to be released with an open source license
- Transparent planning, prioritization & development (beyond IU & NU)
- Partnerships with other open source efforts such as Fedora, Hydra, and Opencast Matterhorn
- Product success will attract third-party for-free support providers
- May integrate with commercial products such as the Flash Media Server, but will also provide fully free options (e.g., Red5)

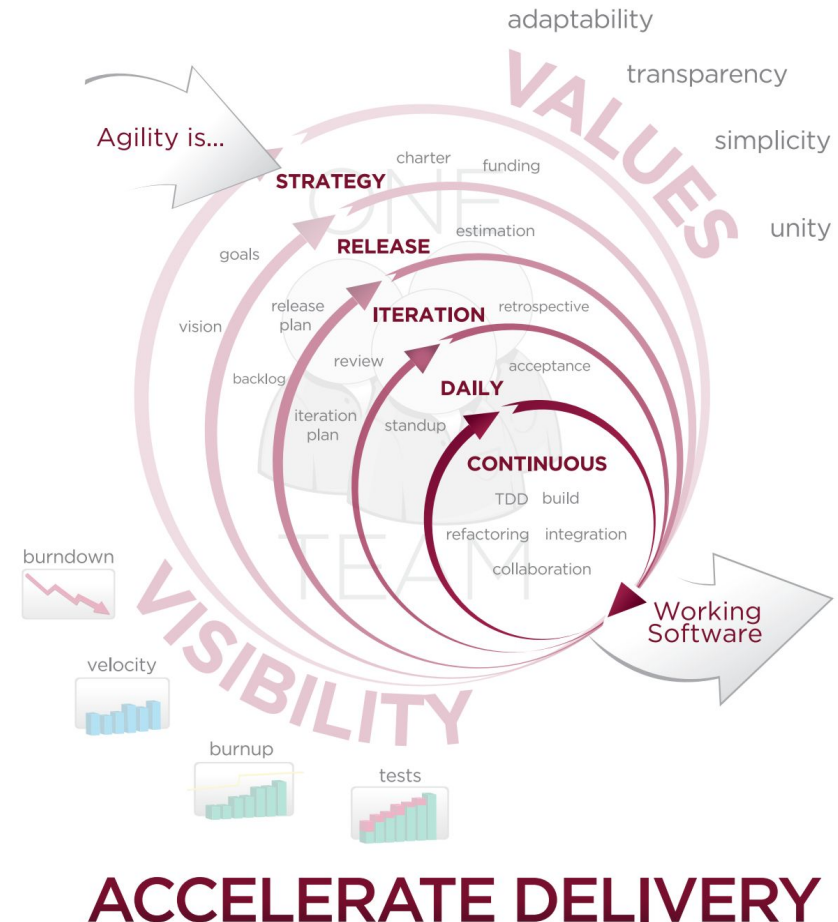




Agile

AGILE DEVELOPMENT

- Rapid iterations & frequent releases
- Agile Scrum
 - ❑ Daily scrum meeting
 - ❑ Releases are time-boxed “sprints”
 - ❑ Requirements replaced by user stories prioritized by product owner
 - ❑ Stakeholders review each sprint
- Scrum training planned





Distributed

- Development primarily expected to occur at Indiana and Northwestern
- Other partners will install and test, providing feedback and participating beyond that if desired
- Northwestern has experience with Scrum, but doing it between two development sites will be new
- Will make heavy use of videoconferencing, Adobe Connect, IRC, etc.
- Occasional F2F meetings



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User-Centered

- User stories won't be pulled out of the air—based on planning grant work
 - Significant needs analysis via interviews and observations
 - Collected usage scenarios from other institutions
 - Teams of stakeholders from IU and NU will be meeting to generate user stories
- Sprints will be publicly available for institutions to test with their own users

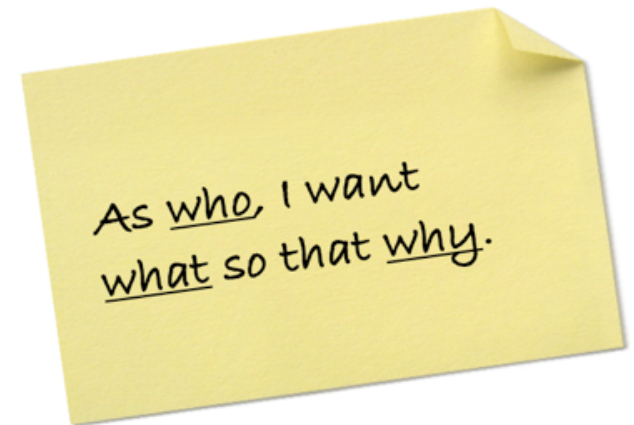




User Stories

Structure: As a <role> , I want <to do something> so that <result>.

Acceptance test: “Done” looks like <test>.



Example

As an instructor, I want to preview items in the archive so that I can make sure it is the version I want students to see.

“Done” looks like: instructors have viewing access to already digitized videos.



For more information

- <http://www.variationsonvideo.org>
- Join vov-l@listserv.indiana.edu



@varvideo



<http://www.facebook.com/varvideo>



QUESTIONS?