



**Diligent**

A **D**igital **L**ibrary Infrastructure  
on **G**rid **E**nable**D** Technology

# **DILIGENT**

## **(objectives and status)**

Donatella Castelli  
ISTI-CNR, Italy



Information Society  
Technologies

# 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 **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

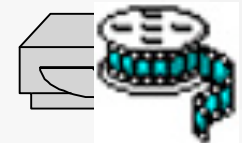
Service D

Service E

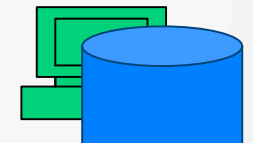
## Producers



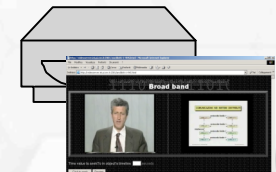
3D processing



simulation

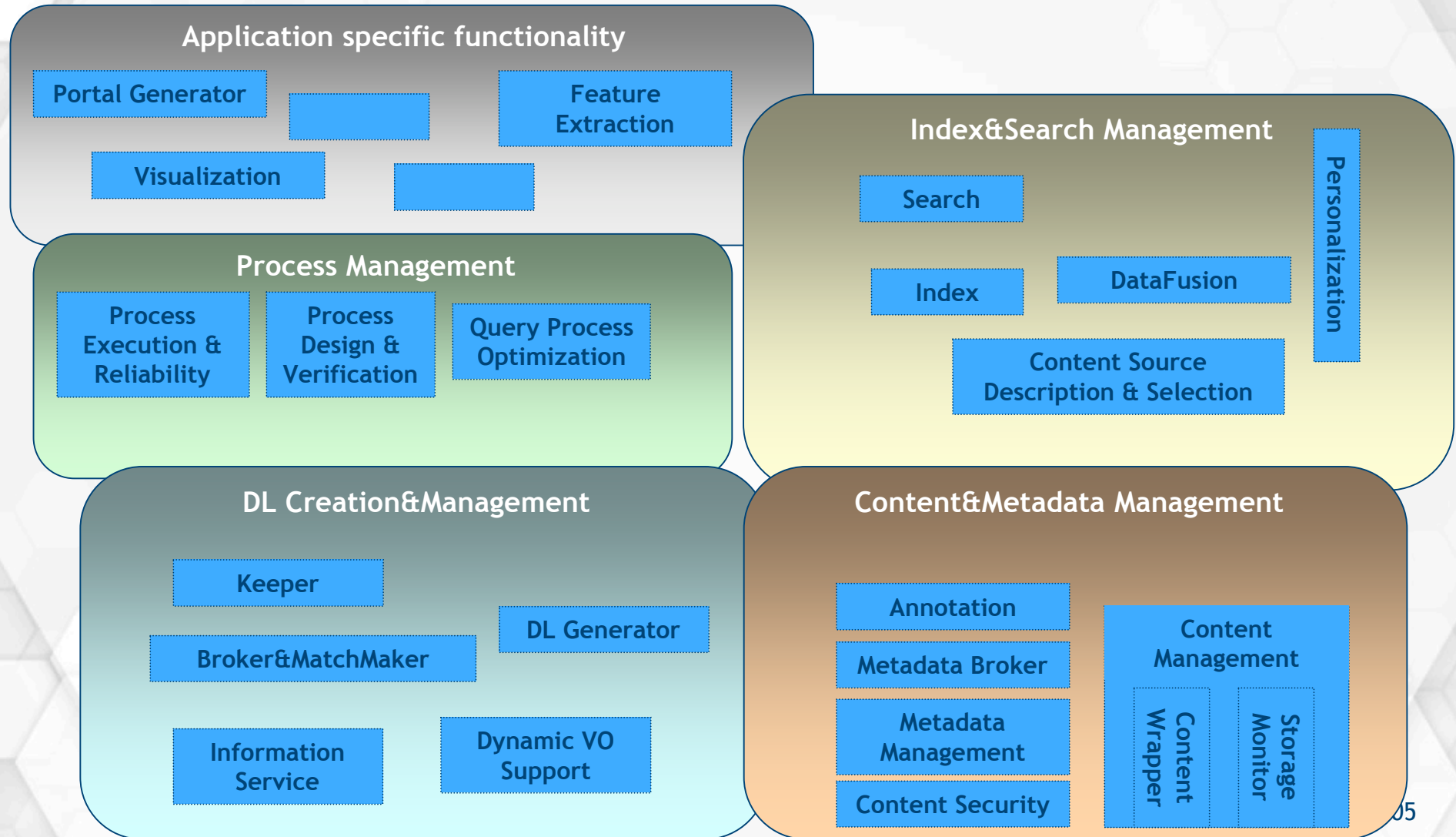


Feature  
extraction



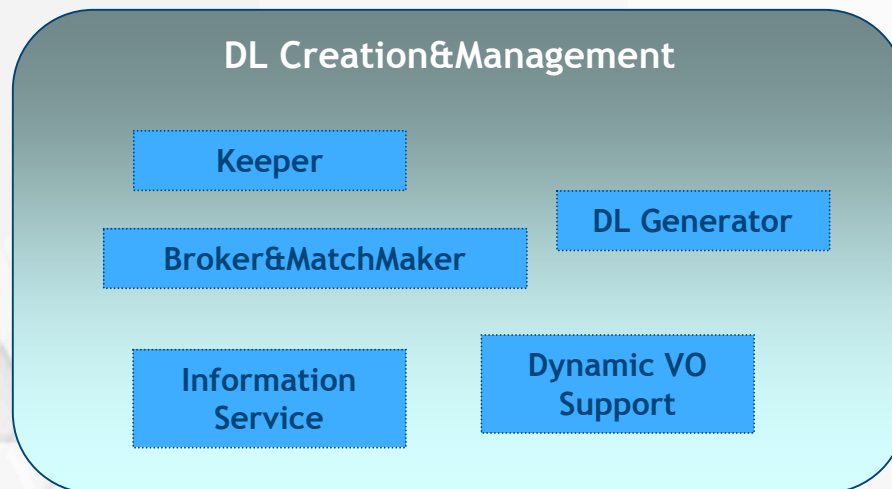
Speech  
recognition

# Diligent functionality decomposition



## DL Creation&Management

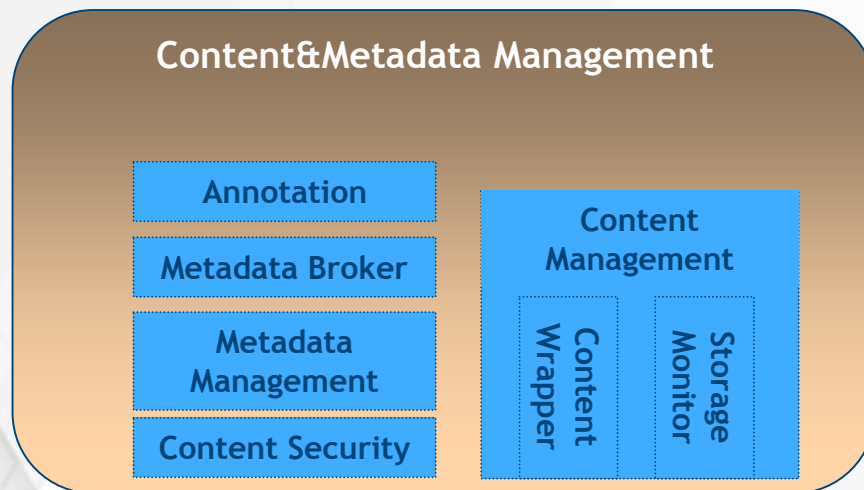
Dynamic construction and maintenance of transient DLs and controlled sharing and management of the resources that are used to implement them



- VDL Generator (CNR-ISTI)
- Information Service (CNR-ISTI)
- Broker&MatchMaker (Engineering)
- Keeper (CNR-ISTI)
- Dynamic VO Support (Engineering)

## Content&Metadata Management

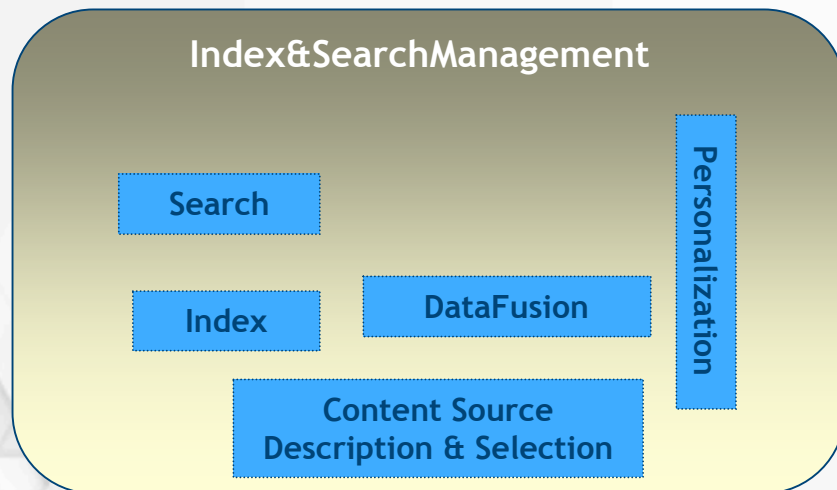
Handling of DL content and related metadata, consistent and distributed annotation handling, and integration of external content and metadata sources



- Metadata Management (Fraunhofer)
- Metadata Broker (Fraunhofer)
- Content Security (Fraunhofer)
- Content Management (ETH)
- Annotation (Fraunhofer)
- Wrappers&Monitor (ETH)

## Index&Search Management

Cost-efficient search and retrieval of information in DLs, while satisfying the level of quality required for the overall data retrieval and delivery operations

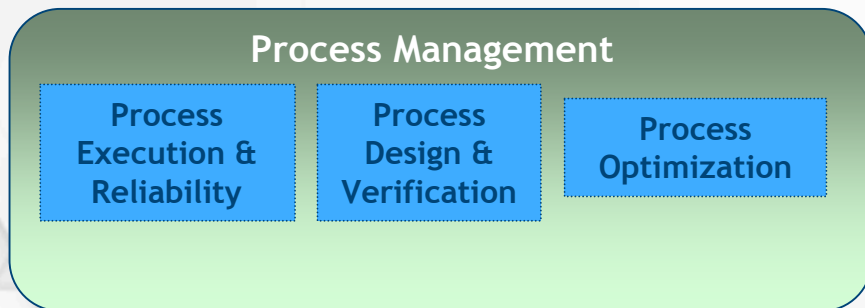


- Search (Univ. of Athens)
- Index Service (FAST Search&Service)
- Data Fusion (Univ. of Strathclyde)
- Content Source Description and Selection  
(Univ. of Strathclyde)
- Personalization Component  
(Univ. of Athens)



## Process Management

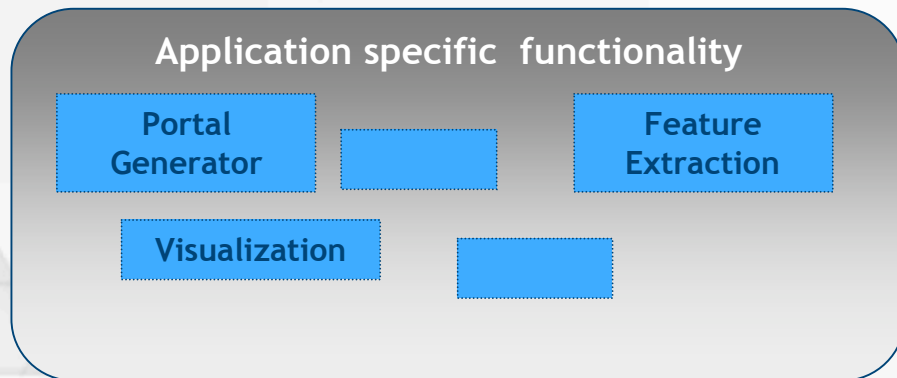
Creation of user processes as composition of existing services, validation of their correctness, automatic optimisation of their definition according to the resources available and the services characteristics, and reliable execution of them



- Process Design & Verification (UMIT)
- Process Execution & Reliability (UMIT)
- Process Optimization (Univ. of Athens)

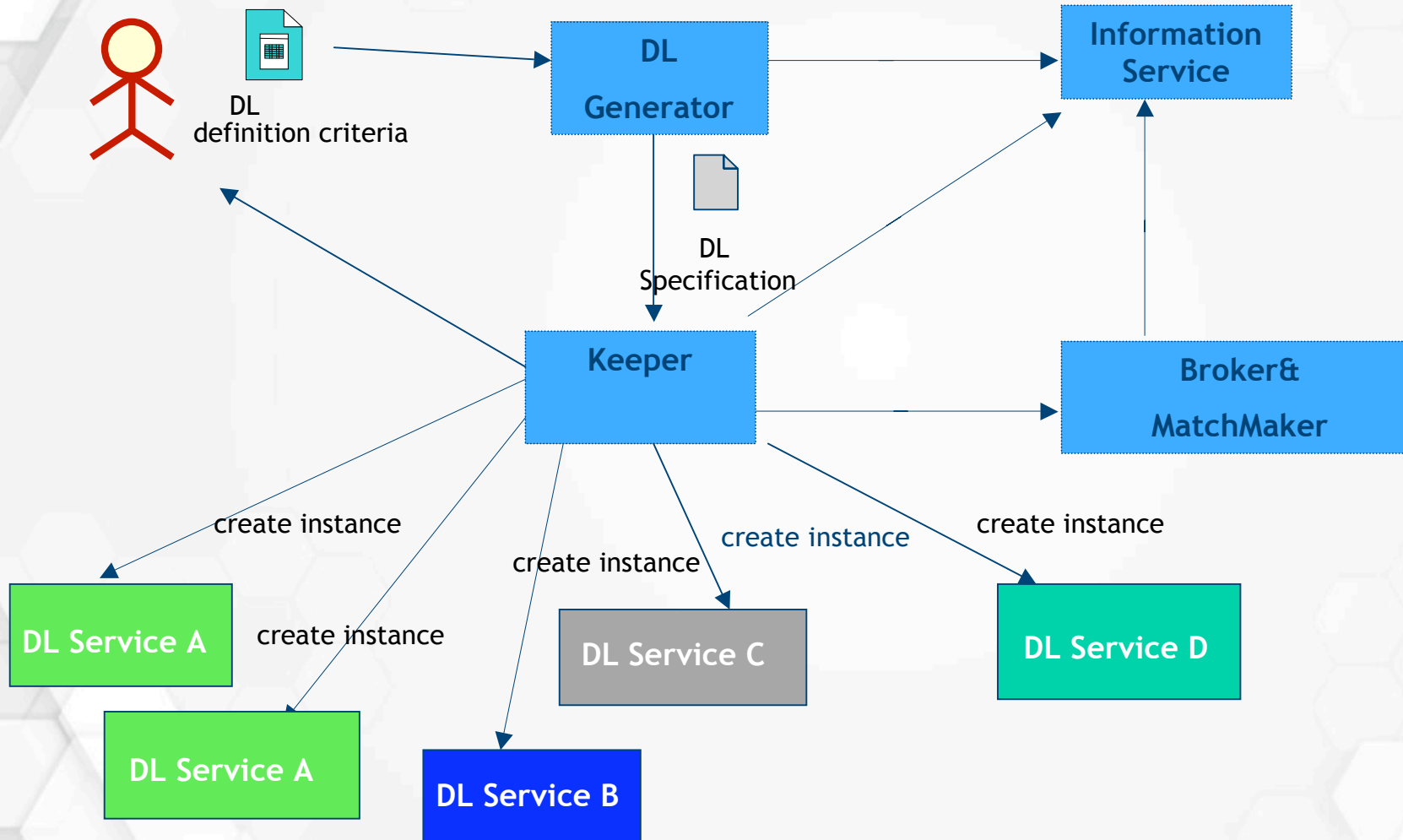
## Application Specific functionality

Functionality needed to support user-specific scenarios,  
e.g. portal, visualization, feature extraction



- Visualization Services (Fraunhofer-IPSI)
- Portal Engine (Univ. of Athens, ESA)
- Feature Extraction (ETH)

# DL Creation



## Diligent specific aspects

- Grid application
- SOA architecture
- Service and archive resources
- Dynamically variable number of VOs
- On-demand deployment

## Uses of gLite in Diligent (1)

- Diligent project **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

## Uses of gLite in Diligent (1) [cont.]

- 
- Main gLite exploited functionality:
  - ◆ Resources registration and monitoring
  - ◆ Data Storage
  - ◆ Distributed processing
  - ◆ VO support

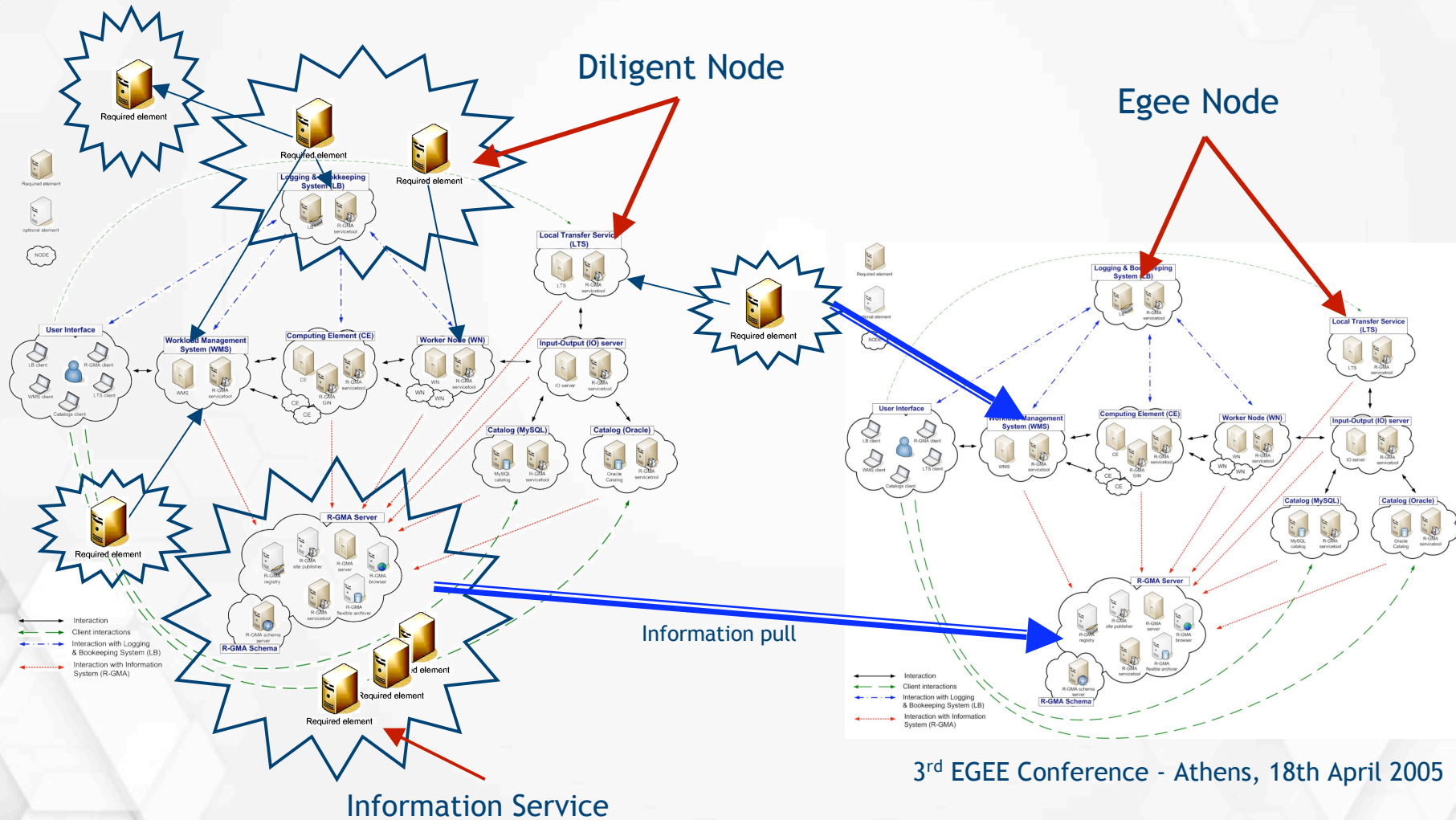
## Uses of gLite in Diligent (2)

Diligent **exploits** gLite services, components, or modules

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

# Uses of gLite in Diligent (3)

The Diligent infrastructure **joins** the EGEE infrastructure





## DILIGENT-EGEE joint activities

- DELOS-DILIGENT-EGEE training event “Grid Technologies for Digital Libraries”, Athens, 16 April 2005
- DILIGENT participates to the user activities:
  - ◆ requirements collection
  - ◆ WIKY site
  - ◆ UIG user group
- Exchanges with JRA1

## Completed and on-going technical activities

- ☑ Requirements collection and analysis
- ☑ Functional specifications

<http://diligentproject.org/content/view/40/42/>

- ➔ Architectural specification
- ➔ Detailed services design

- ➔ Experimentation of gLite  
<https://uimon.cern.ch/twiki/bin/view/DILIGENT/WebHome>

## Next future planned activities

- ➔ Set up of a DILIGENT development infrastructure
- ➔ Development of a first simple prototype of the Diligent infrastructure for supporting DLs of “Live documents”

## Live Documents

Today is 18 April, 2005 and the user wants to update the report s/he wrote in January with the most actual products

### International Report on Mediterranean Sea Chlorophyll Distribution during year 2003

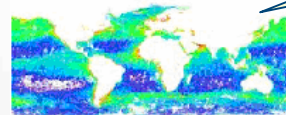
#### 1. Scientific and Societal Concerns

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.

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.



Jan - Apr 2003

Check update model/ parameters defined in the report template. Submit request to get the most recent chlorophyll product

### International Report on Mediterranean Sea Chlorophyll Distribution during year 2003

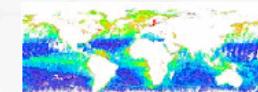
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The new product must replace the old one and the caption must become coherent with the new image

## Contacts

[www.diligentproject.org](http://www.diligentproject.org)

- Donatella Castelli (CNR-ISTI, scientific co-ordinator)  
donatella.castelli@isti.cnr.it
- Jessica Michael (ERCIM, administrative co-ordinator)  
jessica.michel@ercim.org

### At the conference

- Pasquale Pagano, Manuele Simi (ISTI-CNR)
- Alex Delis, Yannis Ioannidis, George Kakalettris (Univ. of Athens)
- Paolo Fabriani (Engineering)
- Soren Balko (UMIT)
- Roberta Faggian Marque (CERN)