
Content and Service Federations

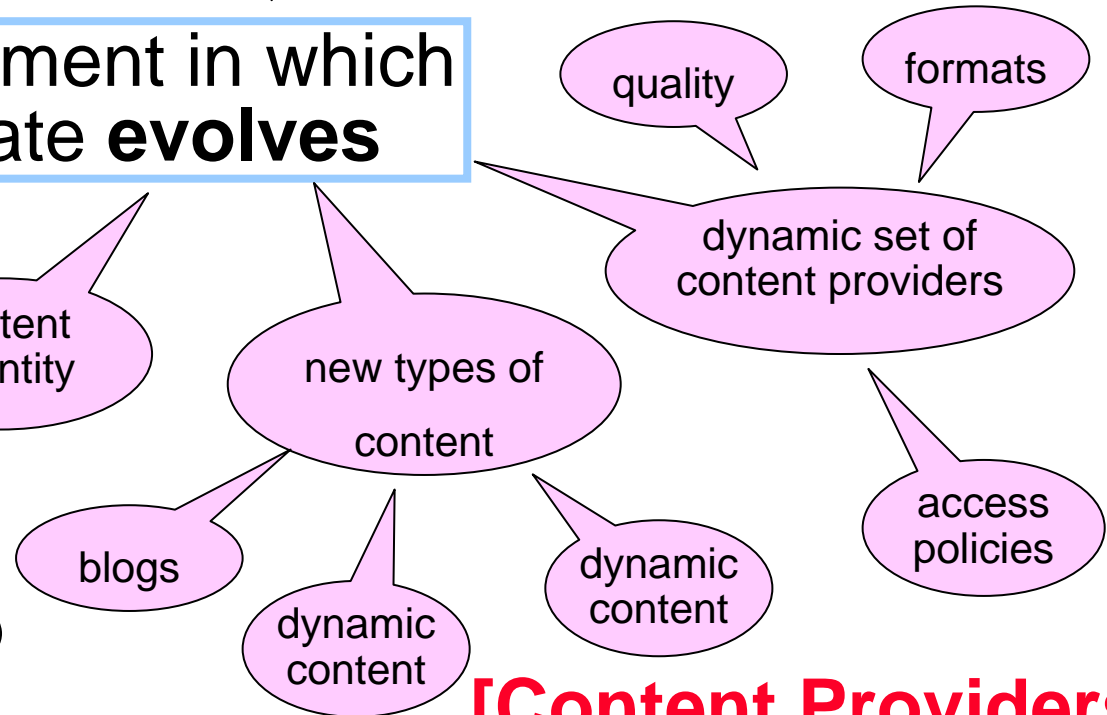
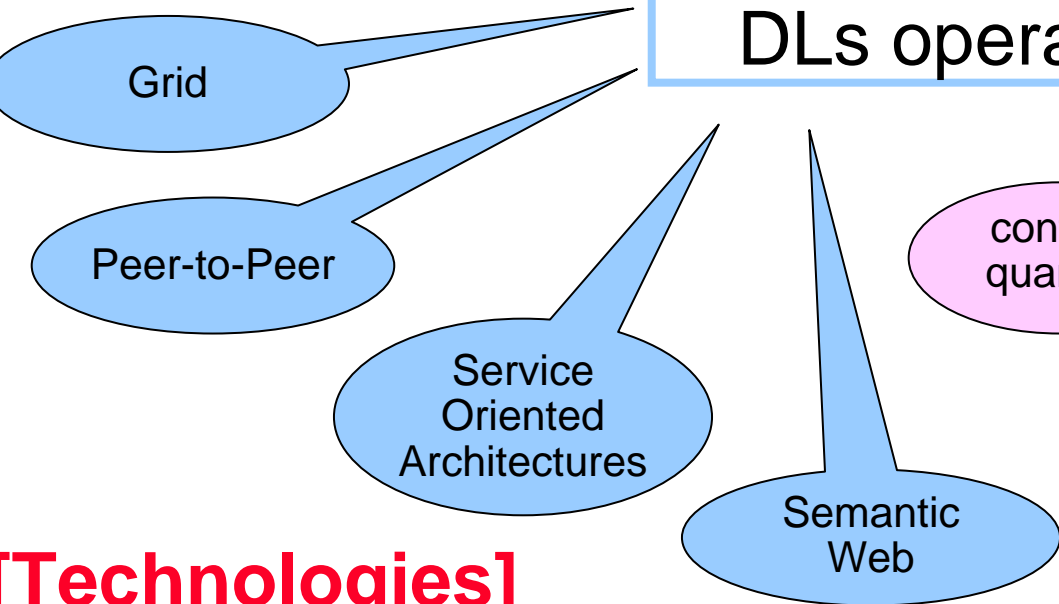


DELOS Workshop, December 5 and 6, 2005
Erich J. Neuhold, Thomas Risse, Claudia Niederée

[User & Market Requirements]



The environment in which DLs operate **evolves**



[Technologies]

[Content Providers]

Choices:

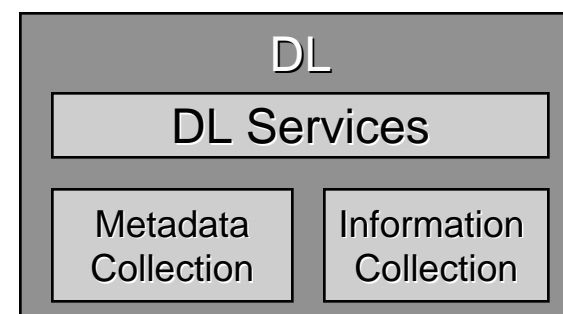
- Building a **huge centralized digital collection (index)** accessible via browsing and searching
 - I have to define the usage
- Building **supportive information spaces** – **Virtual Digital Library**
 - The system has information about the usage

For the second we provide:

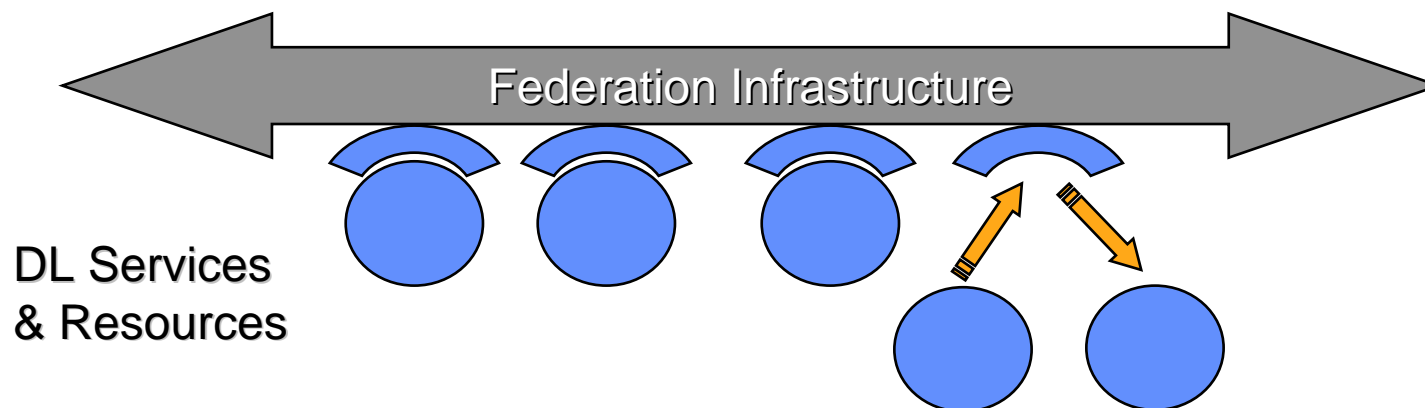
- Next-generation architectures: from centralized systems to **decentralized service federations**
- From Content Mediation to **Resource Mediation**
- Extending Library services towards intelligent context-oriented **community support**

Current plans for next generation DL architectures are aiming for a **continuous transition**

- from the DL as an integrated, centrally controlled system



- to a **dynamic, configurable federation** of DL services and information collections.



- Infrastructures that can dynamically deal with new **content services and content providers (big and/or small)**
- Services for intelligent federated **context driven** search
- Services for metadata **brokering** and metadata integration
- Further efforts in **standardization** (search interfaces, metadata)
- Development of **multilingual ontologies** that ease mediation
- Integrated support for multiple languages
- ...

- Existing (early?) sample projects:
 - DILIGENT – Grid based Virtual Digital Libraries
 - BRICKS – Decentralized Digital Library Infrastructure

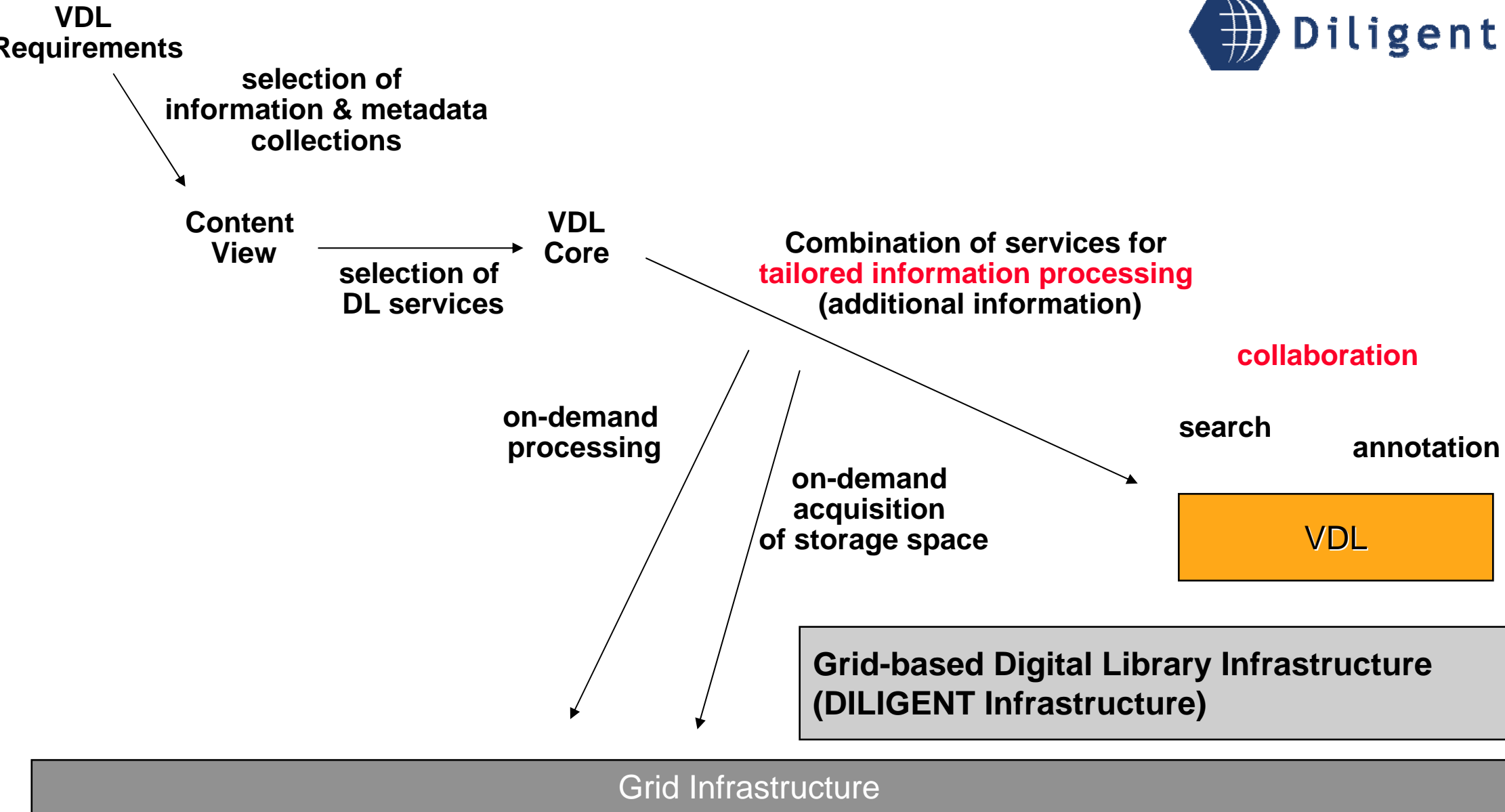
- **DILIGENT:** A Digital Library Infrastructure on Grid-Enabled Technology

The DILIGENT project will

- build a **Grid-based Digital library infrastructure** that
 - uses the **on-demand** mediation of the Grid infrastructure
 - to enable scalable and cost-effective DL infrastructures
→ integration of **Grid** and **DL** technology
- enable the construction of **Virtual Digital Libraries**
- build upon the efforts of the EGEE project;
- be demonstrated and validated by two complementary application scenarios:
 - one from the **culture heritage** domain
 - one from the **environmental e-Science** domain



DILIGENT VDL Construction



Service oriented

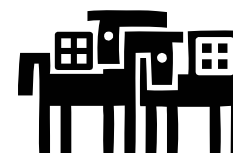
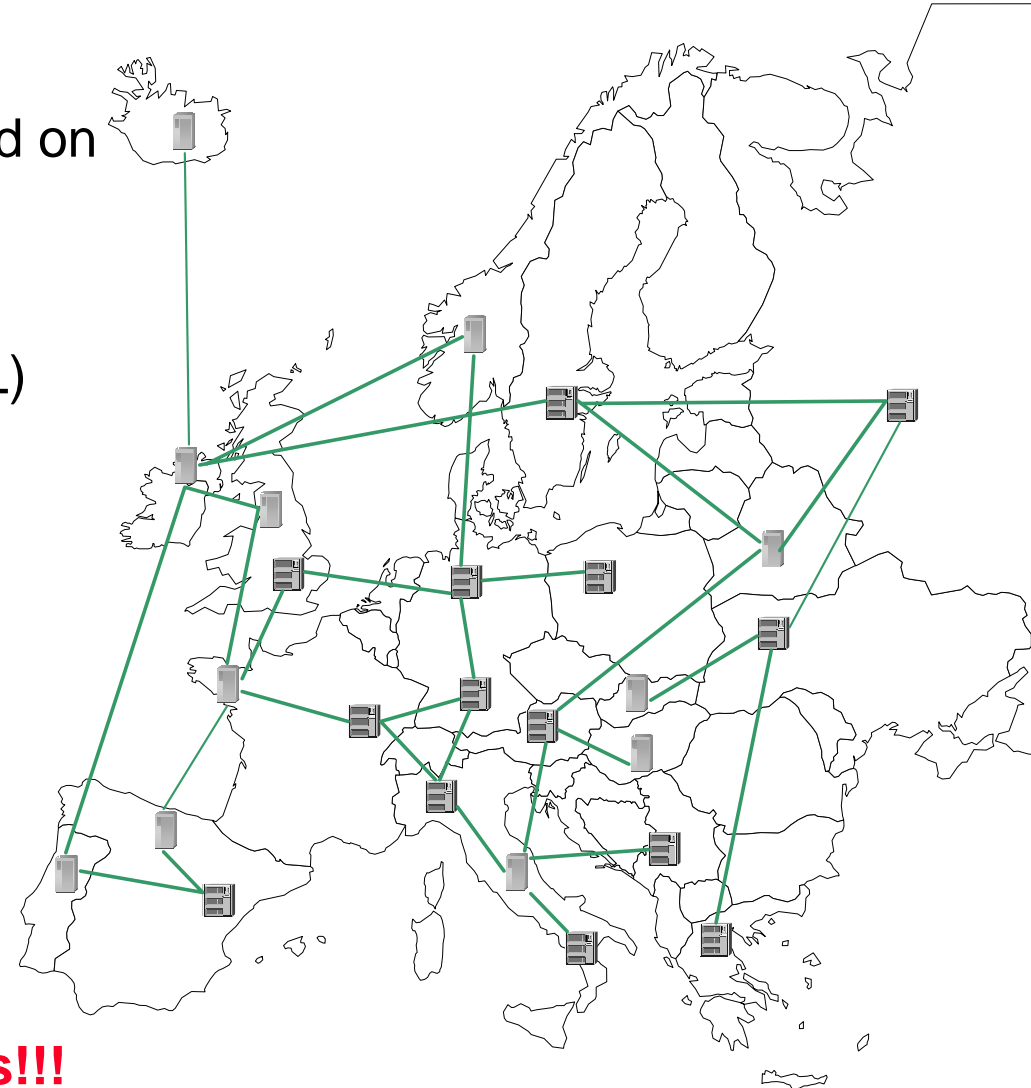
- Standardized interface descriptions based on Web Services (WSDL, UDDI, etc.)
- Platform independent
- Flexible **composition of services** (BPEL)

Decentralized (**Peer-to-Peer**)

- Avoid central coordination
- **Highly scalable**
- **Increased reliability**
- Minimized maintenance cost

Base technology as Open Source

- Lowers the barrier to use BRICKS
- **Ensure sustainability of project results!!!**
- Allows tailoring to user needs

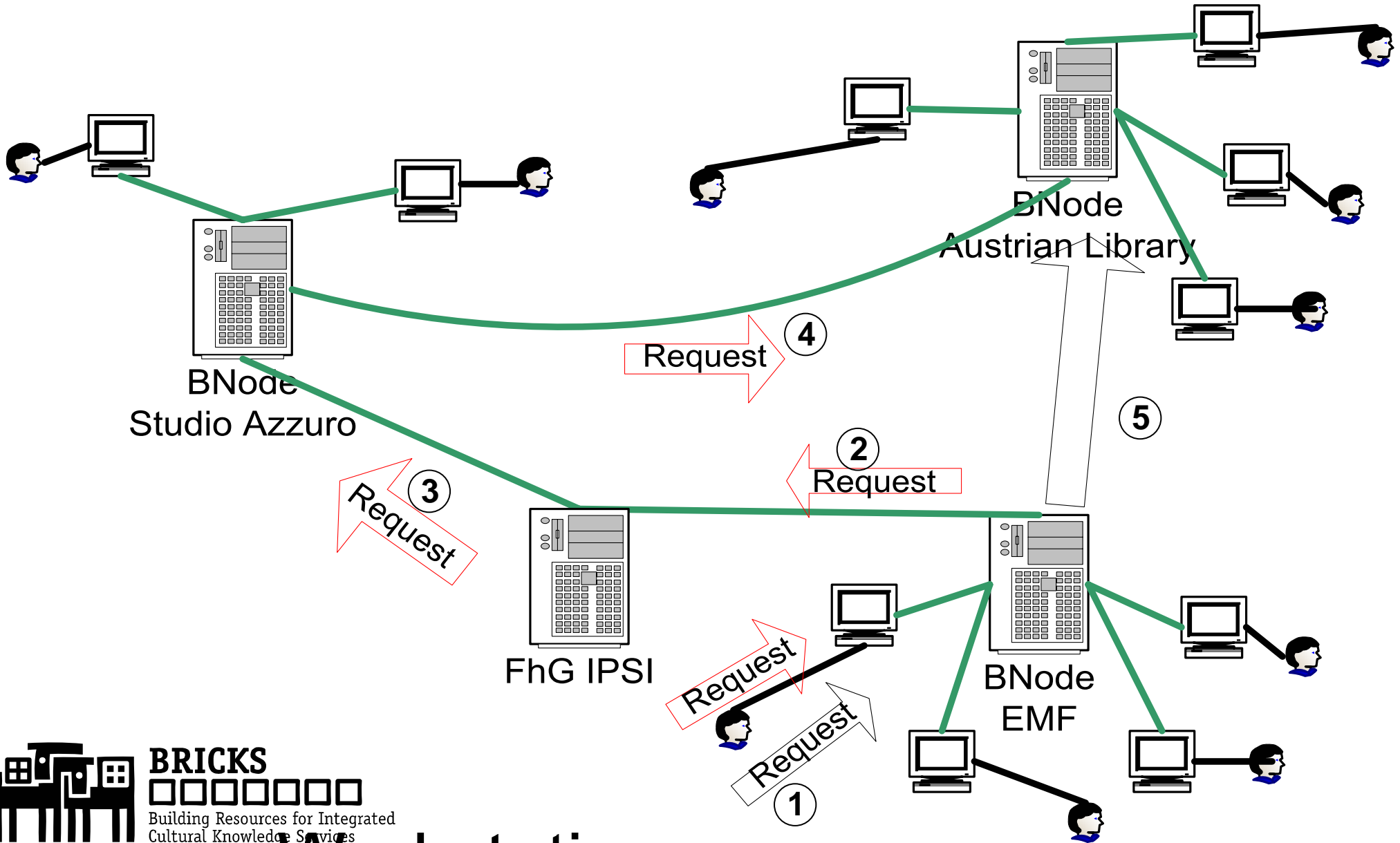


BRICKS



Building Resources for Integrated
Cultural Knowledge Services

Peer-to-peer information access in BRICKS



User Workstation

Focus of classic DL is content management and mediation

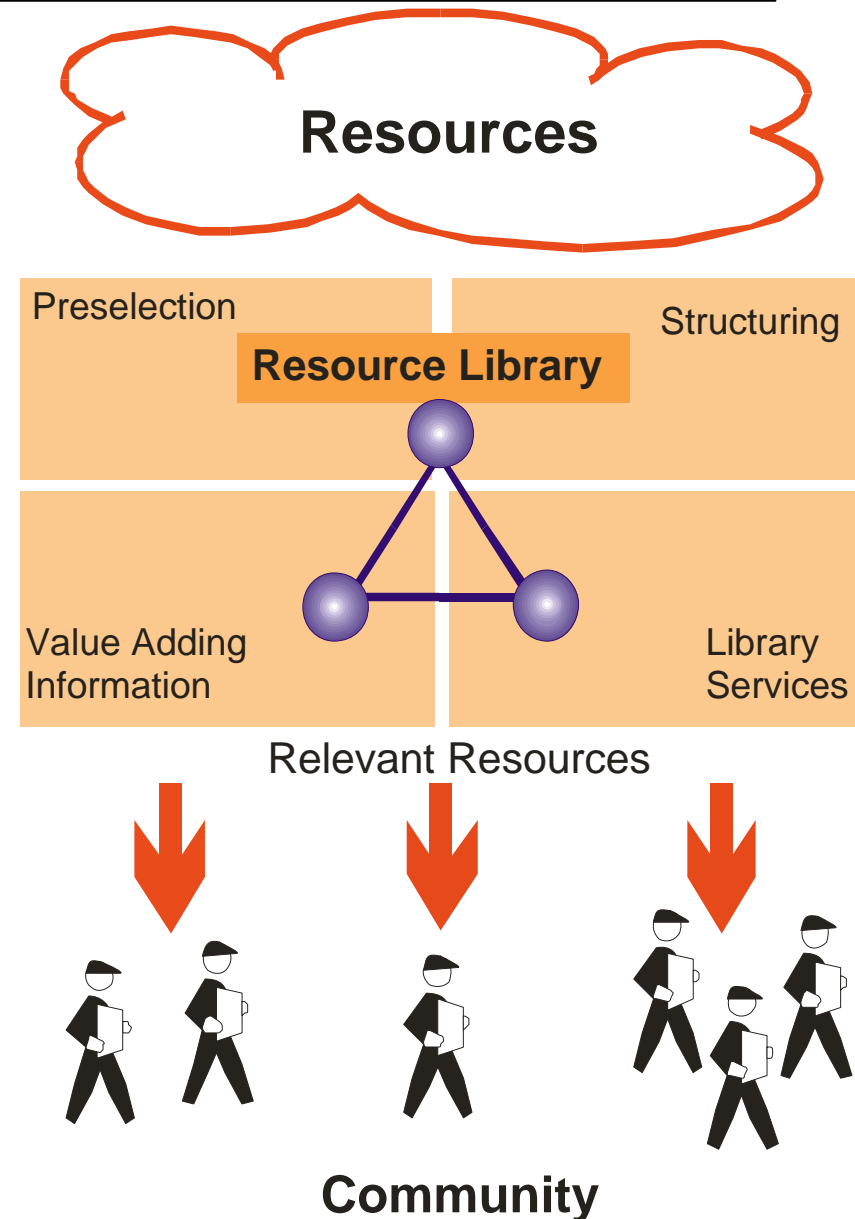
NGDL have deal also with **Services**

- Single services
- Service containers (Composed Service + Service Management)
- Human Services

Example: **Scientists** are interested in the description of algorithms but also in a usable implementation (accessible as a service) and in cooperation (with humans).

The DL acts as a **mediator** between

- Content and Services → **Resources**
- the information and functional needs of the community



- Improved **access support**
 - Context oriented access support (takes into account the current situation of the user)
 - Intelligent federated search (dealing with heterogeneity and decentralized situations, using background knowledge to improve search effectiveness)
- Extended **service portfolio**
 - From pure mediation support to supporting community processes (especially scientific community) → e-Science
 - Step towards Virtual Information and Knowledge Spaces
 - Providing next generation working place to the scientist
- **Harvesting** results from areas like
 - Semantic Web (e.g. project VIKEF)
 - Social Networks
 - Collaboration activities
 - ...



Thank You!
Questions?