



Diligent

A Digital Library Infrastructure
on Grid Enabled Technology

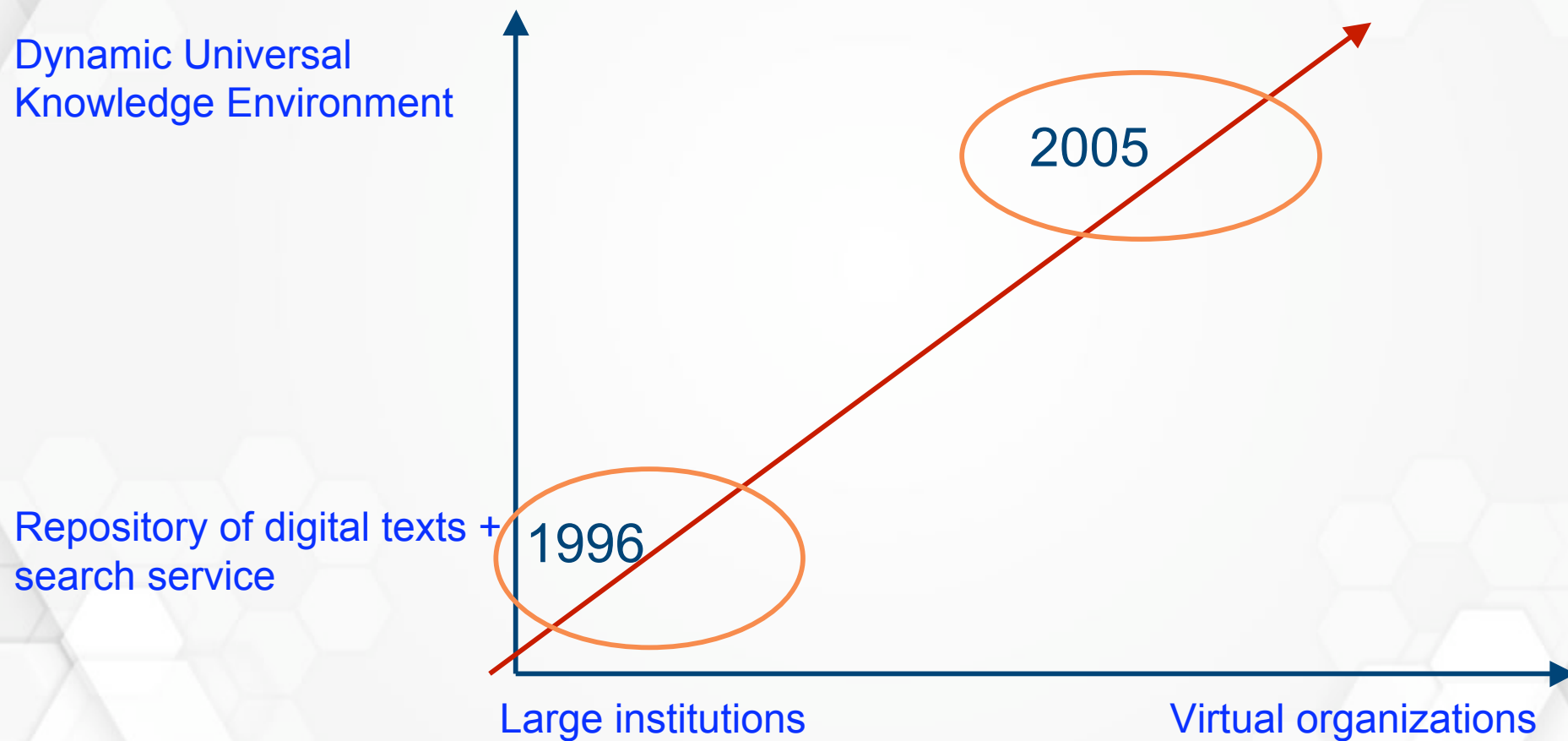
Virtual digital libraries: The DILIGENT Project

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Information Society
Technologies

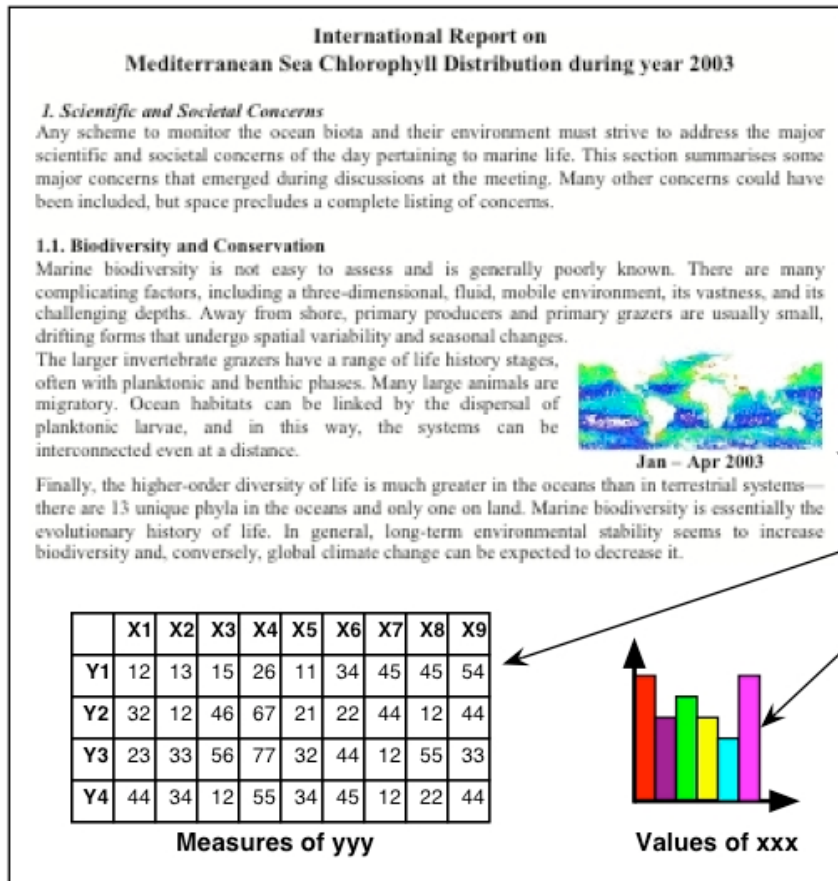
The DLs evolution



New information objects

Live documents

- 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



Automatically updated with the most recent data

Dynamic Universal Knowledge Environments

- In order to satisfy this demand we need:
 - ◆ New DL systems able to provide innovative services, especially capable of supporting multimedia and multi-type information objects
 - ◆ Fast and unexpensive DLs development models, based on sharing and reuse of resources

Which technology?

A solution

The Grid technology

- ◆ Large processing and storage capabilities for handling the wide variety of multimedia and multi-type information objects
- ◆ Controlled sharing of resources

DILIGENT

A Digital Library Infrastructure on Grid Enabled Technology

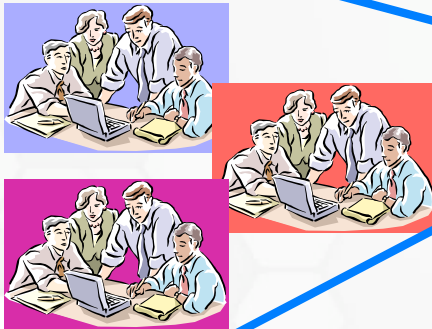
Participants

- Italian National Research Council - ISTI (Italy, Scientific Co-ordinator)
- European Research Consortium for Informatics and Mathematics (France, Administrative Co-ordinator)
- University of Athens (Greece)
- Swiss Federal Institute of Technology Zurich -ETH Zurich (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)

DILIGENT objective

Create a test-bed **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

Consumers



DILIGENT DL infrastructure

Service A

Service B

Service C

DLCreation
service

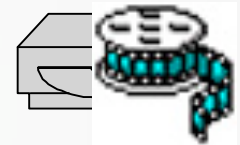
Service D

Service E

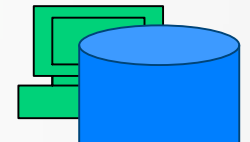
Producers



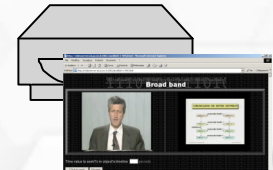
3D processing



simulation

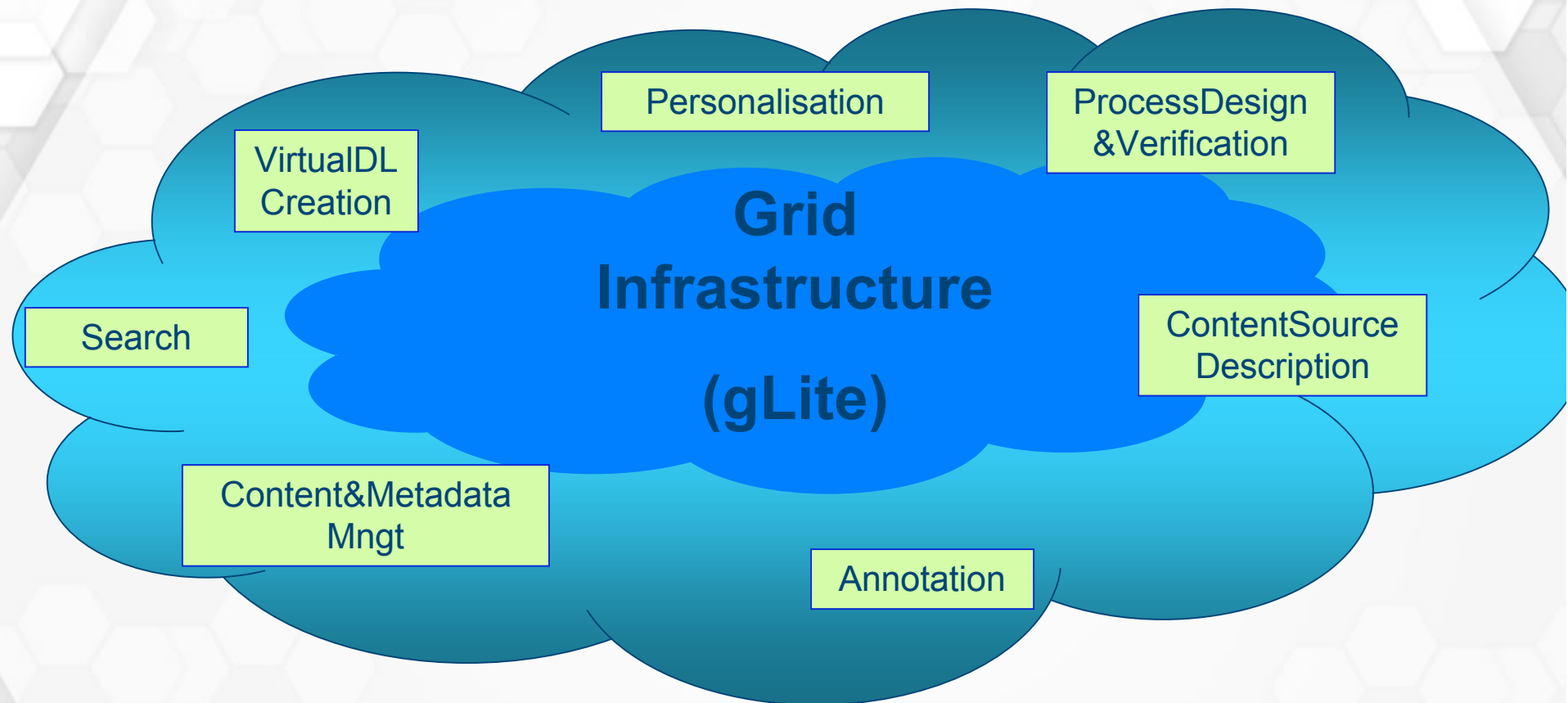


Feature
extraction



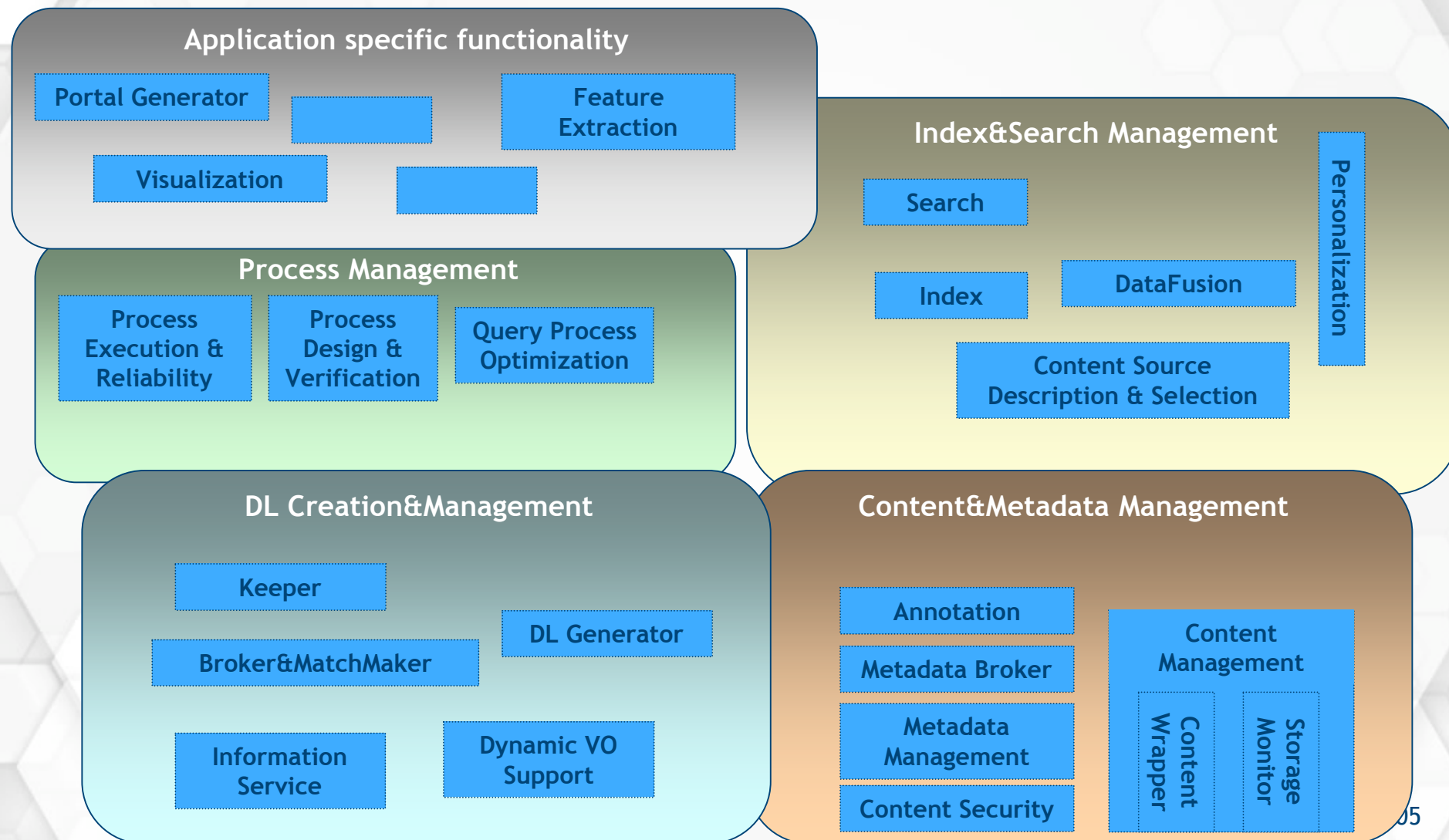
Speech
recognition

DILIGENT DL Infrastructure



- The high computing and storage capabilities will be obtained by relying on the Grid infrastructure
- The DILIGENT project will develop the knowledge management services and the services that are needed to handle them

DILIGENT functional view



Architectural View

- **DILIGENT will**
 - ◆ Adopt gLite as middleware
 - ◆ Exploit gLite as software
 - ◆ Join the EGEE infrastructure

DILIGENT- gLite relationship (1)

- DILIGENT adopts gLite as Grid Middleware

The DILIGENT application will be composed by

- ◆ services provided by the DILIGENT project
- ◆ services provided by the gLite distribution

Both DILIGENT and gLite services will be deployed on the DILIGENT test-bed infrastructure

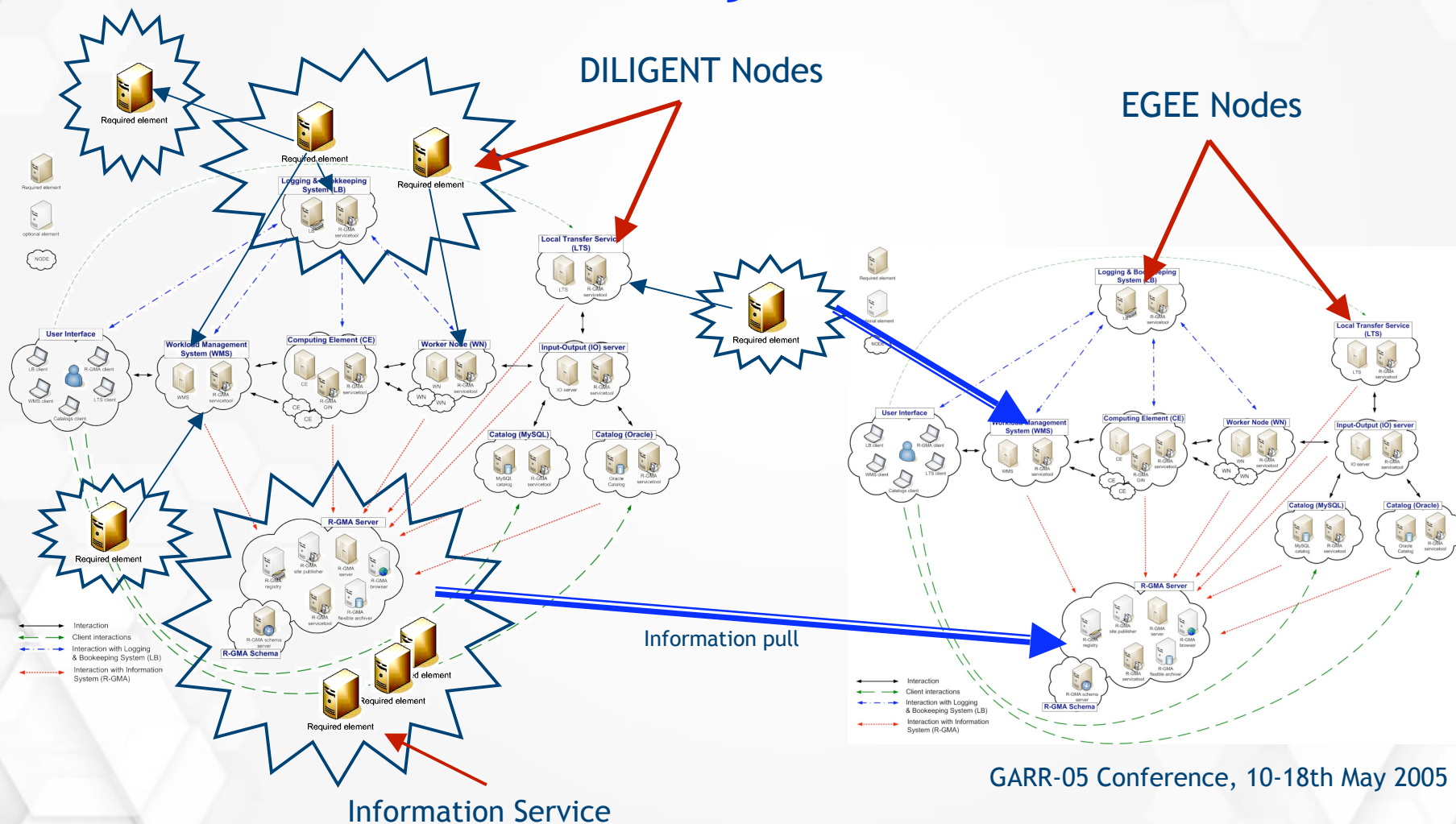
DILIGENT-gLite relationship (2)

- DILIGENT **exploits** gLite services, components, or modules

DILIGENT services can be designed to include or wrap
“pieces of gLite software”

DILIGENT- gLite relationship (3)

The DILIGENT infrastructure joins the EGEE infrastructure



Our users (1): Environmental researchers

Implementation of Environmental Conventions

Objective: DLs for supporting the scientists in
protecting the environment against pollution

Focus: the control of the marine environment of the
Mediterranean Sea

Activities:

- ◆ producing reports
- ◆ prepare conferences
- ◆ analyze data about the environment in case of accidents

Our users (1)

- Large variety of content types (e.g. maps, satellite images, reports)
- Large amount of data
- High processing required to produce useful outcomes
- **Participants**
 - ◆ European Space Agency
 - ◆ Ministero Italiano dell'Ambiente e altri uffici di Guardie Costiere europei
 - ◆ REMPEC - the Regional Marine Pollution Emergency Response Centre (Malta)
 - ◆ UNESCO IOC (Intergovernmental Ocean Committee) (Paris)
 - ◆ ITOPF, International Tanker Owners Pollution Fed. Ltd. and MOIG, Mediterranean Oil Industry Group
 - ◆ ICRAM, Istituto Centrale per la Ricerca scientifica e tecnologica applicata al mare

Our users (2): Culture heritage researchers

ARTE Project

Objective: DLs for supporting the work of teams of researchers working on the humanities domain

Focus: to collaboratively investigate the usage of images and texts in ancient books and to establish semantic relationships among them

Activities:

- ◆ Organization of courses
- ◆ Exhibitions
- ◆ Conferences

- Many multidisciplinary archives
- Strong need of texts, images and videos semantic analysis and search across this heterogeneous documents
- Few resources
- Participants
 - ◆ Scuola Normale Superiore
 - ◆ Rai Radiotelevisione Italiana
 - ◆ Brown University - Department of Italian studies
 - ◆ Centre de Recherche en Histoire des Sciences et des Techniques
 - ◆ Universidade da Coruña - Research Team on Hispanic Emblematic Literature
 - ◆ University of Glasgow - HATII
 - ◆ Università di Pisa - Facoltà di Lettere e Filosofia - Corso di Laurea Cinema Musica e Teatro
 - ◆ Studio Azzurro Produzioni

Conclusions

- The infrastructure is the means that will allow to construct Dynamic Universal Knowledge Environments serving a large number of research communities
- The experience and the services developed by DILIGENT can be exploited by other knowledge-based applications
- The DILIGENT system can serve as a basis for many other applications: e-learning, e-health, e-government

Contacts

www.diligentproject.org

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