Introductory Remarks & Discussion: Federated Systems

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NIST Diffusion & CHiMaD CALPHAD Workshops

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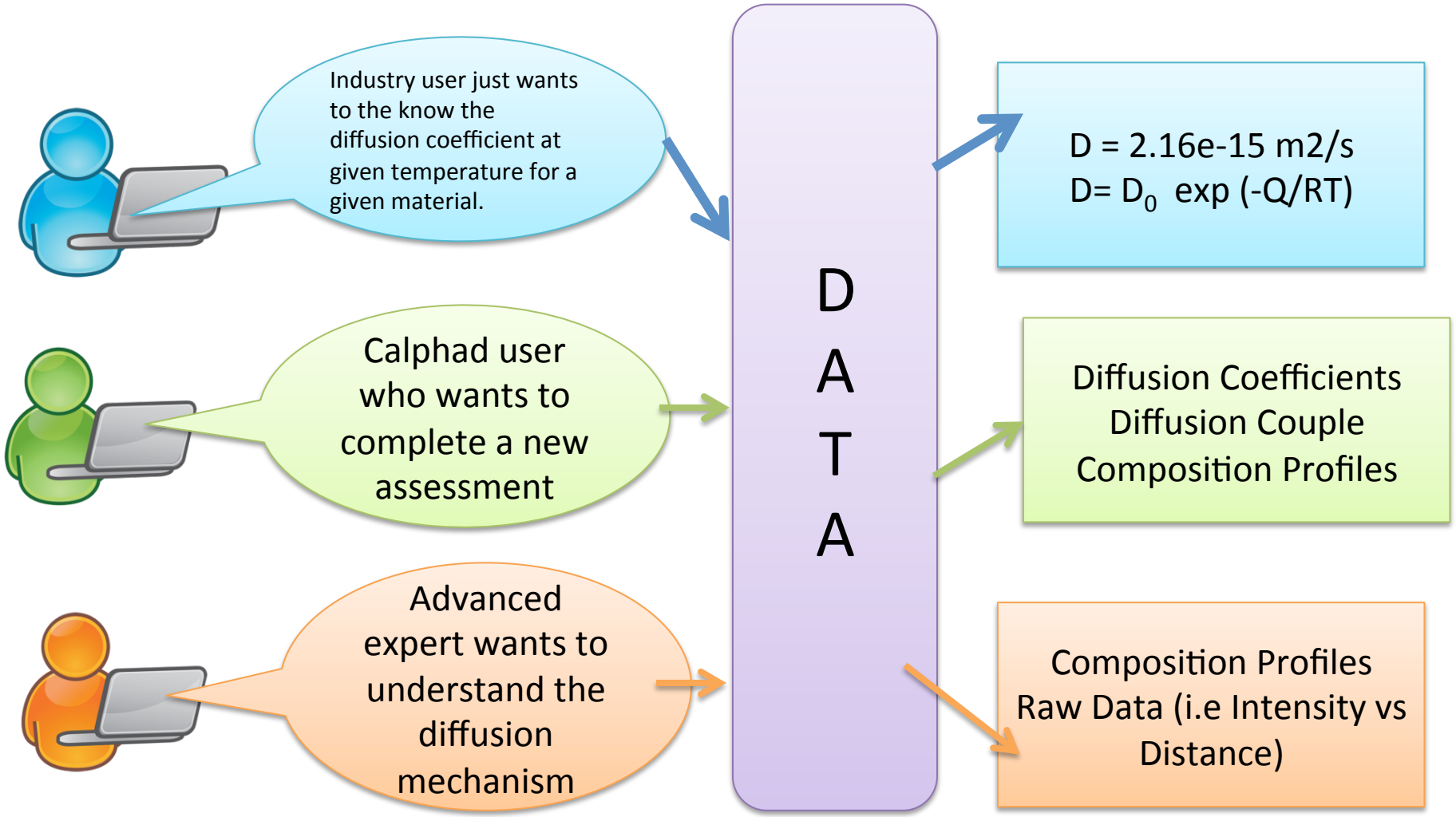
End Users: Different Types of Diffusion Data Needs



NIST National Institute of Standards and Technology
Technology Administration
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Federated data → Leveraging resources → Acceleration & Innovation

Federated Data System:
What is it & Why consider implementing?

What: Data Federation Architecture

Unified access to information about disparate, geographically distributed data sources

Why:

- ✧Retain proprietary control & competitive edge
- ✧Cultivate a culture of data sharing
- ✧Leverage investment
- ✧Encourage collaboration & partnership → innovation

Federated Data Repositories: Key Elements

- Focus on end user data needs
- Use with range of types of content
- Adopt common framework
  - storage repository platform
  - exchangable metadata and data formats
  - query and discovery service overlay
  - federation/search mediator

Storage Repository Platform

NIST DSpace repository platform

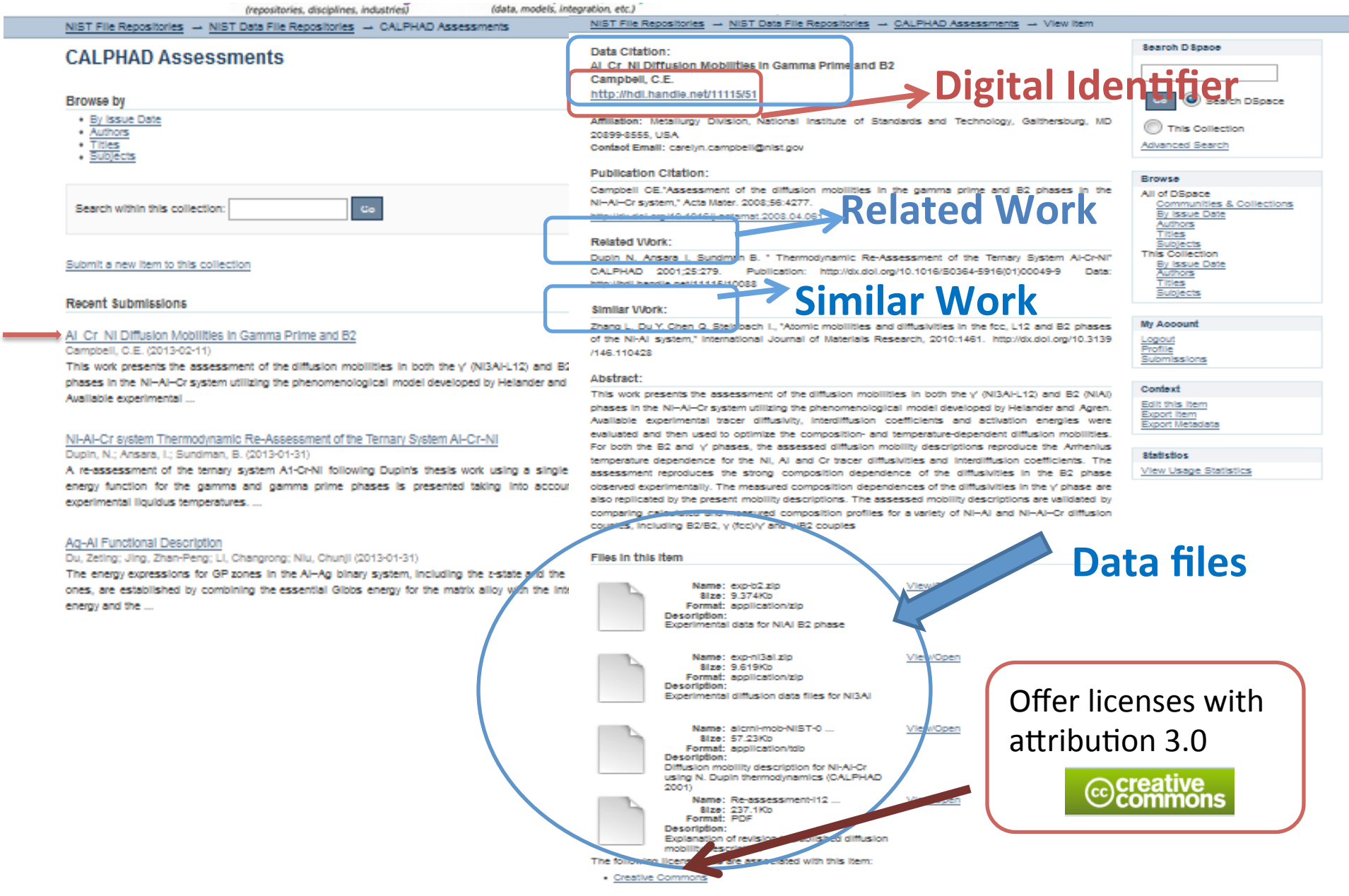
- easy to install and use
- generic, agnostic, & standards-based
- Adaptable for future needs

Free, open software

Capabilities

- link to files
- support simple & customizable metadata
- browse & search
- customize with own tools
- **compatible with other repository systems**
- **export metadata (and data, if desired)**
- **assign persistent identifiers for data**
- **attach license for data use**

Repository Platform: Sample Entry

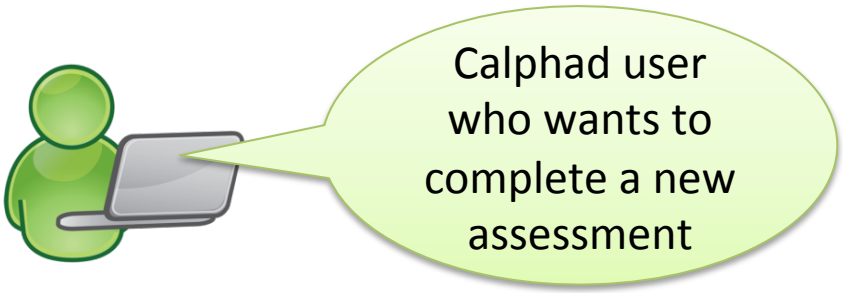


Federated data repository system

- ✧Low-maintenance storage & access for data
- ✧Standards-based to ensure interoperability
- ✧Compatibility with commercial & opensource DBs
- ✧Easy metadata export to Federation Mediator
- ✧Public/private efforts while protecting privacy

Federated systems

- Challenges of Coordination
  - Multiple sub-communities
  - Communication of strategy, process, & resources
  - Short time frames, rapidly moving research & accelerated industrial enterprises
- Potentials for Opportunities
  - Foundation for building on rich, diverse community
  - Connector to increasingly powerful set of tools
  - Teams of scientific partnerships for innovation



University
Content*
Tools
Facilities

Society
Content*
Tools
Facilities

Commercial
Content*
Tools
Facilities

Gov't Lab
Content*
Tools
Facilities

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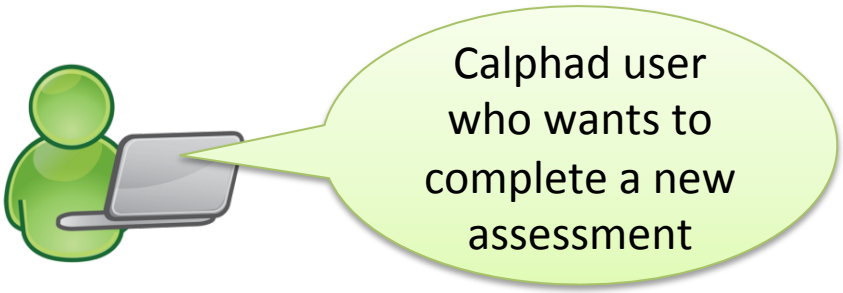

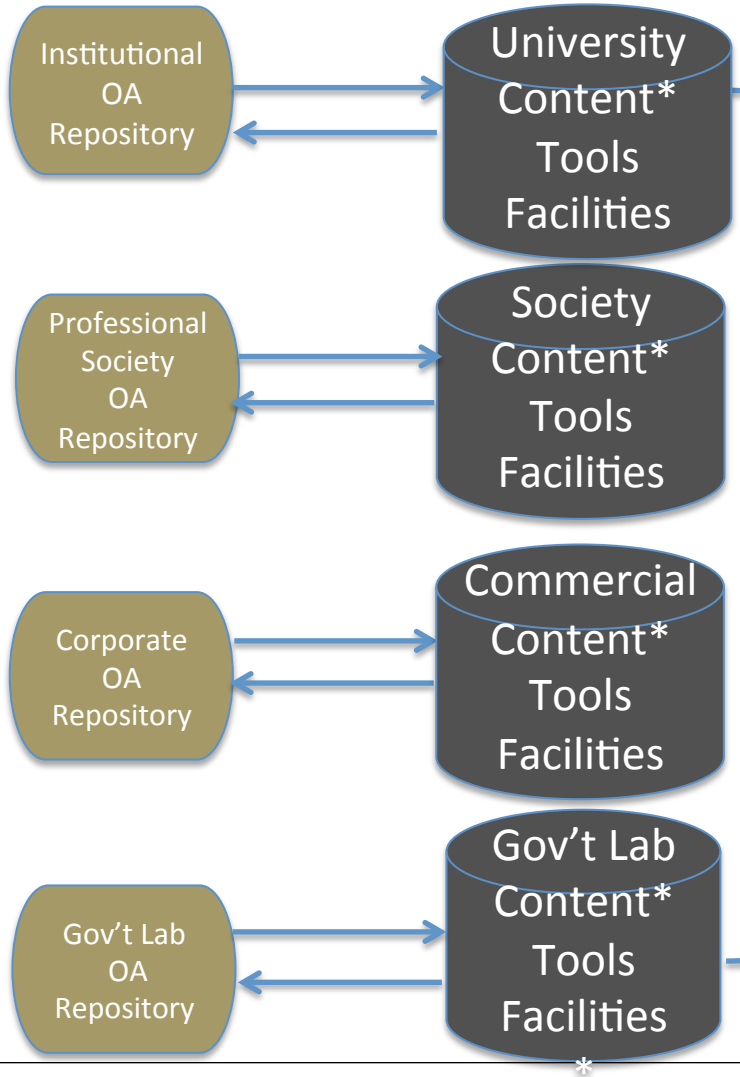

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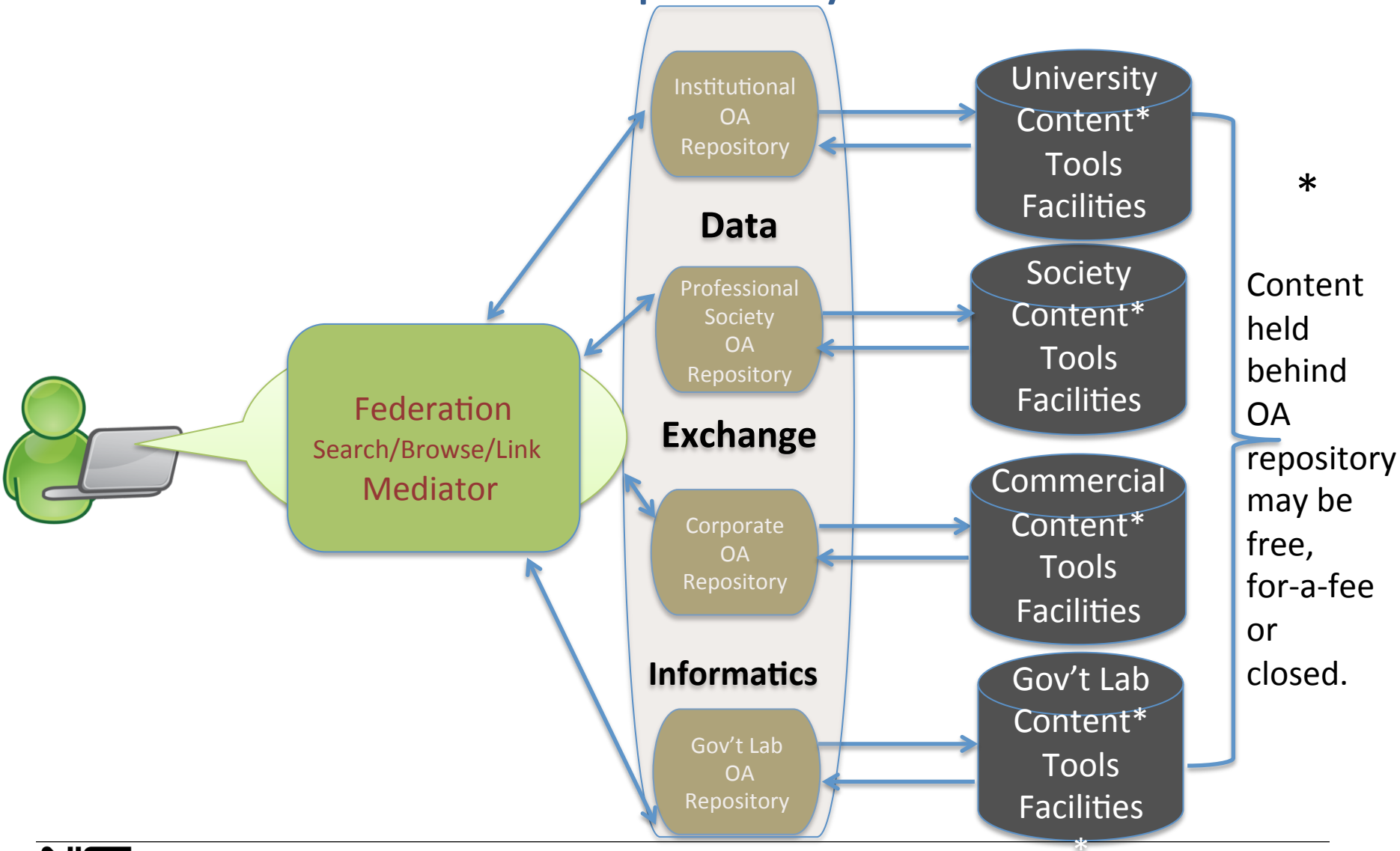
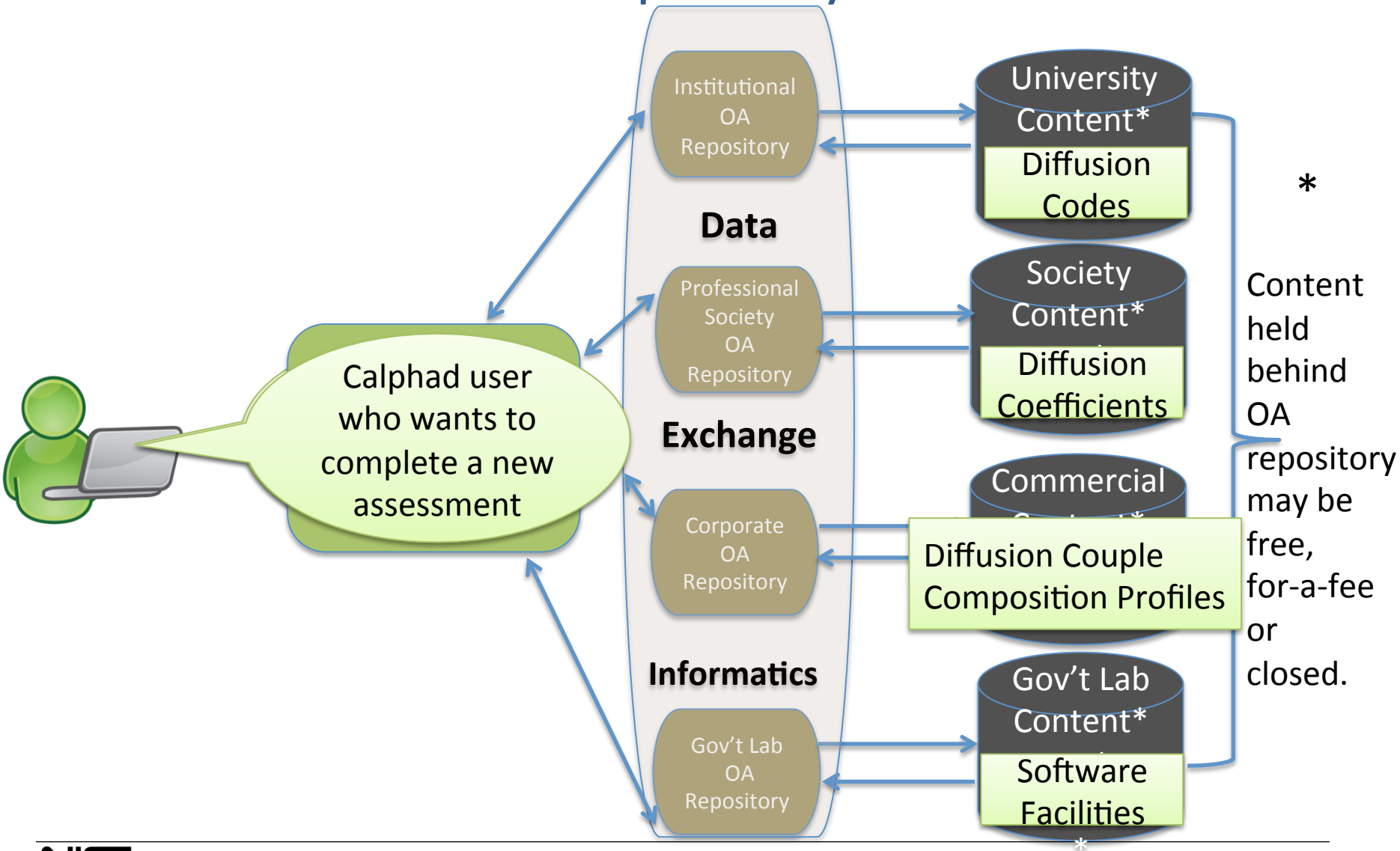
Content held behind OA repository may be free, for-a-fee or closed.

Federated Repository Architecture



Federated Repository Architecture



Federated Repository Architecture

Discussion:

Could federated systems help or hinder your work? How?

Common metadata & data practices? Who could do what? Should/Where to begin?