A Survey of Video Streaming Practice and Aspirations in Academic Libraries

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Digital Library Brown Bag Series

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Survey Context: Variations on Video
• Open source digital music library system
• 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
What’s in the box

**Includes**

- Server software
- Client construction kits for Windows and Mac
- Sample content: 2 recordings and scores
- Various utilities for authentication, authorization & encoding
- Web applications for audio playback & authorization mgmt

**Just add**

- A Linux/Unix server
- MySQL, Apple Darwin SS, Java, Quicktime, Perl, Tomcat, Apache
- Your content

**Nutrition Facts**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td>Open source BSD license</td>
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<tr>
<td>Album- not track-based</td>
<td></td>
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<tr>
<td>Online access to streaming audio and scanned score images</td>
<td></td>
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<tr>
<td>Flexible access control</td>
<td></td>
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<tr>
<td>Teaching &amp; learning tools for annotation &amp; analysis</td>
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</table>

See variations.sourceforge.net for more information.
Variations: Pedagogical Tools

"Exposition": In a sonata-rondo interpretation, the first A and B sections are the PT and ST areas in tonic and dominant. There is also a transition between the PT and ST areas.

A: Rondo theme / primary theme area
P: Rondo theme / primary theme in A major
Variations on Video

Add online video access capabilities to Variations, providing equivalent access, annotation, and analysis tools to support teaching and learning.

- Initial planning grant, Aug 2010 – Jan 2011 from the Institute of Museum and Library Services
- IU & Northwestern are lead institutions
- Funding multi-institutional collaboration on functional and technical requirements
- Goal: Submit full implementation grant proposal to IMLS in Feb 2011
Motivators for Variations on Video

• Demand from Variations implementers
• Increased video digitization locally at IU
• IU Media Preservation Initiative
• IU IT strategic plan: *Empowering People*
• History of involvement in open and community source software
• Desire to create a sustainable foundation for Variations development and maintenance
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 ❌
Variations on Video: Content

- Video digitized from library collections
- Files with purchased or licensed streaming rights
- Feature Films
- Live Performances
- Documentary
- Lectures Series
- Field Recordings
- Research-related Video
- University-produced video
- Archival collections
- Faculty-produced video
Variations on Video Grant Objectives

- Identify functional and technical requirements and define scope based on input from:
  - Librarians and technologists
  - Faculty and students
  - Technical investigation and gap analysis
- Develop high-level technical architecture and development plan
- Form partnership for development and ongoing maintenance
- Submit IMLS National Leadership Grant proposal (February 2011)
Spring 2010

SURVEY RESULTS
Overview

• Survey conducted online April 29 - June 5, 2010
• Invitations sent to
  – MLA-L
  – Code4lib
  – Some Variations lists
  – DLF-L
  – SYSLIB-L
  – VIDEOLIB
  – AMIA-L
• Approximately 150 respondents completed the survey, though most questions were optional so response numbers vary
• Of these, ~90 reported currently streaming video
Who were the survey respondents? (N = 136)

- Librarian (78, 57%)
- Systems Librarian (18, 13%)
- Library IT Staff (12, 9%)
- Institution-wide IT Staff (1, 1%)
- Other (27, 20%)

Other:
- Media Specialists (3)
- Archivists (2)
- Digital Services Librarian (2)
- Programmer, Metadata Librarian, Faculty, Developer....
~90 respondents

THOSE CURRENTLY STREAMING VIDEO
What are the main kinds of video content you stream? Check all that apply (N=94)

- Born digital videos produced by our institution
- Digital Video Files from vendor with streaming rights
- Analog videos produced by our institution then digitized
- Purchased video media subsequently digitized
- Faculty-produced materials
- Digitized film media
- Vendor digital video files without streaming rights
- Other (various)
What streaming server do you use? Check all that apply (N=88)

- Flash Media Server (Adobe)
- Windows Media Services (Microsoft)
- Other
- Quicktime/Darwin Streaming Server (Apple)
- Helix DNA Server (RealMedia)

**Other**: includes Wowza, YouTube, iTunes, VideoFurnace, Apple H.264 ....
What method do you use to restrict access to your streaming video? Check all that apply (N=91)

- Anyone with network ID or VPN can view
- Course management system roster ID
- No restriction: full public access
- Limited to specific class members via pw
- Limited to certain computers

**Other:** Some materials are open, some are not; on-campus only; it depends....
Which organization has primary responsibility for managing your video streaming server technology? (N=92)

- Library (47%)
- Campus IT Department (27%)
- Consortium of which we are a member (7%)
- A commercial third-party to whom we outsource (4%)
- Other (15%) – Most of these responses were multiple servers run by multiple organizations
What do you like about your current video streaming solution? (N=66)

(open responses categorized by topic, ranked highest to lowest by count)

- Reliability
- Broader/easier access
- Tools: Clips can be created by faculty for courses, videos can be embedded, access can be controlled at several levels by admin.
- Easy to use and set up
- High praise from faculty and students
- Video stream is high-quality
- Security and password protection
- Conversion of obsolete formats
- Support for a variety of formats
What needs are not well met by your current solution? (N=57)

(open responses categorized by topic, ranked highest to lowest by count)

- Rights management
- Ability to control authentication or restrict access
- Lacking clip creation, Blackboard embed, clip portability, collaboration, bookmarking
- Workflow is time-consuming, labor-intensive
- Off-campus access, mobile access
- Metadata production
- Limited file support
- Platform limitations (only vendor products can be used)
- Statistical data gathering
~60 respondents

THOSE *NOT CURRENTLY STREAMING VIDEO*
What statement best describes your library’s plans for streaming video? (N=66)

- **76%**: We have plans to implement a specific solution (various)
- **14%**: We have no plans to stream video
- **10%**: We are investigating video streaming options but have made no decisions
If you have already decided which video streaming server to use (or have a leading candidate), indicate which one you have chosen (N=24)

- Flash Media Server (Adobe) - 46%
- Windows Media Services (Microsoft) - 16%
- Quicktime/Darwin Streaming Server (Apple) - 13%
- Helix DNA Server (RealMedia) - 13%
- Other

**Other**: Wowza (2), Flash (2), RealMedia, CONTENTdm, Video Furnace, Kaltura, SAFARI Montage
What main types of video content would you like to stream? Check all that apply (N=64)

- Born digital videos produced by our institution
- Digital Video Files from vendor with streaming rights
- Purchased video media subsequently digitized
- Faculty-produced materials
- Analog videos produced by our institution then digitized
- Digitized film media
- Vendor digital video files without streaming rights
- Other (various)
~150 respondents

BOTH GROUPS OF RESPONDENTS
What is important in a video streaming solution?

(The following selected answers show highest ‘must have’ responses)

<table>
<thead>
<tr>
<th>Feature</th>
<th>Must Have</th>
<th>Would Like</th>
<th>Not Sure</th>
<th>Don’t Need</th>
</tr>
</thead>
<tbody>
<tr>
<td>Users can adjust playback location precisely (within a second of the desired location)</td>
<td>48</td>
<td>55</td>
<td>22</td>
<td>5</td>
</tr>
<tr>
<td>Users can mark a particular location in a video for future immediate access (bookmarking)</td>
<td>33</td>
<td>73</td>
<td>17</td>
<td>9</td>
</tr>
<tr>
<td>Users can create a playlist of segments from different videos for future reference</td>
<td>27</td>
<td>77</td>
<td>15</td>
<td>12</td>
</tr>
<tr>
<td>Videos can be accompanied by transcripts</td>
<td>28</td>
<td>70</td>
<td>22</td>
<td>10</td>
</tr>
<tr>
<td>Video content can be delivered to mobile devices</td>
<td>21</td>
<td>70</td>
<td>30</td>
<td>11</td>
</tr>
</tbody>
</table>
What is important in a video streaming solution?

(The following selected answers show highest ‘don’t need’ responses)

<table>
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<tr>
<td>Video content can be integrated into a discussion forum or chat tool for group discussion</td>
<td>5</td>
<td>80</td>
<td>32</td>
<td>15</td>
</tr>
<tr>
<td>Users can share textual annotations with other users</td>
<td>4</td>
<td>76</td>
<td>30</td>
<td>20</td>
</tr>
<tr>
<td>Video content can be integrated into an online quiz/test tool</td>
<td>6</td>
<td>68</td>
<td>35</td>
<td>21</td>
</tr>
<tr>
<td>Video marking, annotation, playlists, and segmenting can be accomplished on mobile devices</td>
<td>3</td>
<td>64</td>
<td>43</td>
<td>21</td>
</tr>
</tbody>
</table>
Interactive, end-user features wanted in a video streaming solution

(open responses categorized by topic, ranked highest to lowest by count)

• Clips can be downloaded for use in other applications
• Closed and Soft Captioning
• Search by indexed transcript
• Tools for creating learning objects for integration into online classes
• Re-purposing of content for student use (annotation, bookmarking, remixing)
• Remote Access
• Statistics on use (overall, by school, by staff member)
Which of the following repositories or digital asset management systems are you currently running? Check all that apply (N=107)

- CONTENTdm
- Other
- DSpace
- Fedora

Other includes Digital Commons, bepress, DigiTool, Symposia, custom in-house systems....
If you are running a repository or digital asset management system, check any that you use to store video assets (N=68)

Other: In-house or custom (6), bepress (2), Digital Commons (2), various....
Additional Comments

(Open responses categorized by topic, ranked highest to lowest by count)

Issues

• Copyright barriers
• Cost of licensing
• No coherent policy on fair use in this ‘Wild West DRM frontier’
• Conflicts between needs of Library and IT
• Storage costs

Likes & Opportunities

• Faculty and students love their streaming video solution
• Increased collaboration
Variations on Video Project Participant Meeting

• Held October 5-6, 2010, at IU
• Institutions contributed usage scenarios to surface user requirements
• Analyzed scenarios and developed functional & technical requirements
Variations on Video: Other Planning Phase Participants

Berkeley
DuraSpace
Matterhorn
New York University
Stanford University
WGBH
The Ohio State University
The University of York
Preliminary directions

• More likely to focus on ingest, management and delivery than on sophisticated analysis and annotation, at least initially
• Tending towards a modular approach
• Investigating opportunities to leverage work of other projects where possible, such as Opencast Matterhorn and Kaltura
Initial Module List (tentative)

- Ingest/transcoding
- Media delivery server
- Basic player interface
- Simple metadata storage and management search
- Access control (with or without rights), with authentication piece
- Ability to import metadata from other systems
Basic Player

• Navigational metadata (i.e., chapters/tracks)
• Precise, responsive time positioning
• Embeddable
• Browser and mobile support
• Transcripts and captioning
• Bookmarking
• Clip and playlist creation
Roméo et Juliette / Charles Gounod
Elapsed/Total: 0:00:05 / 150:20:03
View IUCAT Record
Context at IU

- Several *Empowering People* actions relating to digital video/media/content management
  - 32, 34, 36, 37, 55, others
- Classroom capture efforts
- Discussion of a faculty/student YouTube-like service
- PAGR Digital Asset Management System
- IUPUI IMDS
- How/when to integrate?
Questions?

• Visit our project page: http://www.dlib.indiana.edu/projects/vov

• Survey writeup will be posted on VoV site

• Follow us on Facebook or Twitter
  facebook.com/VarVideo
twitter.com/VarVideo