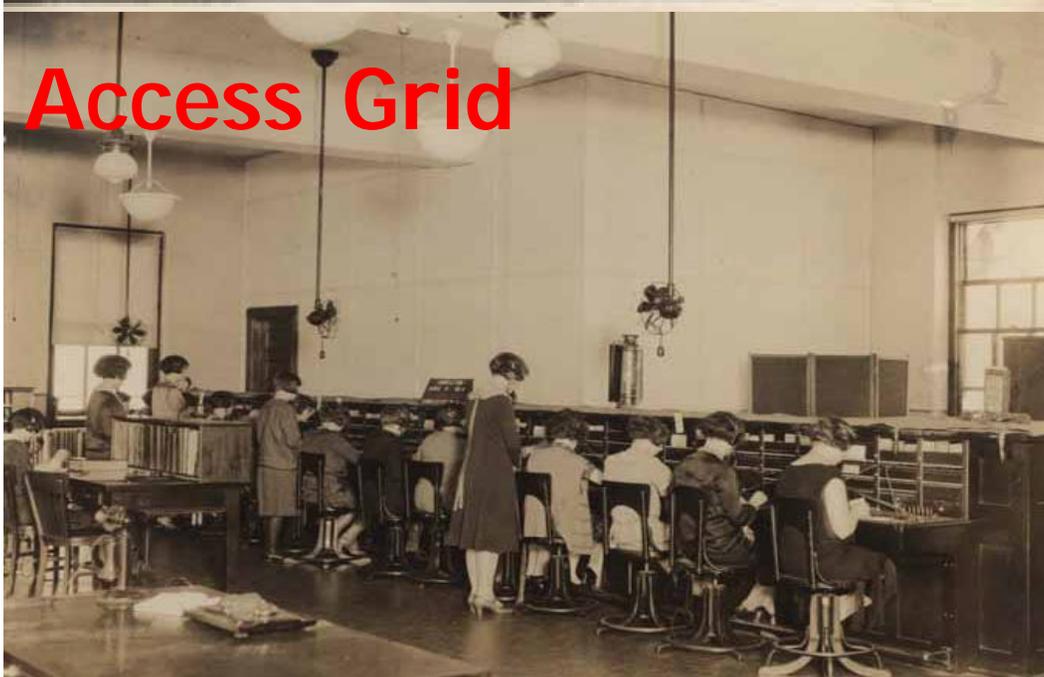




WHO do YOU want to talk to?

The ORIGINAL



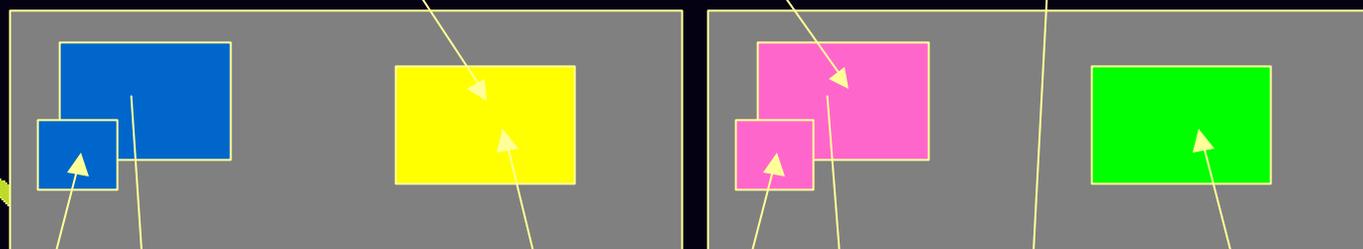
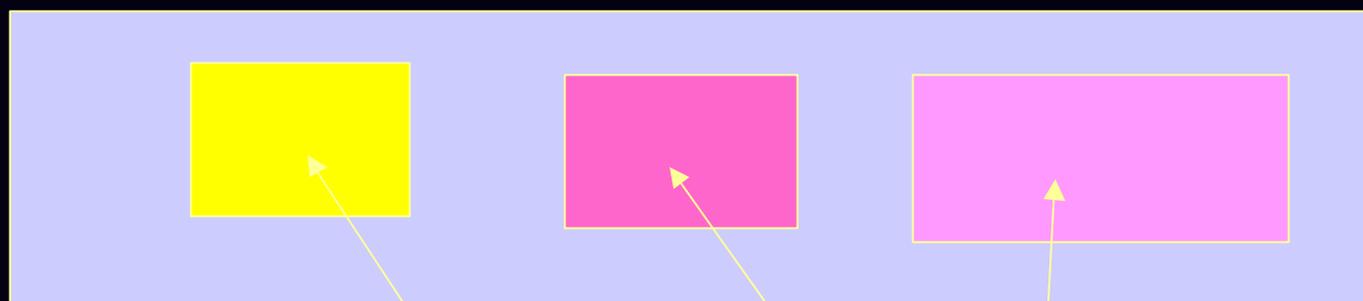
Access Grid





Workspace Docking in the Access Grid

**Terry Disz & The Futures Lab
Argonne National Laboratory**



Introduction



- AG Users often desire to “share” things from their desktop
 - Often extemporaneous, ad-hoc
 - Applications
 - Demonstrations
 - Shared Control
 - Data
 - File transfers, Documents, data regions
 - The Entire Desktop
- Other work
 - Mobile Oriented
 - IBM Pervasive Computing
 - MIT Oxygen Project
 - T.120 (Netmeeting)
 - Remote Control (Timbuktu)



Desired Characteristics of a Solution



- Spontaneous connection of laptops to an AG intranet
- Lightweight local net
- Little or no sw to install
- Trivial to operate (cut 'n paste, drag 'n drop)
- Supports many users, local and remote
- High Fidelity
- Low latency
- Integrated into AG spatial metaphor
- Integrated into AG security scheme
- Open Source



The model: Public and Private Channels in the Spatial Metaphor



Virtual Venues

Virtual Venue Room

AG Node Public Channel

AG Node Public Channel

AG Node Public Channel

User User User

User User User

User User User

Sharing Scope

Virtual Venue Room

AG Node Public Channel

AG Node Public Channel

AG Node Public Channel

User User User

User User User

User User User

Sharing Scope



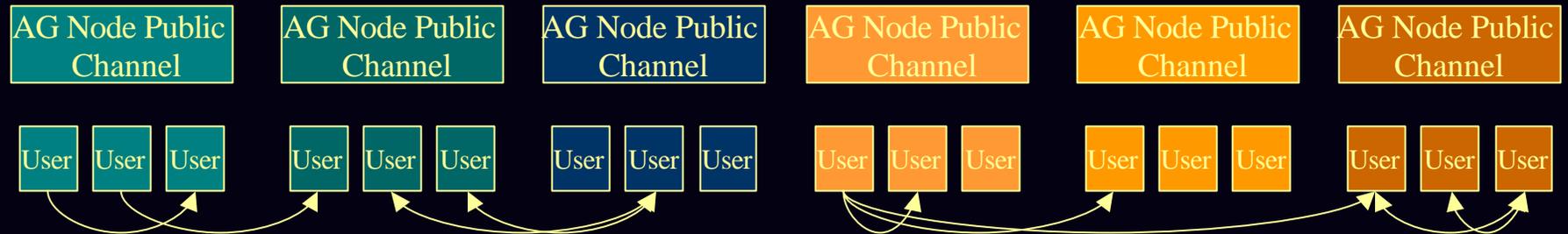
Private to Private Scoped by the VV Room



Virtual Venues

Virtual Venue Room

Virtual Venue Room



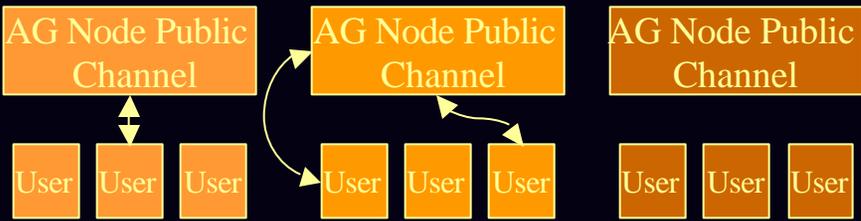
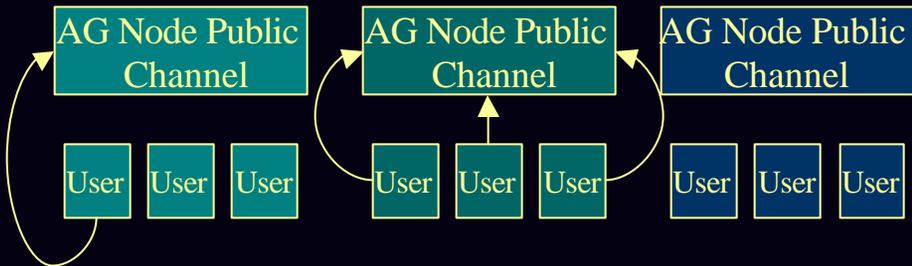
Private to *Local* Public



Virtual Venues

Virtual Venue Room

Virtual Venue Room



Private to Groups of Public Channels



Virtual Venues

Virtual Venue Room

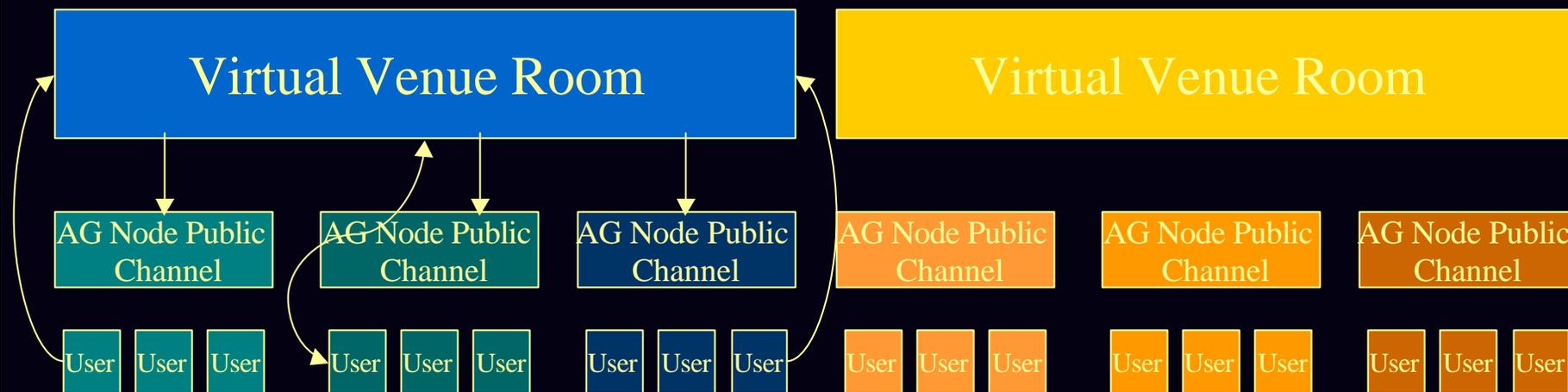
Virtual Venue Room



Private to The Virtual Venue Room



Virtual Venues



Problem Space



- **Selection**
 - What can be shared, how?
- **Discovery**
 - What private and public channels are available?
 - How to find services
- **Scope**
 - How to limit the scope of sharing users
- **Propagation**
 - How are shared objects propagated throughout the AG network?
- **Technical Issues**
 - How do laptops connect? – Security, hardware reqmts
 - How do we accomplish Application Sharing?
 - Facsimile
 - High Fidelity
- **UI**
 - Metaphor?
- **Security**
 - A&A



Sharing



- Selecting an object to share

- Desktop
- Window
- Application
- Device
- Data
- Database access
- Interface
- Agents
- **Birthday Card**

- How to share it

- Initiator
 - Show
 - Jointly Operate
 - Export a document, data, interface, etc
- Receiver
 - Observe
 - Interact
 - Import



Discovery



- Methods for discovering:
 - AG Venues
 - Occupants of Venues
 - Private channels
 - Public channels
 - Occupants outside the venue
 - Sharing sessions
 - Sharing target capabilities
 - Services e.g. a DPPT server
- Salutation seems to provide the right services
 - “Find n Bind”
 - WWW.salutation.org
 - Open source
 - Discovery, availability, capability registration



Scope



- Methods for designating scope of sharing within a venue
 - Individual Private channels
 - Groups of private channels
 - Attributes
 - Domains
 - Public channels
 - Local
 - Remote
 - Groups
 - Venue-wide



Sharing Object Propagation



- AG intranet
- AG internet

- User docks to an AG intranet
- Sharing object launched into AG intranet
- Object propagated throughout AG intra-internet
- Recipients decode the object and **do the right thing**

- Options
 - Shared clipboard
 - T.120
 - MpCB
 - Custom
 - Sockets
 - CORBA
 - WebDAV



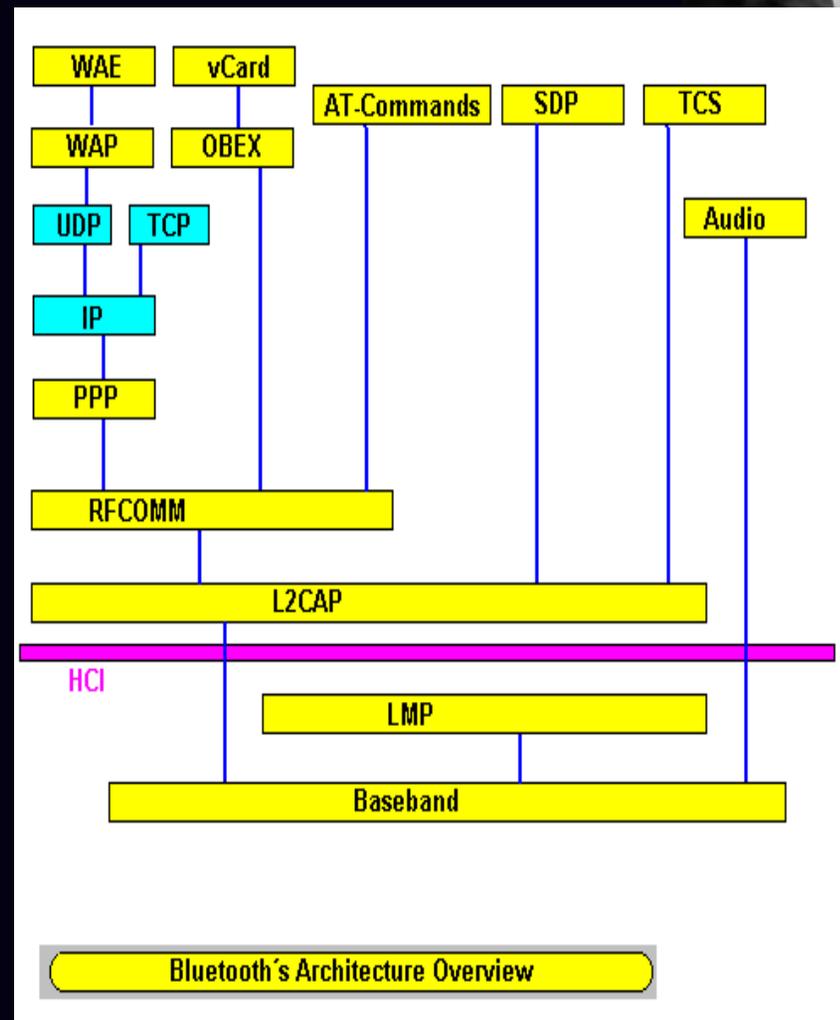
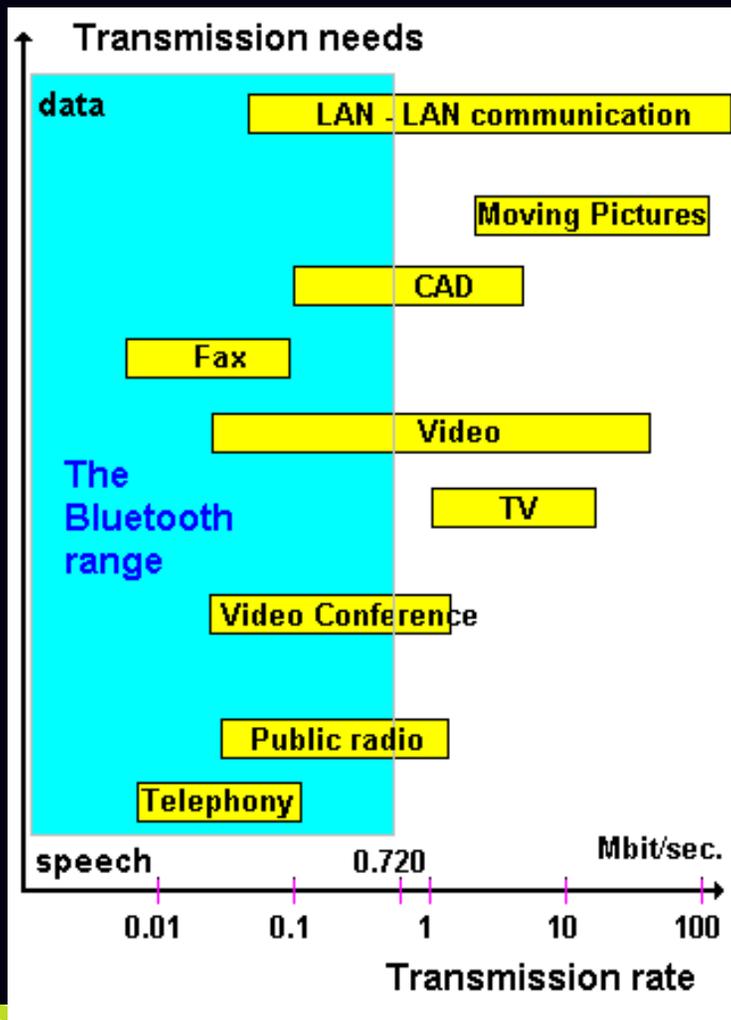
Laptop and Other Device Docking



- Physical connection
 - Bluetooth Card
 - IR
 - Wireless
 - Ethernet
 - USB
- A&A – credential presentation
 - Bluetooth
 - Smart card
 - Java ring thing
 - Biometrics
 - Web
 - Flash cards



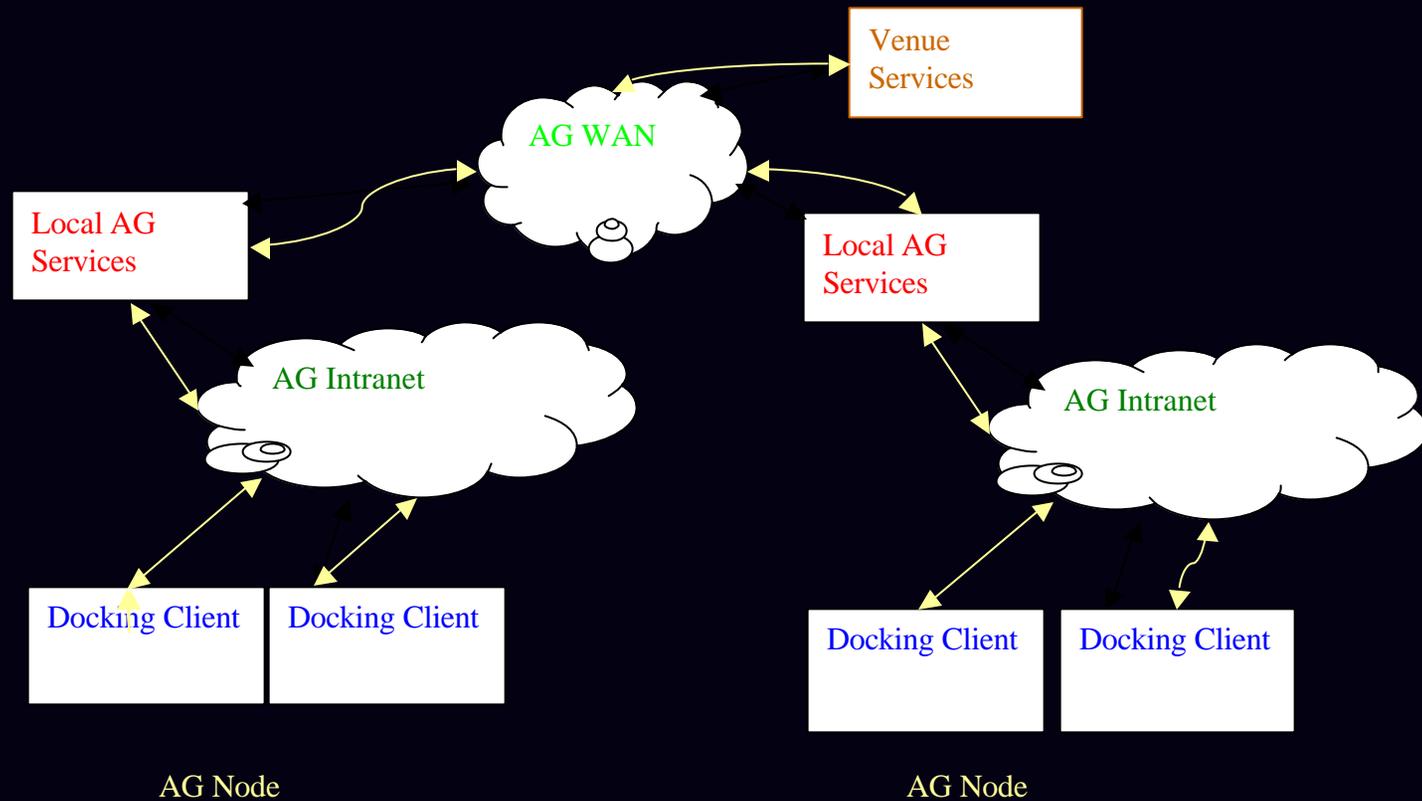
Bluetooth



Proposed High Level Architecture for a Modular Test Bed



- A modular solution



The Modules



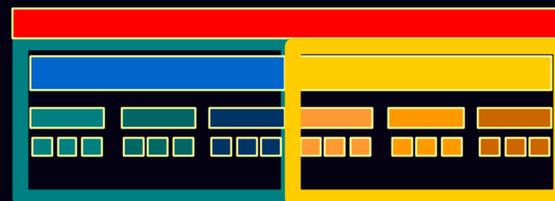
- **Venues Services (See Bob and Ivan Talk)**
 - Persistence
 - Multicast address mapping
 - Discovery services
- **Local AG services**
 - Discovery
 - Registration
 - Security
 - Sharing
- **AG docking Client**
 - User interface to sharing services
 - Connection to AG Intranet
- **AG Intranet**
 - Connects AG objects within a node
- **AG Internet**
 - Connects Nodes in a venue



Test Bed Project Proposal



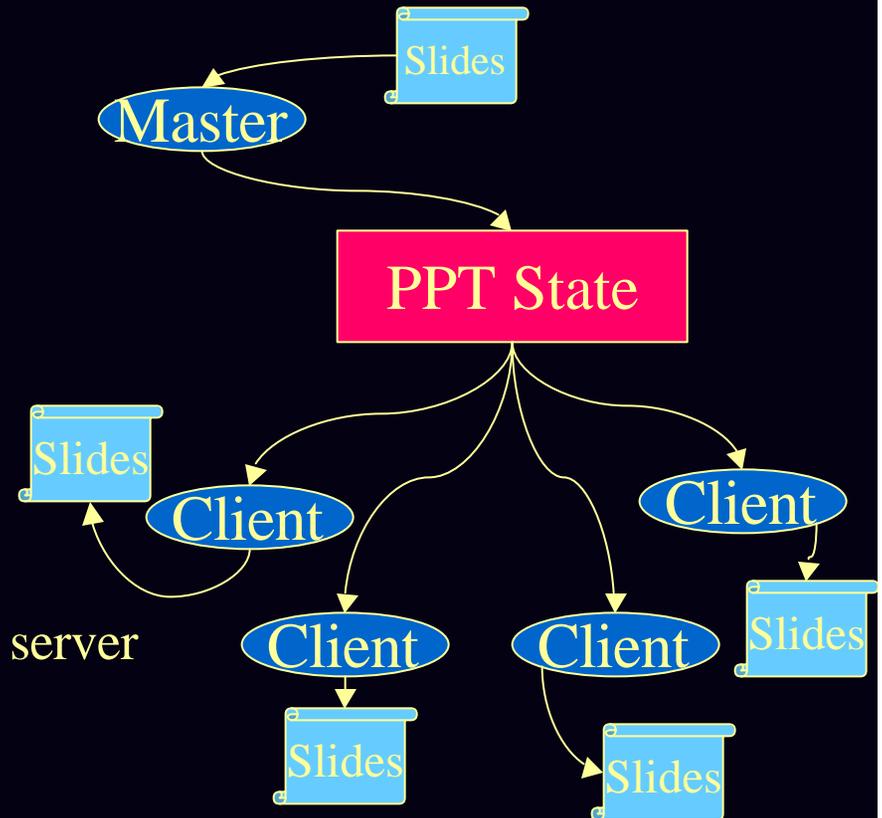
- Make DPPT the target sharing example
 - Well known, Existing code and tools, Useful to us
- Create local AG services server (Control machine)
 - Salutation for discovery and capability registration
 - Local web server
 - See Bob's Security talk/ Ivan's control talk
- Implement a user interface client (web based | simple app)
 - Build interface content from discovery service
 - Multiple views based on capability searches
 - Use the model from slide 3
 - Drag n drop from explorer
 - Interfaces to AG intranet
 - Acts on sharing objects
- Create simple local AG intranet and docking solution
 - Wireless is straightforward and extant
 - Web based is simple
- Create wide area AG net (See R. Olson peer-to-peer discussion)
 - Implement a simple transfer methodology (Dist clipboard, web, ftp, Custom)



DPPT Issues



- Distribution of slides
 - Venue, Public channels, Private
- Master selection by user
 - Discovery of DPPT server
 - Generates Start event
- Client Auto-start/User Start
 - Node Public channel
 - Private channel - User approval
- Control Streams connected via DPPT server
 - One to many
 - Many to one (VTK/VIC model)
 - Pass-around sharing
- State maintained in DPPT server



This approach



- Addresses:

- UI Requirements
- Selection methods
- Discovery
- Scoping
- AG network
- Propagation of sharing objects
- Recognition & dispatching of sharing objects
- Control stream sharing
- State maintenance AG service

- Does not address:

- Laptop connection methodology
 - Bluetooth
 - IR
 - Separate Research
- Generalized application sharing methodology
 - Investigate T.120 standards
 - Separate Research
 - Investigate other tool integration
 - CVW, Garnet
 - “Dusty Deck” solutions
 - New collaborative Aware Interfaces

