



Digital Libraries in Research & Education, 9 November 2010, Parma, Italy

DL.org

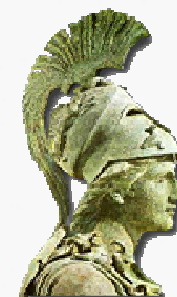
Coordination Action on Digital Library Interoperability, Best Practices and Modelling Foundations

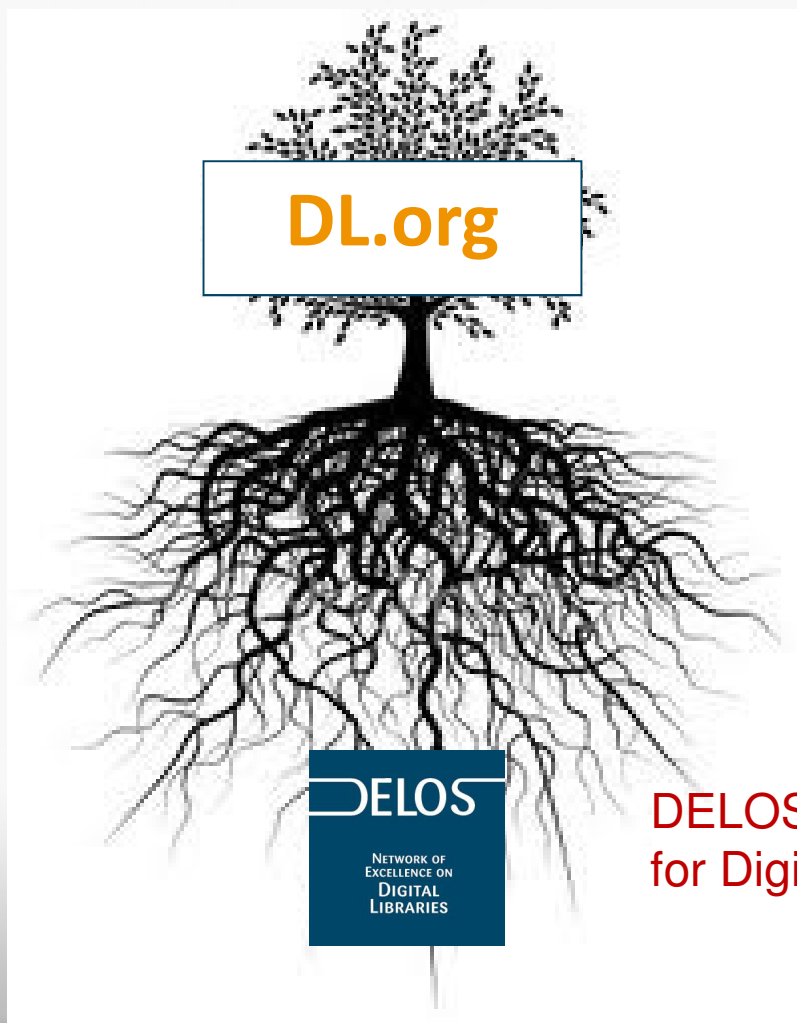


DL.org

DL.org Consortium

- CNR-ISTI (coordinator, Italy)
- NKUA (Greece)
- UG (United Kingdom)
- Trust-IT (United Kingdom)





DELOS Reference Model
for Digital Libraries

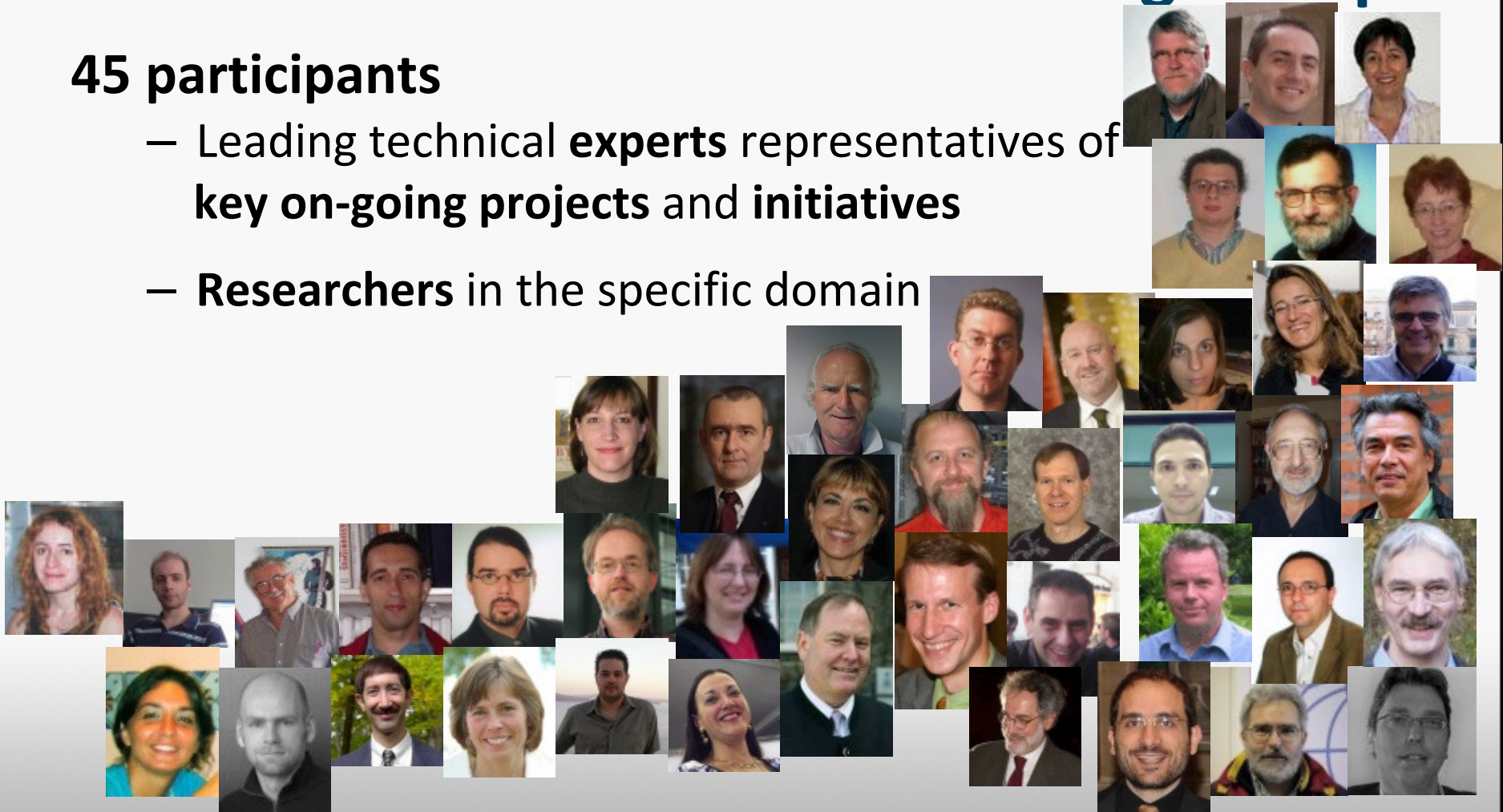
DL.org objectives

- 1. Promote interoperability between current and future DL initiatives**
 - by adopting a systematic approach
- 2. Deliver a DL Interoperability Technology and Methodology Cookbook**
 - by identifying most common best practices and technology patterns
- 3. Consolidate and enhance the DELOS Reference Model**
 - by exploiting feedback collected by members of different communities
- 4. Serve the DL community making available the produced outcomes**
 - via Web site, Workshops, Schools

Six Thematic Working Groups

45 participants

- Leading technical **experts** representatives of **key on-going projects and initiatives**
- **Researchers** in the specific domain



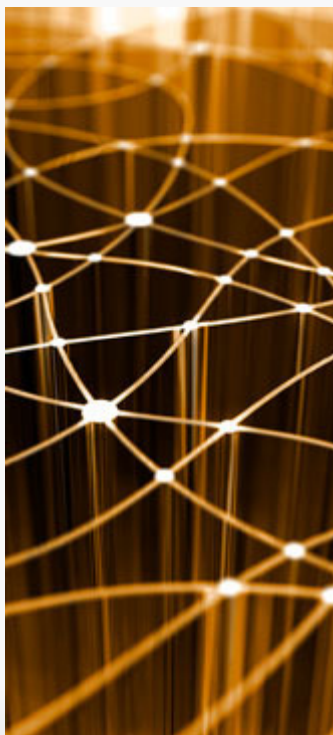
18 members:

- Stakeholders of **DL organizations** and **coalitions**
- Well known **experts** in the DL field



1. ***1st Face-to-Face meetings, late Spring-Summer, 2009***
2. ***2nd Face-to-face meeting, Rome, 30 November 2009***
3. ***DL.org 1st Workshop: Digital Libraries: Interoperability, Best Practices & Modeling Foundations, 1 October 2009, Corfu***
4. ***DL.org 2nd Workshop: Making Digital Libraries Interoperable: Challenges and Approaches, 9-10 September 2010, Glasgow***
5. ***Digital Library Autumn School, 3-8 October 2010, Athens***





www.dlorg.eu



The DL Reference Model

Donatella Castelli



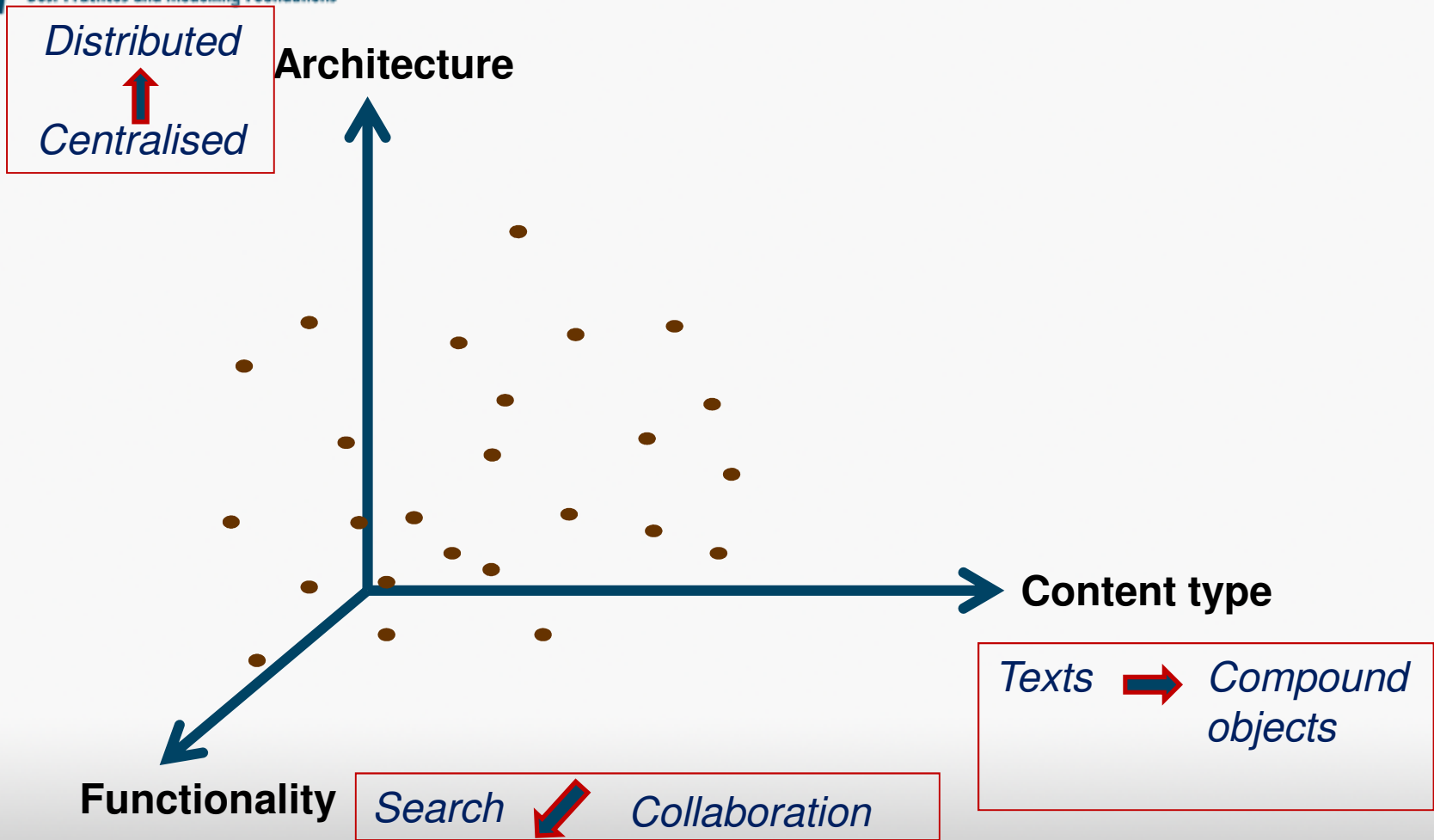
Outline

- DL Evolution
- Introduction to the RM
- Introduction to the Cookbook

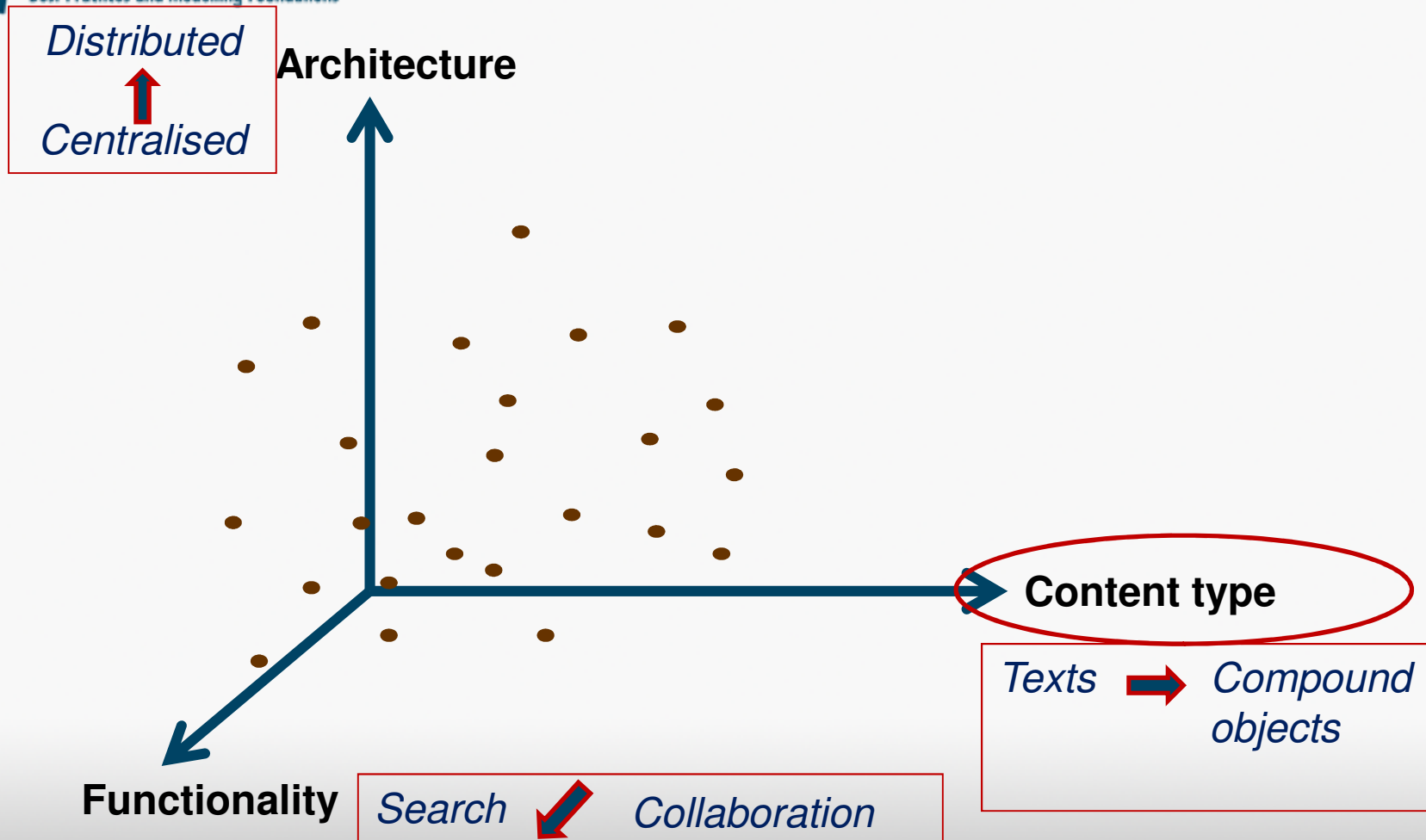
A digital library is the analogous of...

- A digital library
- A digital museum
- A digital archive
- A digital audio-video archive
- ...
- A data center
-and much more

Evolution Axes

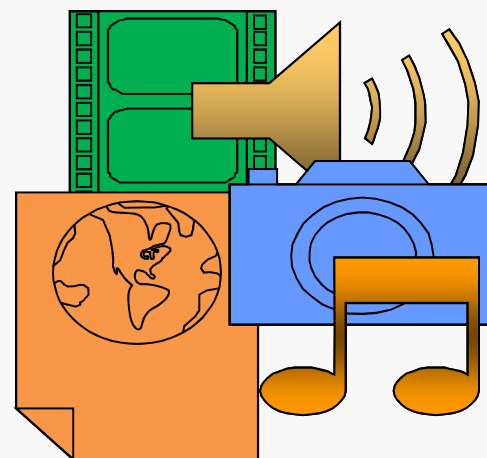


Evolution Axes



Content type

- Text objects
- Multilingual objects
- Multimedia objects
- Annotated objects
- Compound objects
- Enhanced publications
-



New document types empower novel forms of communication and remote collaboration among the members of a community of interest

Multilingual documents

- Documents in different languages can be maintained in the same DL
- These documents can be accessed by querying in the language of the document and in any other supported language

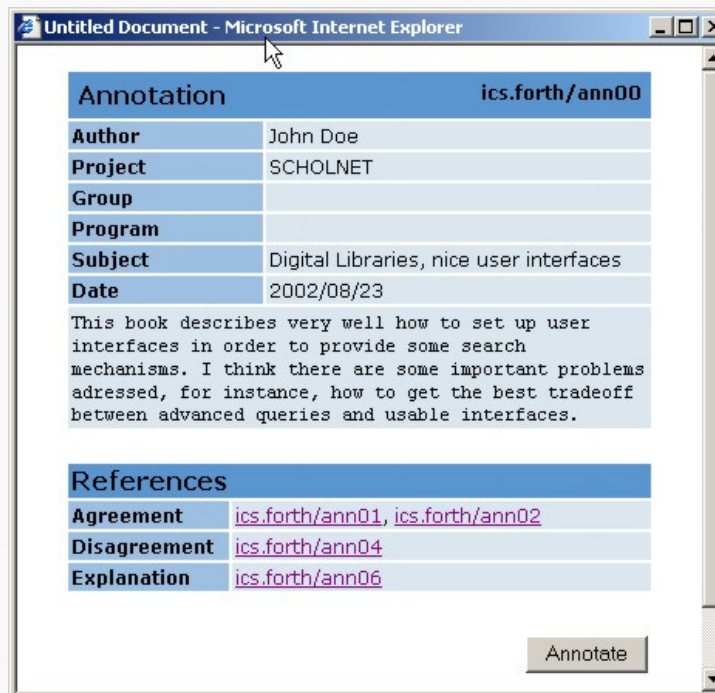


Multimedia objects

- **Documents**
 - Audio-video resources
- **Metadata**
 - Terms extracted from the transcript and from the image captions
 - Locations
 - Keyframe
 - Faces
 - Name of the speakers
 - Video abstract
 -

Annotated objects

- comment
- rating
- description
- link
-



Annotation **ics.forth/ann00**

Author	John Doe
Project	SCHOLNET
Group	
Program	
Subject	Digital Libraries, nice user interfaces
Date	2002/08/23

This book describes very well how to set up user interfaces in order to provide some search mechanisms. I think there are some important problems addressed, for instance, how to get the best tradeoff between advanced queries and usable interfaces.

References

Agreement	ics.forth/ann01 , ics.forth/ann02
Disagreement	ics.forth/ann04
Explanation	ics.forth/ann06

Annotate

- on the whole document or on its parts
- authored by different people
- public or restricted

Compound documents

Journal

Article1
Article2
Article3



Thesis

Chapter1
 SectionA
 SectionB
Chapter2
 SectionC



Video

Sequence1
 SceneA
 FrameA1
 FrameA2
 SceneB
 FrameB1
Sequence2



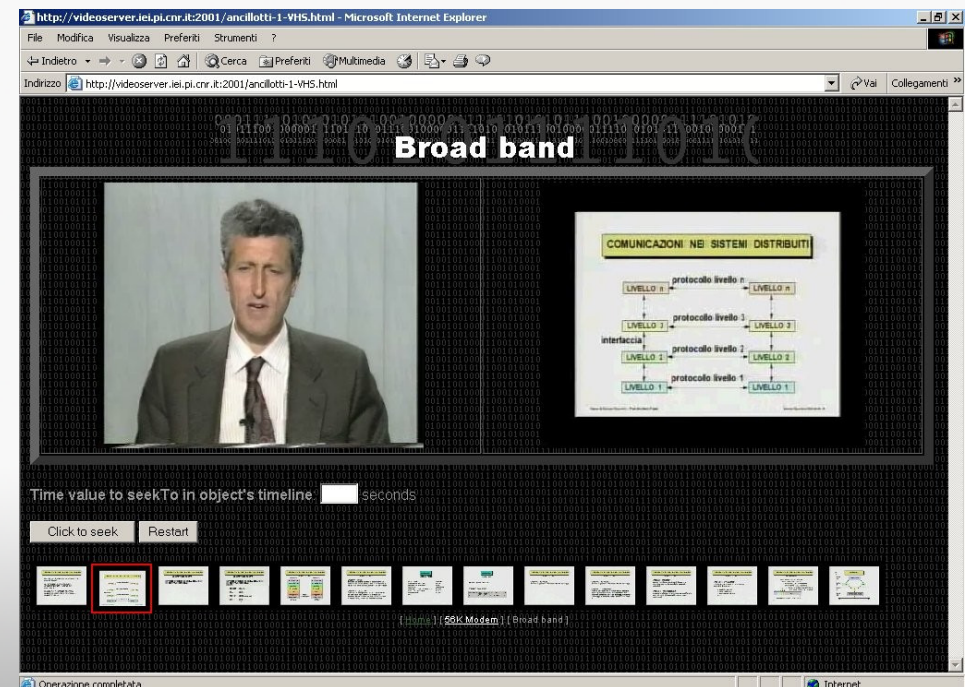
Tutorial

Introduction
Part1
Part2
Part3



Multimedia compound objects

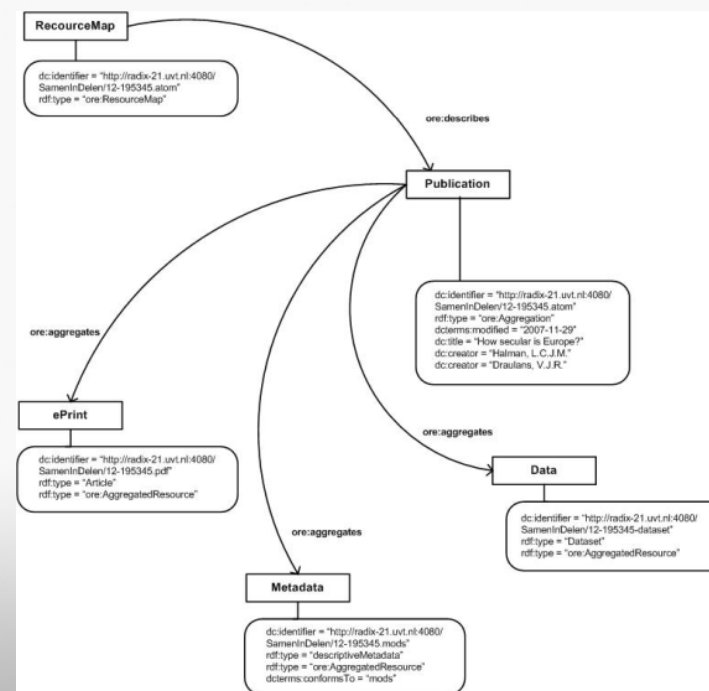
- Sequence of lectures
 - Videos of the lecture
 - Slides
 - Demos
 - Related documentation



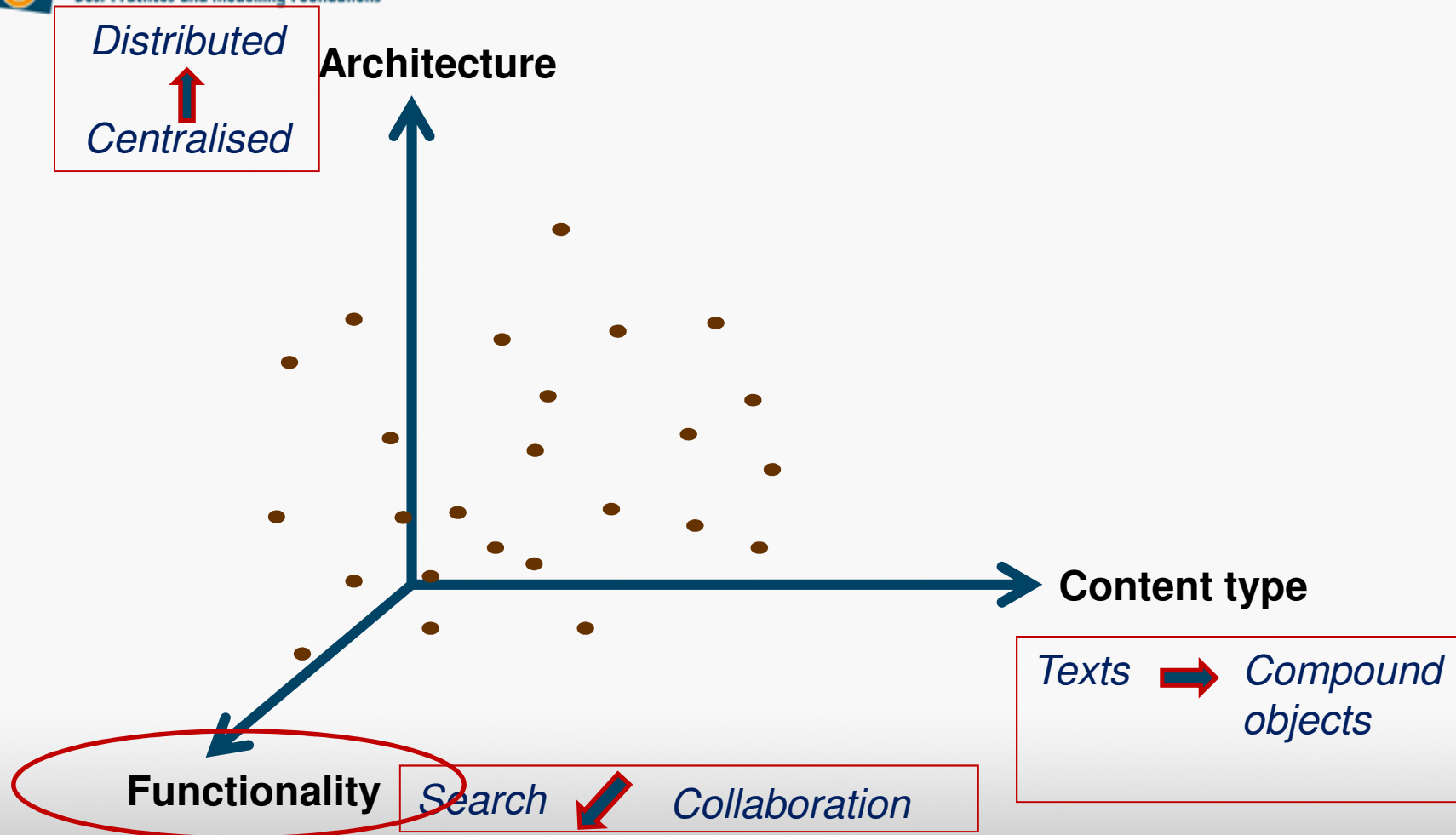
Enhanced publications

An enhanced publication is a publication that is enriched with three categories of information:

- **research data** (evidence of the research)
- **extra materials** (to illustrate or clarify)
- **post-publication data** (commentaries, ranking)



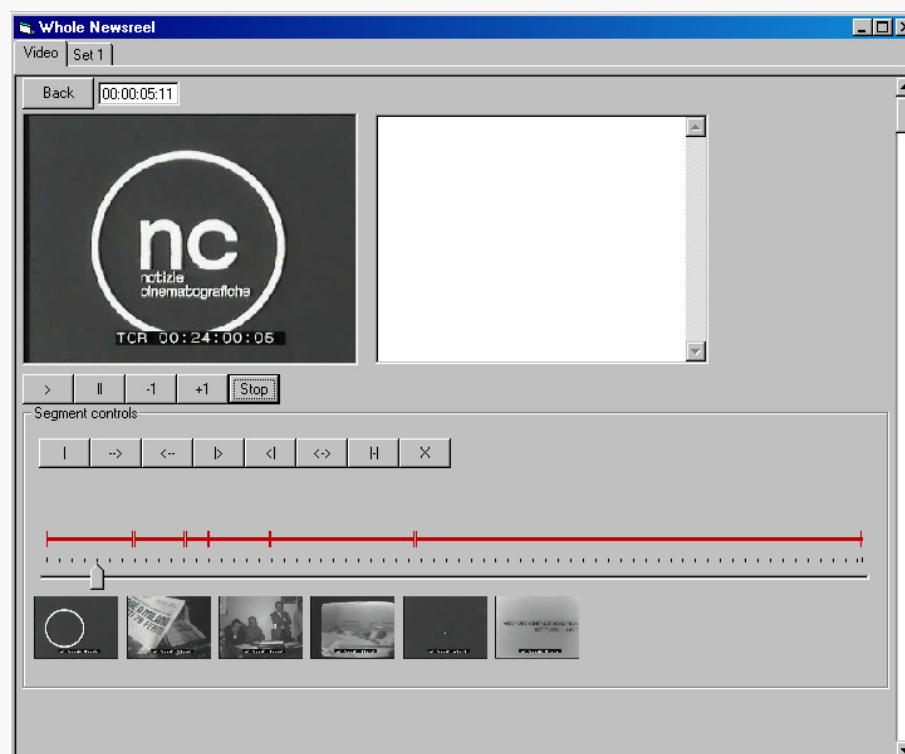
Evolution Axes



DL functionality

- Different type of information objects require semantically different functionality
- DLs may offer to end users more than simple retrieval and access functionality
 - e.g. - Document generation through data processing
 - Communication and collaboration services

e.g. the acquisition of video documents

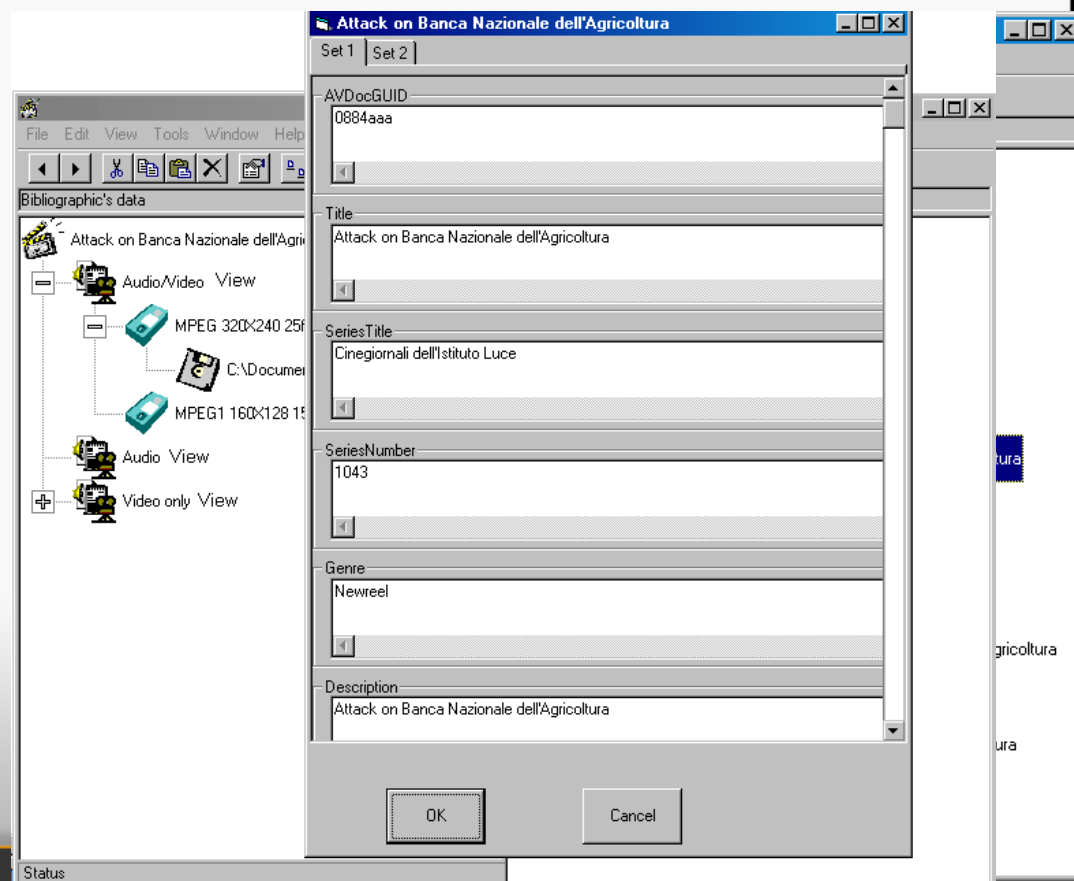


It must be possible to structure the video into meaningful parts (sequences, scenes, frames) ...

Description of video documents

It must be possible to structure the video into meaningful parts (sequences, scenes, frames)

... and describe the video and its parts separately



e.g. search

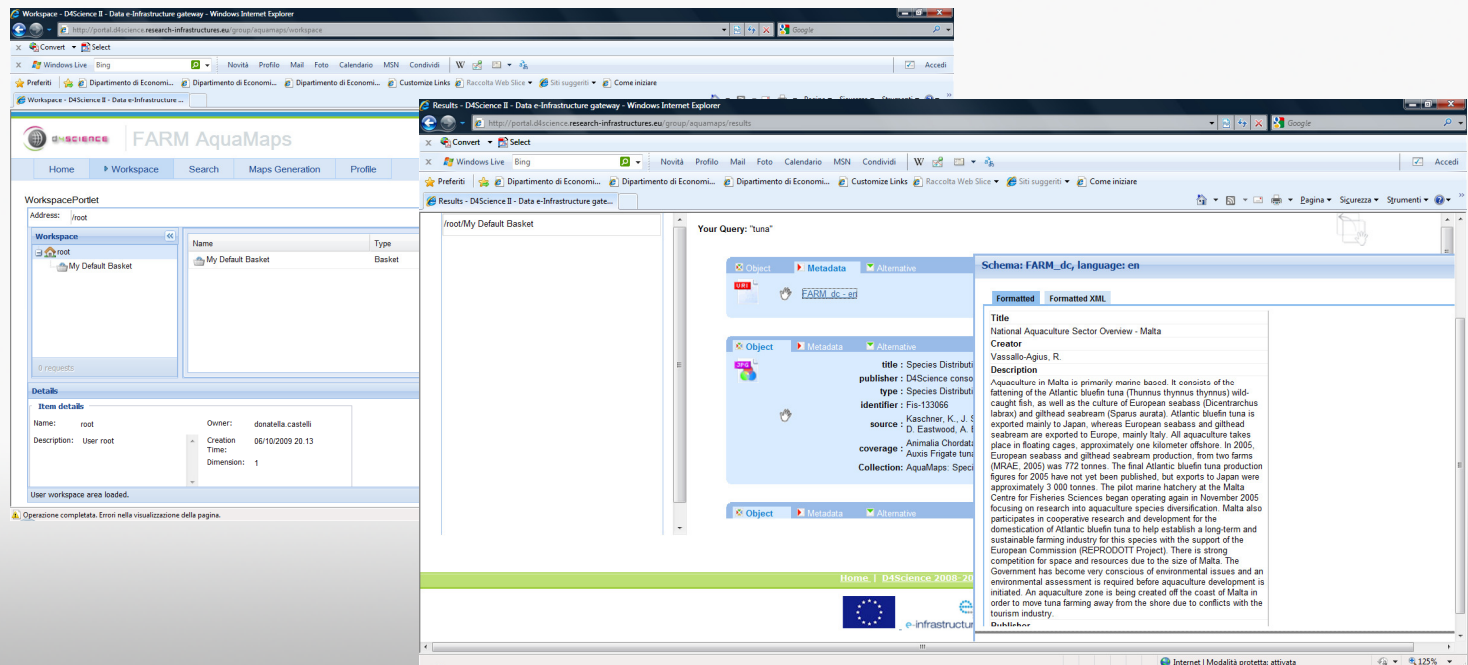
- Free text search
- Fielded search
- Monolingual and cross language search
- Similarity search
- Search by doc structure
- Search on annotations
-

Other DL Services

New services (not necessarily document centered) can be included in a DL to improve its potential usages

- Recommenders
- Co-operative work services
- Peer-reviewing supporting services
- Shared authoring services
- Social networking
-

Integrated environment for the generation of products (through data processing), sharing and generation of new documents



The image displays two screenshots of the FARM AquaMaps web application. The left screenshot shows the 'WorkspacePortlet' interface, which includes a tree view of the workspace containing 'root' and 'My Default Basket'. The right screenshot shows the search results for the query 'tuna', displaying metadata for a document titled 'National Aquaculture Sector Overview - Malta'.

WorkspacePortlet

Address: /root

Name	Type
root	
My Default Basket	Basket

Item details

Name:	root	Owner:	donatella.castelli
Description:	User root	Creation Time:	06/10/2009 20:13
		Dimension:	1

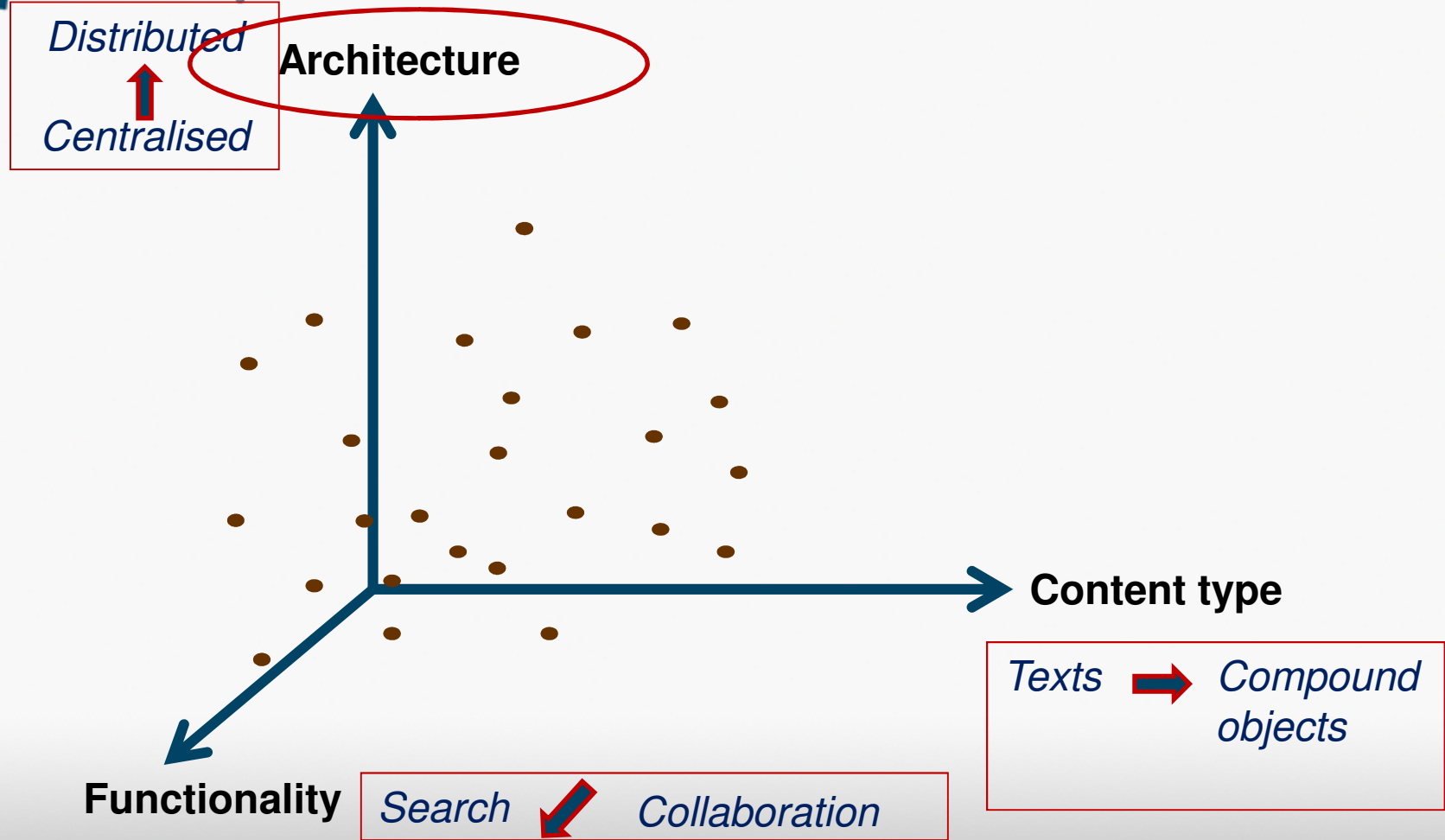
Your Query: "tuna"

Object	Metadata	Alternative
Object	Metadata	Alternative
Object	Metadata	Alternative
Object	Metadata	Alternative

Schema: FARM_dc, language: en

Formatted	Formatted XML
Title	National Aquaculture Sector Overview - Malta
Creator	Vassallo-Agius, R.
Description	Aquaculture in Malta is primarily marine based. It consists of the fattening of the Atlantic bluefin tuna (<i>Thunnus thynnus thynnus</i>) wild-caught fish, as well as the culture of European seabass (<i>Dicentrarchus labrax</i>) and gilthead seabream (<i>Sparus aurata</i>). Atlantic bluefin tuna is exported mainly to Japan, whereas European seabass and gilthead seabream are exported to Europe, mainly Italy. All aquaculture takes place in floating cages, approximately one kilometer offshore. In 2005, European seabass and gilthead seabream production, from two farms (MFAE: 2005) was 772 tonnes. The final Atlantic bluefin tuna production figures for 2005 have not yet been published, but exports to Japan were approximately 3 000 tonnes. The pilot marine hatchery at the Malta Centre for Fisheries Sciences began operating again in November 2005, focusing on research into aquaculture species diversification. Malta also participates in cooperative research and development for the domestication of Atlantic bluefin tuna to help establish a long-term and sustainable farming industry for this species with the support of the European Commission (REPRODOTT Project). There is strong competition for space and resources due to the size of Malta. The Government has become very conscious of environmental issues and an environmental assessment is required before aquaculture development is initiated. An aquaculture zone is being created off the coast of Malta in order to move tuna farming away from the shore due to conflicts with the tourism industry.

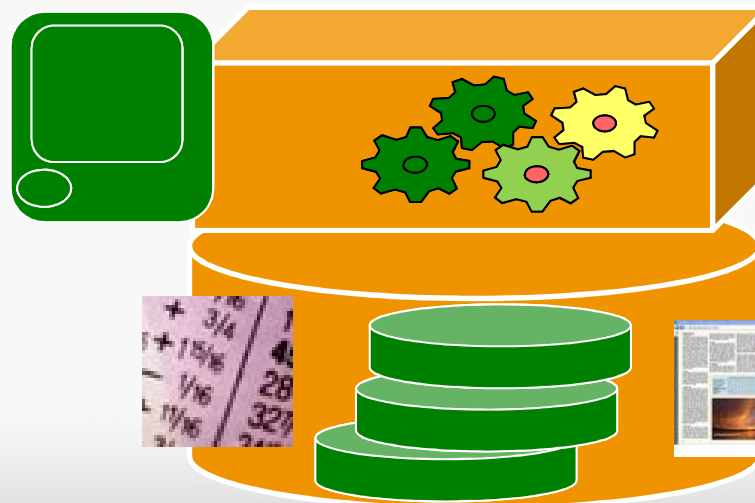
Evolution Axes



Centralised systems



- Store
- Curate
- Search
- Access



- Submit
- Annotate
- Recommend
- Collaborate
- Specialised analysis & processing
-

- Single-type document

Cost of centralised DLs

- Digital content production & curation
- System development
- Hw & sw maintenance
- Workload peaks coverage



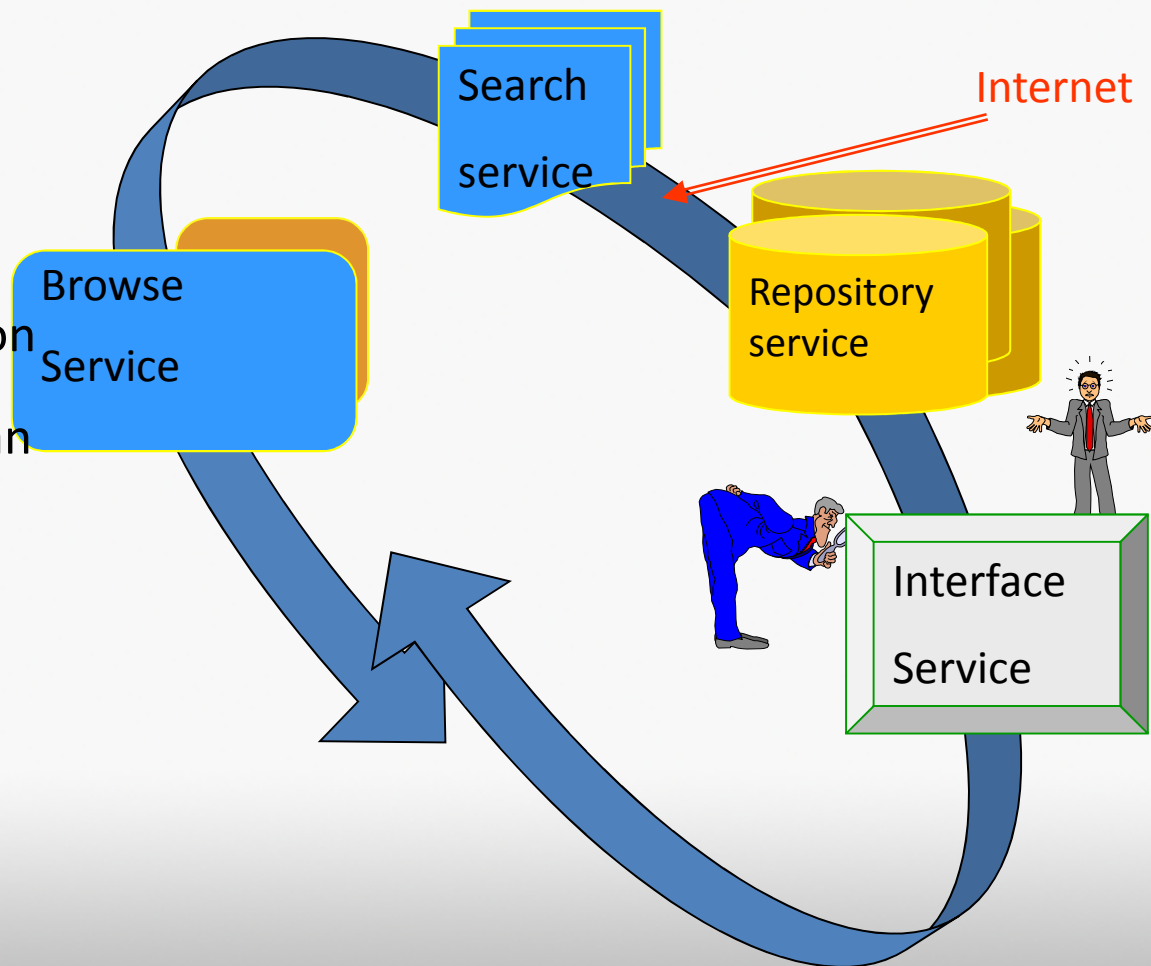
Centralised vs distributed

Distributed systems

The services are distributed on the Internet.

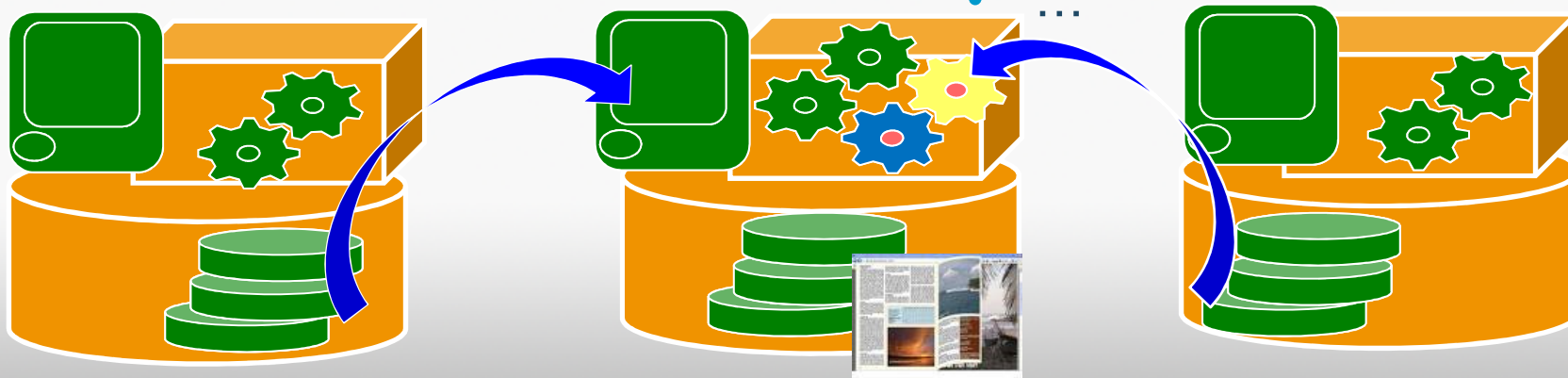
They communicate through an established protocol.

Users access the system through a Web interface



Federated DL

- Cross-access
- Metadata & document mapping & harmonization
- Metadata cleaning
- Policy control



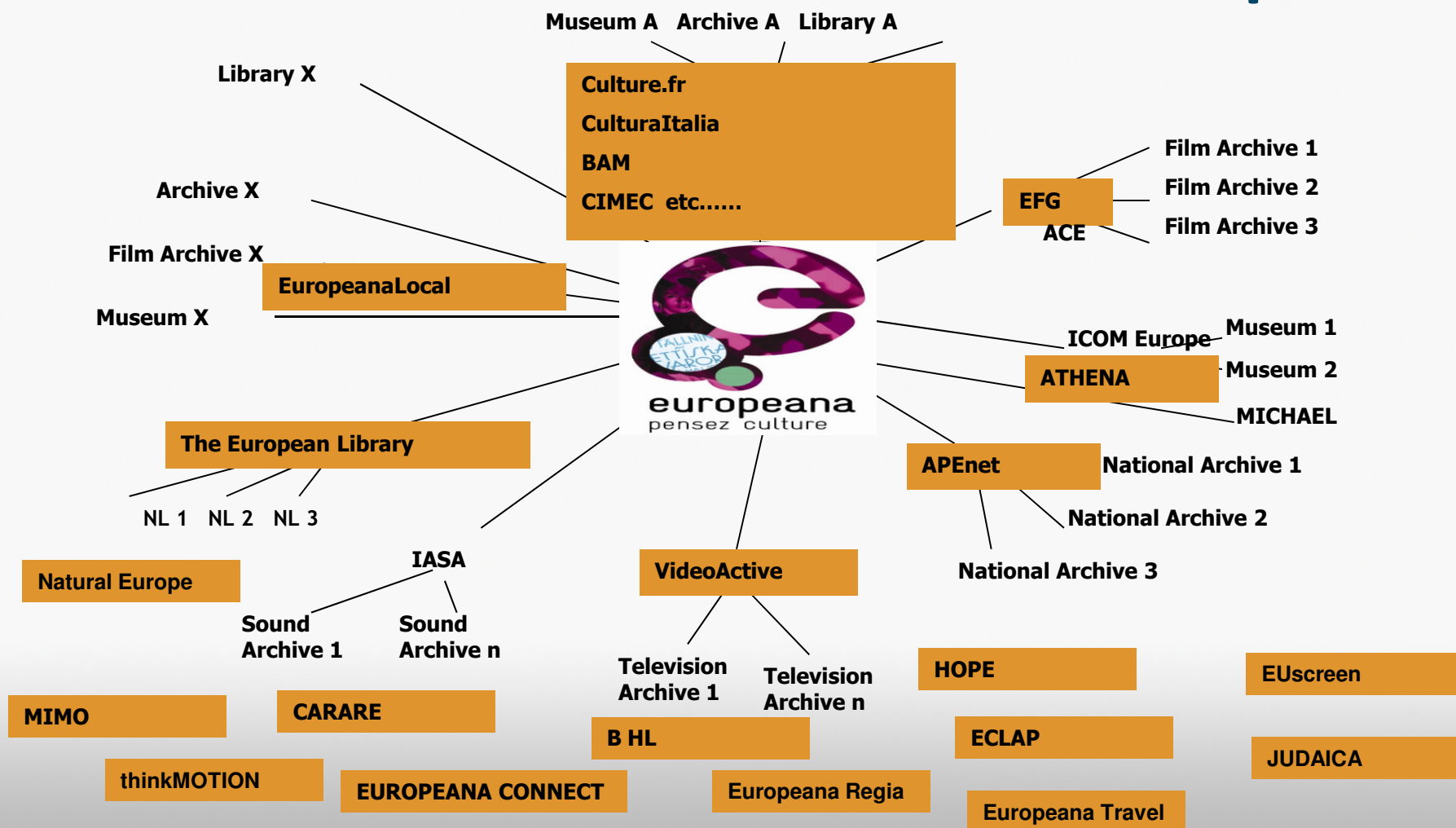
Cost of federated DLs

- Digital content production & curation (reduced)
- System development
- Hw & sw maintenance
- Workload peaks coverage

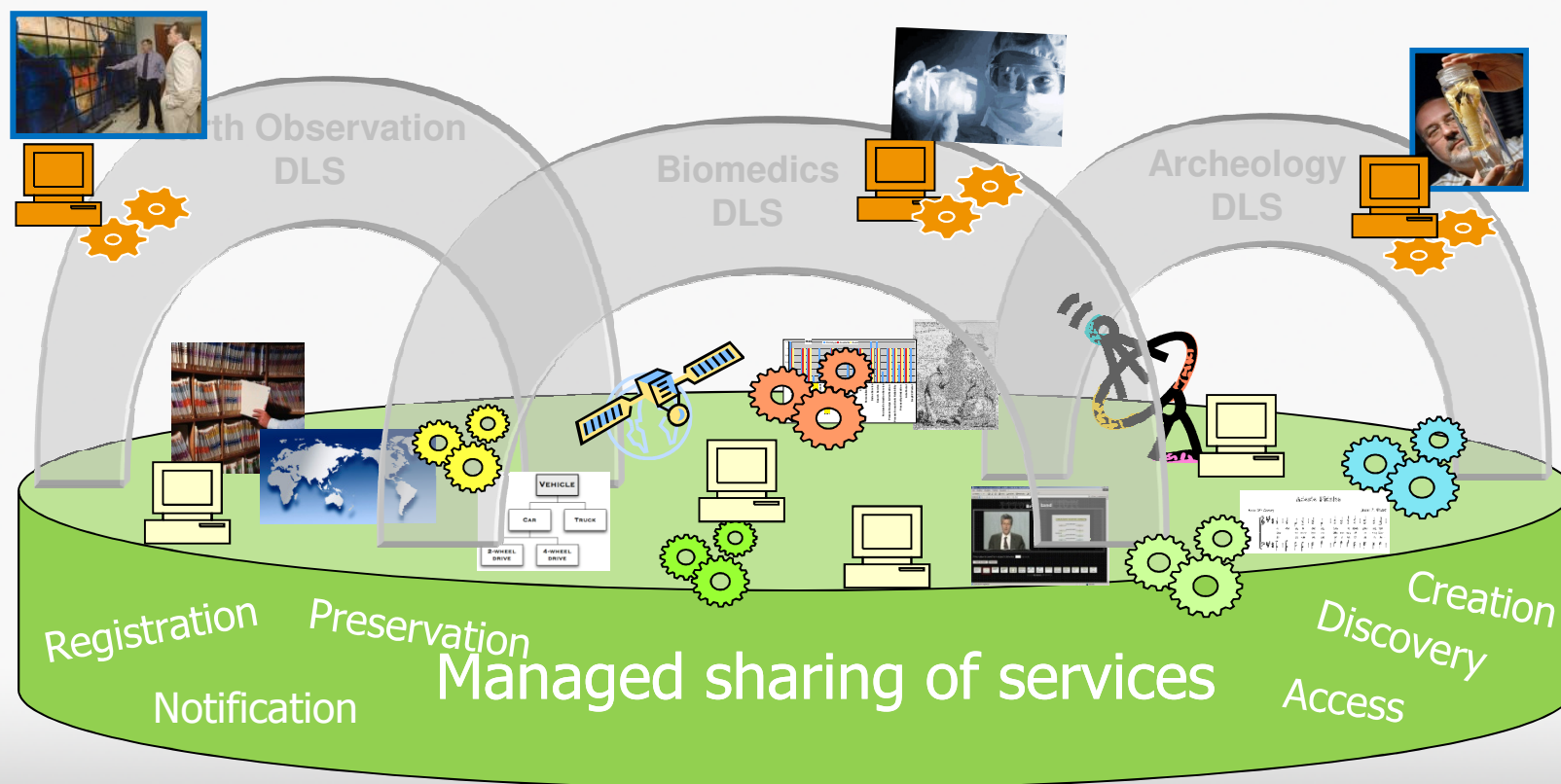
- Interoperability
 - Metadata & object structure
 - Contextual information
 - Provenance
 - Policy
 - Quality
 - ...



Large federations: Europeana



Data Infrastructures



Exemplars

- DRIVER
- OpenAIRE
- EFG
- HOPE

D-Net
enabled



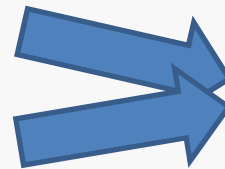
- D4Science
- gMan

gCube
enabled



Data infrastructure cost

- Digital content production & curation
- System development
- Hw & sw maintenance
- Workload peaks coverage



Covered by the e-Infrastructure



E-Infrastructure set-up and mgmt cost



DL Universe

DIENST
ACM DL
EUROPEANA
FEDORA
DILIGENT
DRIVER
ADEPT
IMPACT
PERSEUS
e-FRAMEWORK
NSDL
NDLTD
PAPYRUS
TEL
BRICKS
SONNEX
ECHO
DSPACE
OPENDLIB
D4SCIENCE
OPENAIRE

Issues when dealing with DL

- Comparison among systems is hard
 - Different focus
 - Different concepts
 - Different terminology
- No guidelines for DL education
- Lack of DL systems design and development methodologies
- No systematic approach to interoperability & integration of solutions

Lack of foundations !

Reference Model

- A reference model is an **abstract framework** for understanding significant relationships among the entities of some environment, and for the development of consistent standards or specifications supporting that environment
- A reference model may be used as a **basis for education** and explaining standards to a non-specialist
- A reference model **is not directly tied to any standards, technologies or other concrete implementation details**, but it does seek to provide a common semantics that can be used unambiguously across and between different implementations

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DL Reference Model

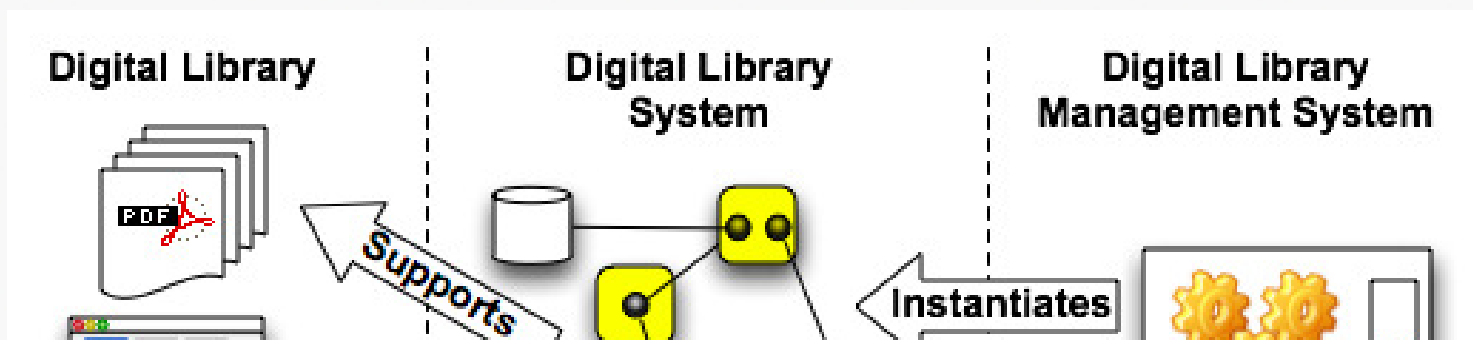
Objective

To set the foundations and identify the cornerstone concepts within the universe of Digital Libraries, facilitating the integration of research and proposing better ways of developing appropriate systems

Consists of 3 parts:

- Digital Library Manifesto
- Digital Library Reference Model in a Nutshell
- Digital Library Reference Model Concepts & Relations.

The DL “Systems”



ERROR: stackunderflow
OFFENDING COMMAND: ~

STACK: