

Access Grid 2.0

General Architecture



Overview

- AG 1.0 is a Success
 - Networking is hard
 - Bandwidth
 - Multicast
 - The AG has to be experienced to be understood
- 2.0 needs to provide:
 - Well Documented Standards and Interfaces
 - The Core infrastructure to enable higher level research



Interactions

- Teaching
 - Lectures
 - Tutorials
 - Laboratories
- Experiments
 - Grid Computing
 - Exotic Hardware
- Meetings
 - Program Management
 - Project Management
- Demonstrations
 - Site Visits
 - Collaborative Success



Use Cases

- Put data in the Venue
- Get data from the Venue
- Make a resource available in a Venue
- Authorize users to use your resource
- Record a meeting
- Playback a recording
- ...



Requirements I

- Security
 - User Identity
 - Authentication
 - Make it easy!
 - Authorization
 - Content Encryption
- Spatial Metaphor
 - Scoping Mechanism
 - Distributed Coherence
 - Authorization Group
 - Navigation
 - Discovery
 - Presence

Requirements II

- Extensible
 - basis for others to build upon
 - Well documented interfaces and protocols
 - Clear Architecture and Design
 - Open Information Model
- Sharing Resources
 - Data
 - Grid Computing
 - Storage
- Enable Peer to Peer interactions



Requirements III

- What's Not in 2.0
 - The infrastructure to enable sub-group communication and sharing within a single Venue
 - Application Sharing, data only for now
 - Scheduling is done outside of the Venues



Architecture I

- Virtual Venues, Virtual Venues Fabrics
- Workspace Docking
- Capabilities Brokering
- Network Services
- AG Node Management Software
- A Service Model for third party Services
- Security Throughout



Architecture II

- Virtual Venues
 - Venues are persistent
 - Venues are coherently experienced
 - Venues are collaboration scopes
 - Venues are extensible
 - Venues broker capabilities
 - Venues are secure
 - Venues Fabric has Topology
- Workspace Docking
 - Allows the sharing of data
 - Provides the basis for more extensive peer to peer interactions



Architecture III

- Node Management
 - Creates a standard set of services for participating in Virtual Venues
 - Allows users with very few or large numbers of resources to participate
 - Increases Usability
 - Enables Remote Mgmt
- Third Party Services
 - Provides extensibility
 - Provides integrated security
 - Voyager is an Example
 - Will appear inside venues as a service



Technology Strategy

- Build Hype Independent Software
 - Good Architecture and Design
 - Understand the Value of the AG
- Leverage the current Hype to fuel adoption
- Web Services
- Grid Computing

Technology Choices

- Web Services
 - SOAP
 - WSDL
 - Not UDDI
- Grid Computing
 - Globus Toolkit 2.X
 - Security
 - Preparation for OGSA



Design I

ACES



Design II

ACES



Design III

ACES



Design IV

ACES



Design V

ACES



Open Issues

ACES



Conclusion

- The Access Grid 2.0 Toolkit provides the infrastructure for developing collaborative systems.
- The Access Grid 2.0 Toolkit is used to build the core services that make up the Access Grid:
 - Venues, Services, Nodes, Security



Final Notes

- Questions?
- We'll meet monthly:
 - The first Tuesday of every month
 - 9AM Central – 11 AM Central
 - Argonne Institutional Venue

