



NJVid – A Statewide Video Network Based on RUcore and Fedora

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Topics for Discussion

- A Statewide Video Network – An IMLS Grant Funded Project based on RUcore and Fedora
- Architecture and Use Scenarios
- NJVid Technical Challenges



NJVid – A Statewide Video Network

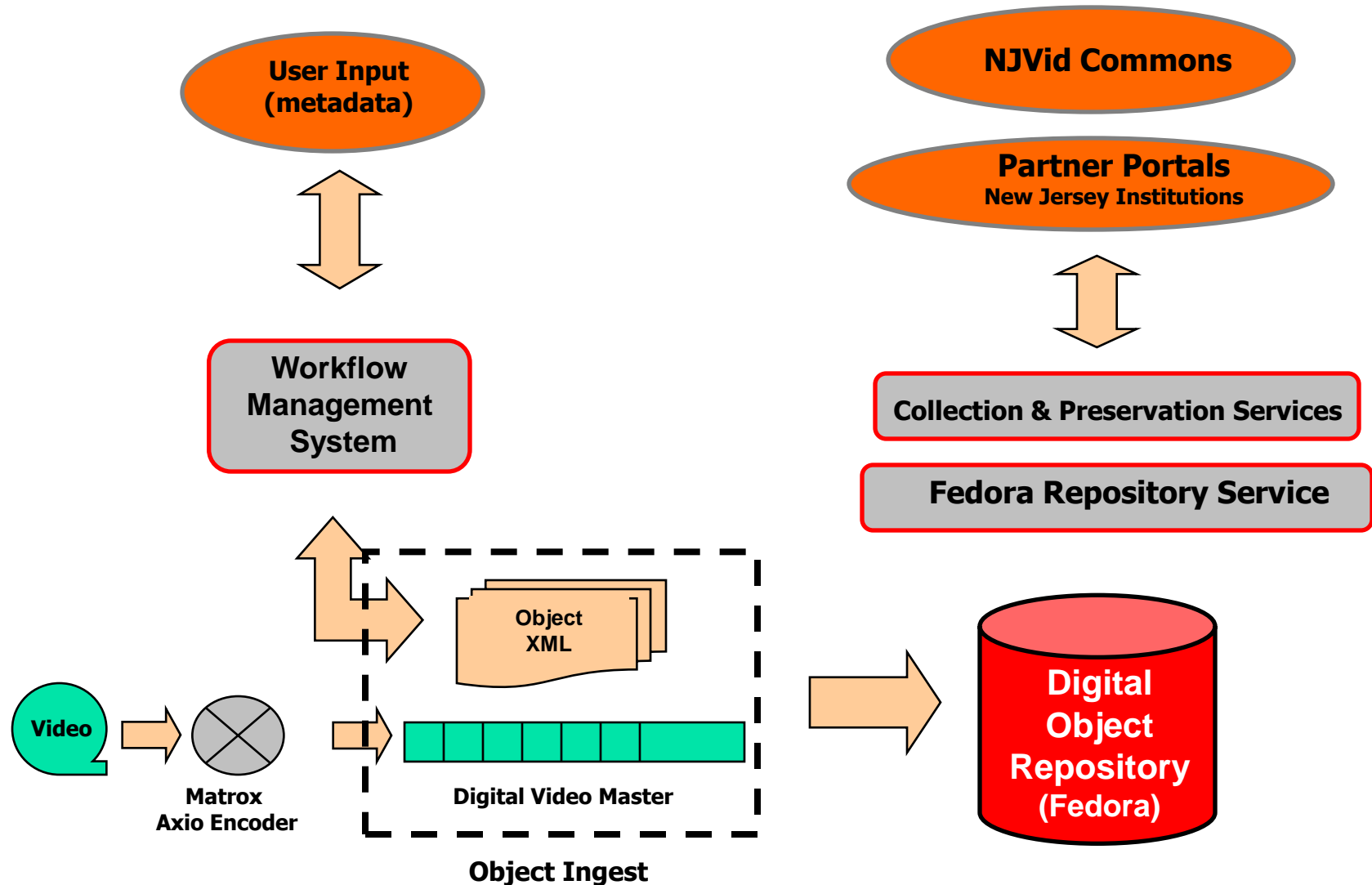
- A digital video network supporting over 600 New Jersey institutions (academic, K12, & cultural heritage)

- Three types of video collections
 - Video Commons – publicly available videos
 - Commercial videos available through educational consortia
 - Lectures on demand – customized annotations of videos

- Technical platforms based on RUcore and Fedora

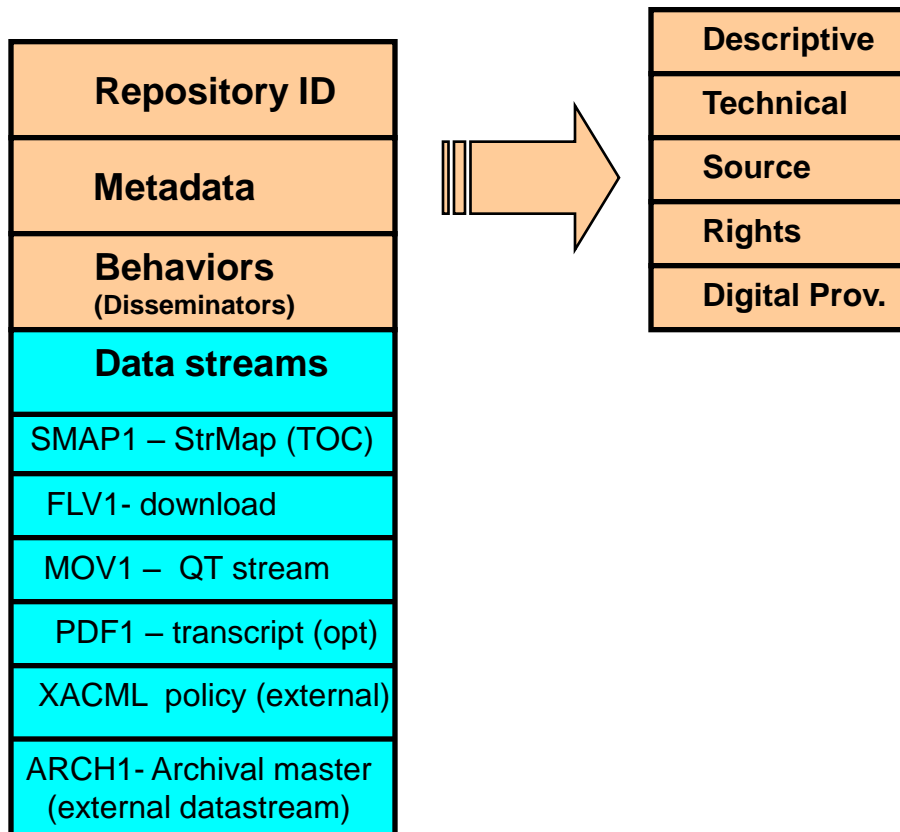
NJVid Concept Architecture

(Based on RUcore)



Large Files - the Video Digital Object

Video Object

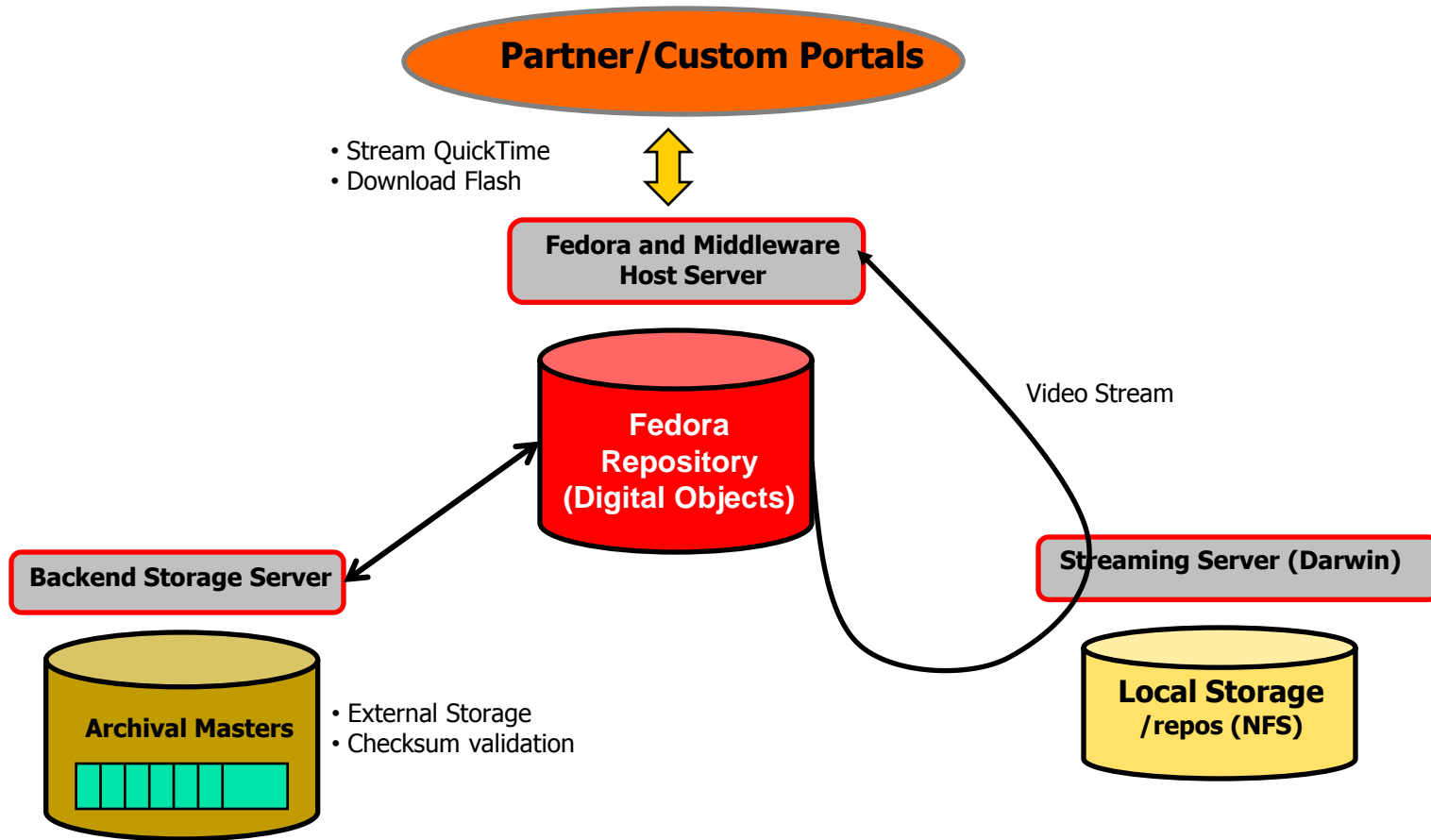




Architectural Challenges

- Managing Large Video Files – Ingest, Presentation, and Preservation
- Annotation of Videos for Lectures on Demand
- Authentication and Authorization

NJVid Storage & Server Architecture





End User Scenarios

- General Public Access to NJVid Commons
- Instructor Annotation for Lectures on Demand
- Student Access to Licensed Videos



Annotations of Videos

The basic concept is to allow an instructor to customize any video by selecting time segments to be played as part of a course offering. Additional descriptive metadata and access permissions can also be applied.



Annotating a Video

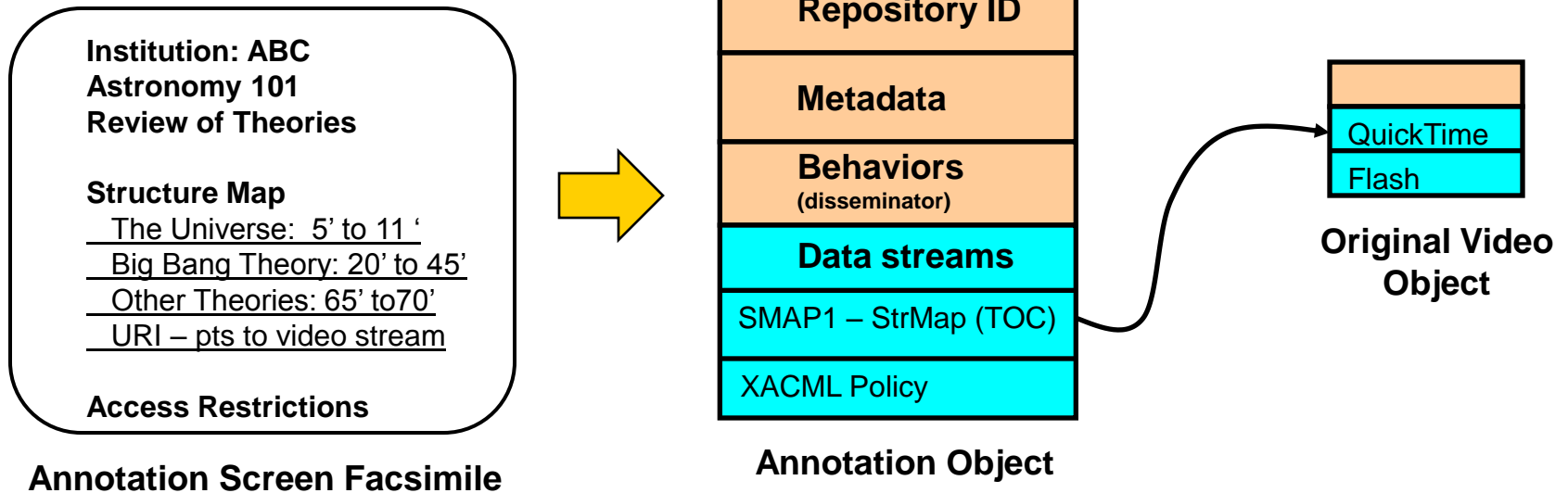
■ Instructor Annotation

- Instructor logs in to special “annotation” portal and is authenticated as “instructor” from ABC institution
- Instructor selects and previews video to determine time segments to be used for instruction
- Instructor creates annotation object and references video to be used
- A structure map with appropriate time segments of the source video is created
- Additional access restrictions may be applied

■ Student Access

- Logs in as “student” from institution ABC
- Student selects “course 101” on Faculty portal and plays video
- Disseminator/action script plays video according to time segments in structure map

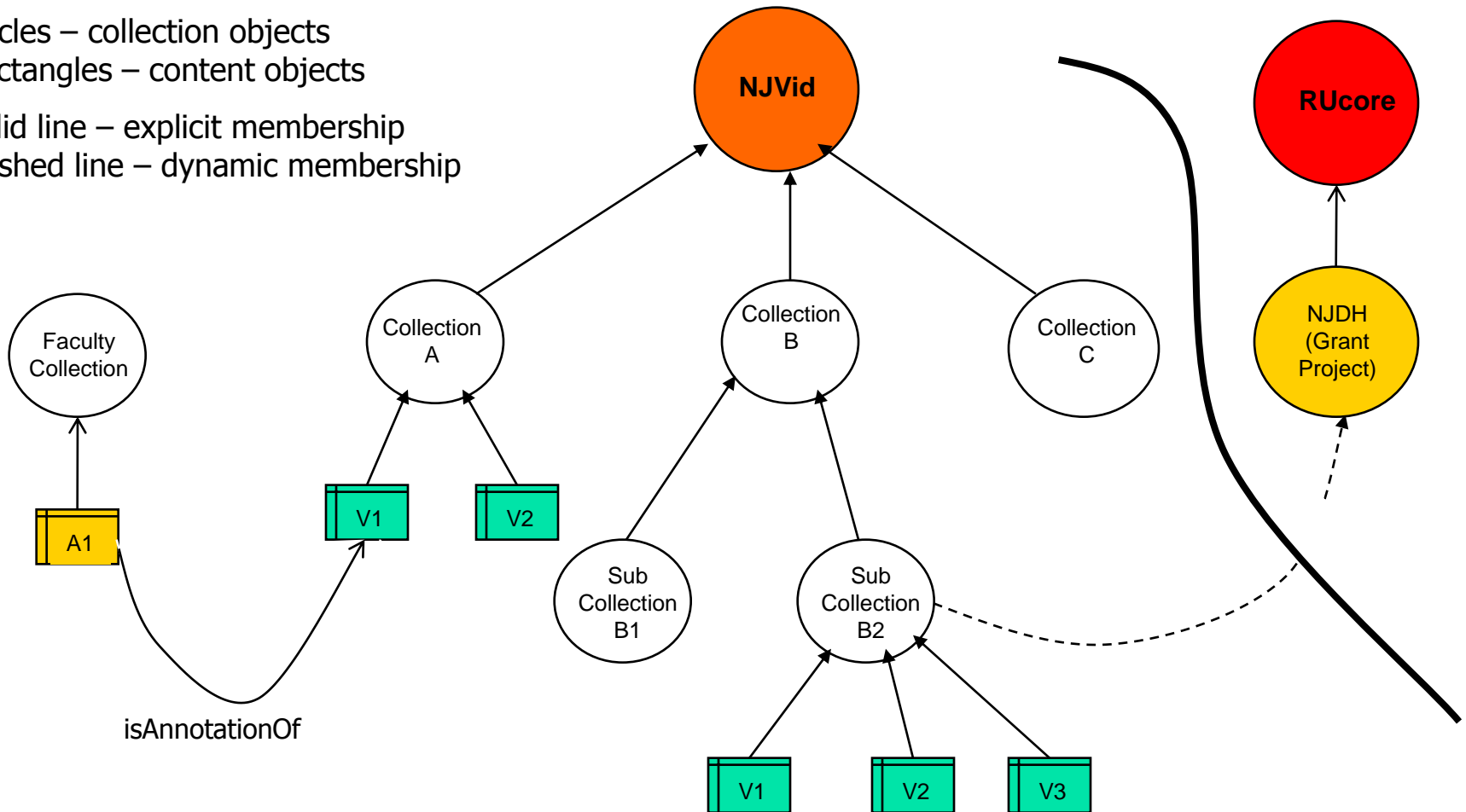
Annotation Portal Scenario



NJVid and RUCore – Two Fedoras and Distributed Collections

Circles – collection objects
Rectangles – content objects

Solid line – explicit membership
Dashed line – dynamic membership





Statewide Sharing of Multi-site Collection Content

- Concept – Allow a collection manager to subscribe to any collection on a remote RUcore/Fedora site

- Assumption – Each site reuses the RUcore data model and architecture

- Indexing and Search Architecture
 - A common indexing service layer supporting all sites
 - Centralized indexes
 - Local control of collections thru RUcore collection management services



Authentication and Authorization

- Flexible access control based on Shibboleth framework
- NJVid will need to support the full range of institutions
 - Participating institutions will need to provide LDAP directory information
 - Must establish agreement on shared attributes across institutions: person, department, role
- Architecture
 - One backend RUCore/Fedora repository supporting multiple GUIs
 - Many front-end partner portals
 - Authentication – evaluating alternatives including DRAMA
 - Authorization using XACML policies



Further Development Challenges

- Storage Architecture
 - Archival Storage and “Managed External”
 - Large file local ingest
 - Redundancy and dark archive

- Preservation Framework

- Installation of RUcore/Fedora at other institutions
 - More formal software development methodology
 - Release/support processes for multiple locations



RUcore Open Source Software

AREA

- Applications
- Journals
- Search Engine
- Workflow Management
- Management Services
- Handles/persistent IDs
- Video Streaming Server
- Digital library framework
- OS/Webserver

Software/Tool/Technology

PHP/MySql (by RUL)
Open Journal System (PKP)
Amberfish
PHP/MySql (by RUL)
PHP/PERL/MySql (by RUL)
CNRI Handle server
Darwin (Apple)
Fedora
Linux-Solaris/Apache



Video Specifications

- Video source – analog and digital camcorder
- Archival master is uncompressed AVI
- Streaming protocol is QuickTime H.264
- 29.9 frames/second, 640 x 480 resolution, data rate from 384 – 512 kb/sec
- Delivery to user as QuickTime or Flash