



Large National User Facility (LNUF) CI Needs

- Huge investment in scientific capabilities: NSF, DOE, NIH, Military Branches, Industry
- Need for competitive output, highest possible quality
- Need for highly efficient usage, especially since data collected at LNUFs are becoming more unique
- Need for training - ~50% of users are students or post doctoral (CHESS)
- Need to educate public, have good public relations and citizen value
- (edit this presentation...)

Distance from home



ALS

- Limited to “portable tools” and specimens
- Extraordinary research expenses (travel, support...)
- Less-than-complete research groups
- LNUFs are “centers” for collaboration
- “All” LNUFs are distant, so all are equally available and used routinely
- Common credentials, authentication, “passports” needed for routine access
- ...

Collect large quantities of data



Jefferson Laboratory

- Data rates extraordinary (and growing)
- Data volume unprecedented (for most)
- Scientists accustomed to analyzing data must now “screen” data first
- Data collection strategy tools needed
- Storage issues
- Transport issues
- ...

Unfamiliar software and analysis tools



NSLS

- Scientists are “guests”
- Software has huge effect on efficiency of LNUFs
- Most scientists consider analysis software “personal” (like underwear)
- Open source collaborative software design models exist (CCP4, others...)
- Normal language interfaces (i.e. elves ALS)
- ...

User Support needed



Photon Factory, Japan

- Cognizant support persons are key
- \$\$ limit use of expensive equipment
- Always-on equipment needs special design and on-call support
- Can support be remote?
- Pre-visit training possible?
- Pre-visit screening possible?
- ...

Documentation



SRC

- Are there established documentation design standards?
- Issues of availability and searchability
- Content sensitive documentation?
- “Smart” documentation
- “Smart” equipment (plug-and-play docs.)
- Communal documentation tools, sites (Forum, blog, wiki, etc.)
- ...

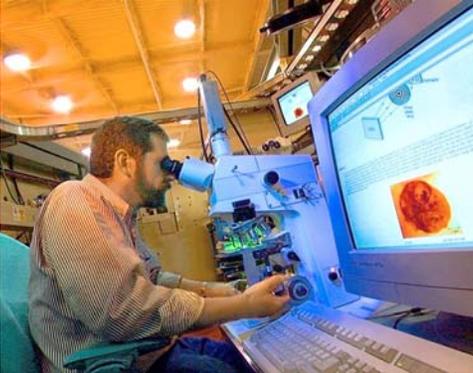
Remote access/control



SSRL

- User interface design needed
- Save \$\$\$
- Enhance collaboration
- Enhance support
- ...

Ownership and Security



ALS

- “Pseudo private” machine use
- Data owned by scientists
- Privacy/protection of intellectual property
- Need model for sharing
- Long-term access/retrieval of data and results
- ...

Outreach and Instruction



CHESS

- LNUFs must be accessible to public
- Education is critical to NSF mission
- Scientists generally not trained as teachers (especially K-12)
- Tools for on-line “virtual classrooms” needed
- Ties to education resources needed
- Means to evaluate LNUF efforts and effectiveness not intact
- ...

Other...



APS

- Should LNUFs be software development centers?
- Should there be a data/results repository? With open and searchable access?
- Should NSF develop standards for data collection/analysis/storage?
- ...