The AccessGrid Project: Vision for the Future

Rick Stevens
Argonne National Laboratory
The University of Chicago

Kudos and Thanks

- Mary Fritsch
- ANL Conference Services
- Futures Lab Group – Mike, Ivan, Terry, Bob, Lisa, and Mark*
- Alliance AG-in-a-box Team, Alliance PACS...
- Members of the AG-Tech List
- Office of Advanced Scientific Computing, DOE
- PACI Program, National Science Foundation
- inSORS Integrated Communications, Inc. → reception tonight

Goals for the AG Technical Retreat

- To engage a broader community in discussion about the future development of the AccessGrid both technically and conceptually
- To encourage the creation of a developer community interested in advancing *group-oriented* collaboration technologies
- To provide a open forum for discussion of emerging ideas and technologies relating to supporting human collaboration via the Grid

Rules for the AG Retreat

- Enjoy yourself, this is supposed to be fun!
- Be positive and be supportive
  - Many ideas presented here are works in progress and need constructive input
- Q+A is critical part of each talk/session
  - Please limit your prepared remarks to 75% of the time slot (15 minutes + 5 minutes Q/A)
- Your input is important to us so please give us your comments, but also be prepared to have your suggestions taken seriously

ac·cess [áksess] *noun*

1. entry or approach: the possibility or means of entering or approaching a place
2. opportunity for use: the opportunity or right to experience or make use of something
3. right to meet somebody: the right or opportunity to meet somebody
4. outburst: a sudden strongly felt burst of emotion (*literary*) "With a sudden access of tenderness he flung his arm about me." Rider Haggard *She* (1887)
5. COMPUTING **right to use computer:** the right or ability to log on to a computer system or use a computer program *software that allows network access*
transitive verb (*past* **ac·cessed**, *past participle* **ac·cessed**, *present participle* **ac·cess·ing**, *3rd person present singular* **ac·cess·es**)

1. enter place: to find a way or means of entering or approaching a place
2. get information: to have the opportunity or right to experience or make use of something
3. COMPUTING **call up:** to retrieve data or a computer file *the program can be accessed using the correct password*

[14th century. Directly or via Old French *acces* from Latin *accessus* , the past participle of *accedere* "to come near" (see accede).]

What is the AccessGrid?

- An Open Grid Based Community
- A Platform Supporting Group-to-Group Collaboration
- An Emerging Collection of Open Source Tools
- A way to think about the Grid
- All of the above

Three Realities of the Access Grid

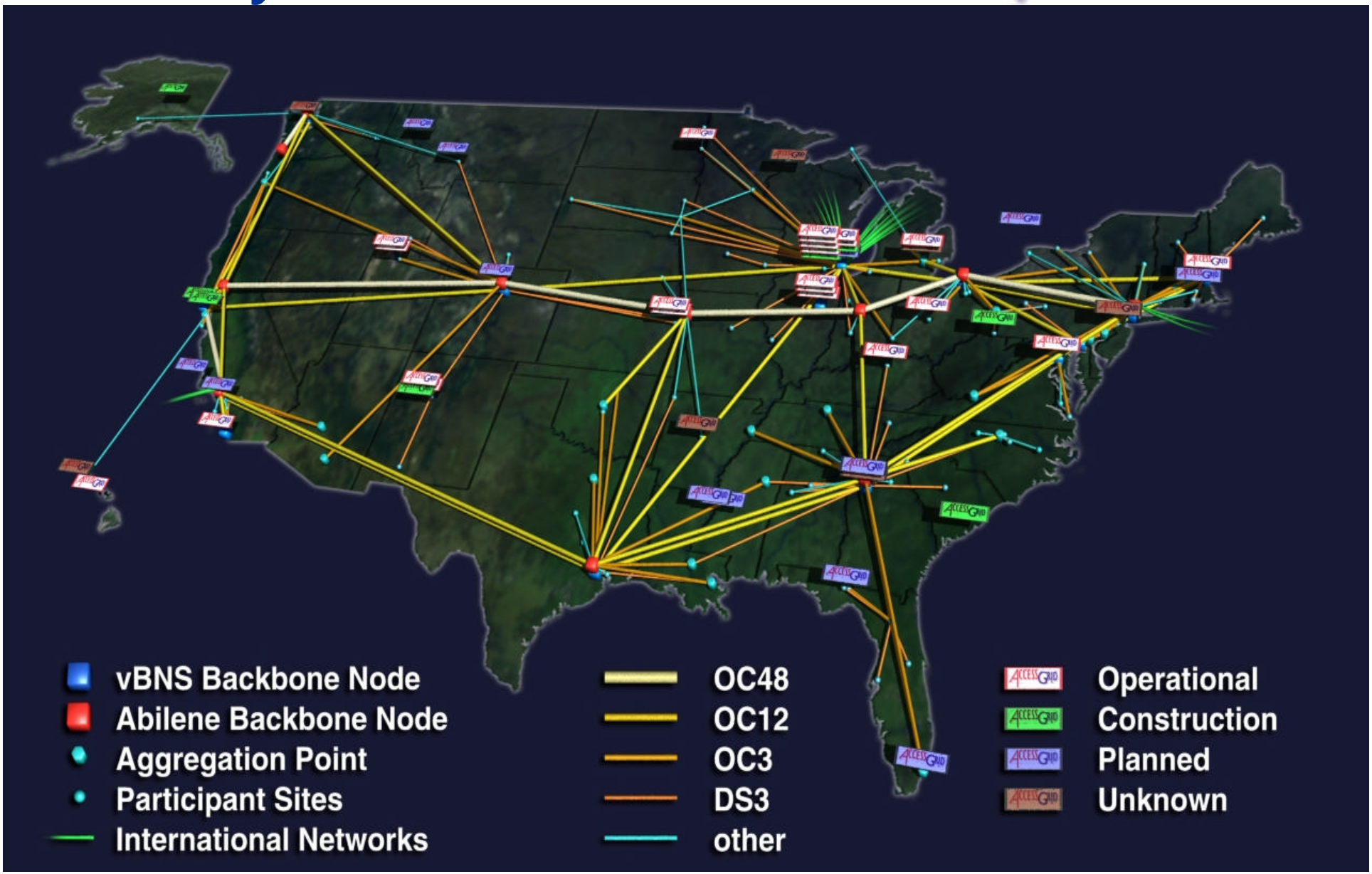
- Reality #1 →
  - The Emergence of a Grid Community
- Reality #2 →
  - Developing *Group-Oriented* Collaboration Technologies
- Reality #3 →
  - The Core of a Good idea

Collaboration is not about Technology it is about Communication

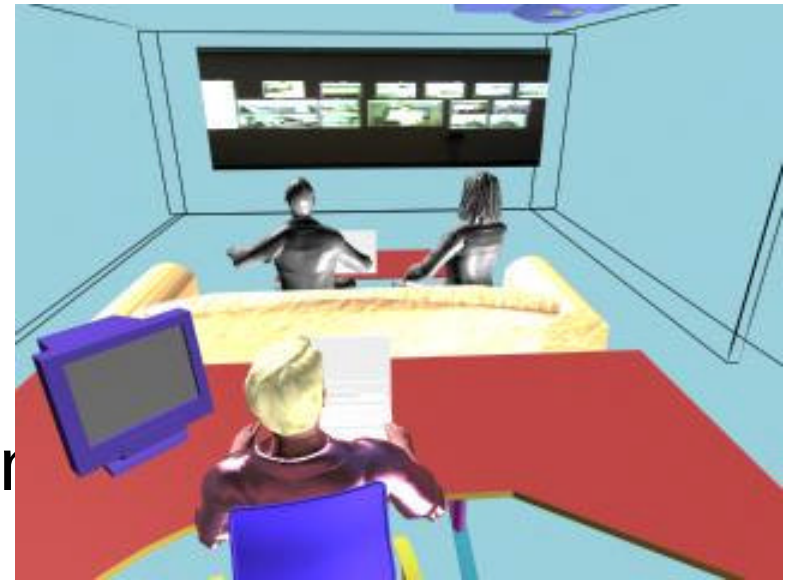
The Emergence of an AG Community

- The Labspace Project and the Founding of the Futures Lab
- I-WAY and Teleimmersion as a way of life
  - "If Travel were free and instantaneous"
- DOE 2000 Shared Virtual Spaces Project
- The Alliance Grid Vision – aka National Technology Grid
- DOE Advanced Visualization Technology Center
- The Grid Book and Grid Forum Founding
- AccessGrid Project start November 1998..
- The Alliance Chautauqua '99 + '00
- The Corridor One DOE NGI project
- SC-Global

The AccessGrid Circa January 2001



The State of the AccessGrid 2001



- Growing Interest
  - End Users
  - Developers
  - Commercial
- New Targets of Opportu
  - Applications Grids
  - Persistent infrastructure and deployment platforms
  - The human link for creating virtual organizations
  - Integration with Grid infrastructure and services

Where Are We Going?

- We Will Keep the Open Community Orientation
  - AG will be Open to all that are interested
- Embrace the role the AG is playing in Empowering Communities
  - Work with new communities to adapt AG to new purposes
  - Indian Country, Epscor, MSIs, etc.
- Develop Open Interfaces to Promote Rapid Development
  - Work via the Global Grid Forum to define AG interfaces
- Connect with others of common view
  - Exploit Existing Collaboration Technologies
    - Interoperability strategies with existing systems
  - Develop Relationships with Commercial Vendors
    - Enhanced capabilities and develop commercial support

Common AG Questions

- Why not just use Netmeeting?
- Why not just use Internet2's H.323 systems?
- Is there a commercial version of AG with support?
- Can I run the AG on` my Laptop?
- Why do I need all this stuff, isn't this just Mbone?
- This is really cool, how do I get one of these?
- How much network bandwidth do I need to use the AG?
- When will the AG be cheap enough for my house?

What is Driving AG Core Development?

- The AccessGrid Project is in Transition
  - From an exploratory and Ad hoc development platform → To a focus on open and scalable interfaces → to better understanding of group-to-group collaboration requirements
  - Need a technology and OS independent open framework for further development
- Group2Group-oriented Collaboration Technology Is in Its Infancy
  - We are just starting to understand why this idea is compelling
  - Interest in AG demonstrates desire for new tools that go beyond the desktop
  - Connected to the original goal of the FL-Group at ANL
- Room-Based Computing Environments Challenge Desktop Metaphors
  - We need multiple testbeds and new software environments for exploring what is possible and what is interesting here

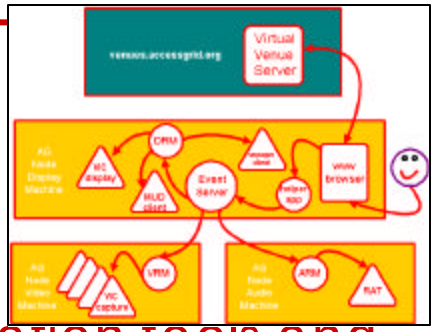
Some Things I Would like to See

- Experiments with Alternative Hardware Platforms
  - Pure NT Node – determine performance and functionality issues
  - Pure Linux Node - determine performance and functionality issues
  - Single System Node – Price/Performance, ease of deployment
  - Game Console Based Node – PS2, Xbox, Indrema
  - Integration with smaller scale Tiled Display Systems
- Evaluation of Alternative Software Platforms
  - Define core AG functionality and compare to h.323 systems
  - Evaluate CVW, Garnet, Tango, Etc. in AG type environments

Some Things I Would like to See <II>

- Development of a Wireless AG node for field deployment
  - Satellite based node for remote locations <MARS Soceity, DD>
  - Mobile AG node for vehicular deployment <Rover>
- Development of Wall Panel based AG node <ER-AG>
  - Embedded cameras, touch screen controls, embedded audio
- Tools for Building Rich Persistent Workspaces
  - Tools for Constructing Persistent Project Rooms
    - New Applications, datasets, instrument interfaces, etc.
    - Better Exploitation of Spatial Metaphors for Session and scope
    - Better tools for managing collaboration archives

Some Things I would like to See <III>



- Standard Set of Virtual Venue Services
- Flexible Server Architecture
  - Scalable to Millions of Virtual Venues
  - Supporting a diverse collection of collaboration tools and modalities
  - Enabling a seamless network of distributed collaboration servers
  - Leveraging Standard Grid Services – security, scheduling, etc.
- Open Source Reference Implementation of Basic AG Tools
  - V-V Servers, A/V Tools, Application Sharing, Remote Viz
- Multiple Commercially Supported AG Implementations

More Good Things to Investigate

- AG on Scalable Tiled Displays
  - Large-format and High-Resolution
  - Spatially Integrated Room Scale displays
- Higher Resolution Video/Audio
  - Tiled and/or panoramic video
  - Multi-channel studio quality audio
- Spatialized Audio
  - Personalized Audio
  - Private audio channels per node

Example New Application Domains

- Distributed Paleontology labs
- Real-time Collaborative Medical Consultations
- Financial Markets and Trading Floors
- Software Development Sweatshops
- Collaborative Visual Data Mining and Decision Support
- Distributed real-time crisis management
- Collaborative Genome Annotation Festivals

Potential New AG Communities

- Computational Molecular/Cell biology
- Computational Nanotechnology
- Search for Extraterrestrial Intelligence/LITU
- Biological Field Stations
- Oceanography and Terrestrial Ecology Research Groups
- Scientific Computing Infrastructure Development
- Remote Visualization Research Testbeds
- Student Support Groups

AG to Mars

- Mars Society
- Flashline Station
- NASA Haughton Mars Projec

Global Grid Forum

- Argonne and UIC/EVL are proposing to create a GGF Working Group on Grid-based Collaboration Environments
  - Foster development of common specifications, Interfaces and reference implementations of Grid-Based Collaboration Tools
  - Provide input to other Grid Forum working groups on requirements to support the AccessGrid

SCGlobal'01

- A Global Extension to the Supercomputing XY conference
- The idea is to have satellite sites contribute content and participants to the SC'01 Conference
- SCGlobal will be AccessGrid Based
  - Somewhat like the Chautauquas, but international and linked to SC'01
  - There will be a Monster AG node at SC'01 and many-many remote nodes
  - It will be the first truly global real-time technical multimedia based conference
- SCGlobal will be an excellent Testing ground for new AG related technologies

Questions?