



LIONSHARE

Agenda

- LionShare background
- Description of current efforts
- Discussion of future efforts (2003-2005)
- Opportunities for collaboration



LionShare Origins

- Visual Image User Study (VIUS)
- Hosted in University Libraries at Penn State
- A two-year user study sponsored by Mellon Foundation
- Looking at how fac/staff/students use digital images in teaching, research and service
- Several prototypes identified
 - Peer-to-Peer was identified as one possible solution - LionShare prototype



VIUS Identified These Problems

- Need for tools to manage personal collections
- Movement from analog to digital
- Difficulty in finding appropriate resources
- Difficulty merging public/private collections
- Need for faculty/student/dept's to manage large collections
- Need for copyright and access control



Why Use P2P for LionShare?

- Encourages collaboration
 - Student, faculty members and departments
- Helps manage the digital media explosion
 - Digital consumer devices
- Provides common organizational structure
 - Metadata and standards
- Flexible and Scalable
 - Customizable for different needs



LionShare Uses

- Media organization (offline use)
- Publish personal media collections
- Person-to-person collaboration
- Group projects
- Departmental collaboration
- Formation of user communities
- Publication of academic collections



LionShare Design Goals

- Personal information management
- Simple, intuitive interface
- User-defined sharing
- Authenticated access to the network
- Standard descriptive metadata structure
- Leverage Open Source



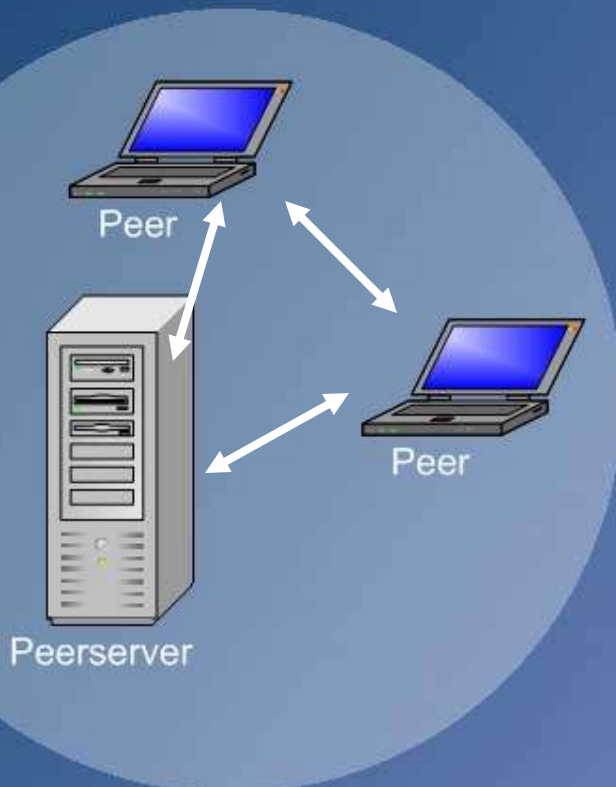
LionShare Architecture

- Based on Limewire Open Source project
- Modified version of the Gnutella protocol
 - P2P + Client/Server Architecture
 - Decentralized + Centralized Topology
- Integrated Authentication with Kerberos



LionShare Architecture

- LionShare adds the concept of a PeerServer



PeerServer

- *Local aggregator*
- *Adds persistence to P2P*
- *Can function as gateway*
- *Administrative interface*
- *Web interface*



Limewire Background

- Open source (GPL) Gnutella application
- Multiplatform (Java)
 - Windows
 - OSX
 - Linux/Solaris/BSD
- UltraPeer technology
- Support flexible use of Metadata

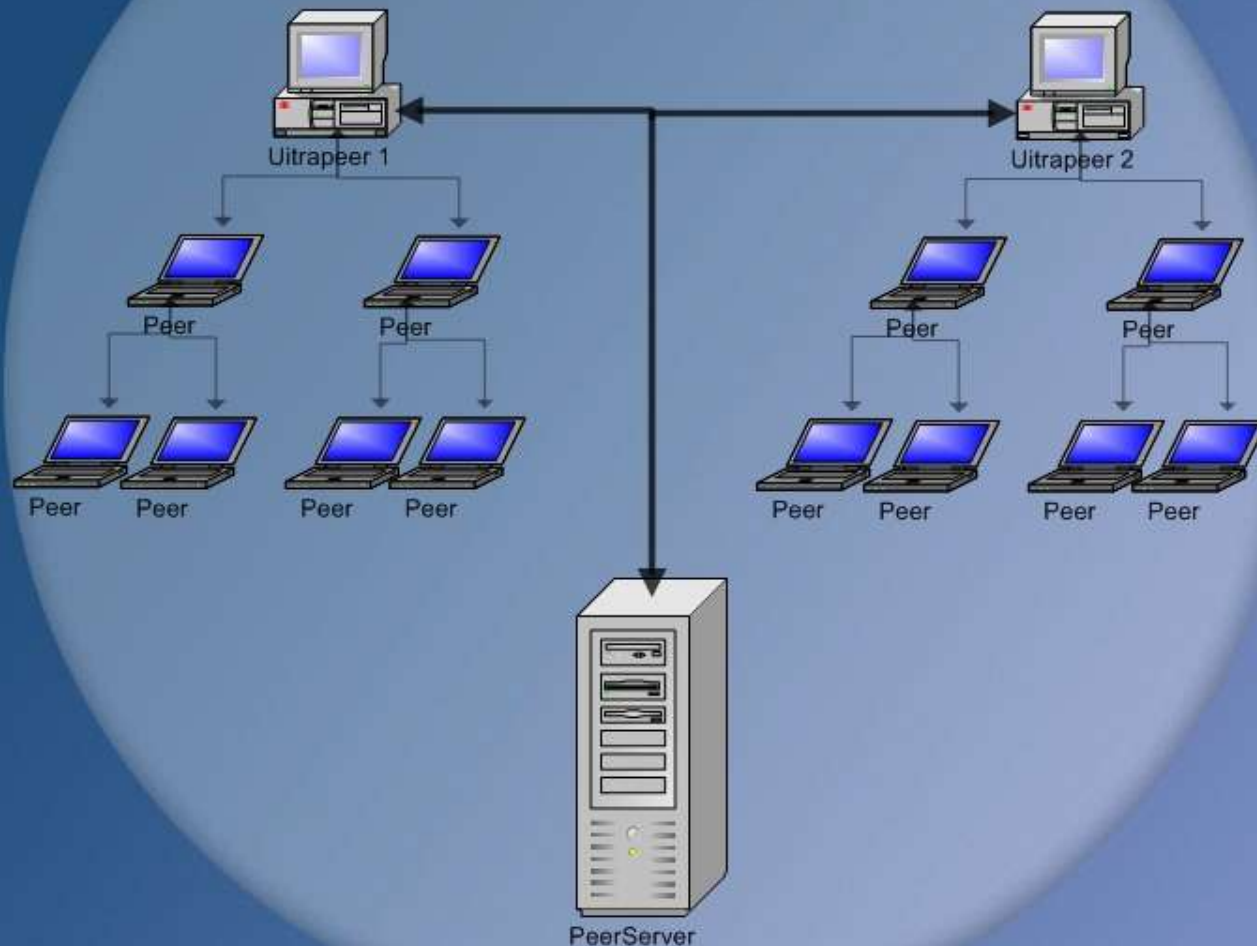


LionShare Protocol

- Private
- Hybrid topology (P2P+Client/Server)
 - PeerServers
 - Users can publish files to a server to remain shared on the network even though the user is not connected to the network.
 - PeerServer Uses
 - Off-line sharing
 - Remote backup
 - WWW publication possibilities



LionShare | Topology



High bandwidth Ultrapeers route network traffic to nodes with slower connections.

Ultrapeers are automatically selected by connection analysis code.

The PeerServer allows for persistent file sharing so users can share without network connectivity.

All LionShare queries hit the PeerServer and all available Peers on the network.



LionShare Principles

The Three A's

- Authentication
 - Kerberos
- Authorization
 - Access Control
- Accountability
 - Non-anonymous network
 - Userid associated with shared files
 - Activity logging



Current Development Status

- Accomplishments to date
 - Basic architectural design complete
 - LionShare App Alpha Release
 - MIT Kerberos compatibility
 - XML schemas for learning object description
 - Protocol customization
 - LionShare PeerServer prototype
 - Alpha pre-release
 - Mellon development grant just awarded

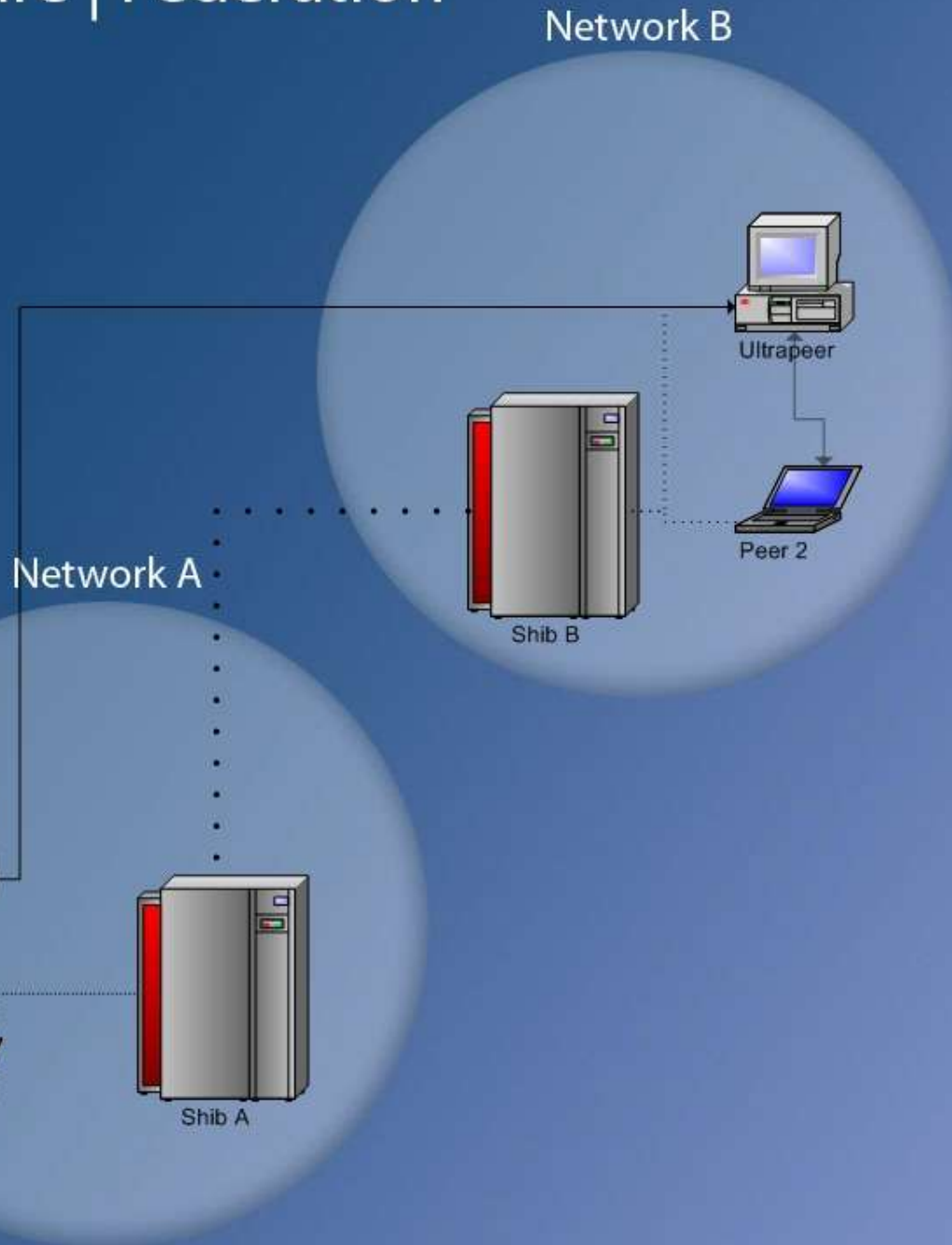


Future Development Plans

- Hardening the LionShare Application
- Re-engineering the PeerServer
- Federation of the LionShare protocol
 - Shibboleth-like implementation
- Connecting to Fixed Repositories
 - IMS DRI Spec/OKI OSIDs
 - Access to Large Collections



LionShare | Federation



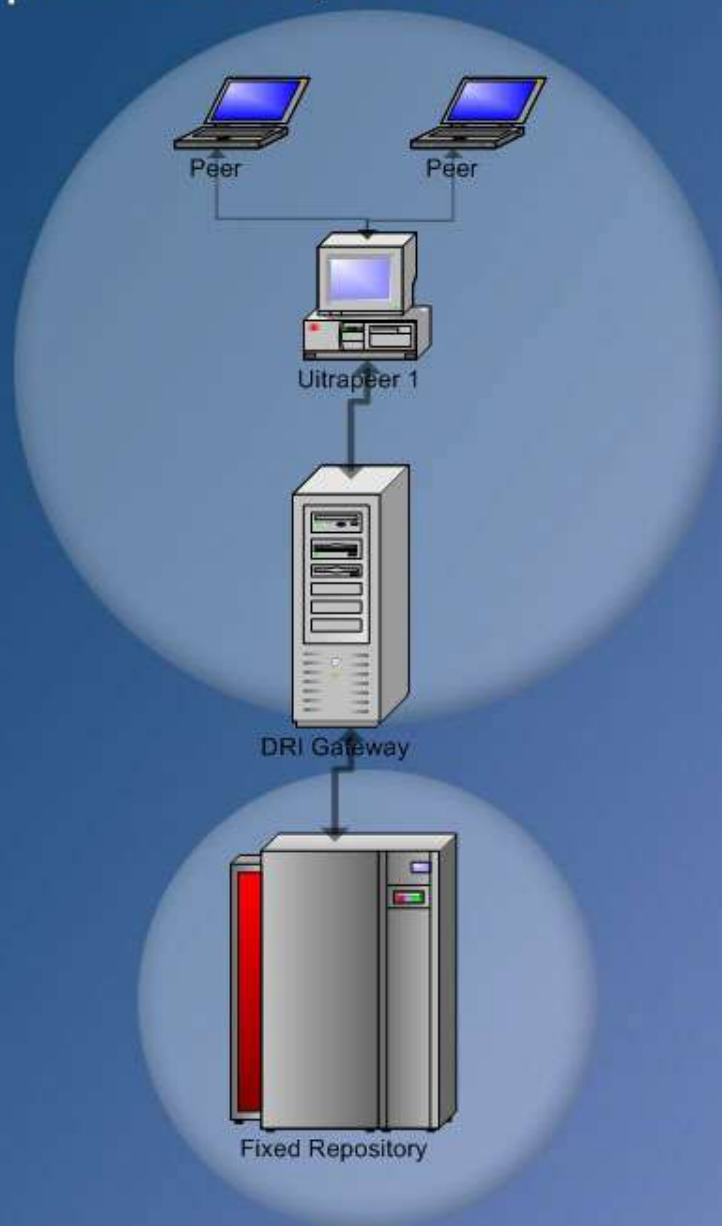
Shibboleth middleware architecture allows for the secure sharing of user information between multiple autonomous networks.

User privacy is ensured by allowing users to specify what information is shared to each individual network.

In this simplified example Peer 1's attributes are sent to network B to allow access to multimedia files shared by Peer 2.



LionShare | Fixed Repositories



The IMS Digital Repositories Interoperability (DRI) specification is a standard for describing a number of high level repository functions.

A Gateway exists between the repository and the LionShare network, giving users the ability to connect to the repository via DRI.

A Gateway could be used to connect to other P2P networks implementing DRI such as eduSource Canada.



LionShare Team

- Penn State University
- Internet 2 Middleware and P2P WGs
- eduSource Canada/Simon Fraser U.
- MIT - Open Knowledge Initiative (OKI)



LionShare Opportunities

- Requirements gathering
- LionShare Testbed
 - Testing and Evaluation
 - Feedback
- New features list/future directions
- Co-development opportunities
 - Efforts inside and outside the scope of currently described workplan



Co-development Ideas

- Porting LionShare to hand-helds
- Using LionShare for back-up solution
- ePortfolio system
- Security and encryption
- End-to-end diagnostics



Contact

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