



DELOS

Digital Library Technologies

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DELOS Network of Excellence



An initiative funded until 2007 by the European Commission, under the 6th Framework Program.

Presently it has 57 active members:

European Research Consortium for Informatics and Mathematics ▶ Istituto di Scienze e Tecnologie dell'Informazione – CNR ▶ Swiss federal Institute of Technology Zurich ▶ University of Bath ▶ University of Athens ▶ Technical University of Crete ▶ Università degli Studi di Firenze ▶ Fraunhofer-Gesellschaft zur Förderung der angewandten Forschung e.V. ▶ University of Glasgow ▶ Universität Duisburg-Essen ▶ Stichting Centrum voor Wiskunde en Informatica ▶ Foundation for Research and Technology – Hellas ▶ Università degli Studi di Roma “La Sapienza” – DIS ▶ National Technical University of Athens ▶ Università degli Studi di Padova ▶ Università degli Studi di Milano ▶ University for Health Informatics and Technology Tyrol ▶ Max-Planck-Ges.z.F.d.W.vertr. d. MPI fuer Informatik ▶ Kuratorium OFFIS e.V. ▶ Queen Mary & Westfield College ▶ University of Strathclyde ▶ Ionian University, Archive and Library Science Department ▶ Université Paris-sud XI/Laboratoire de Recherche en Informatique ▶ University of Southampton ▶ The University of Edinburgh ▶ Institute for Information Processing and Computer Supported new Media ▶ Vienna University of Technology ▶ University of Urbino ▶ Norwegian University of Science and Technology – DCIS ▶ Lund University /Lund University Libraries, Head Office ▶ Institut National de Recherche en Informatique et en Automatique ▶ National Archief ▶ Univesitaet Bremen ▶ Phonogrammarchiv der Österreichischen Akademie der Wissenschaften ▶ Universität zu Köln ▶ Consorzio Forma ▶ Swedish Institute of Computer Science AB ▶ Università degli Studi di Modena e Reggio Emilia ▶ Masarykova univerzita v Brne ▶ Universiteit van Amsterdam ▶ Università Della Svizzera Italiana ▶ Magyar Tudományos Akadémia Számítástechnikai és Automatizálási Kutatóintézet ▶ Università degli Studi di Bari - Dipartimento di Informatica ▶ Health Information Technologies Tyrol ▶ University of Lancaster ▶ Athens University of Economics and Business ▶ University of Glamorgan ▶ University of Queensland ▶ Austrian National Library ▶ Goettingen State and University Library ▶ Imperial College ▶ Institute of Knowledge Sharing ▶ Center of Cognitive Systems Engineering ▶ Centre Virtuelle de la Communication sur l'Europe ▶ University of Lille ▶ University of Konstanz ▶ University of Basel

DELOS activities

- Coordination of research
- Publications
- Dissemination and visibility
- Workshops and meetings
- Summer Schools, Tutorials
- Researcher Exchanges, Short Visits

DELOS main objective

To define and conduct **a joint program of activities** in order to integrate and coordinate the on-going research activities of the major European research teams in the field of **digital libraries** for the purpose of developing the next generation digital library technologies



DELOS - Grand 10~~6~~10-Year Vision #1



Digital libraries should enable **any citizen** to access **all** human knowledge **anytime** and **anywhere**, in a **friendly, multi-modal, efficient, and effective** way, by overcoming barriers of **distance, language, and culture** and by using multiple **Internet-connected devices**

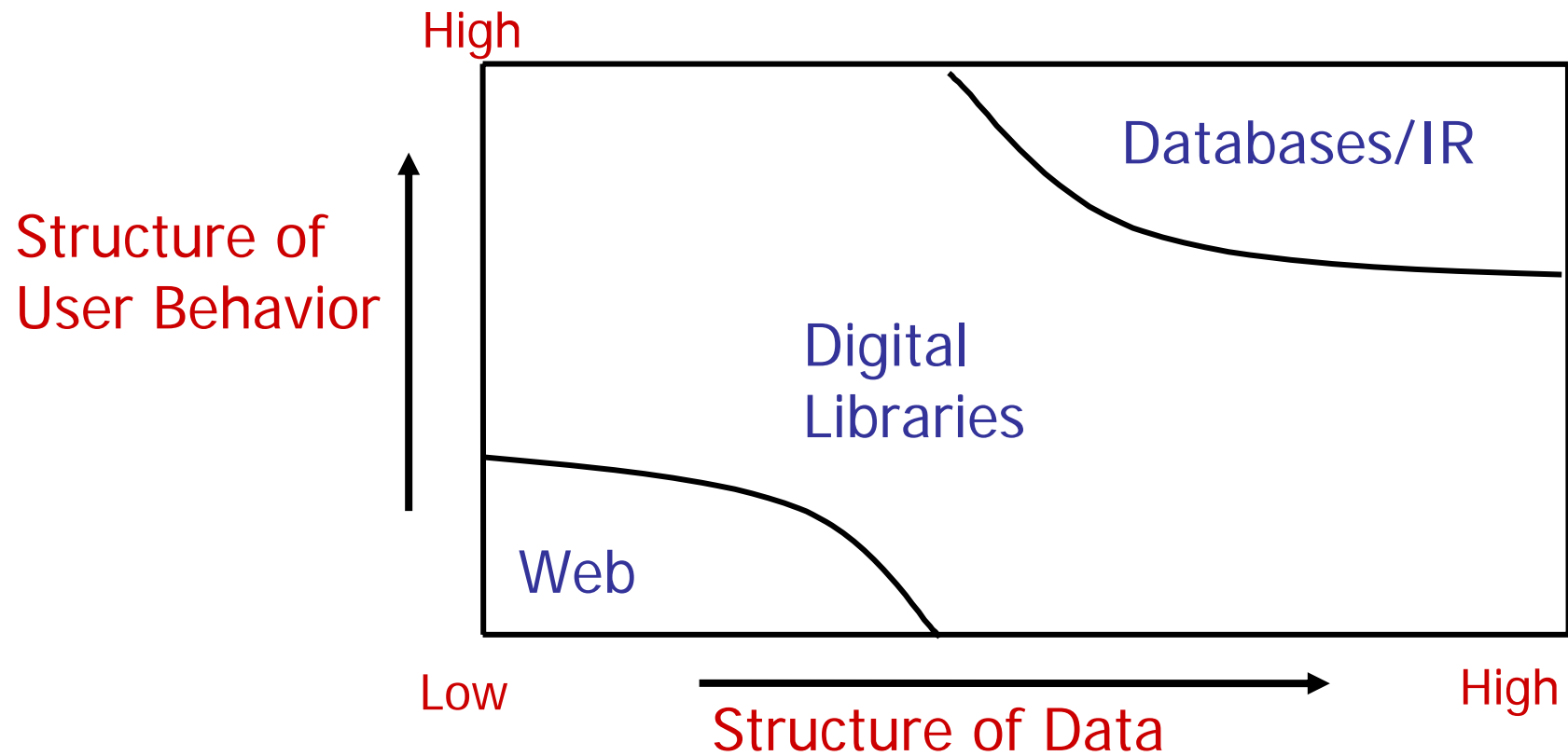


DELOS - Grand 10-Year Vision #2



The potential exists for digital libraries to become the **universal knowledge repositories** and **communication conduits** for the future, a common vehicle by which **everyone** will access, **discuss, evaluate, and enhance** information of **all** forms

Information Space for DLs



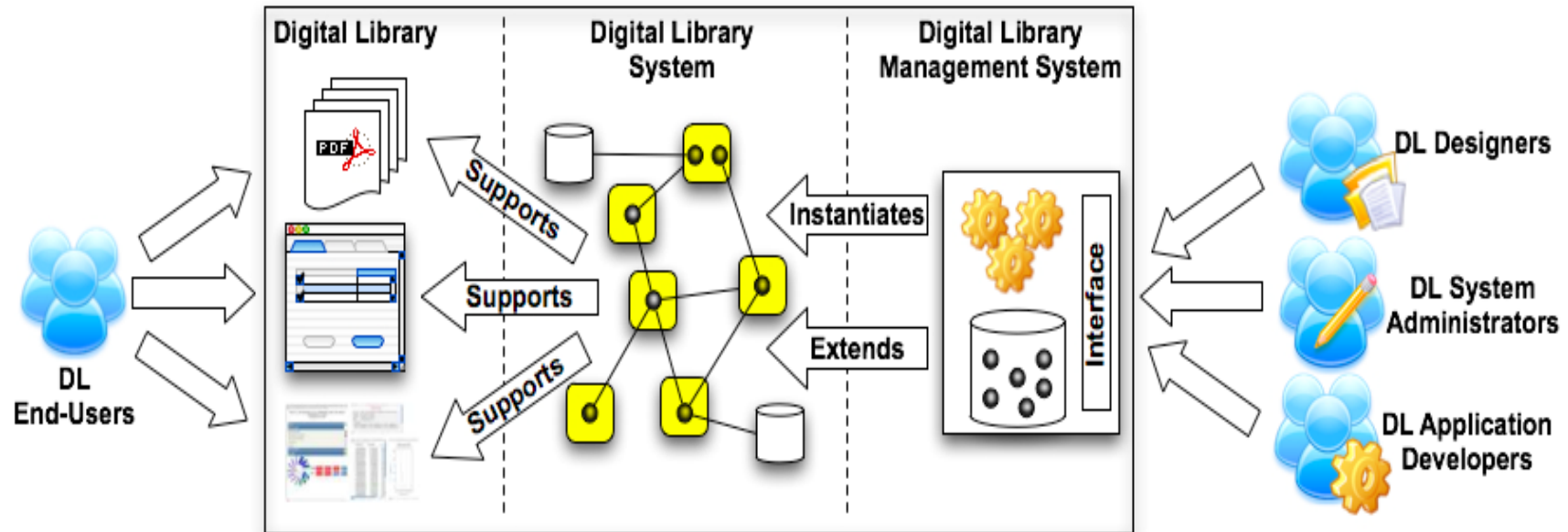
Definition of “Digital Library”

- Click to add text

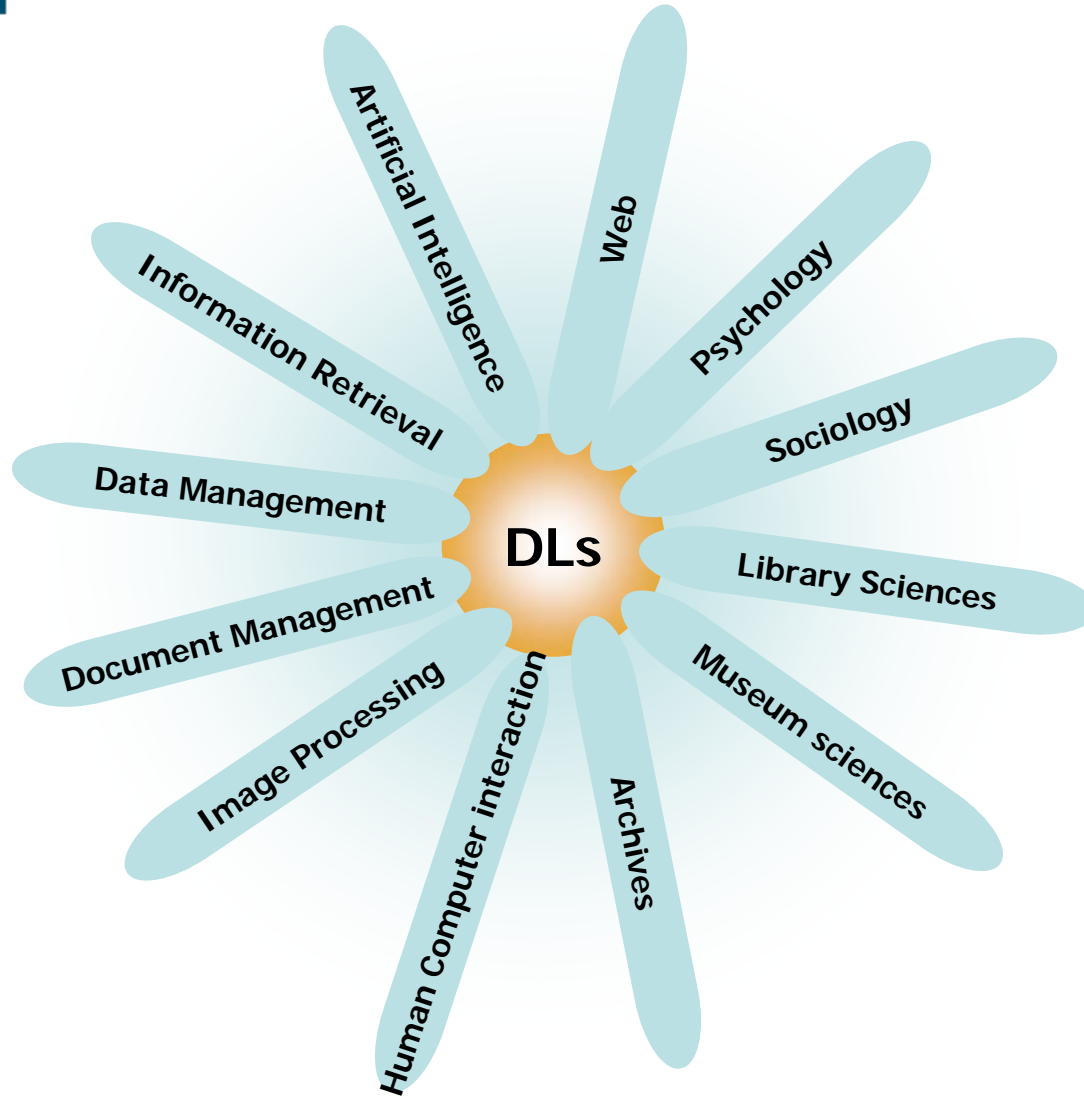
What is a Digital Library ?

- A DL is the combination of content and services
- A DL is an “entity” providing the functionality to mediate between information objects and information users in the context of distributed collections of information objects. This (external) functionality includes access, publish, delivery, preservation, personalization, etc.
- A Digital Library is an institution in charge of providing at least the functionality of a traditional library in the context of distributed and networked collections of information objects
- A Digital Library is a tool at the centre of intellectual activity having no logical, conceptual, physical, temporal, or personal borders or barriers on information

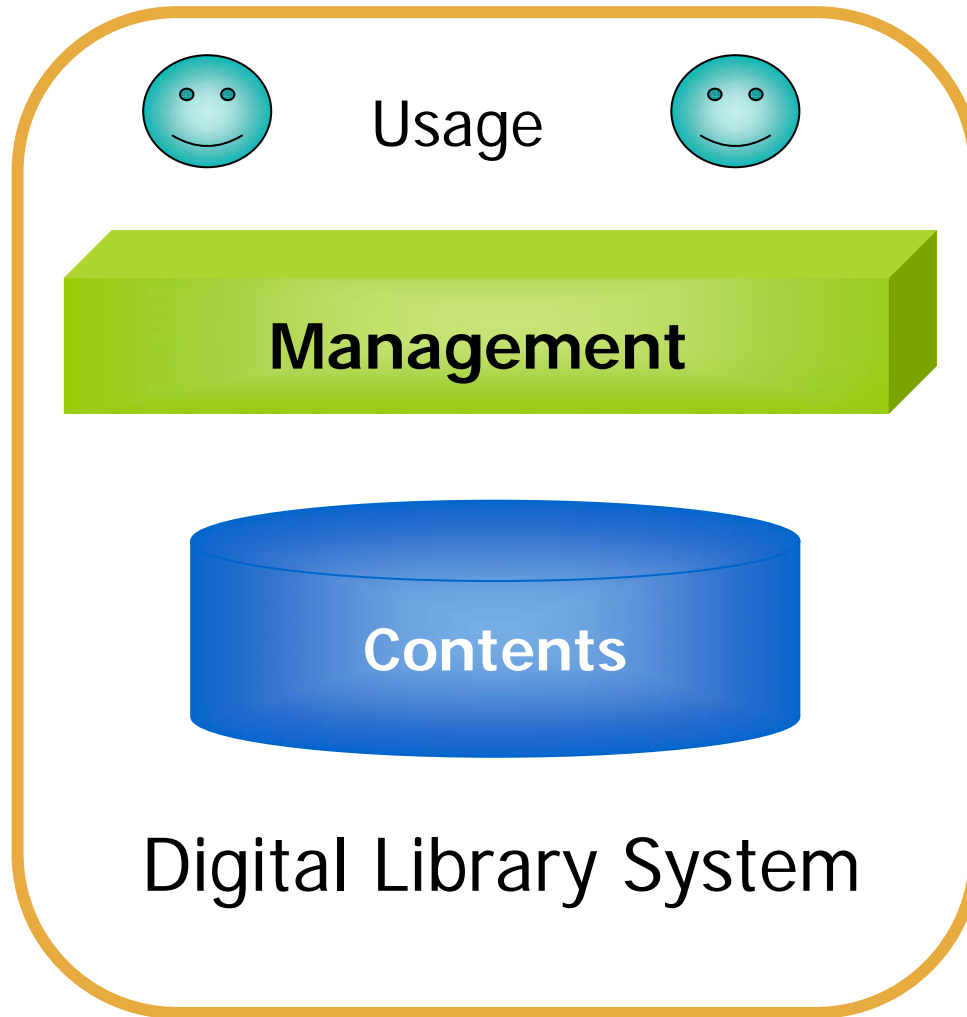
A conceptual framework



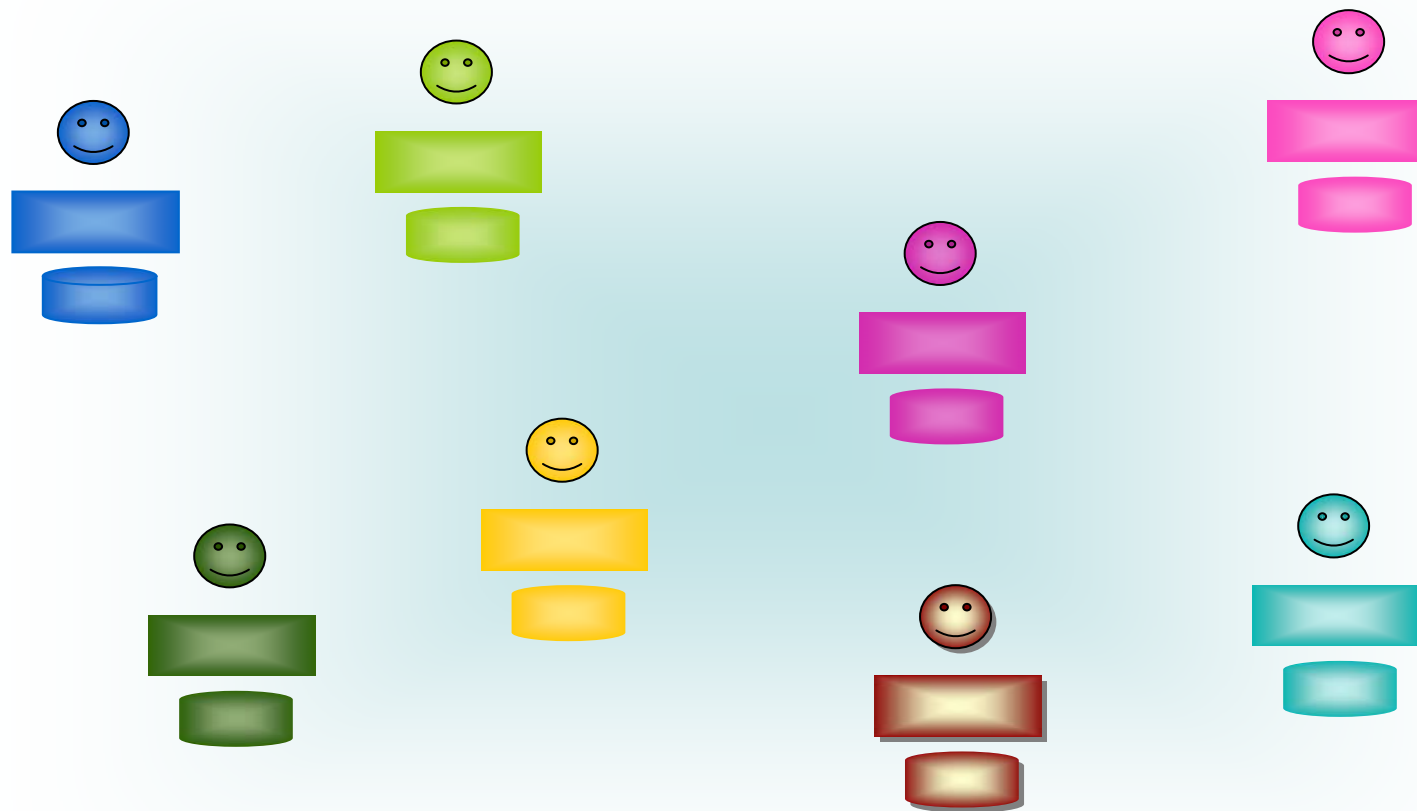
Digital Libraries



Conceptual Framework



Current Methodology



Current Methodology

- ! **content-centric**
- ! **targeted for static storage**
- ! **isolated systems**
- ! **environment-specific repeated efforts**
- ! **myths about restricted applications**

A Vision for Future Digital Libraries

content-centric

person-centric

targeted for static storage

for active communication/collaboration

isolated systems

global distributed interacting systems

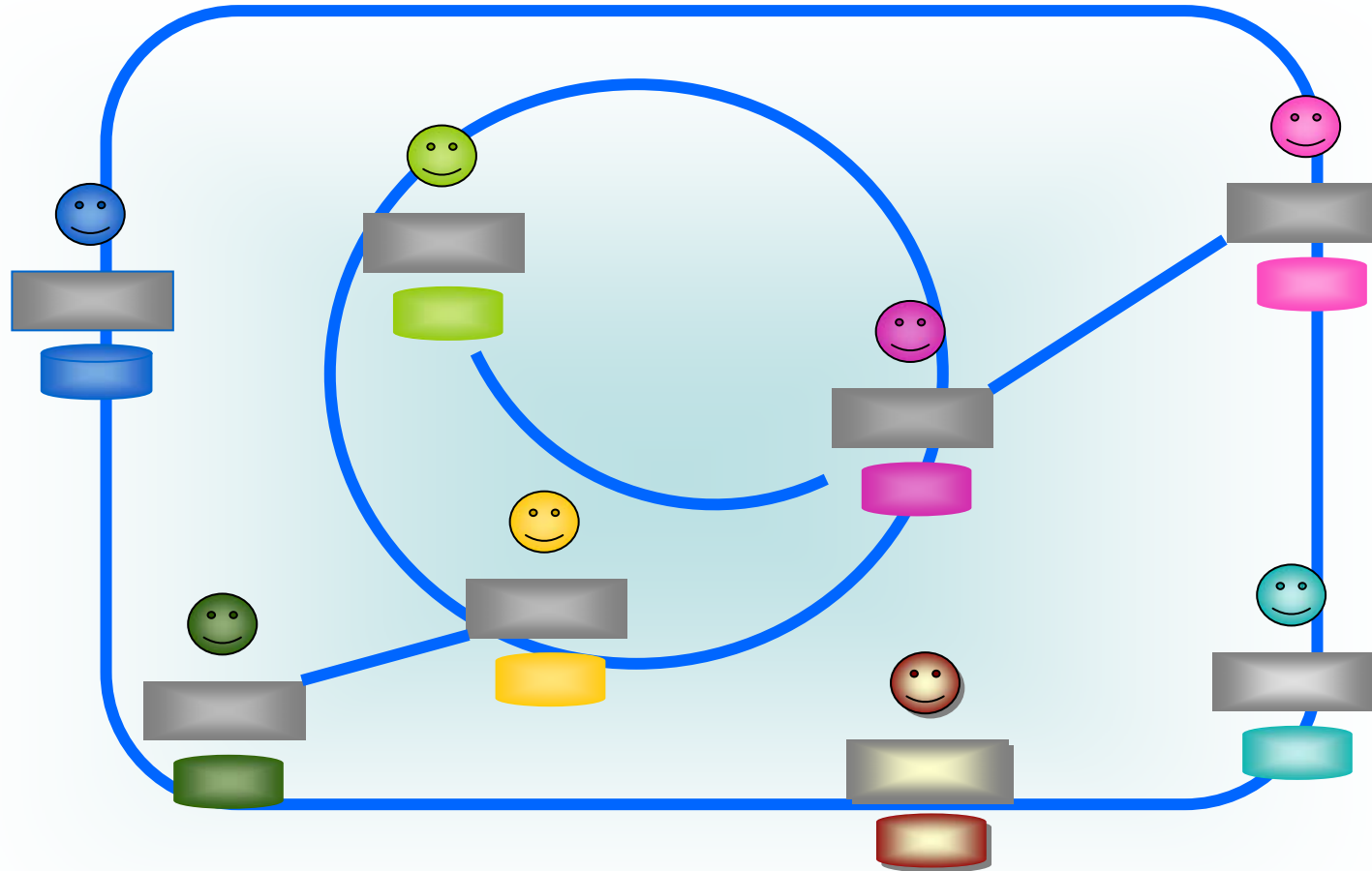
environment-specific repeated efforts

generic DLMS technology to build on

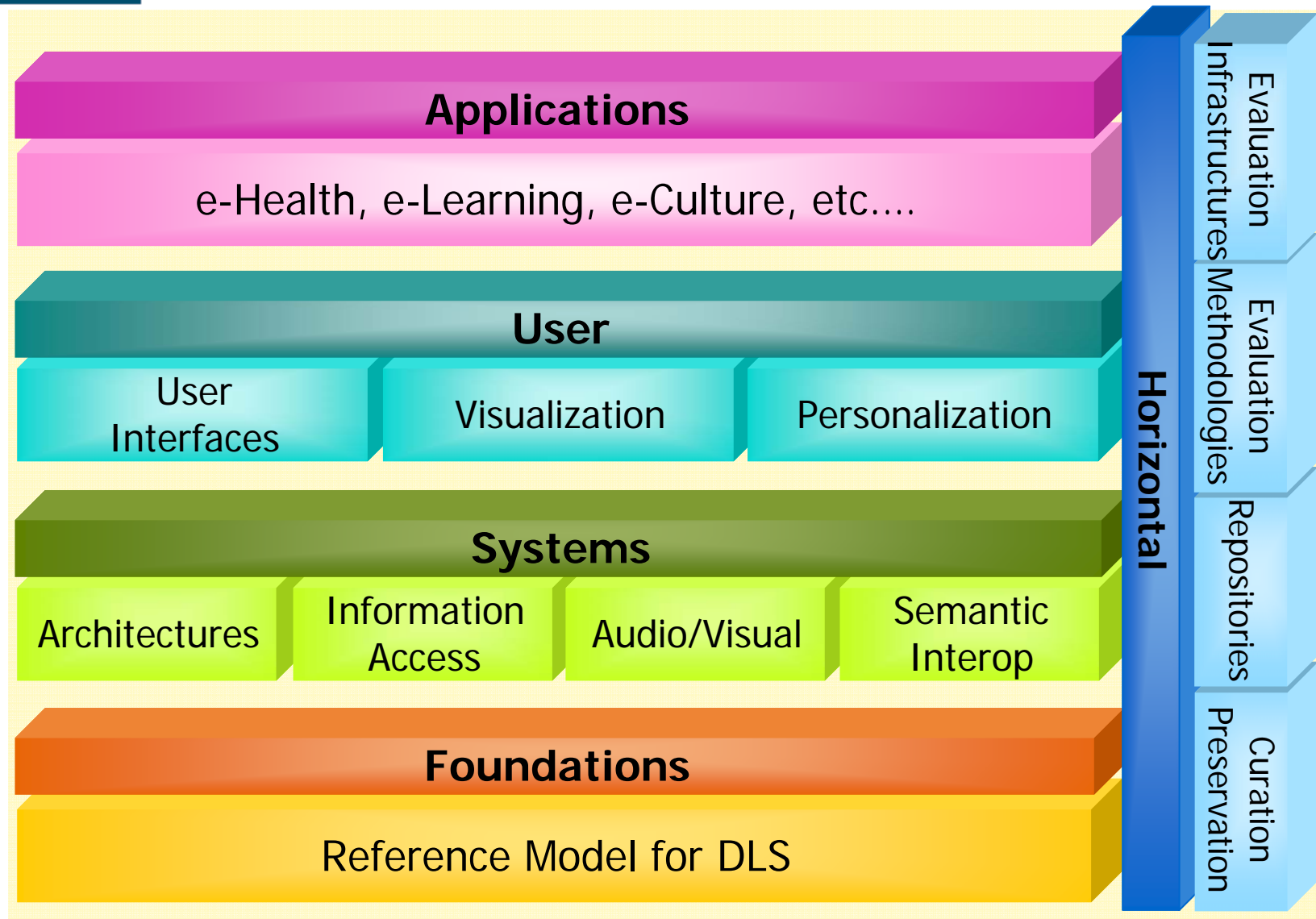
myths about restricted applications

"all" applications

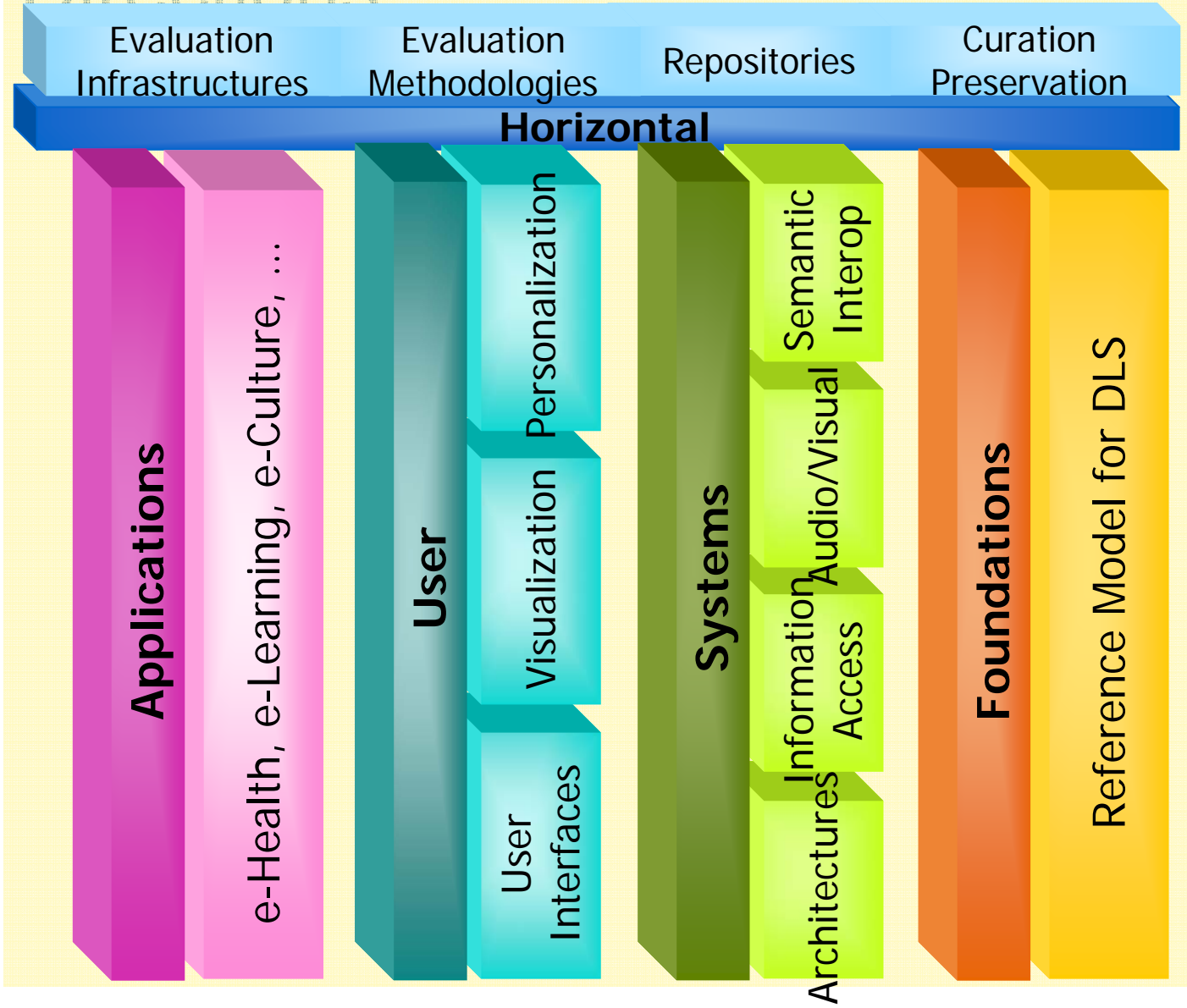
Future Methodology



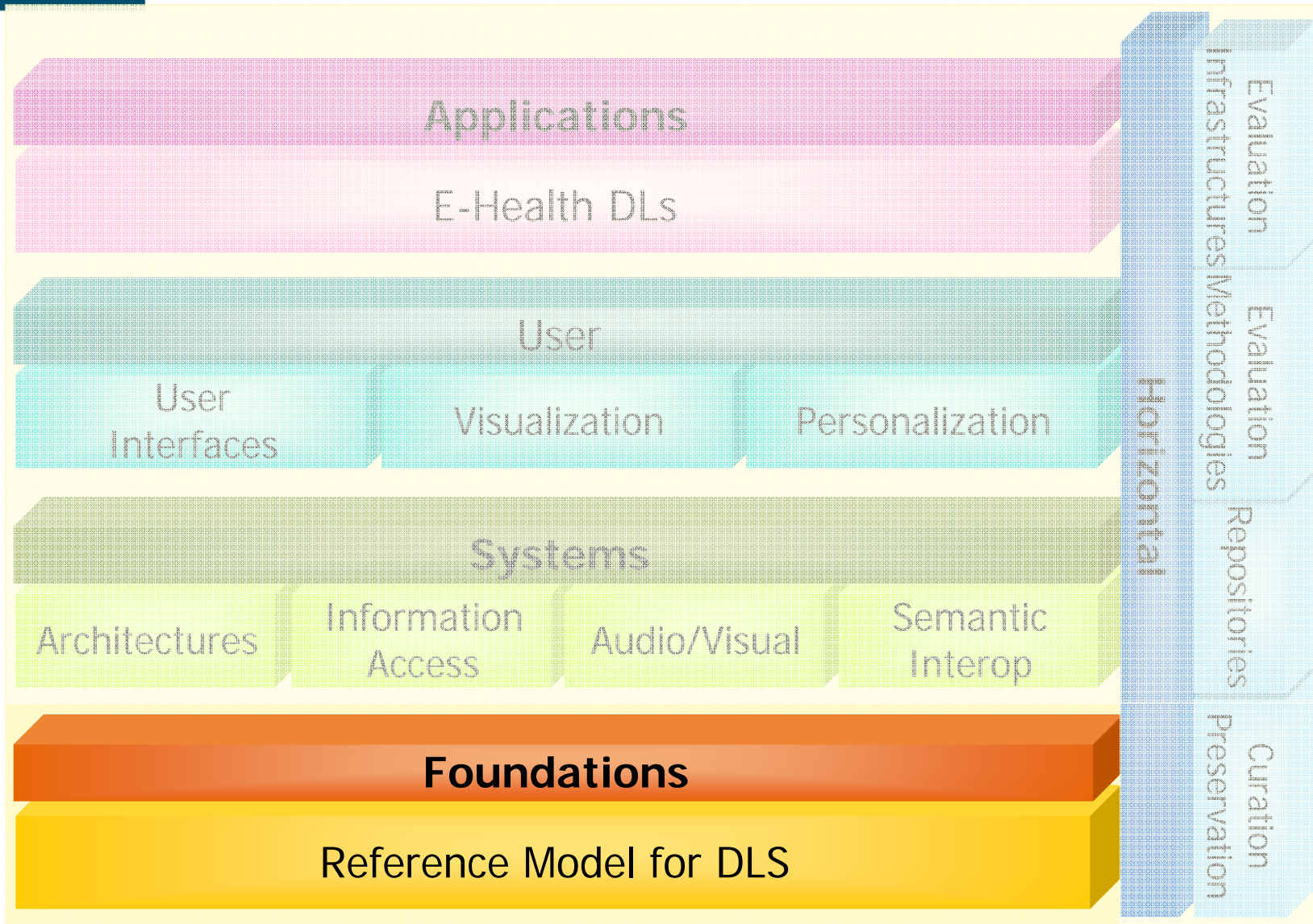
DELOS Research Directions



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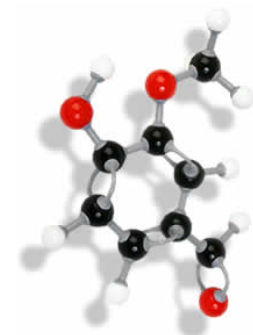
DELOS Research Directions



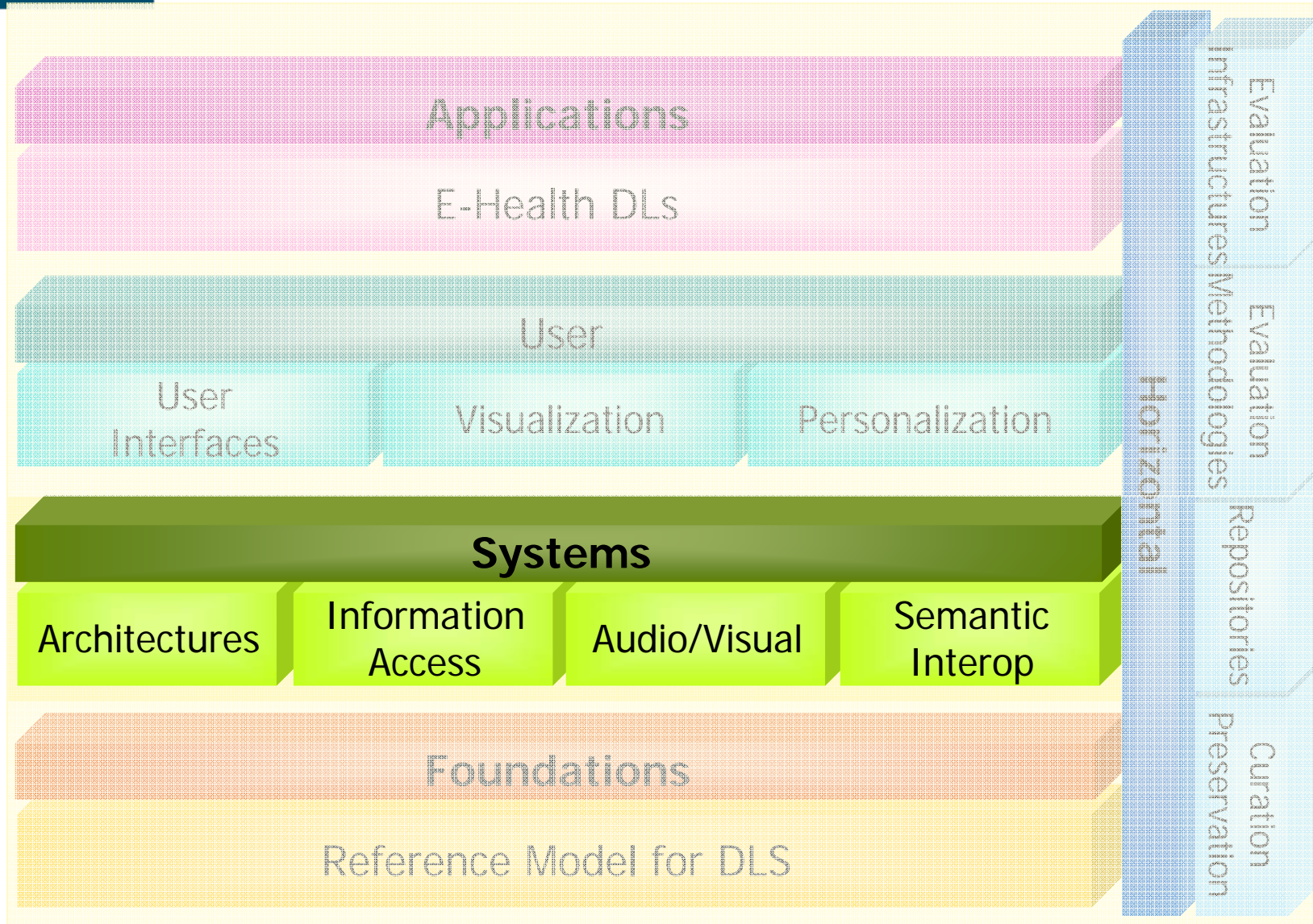
Reference Model for DLS

Formalize a conceptual framework for Digital Library systems

- to serve as a yardstick of quality and richness
- to specify features and properties of generic DLMS
- to clarify relationships among
 - digital libraries, digital repositories, digital archives,
 - search engines, information infrastructures,
 - knowledge commons



DELOS Research Directions



Architectures

- Peer-to-peer architectures
- Grid middleware
- Service-oriented architectures

Information Access

- Indexing for complex and novel data
- Query routing in complex distributed Digital Libraries



System-related Research Issues

Audio/Visual

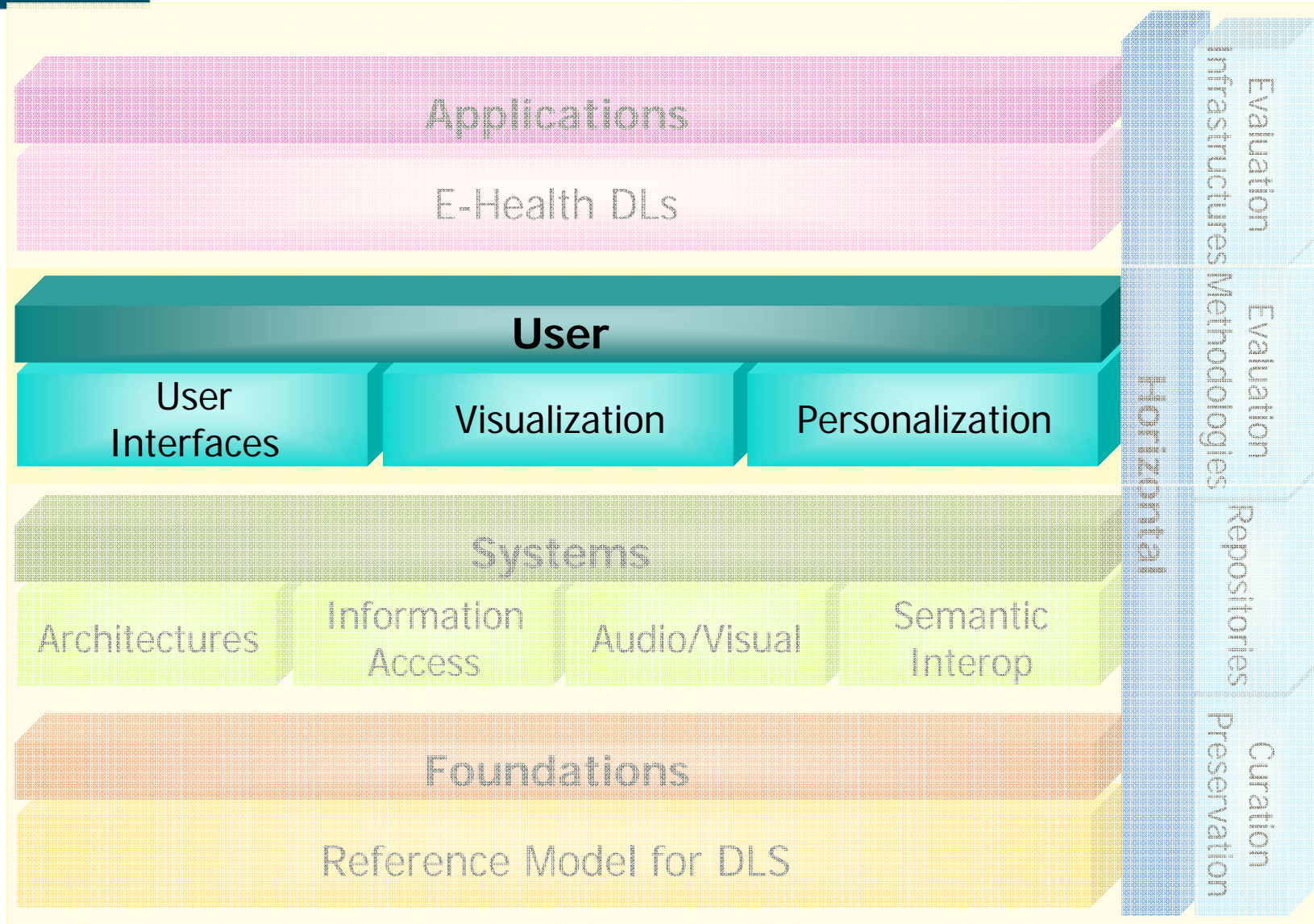
- Automatic metadata extraction
- Context-aware content-based retrieval
- Audio/visual interfaces

Semantic Interop.

- Methods for the integration of heterogeneous ontologies and domain-specific knowledge organization systems
- Interoperability with e-Learning applications



DELOS Research Directions



User Interfaces

- Framework for new digital library interfaces
- Task-oriented user interfaces
- Cooperation/collaboration tools, e.g., annotations

Visualization

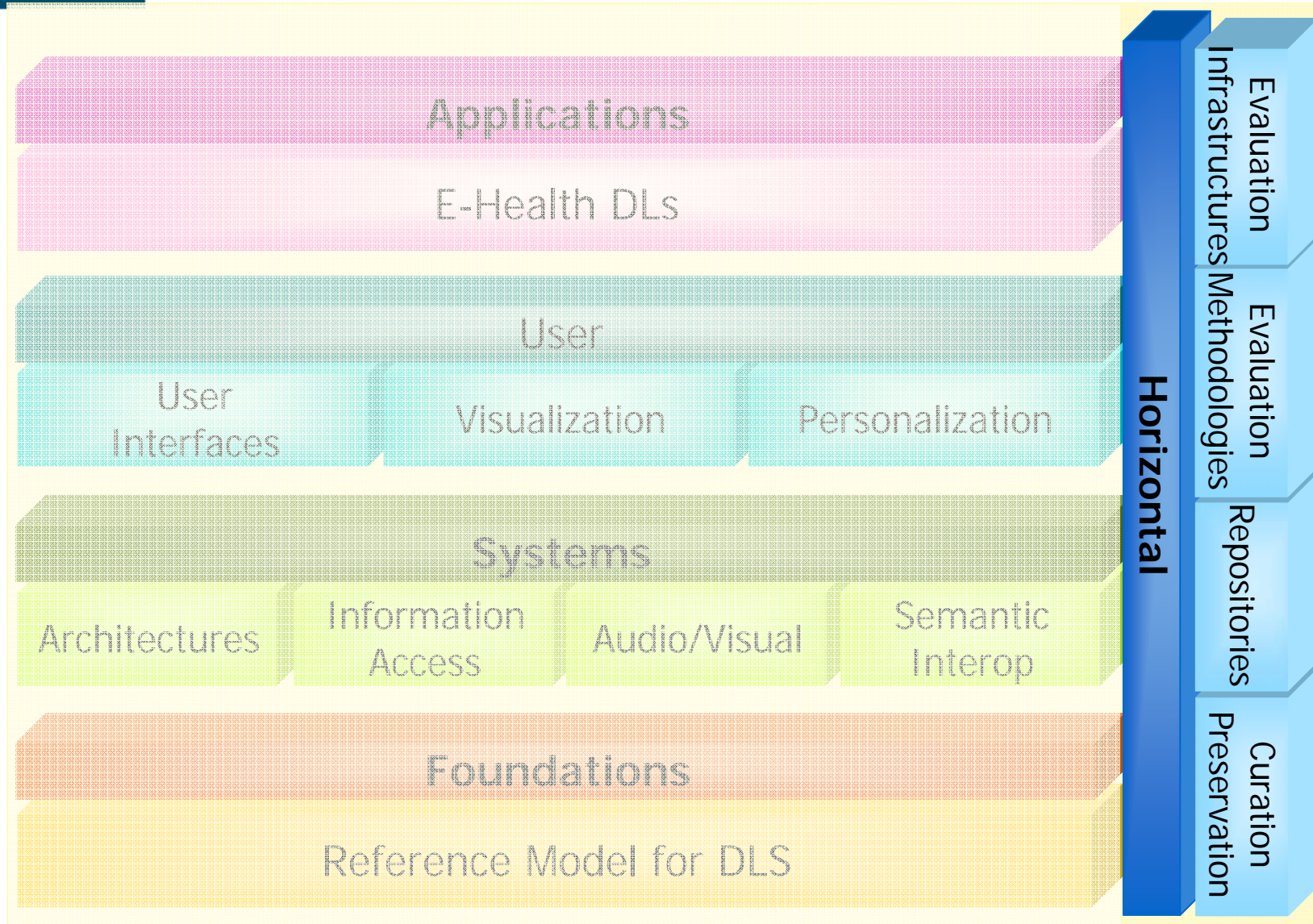
- Self-adaptability to small screens
- Visual analysis and exploration of query results

Personalization

- Modeling foundations for user preferences and context
- Personalization of user interactions
- Peer-similarity-based query routing decisions
- User log analysis for profiling



DELOS Research Directions



Curation/Preservation

- Integration of preservation functionality
- Establishment of a testbed and evaluation framework for preservation techniques
- Automating selection and ingest processes

Repositories

- Common grounds: access policy, operational environment
- Infrastructure repositories for research and learning



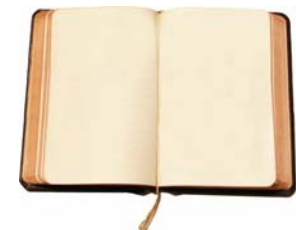
Evaluation Methodologies

Standard frameworks for comparative evaluation of DL Systems

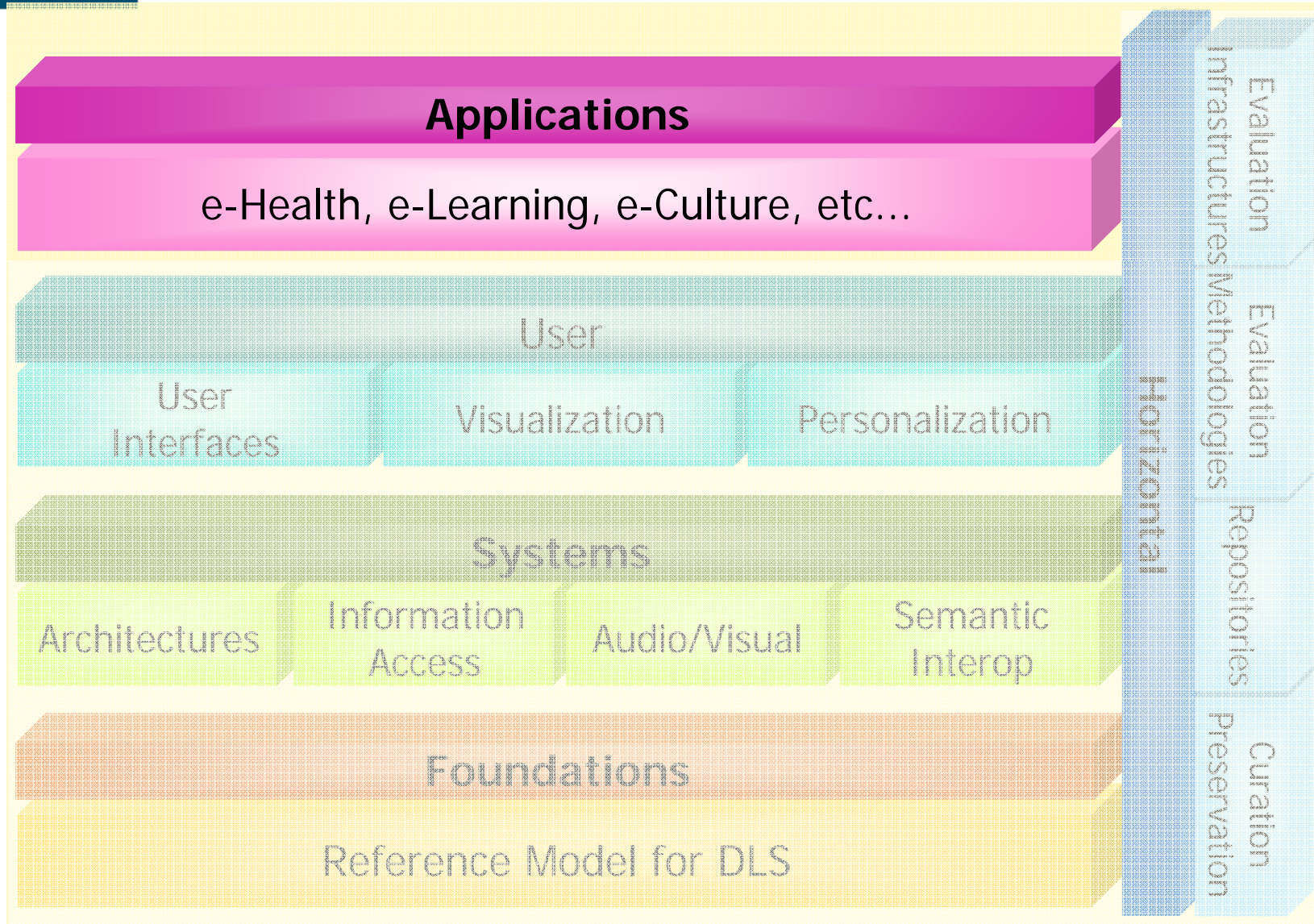
- Definition of standard events in a DL environment
- Identification of appropriate metrics
- Establishment of information repositories

Evaluation Infrastructures

- Cross Language Evaluation Forum (CLEF)
- Initiative for Evaluation of XML retrieval (INEX)



DELOS Research Directions



e-Health

- Virtual electronic health records
- Integration of multiple medical information streams

e-Learning

- Interoperability of e-Learning applications

e-Culture

- Integration of upper-level ontologies
- Mapping of core ontologies to schemas and KOS

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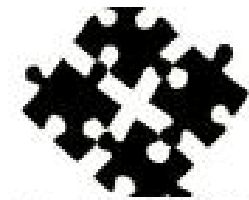
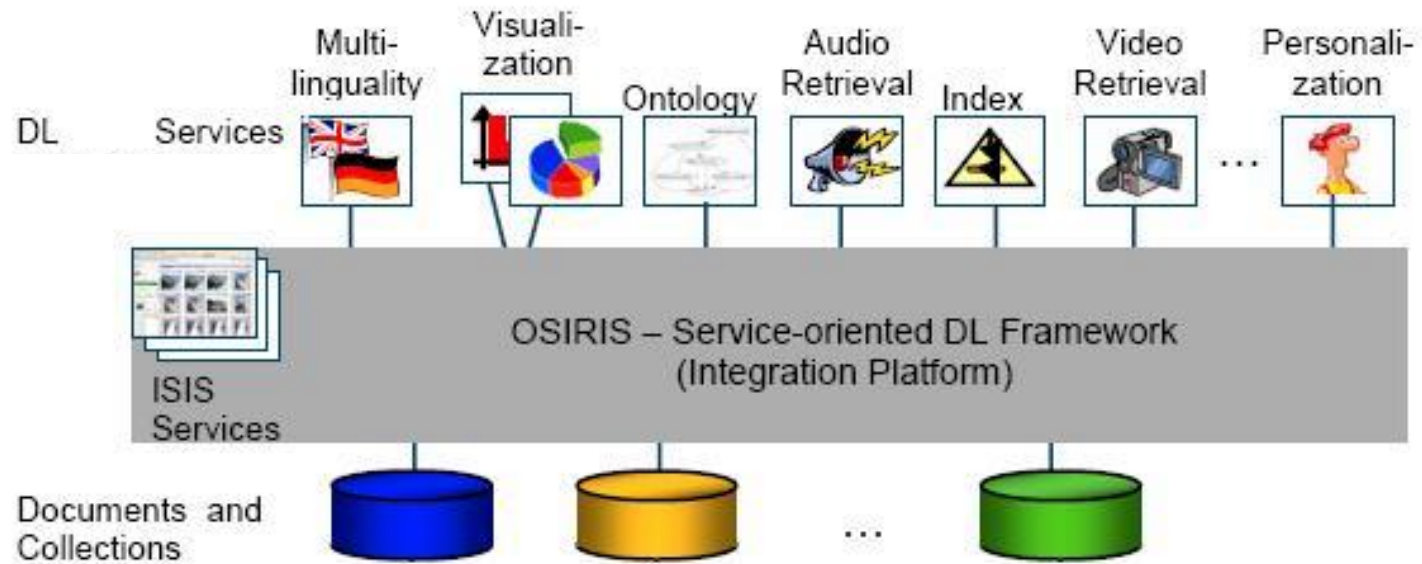


DELOS DLMS

- Implementation of a next-generation digital library management system
 - Middleware environment providing service composition and flow control (OSIRIS/ISIS)
 - Integration of Digital Library functionality
 - Audio-visual searching
 - Personalized browsing
 - Information visualization
 - Annotation
 - Sensor data streams processing
 - Multilinguality



DELOS DLMS



<adjective><content abstraction><created
entity>

- adjective := Digital
- content abstraction := “
- created entity := Library

New name for Digital Libraries ?

Digital
Pervasive
Dynamic
Universal
Ubiquitous
Collaborative

Data
Information
Knowledge

Libraries
Environment
Spaces
Gardens
Commons
Forums
Architectures
Worlds
Realms

What's in a name ?

DIGITAL LIBRARIES



DYNAMIC
UNIVERSAL
KNOWLEDGE
ENVIRONMENTS



KNOWLEDGE
COMMONS



... what's in a name? that which we call a rose,
by any other name would smell as sweet.....

Getting ... "There"