Digital Libraries of the Future – and the Role of Libraries

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Information Society Technologies

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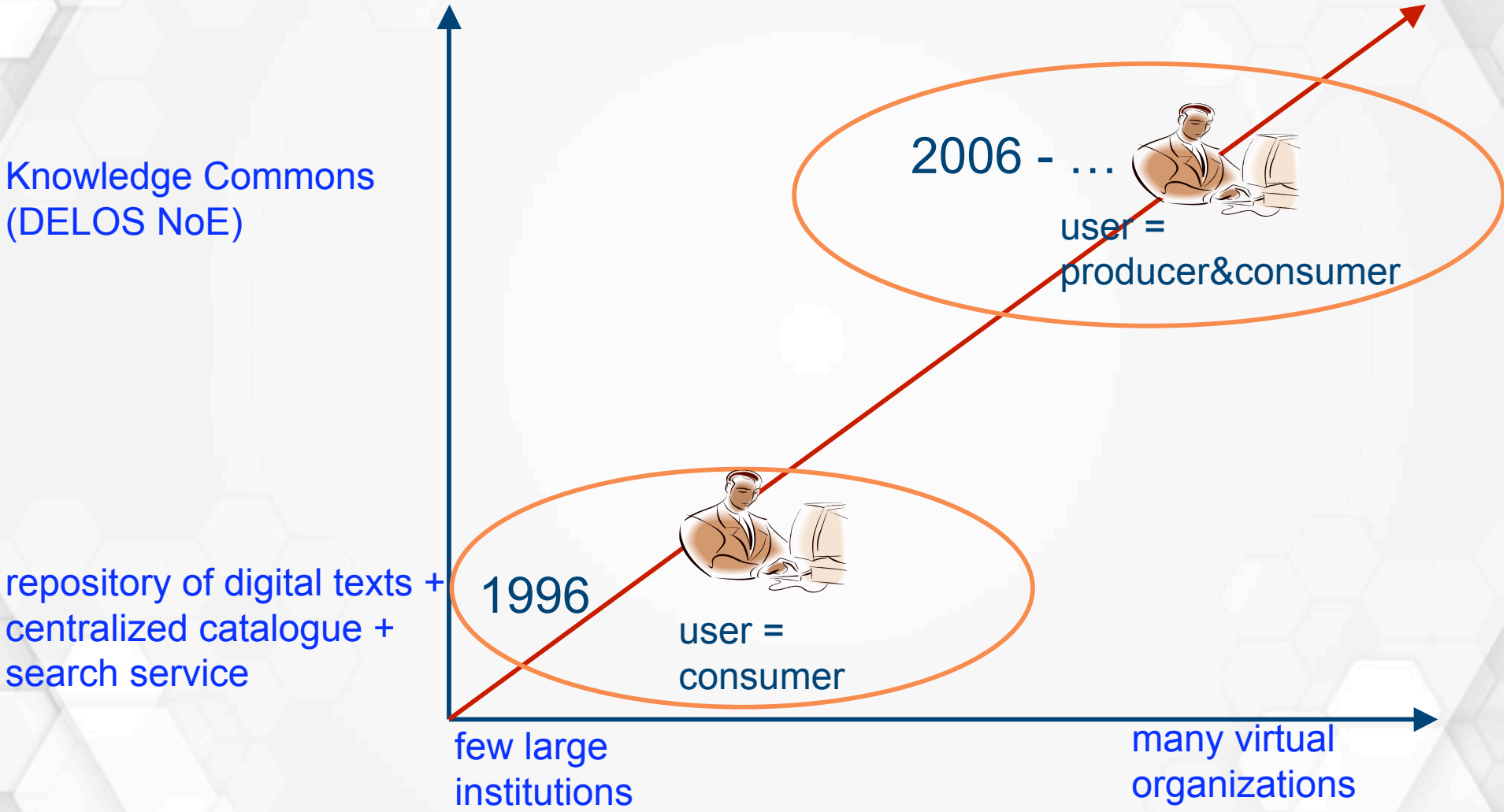
The DLs evolution



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New information objects

- Multimedia documents (images, audio-videos, 3D-objects)
- Data (observation data, experimental data, specific elaborations outcomes)
- Information objects with no physical analogous
- On-demand information objects

On-demand information objects

- a fixed text
- a pollution map
- a table summarizing data
  from millions of observed satellite measures
- a graph reporting an analytical trend of certain information extracted from a great amount of observed data

International Report on
Mediterranean Sea Chlorophyll Distribution during year 2003

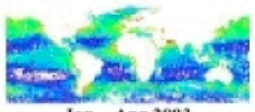
1. Scientific and Societal Concerns

Any scheme to monitor the ocean biota and their environment must strive to address the major scientific and societal concerns of the day pertaining to marine life. This section summarises some major concerns that emerged during discussions at the meeting. Many other concerns could have been included, but space precludes a complete listing of concerns.

1.1. Biodiversity and Conservation

Marine biodiversity is not easy to assess and is generally poorly known. There are many complicating factors, including a three-dimensional, fluid, mobile environment, its vastness, and its challenging depths. Away from shore, primary producers and primary grazers are usually small, drifting forms that undergo spatial variability and seasonal changes.

The larger invertebrate grazers have a range of life history stages, often with planktonic and benthic phases. Many large animals are migratory. Ocean habitats can be linked by the dispersal of planktonic larvae, and in this way, the systems can be interconnected even at a distance.

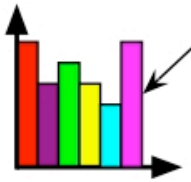


Jan – Apr 2003

Finally, the higher-order diversity of life is much greater in the oceans than in terrestrial systems—there are 13 unique phyla in the oceans and only one on land. Marine biodiversity is essentially the evolutionary history of life. In general, long-term environmental stability seems to increase biodiversity and, conversely, global climate change can be expected to decrease it.

	X1	X2	X3	X4	X5	X6	X7	X8	X9
Y1	12	13	15	26	11	34	45	45	54
Y2	32	12	46	67	21	22	44	12	44
Y3	23	33	56	77	32	44	12	55	33
Y4	44	34	12	55	34	45	12	22	44

Measures of yyy



Values of xxx

Automatically updated with the most recent data

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Requirements for “the future DLs”

- The creation and handling of these documents require
  - Access to many different, large, heterogeneous information sources
  - Use of specialized services
  - Large processing capabilities

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Controlled sharing of resources

- Small virtual dynamic organizations usually do not have the instruments for satisfying these requirements
- To exploit controlled sharing of resources
  - information sources
  - sw components
  - computers
  - skills

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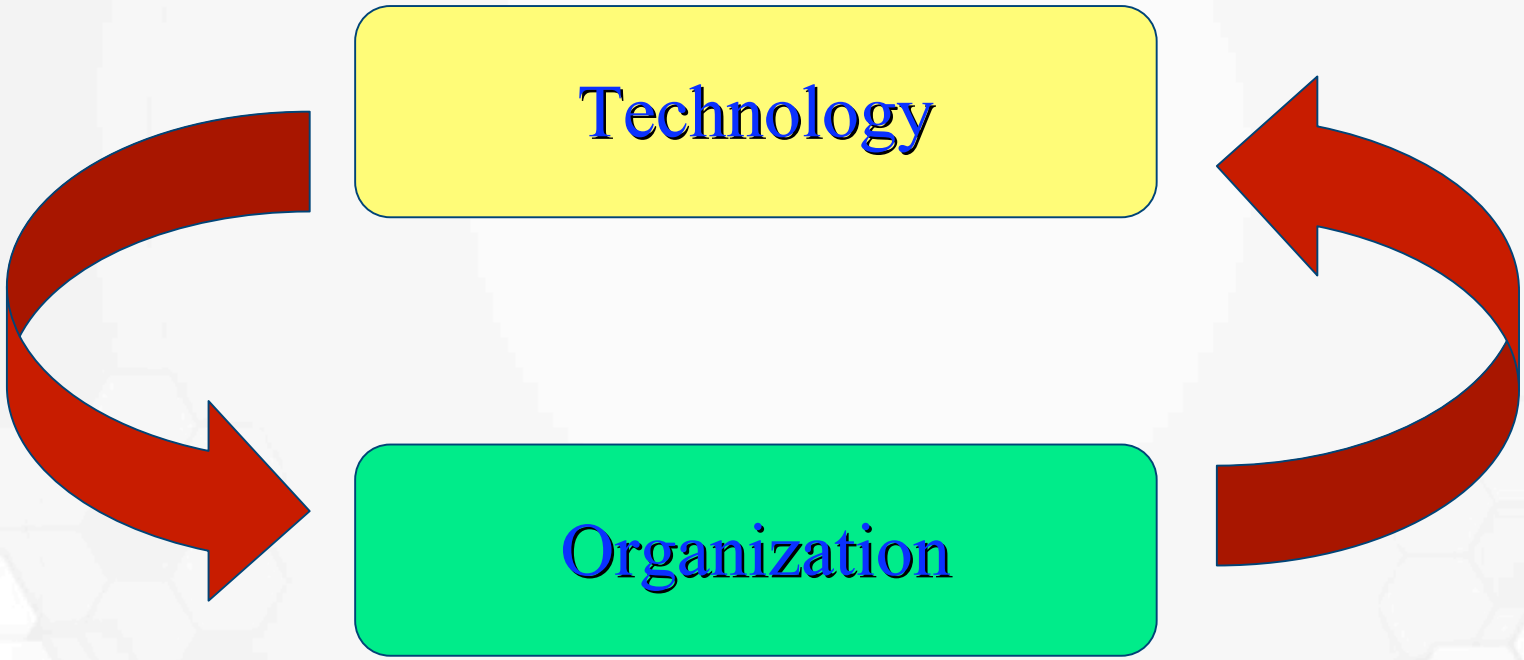
Implementing “the future DLs”



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A view on technology

The DILIGENT project

- Italian National Research Coucil – ISTI (Italy, Scientific Co-ordinator)
- European Research Consortium for Informatics and Mathematics (France, Administrative Co-ordinator)

- University of Athens (Greece)
- University of Basel (Switzerland)
- Fraunhofer-Gesellschaft zur Förderung der angewandten Forschung e.V. – IPSI (Germany)
- University for Health Informatics and Technology Tyrol (Austria)
- University of Strathclyde (United Kingdom)

- Engineering Ingegneria Informatica SpA (Italy)
- Fast Search & Transfer ASA (Norway)
- 4D SOFT Software Development Ltd. (Hungary)

- European Organization for Nuclear Research (Switzerland)

- European Space Agency – ESRIN (Italy)
- Scuola Normale Superiore (Italy)
- RAI Radio Televisione Italiana (Italy)

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The DILIGENT project

Objective

To develop a Digital Library Infrastructure that will allow members of dynamic virtual research organizations to create on-demand transient digital libraries based on shared computing, storage, multimedia, multi-type content and application resources

Digital libraries are not ends in themselves; rather they are enabling technologies for digital asset management, electronic commerce, electronic publishing, teaching and learning, and other activities.

Fourth DELOS Workshop, Budapest, 2002

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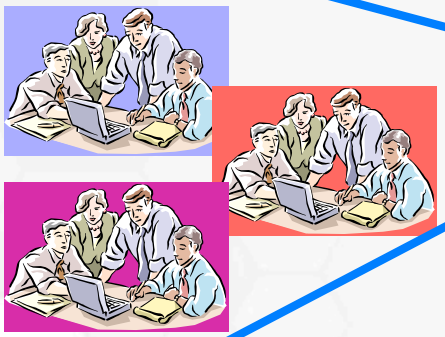
DILIGENT DL infrastructure

Consumers



Service A

Service B

Service C

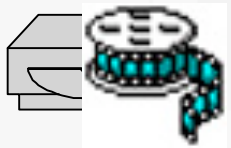
DLCreation service

Service D

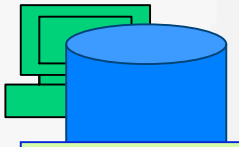
Service E

Producers

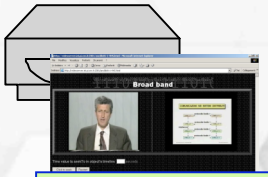
3D processing



simulation



Feature extraction



Speech recognition

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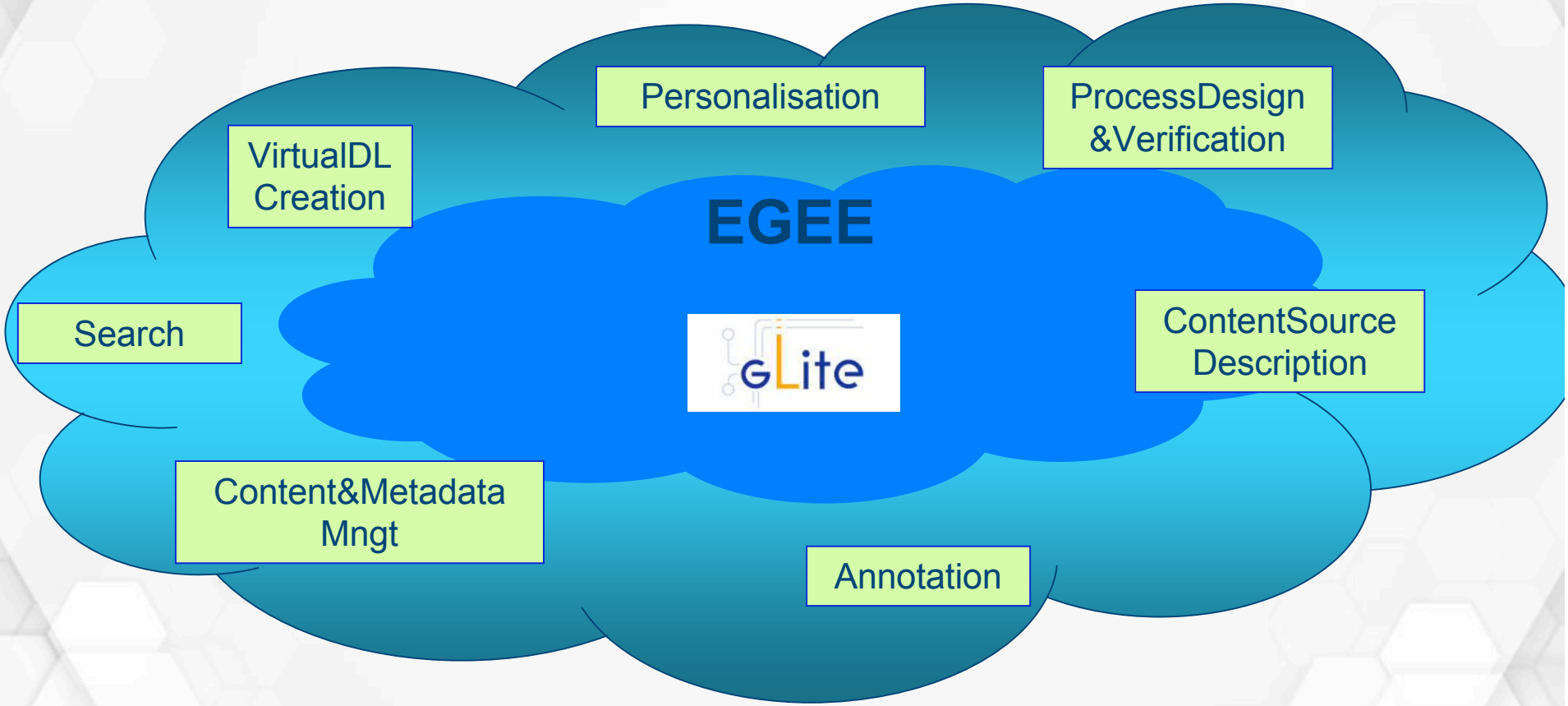
Technical solution



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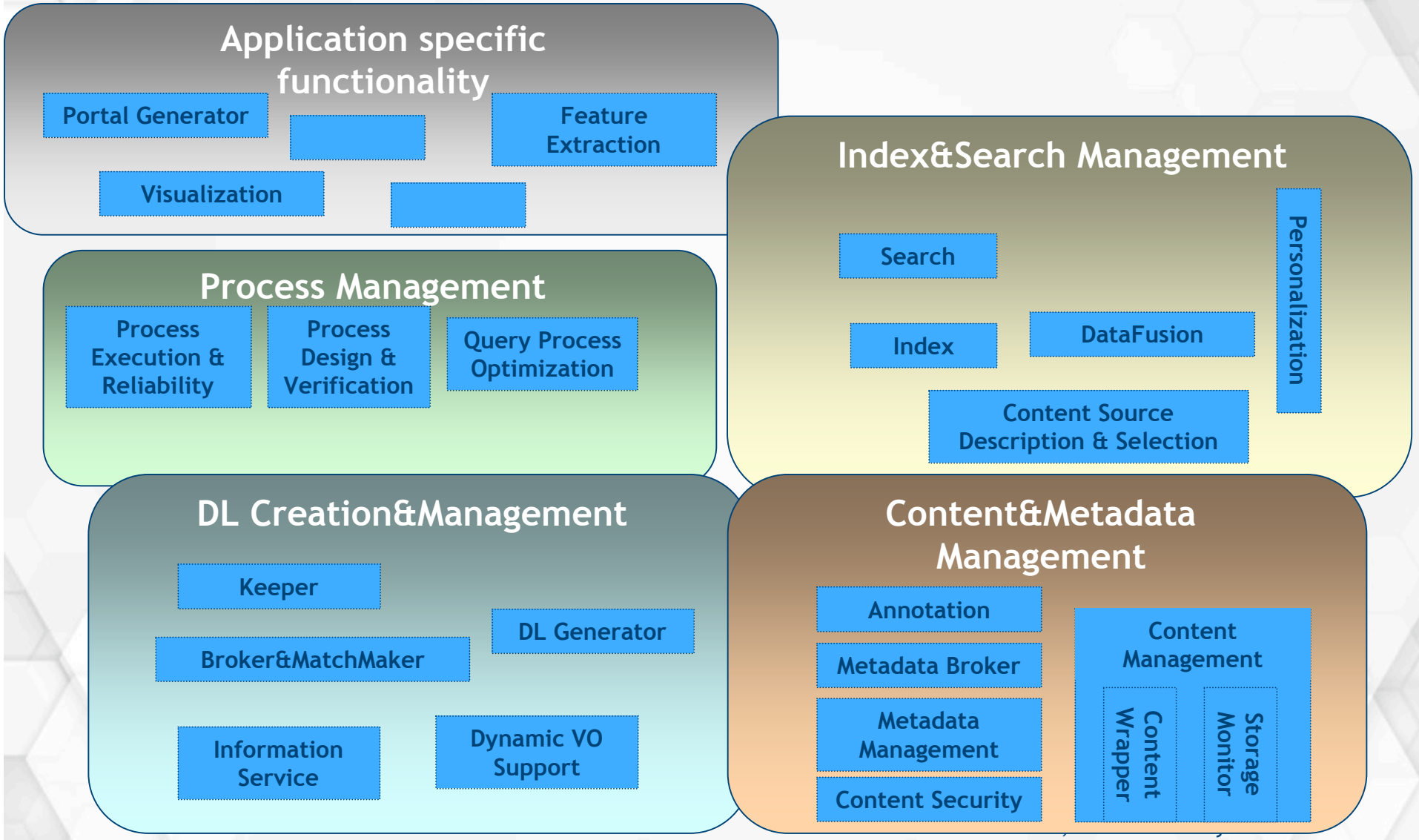
Diligent functionality decomposition



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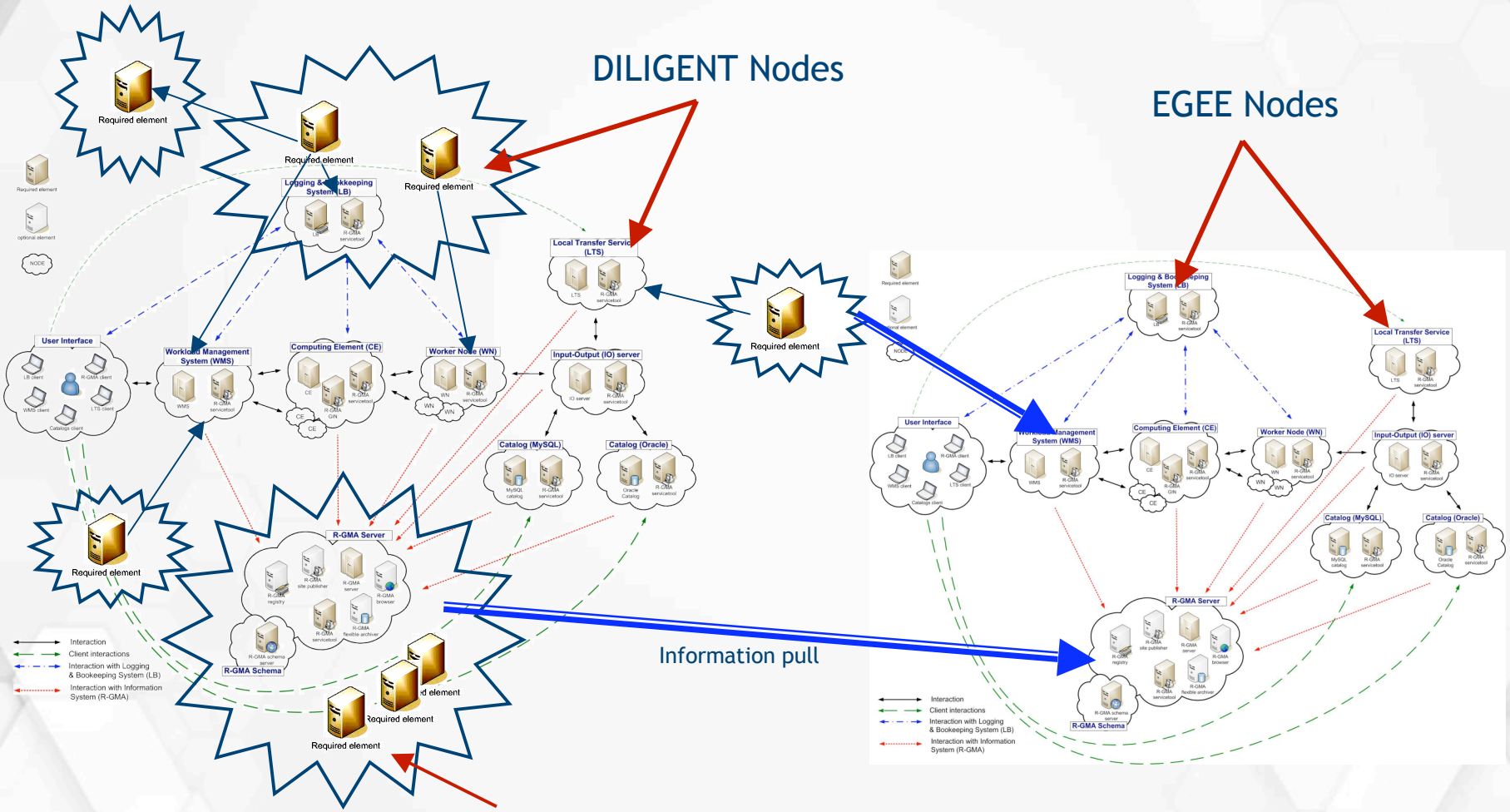
DILIGENT infrastructure



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The DILIGENT user scenarios

Implementation of Environmental Conventions

Research and Learning in the Culture Heritage domain

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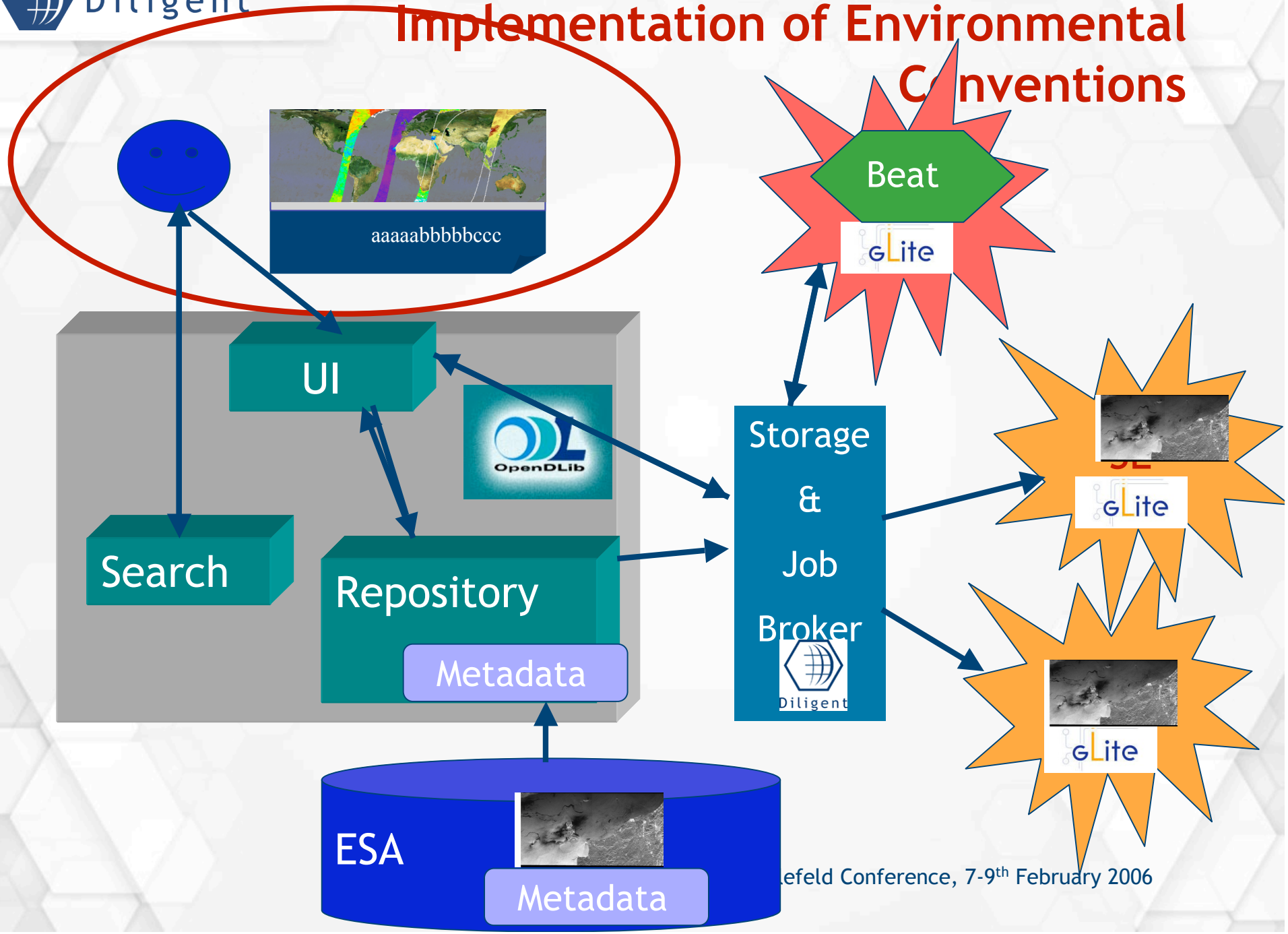
Implementation of Environmental Conventions



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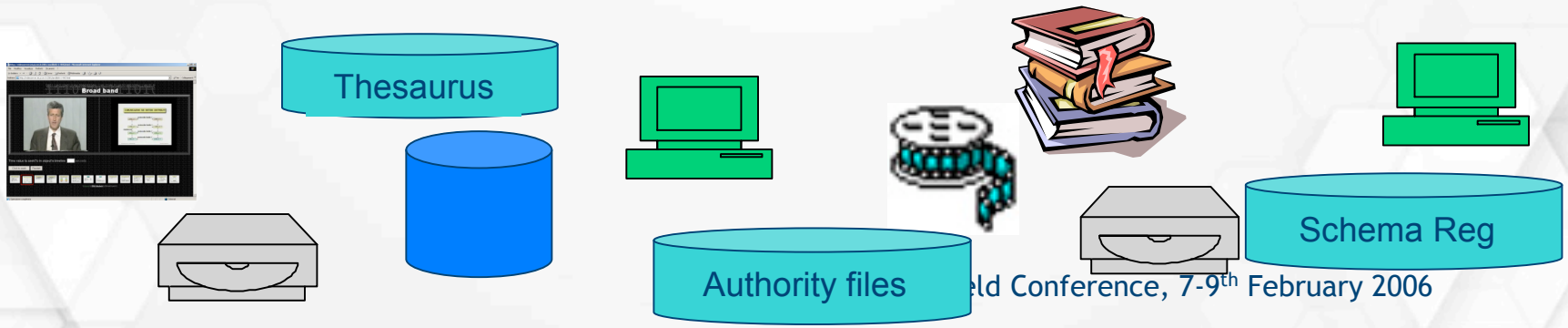
Organization for the future DLs(1)

The role of libraries as producers of resources

- Provide the necessary resources
- Develop economic models to support the resources sustainability
- Define policies and standards (e.g. rights)
- Increase the amount of shared digital content (e.g. by digitalization, by awareness)
- Ensure the avalability of content (e.g. maintenance, preservation) and its quality



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Organization for the future DLs(2)

The role of libraries as mediators between the infrastructure and the user communities

- Proactively promote and facilitate the creation of DLs that responds to the needs of the user communities
- Assists users by providing, if necessary, the skills required to select, update and exploit the DL content and services





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A **DI**gital **LI**brary **I**nfrastructure
on **G**rid **EN**abled **T**echnology

http://www.diligentproject.com