

Breakout 1: Facilities Access and Collaboratories



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Breakout Discussions

- Scope
- Interaction Models
- Key Elements
- Application Specifics

Breakout Scope

- Inner tiers → other breakouts
 - High performance computational facilities
 - Intensive data movement

- This breakout → next tier out
 - Enabling the science communities to access information/experimental/computational resources and to collaborate

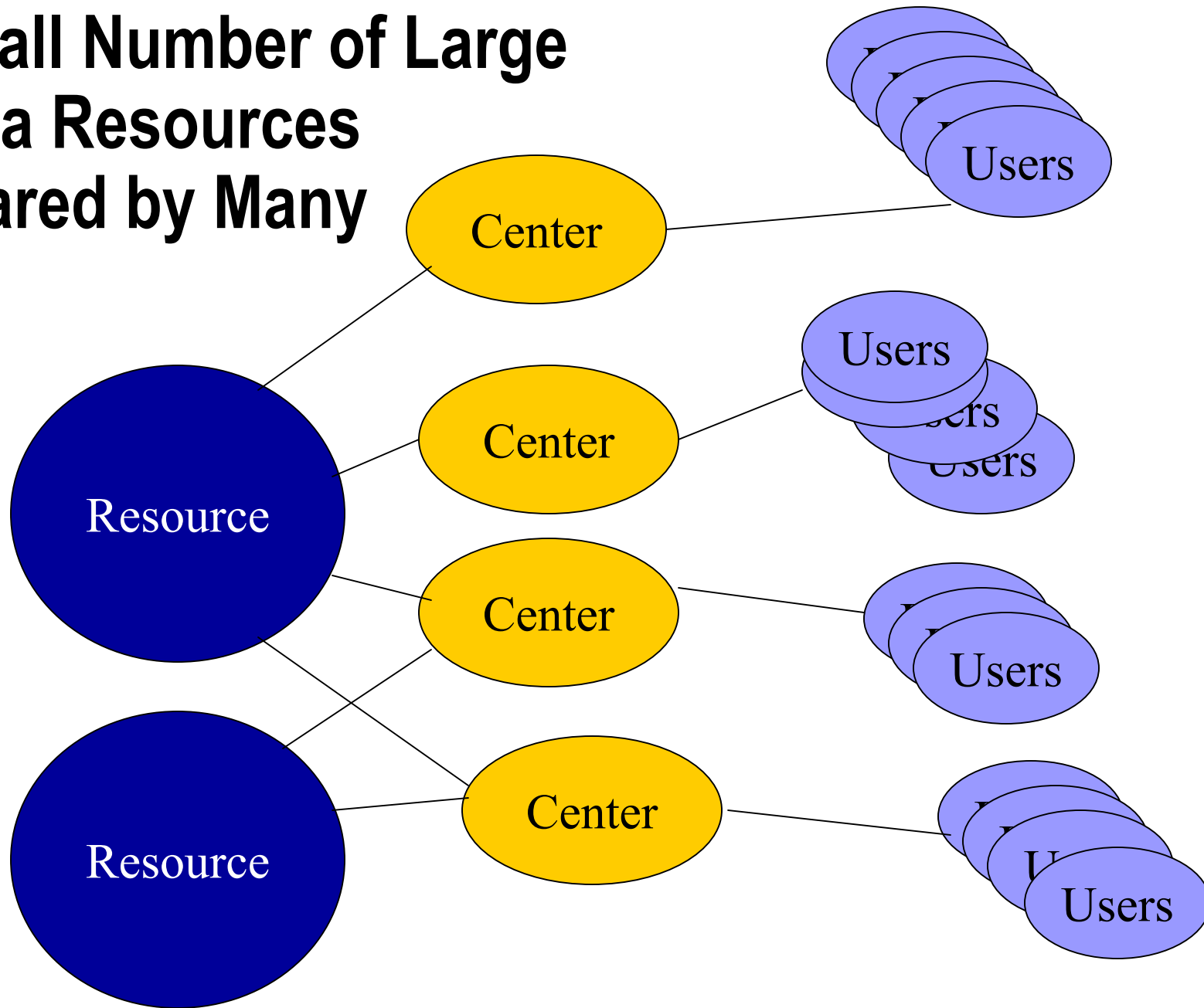
Critical Application Focus Areas for Facility Access and Collaboration

- Support for collaboration
- Authentication and authorization
- Distributed storage
- Data-grid issues
 - Information infrastructure
 - Resource discovery
 - Resource management
 - Distributed job management

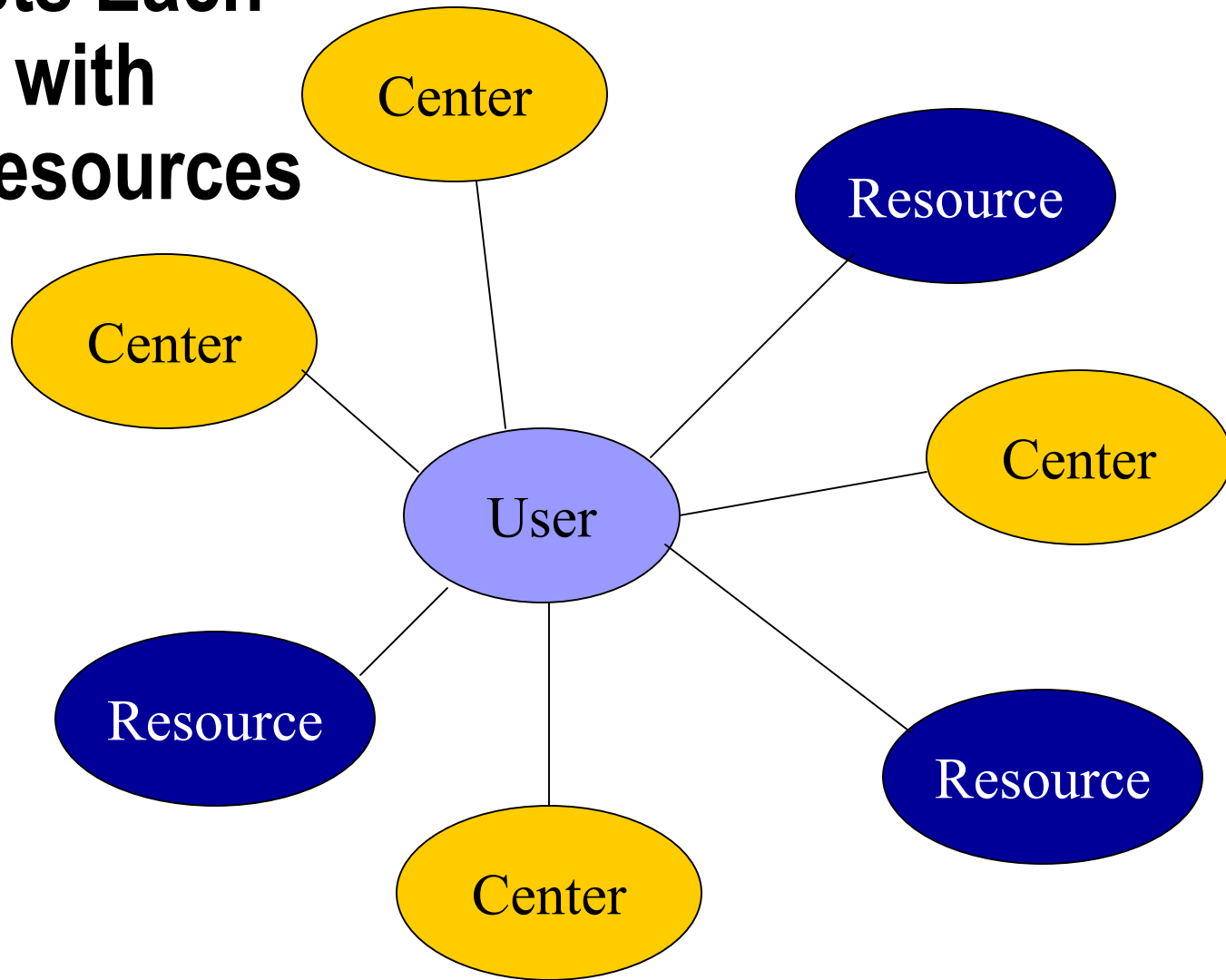
3 Extreme Distribution Models

- Cohesive science communities have different interaction models
 - Independent vs. collective use of shared data repositories
 - Shared individual time on unique instrumentation vs. collective experiments
 - Large team projects vs. coordinated cross-scale projects
 - ... etc.

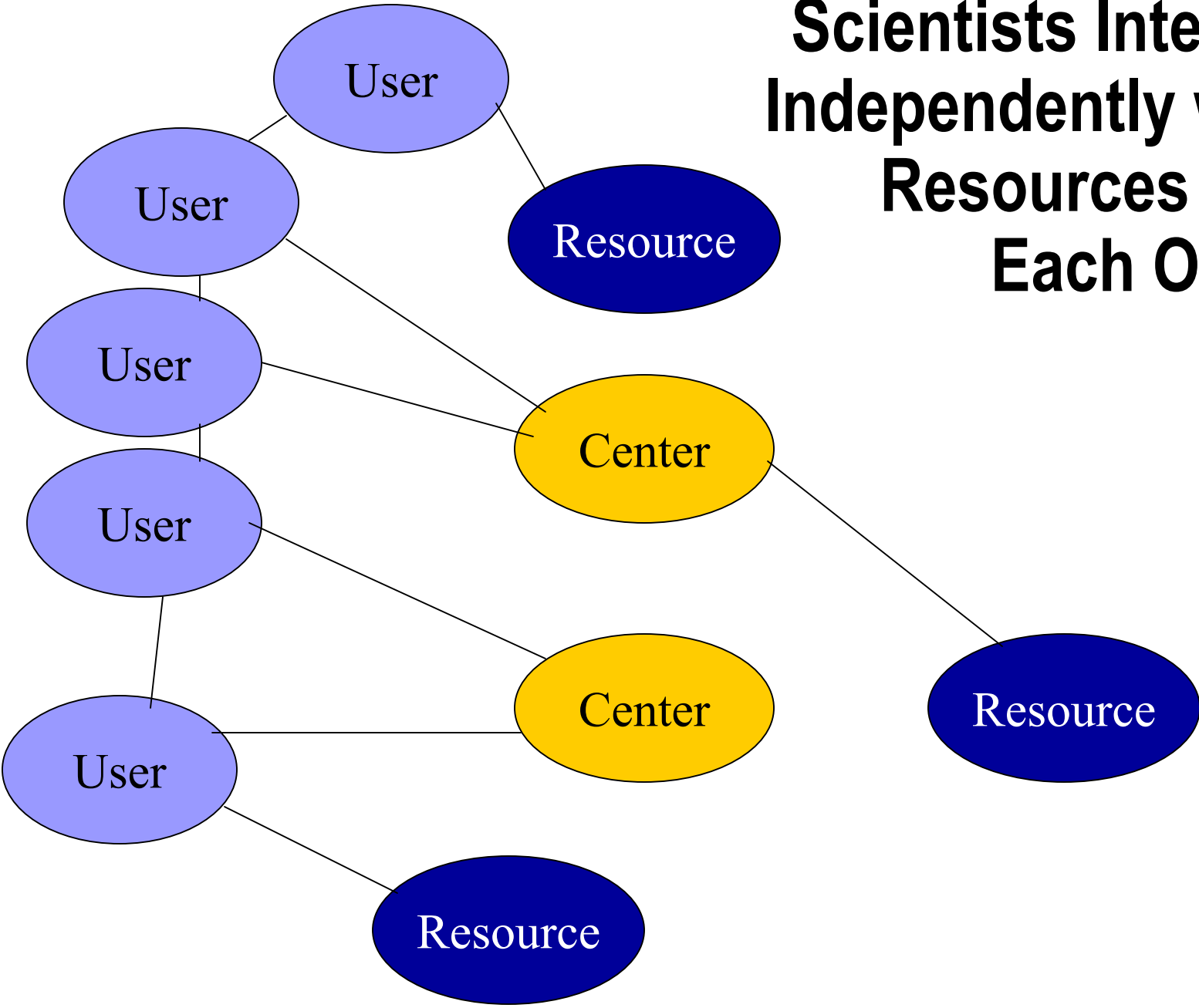
Small Number of Large Data Resources Shared by Many



Scientists Each Interact with Many Resources



Scientists Interact Independently with Resources and Each Other



Application Areas Discussed

- Magnetic Fusion
- Macromolecular Crystallography
- Chemical Sciences and Nanoscience
- High Energy Physics
- Astrophysics
- Global Accelerator Network

Recurring Themes

- Network advances are critical to supporting altered science processes dictated by high throughput experiments, more detailed simulations, and integrated science communities.
 - Tighter coupling of collaborations
- The most precious commodity is often time on unique/expensive facilities; so data analysis/simulation turnaround is vital to productivity
 - Real-time analysis and simulation

Recurring Themes

- Secure seamless authentication/authorization infrastructure is a gating capability for creation of successful facility and collaboratory interactions.
 - Interplay between site security and enterprise security mechanisms is critical..
- Vision of DOE-funded labs and universities as an enterprise; however, we currently don't have a set of enterprise components to build it with.

Other Valuable Lessons

- Need to thoroughly understand how data moves in a community, and how it is shared beyond the team that creates it.
- Applications can cost a lot to support, so some communities want more centralization of application execution, rather than more distribution.