



Architecture/Engineering Support

JMPS Prototyping

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JMPS Prototyping

- **Background processing**
- **Collaboration**



Solution Guidelines

- **Keep it simple**
 - For the planner to use
 - For the UPC developer
- **Don't preclude use of more sophisticated solutions**

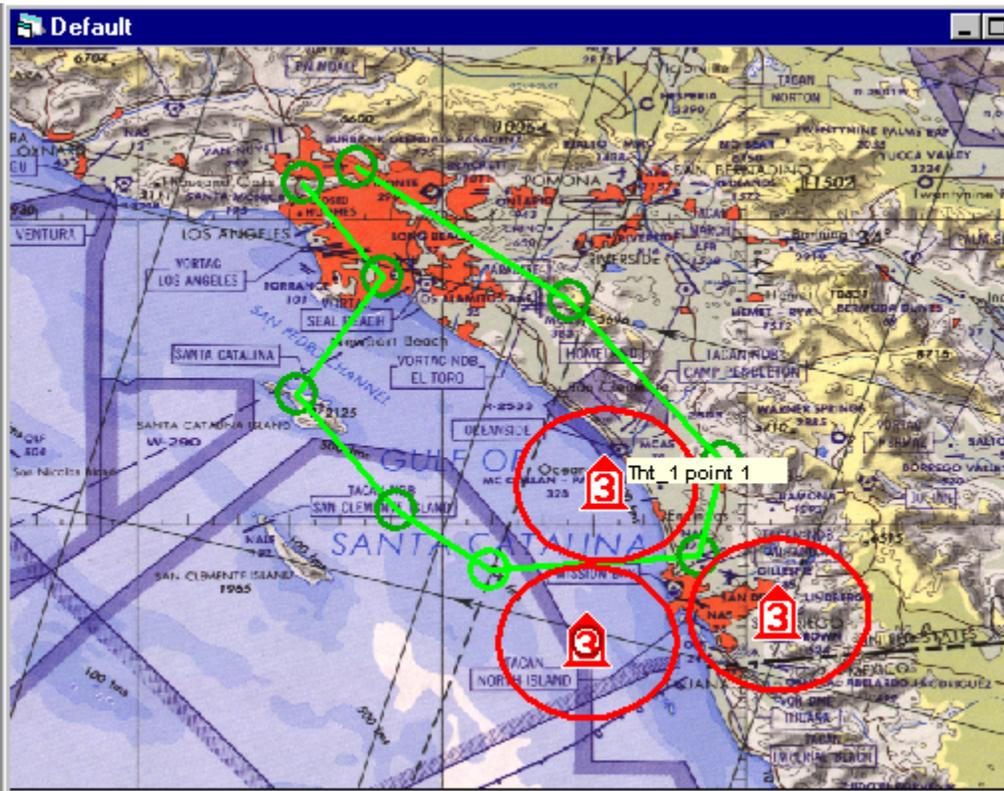


Background Processing

- **Support for compute tasks**
 - Synchronous - user waits
 - Asynchronous - runs in the “background” while user continues editing
- **Background task may be executed locally or remotely**
 - UPC developer identifies tasks that may execute remotely
 - Planner/administrator determines where background tasks execute
 - Locally, remotely, or balanced
 - Planner/administrator determines whether to share local workstation or server



Background Processing – Editing Example



Planner edits something that requires computation

Move route point – compute aircraft performance

Move target – compute visibility

Move threat – compute terrain mask

Synchronous mode

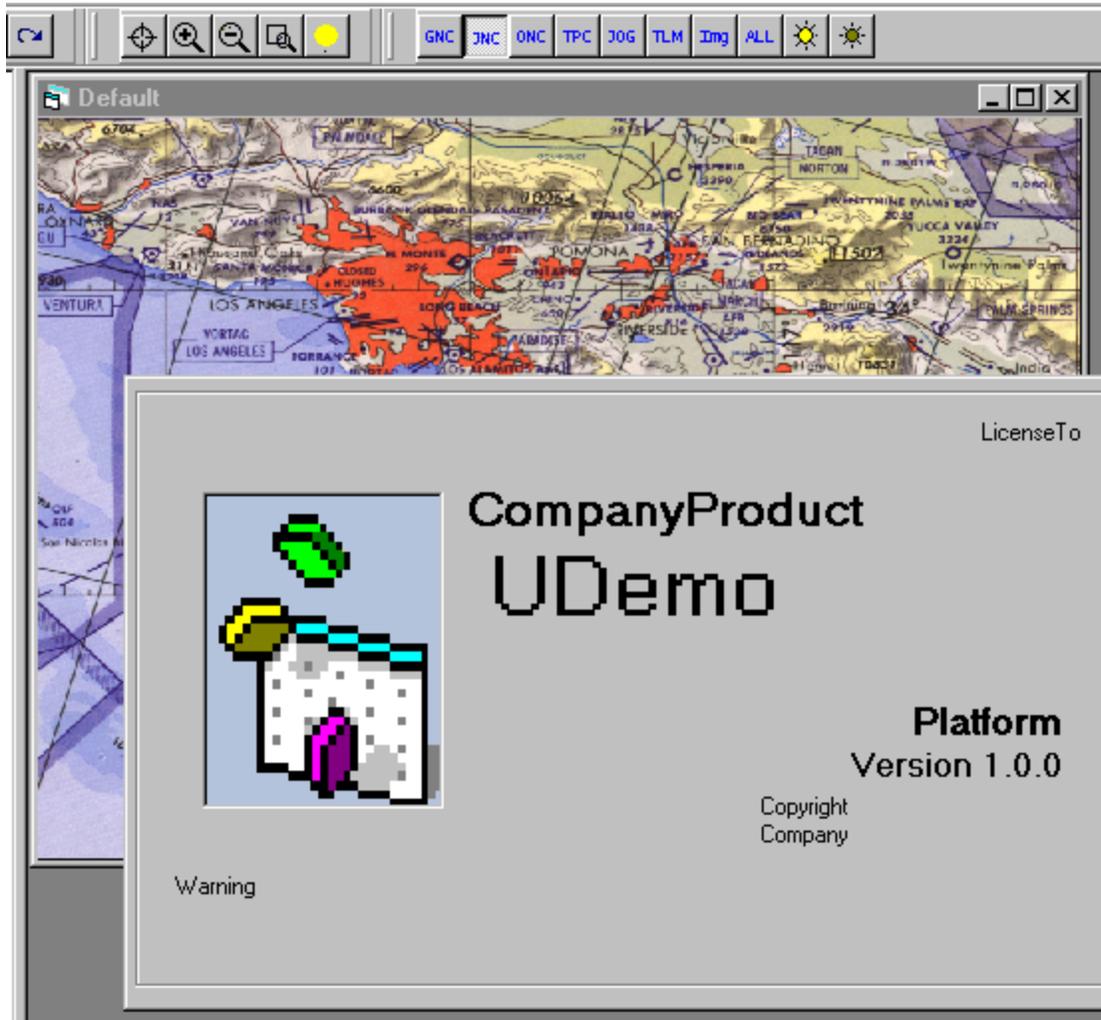
User waits

Asynchronous mode

User can continue



Background Processing – Logon Example



Planner logs on JMPS

- JMPS loads session,**
- Validates configuration,**
- Establishes DB connections,**
- Establishes network connections,**
- Loads data (maps, DTED, DAFIF, threats, routes),**
- Refreshes display windows**

Synchronous mode

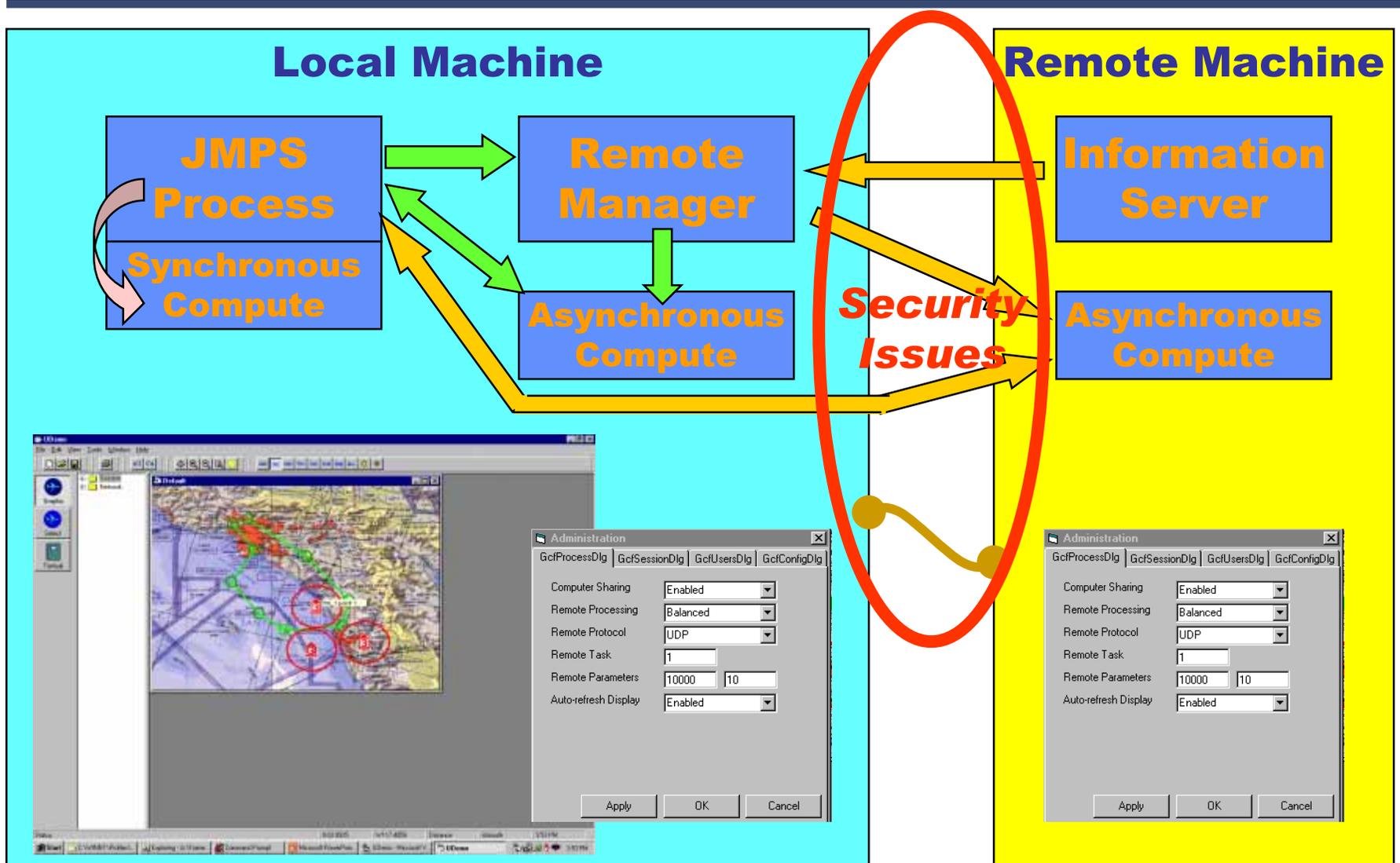
User waits

Asynchronous mode

User can continue



Compute Component Processing

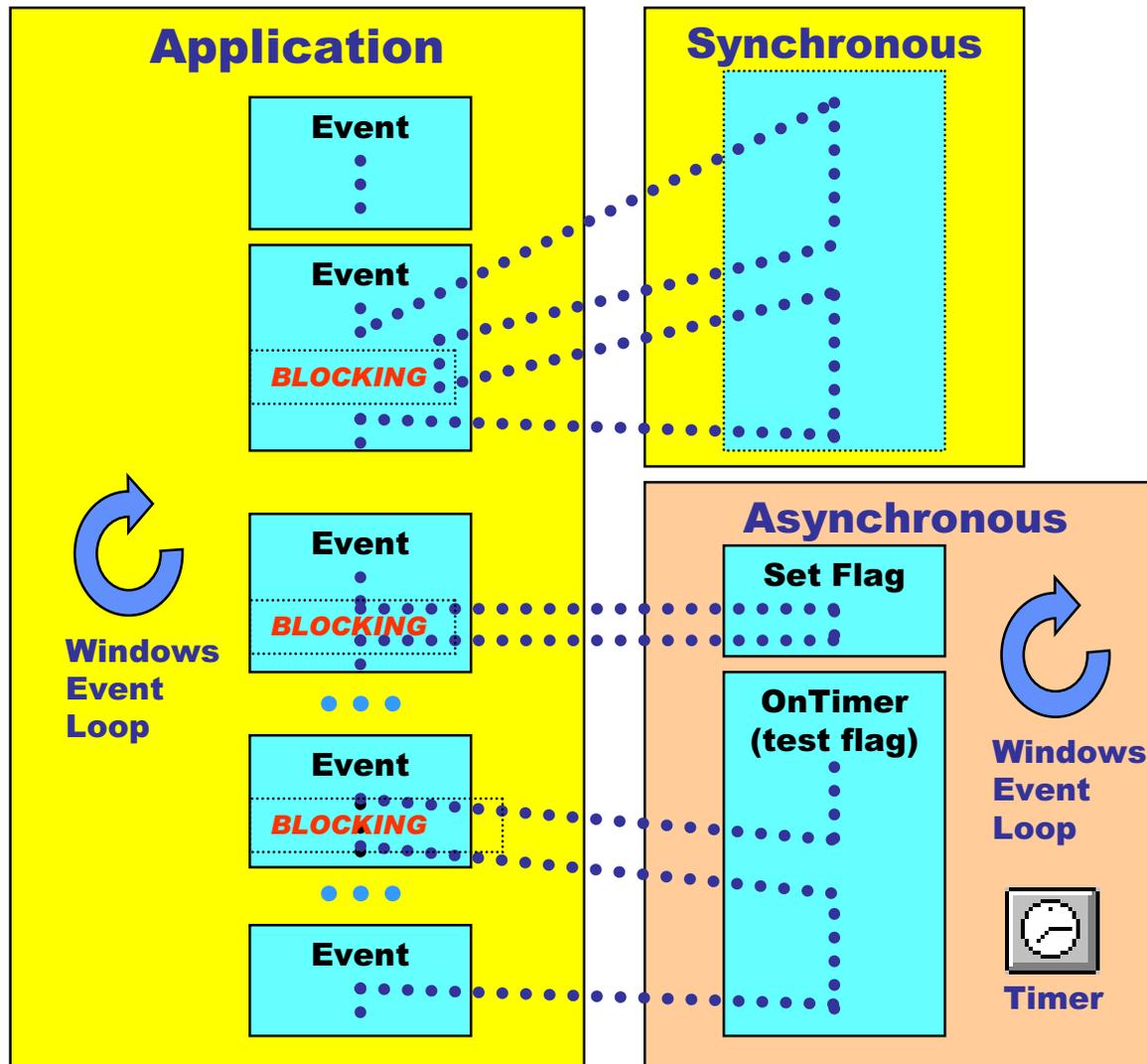


Background Threading Model

- **VB model is recommended**
 - Simple asynchronous processing
 - Callback blocking avoids synchronization problems
- **Sophisticated threading not precluded**
 - Multiple threads, mutexes, semaphores, events, and waitable timers



VB Threading Model



Collaboration

- **Publisher**

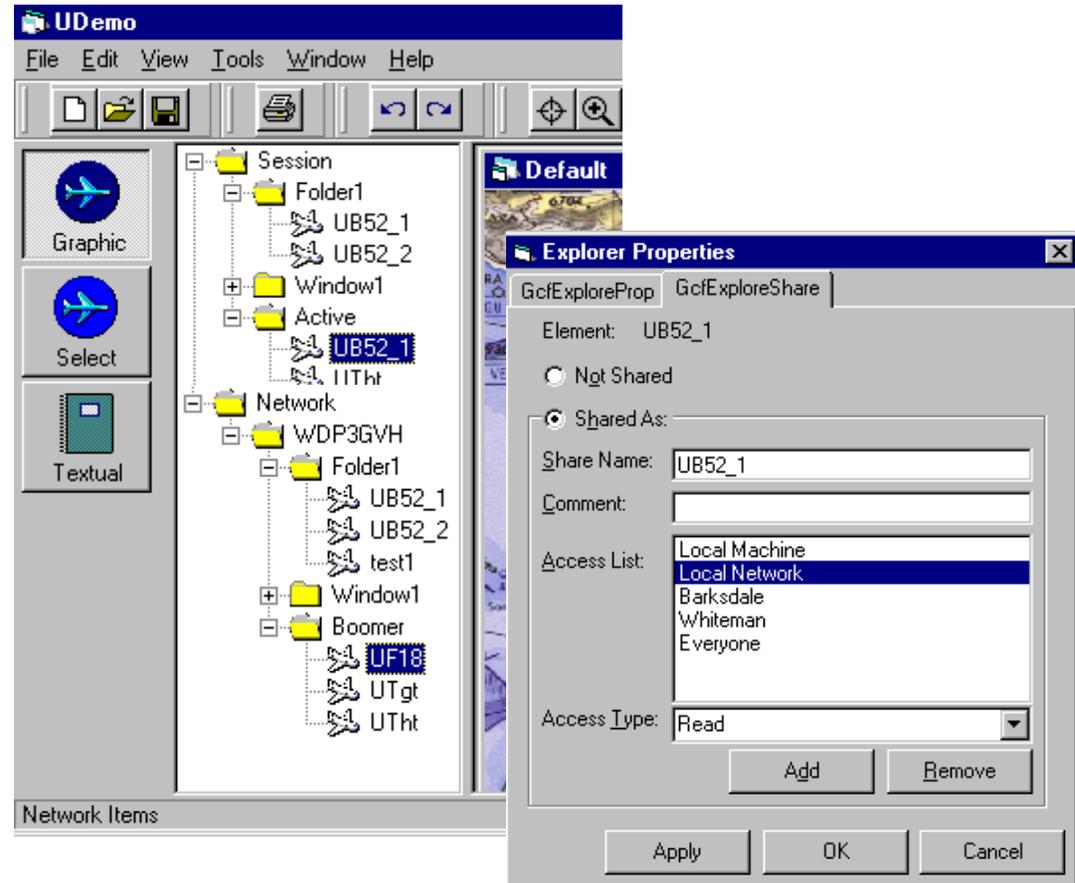
- Establishes permissions (share, read/write)
- Owns active data objects

- **Explorer exposes collaboration items**

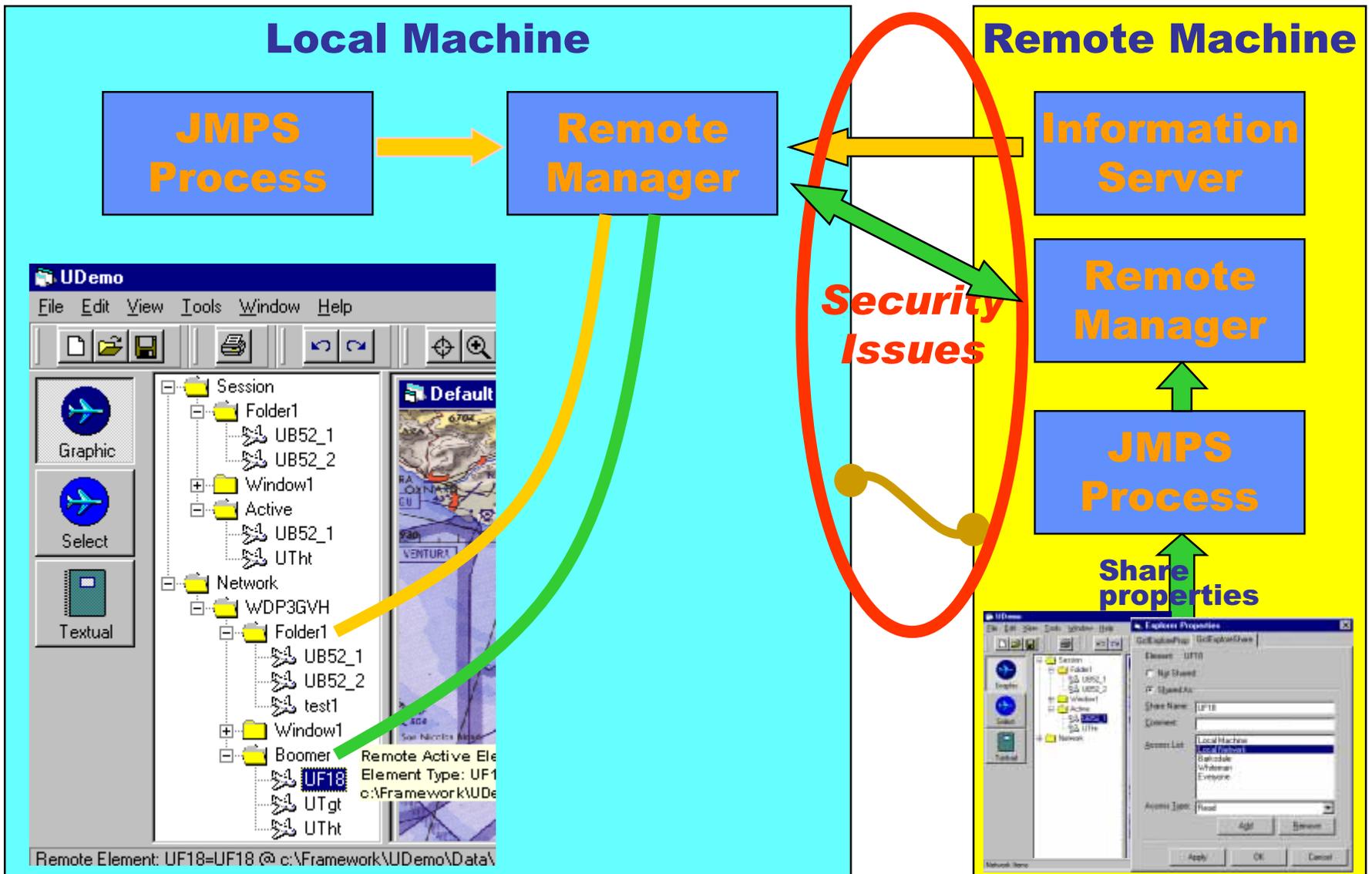
- Persisted data sources (files or databases)
- Active session objects (routes or threats)

- **Subscriber**

- Selects published items for collaboration
- Selected data is replicated and updated
- May edit data (with permission)



Collaboration Processing



Collaboration User Notifications

- **User notifications**

- On connection – identify connected user call sign
- On data load – identify data element (e.g. route name)
- On data unload – identify data element (e.g. route name)
- On termination – identify terminated user call sign

- **Collaboration status**

- Current connections
- Connection status
- Active collaboration data elements
- Activity statistics (e.g. number of messages sent)



Component Activation

- **Framework must find and activate appropriate components**
- **Component sources**
 - Installed components
 - Surrogate components (e.g. generic route display components)
 - Notify user to locate and install required components
 - Automatically install required components (with validation) from:
 - JMPS server
 - Source of data
 - Internet
 - Provide for uninstall (revert) on request



Collaboration Issues

- **Network domains**
 - Use of Active Directory to identify remote users
 - Identification of remote users for non NT domains
- **JMPS dependence on Win 2000 capabilities**
 - Active Directory
 - MTS
 - MSMQ



Network Security Issues

- **Remote Processing and Collaboration exchange only data**
(except where remote component installation is activated)
- **NSA Security**
 - System High - NO MLS
- **Network Security**
 - Secure communication provides
 - Authentication
 - Data integrity
 - Privacy
 - (e.g. SSL using Digital Certificates)
 - LAN vs. Classified WAN vs. Public WAN (e.g. Internet)
 - Ability to configure (disable) remote processing and collaboration

