User Interfaces and Visualization

http://delos.dis.uniroma1.it/default.aspx

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Participants in Delos wp 4:

Universities

- Roma-1, Italy (cluster management)
- CWI, Netherlands
- Forth-ICS, Greece
- Brunel, UK

Sector research institutes

FhG-IPSI, Germany

- Risø National Laboratory, Denmark

Overall goal:

- To elaborate a common understanding of the role and scope of UI research in the DL area and start the development of a theoretical framework

Objectives and tasks:

1. Identify empirical basis (Risø)
2. Characterize all life cycle phases (Forth-ICS)
3. Characterize the users (FhG-IPSI)
4. Characterize contexts/environments (Roma1)
5. Characterize visualisations (Roma1)
6. Develop theoretical framework (Roma1)

Problems:

Valuable digital libraries exist
+Access for users to digitized repositories

Valuable tools for knowledge integration exist
+ Content management through metadata
- Lack of technology support for collaborative content provision and collaborative research

Valuable knowledge about user interface design exists
- But user interfaces to DLs are often designed in an ad hoc manner.
- Empirical evaluation of DL user interfaces is rarely an integrated activity in DL design

Research strategies for 2004:

•To integrate knowledge about state-of-the art through empirical analysis of digital libraries and users' experience

•To reach a first foundation for a common understanding to build a theoretical framework for visualization in user interfaces to digital libraries

•Collaboration 'outside' the consortium and dissemination of preliminary results

Work done

1. Data gathering and empirical analysis:

•Case studies of advanced digital libraries

•Questionnaire surveys of DL users

•Literature study

2. Dissemination:

•Organization of workshop in 2005 on collaboration with wp 3 on audio-visual content and visualization in digital libraries

•Preparation of joint report and publication of main results

Empirical basis, highlights from the work done:

1. Case studies of advanced digital libraries

2. Questionnaire surveys

Reported in the joint deliverable D4.1.1.:
”User Interfaces and Visualization”
By Roma1, Risoe, Forth-ICS and FhG/IPSI
(Draft: September 2004; Final version, October 2004)

Case studies of advanced digital libraries

Cases: four European digital library projects, funded by the European Commission's IST programme

Laurin – libraries and archives collecting newspaper clippings

Collate – collaboratory for film archive research

Scholnet – testbed for searching and annotation of software concepts for DL development

I-Dove – Interactive support tool for development of virtual environments

Case studies of advanced digital libraries

Input: in-depth descriptions of the digital libraries, prepared by the partners, according to guidelines developed to address:

a. What are the domains covered by the DL
b. Who are their users
c. What are their services
d. How have the DLs been developed
e. What kinds of visual design have been created
f. What are the future visions

Case studies of advanced digital libraries

- Analytical levels:

1. Domains:
   - Work domains
   - Knowledge domains

2. Users
   - Stakeholders (Experts in mediation and content)
   - End-users

3. Tasks/services

Case studies of advanced digital libraries

Domains:

Work domains (involve company strategies and goals):

1. Archives and libraries (Collate and Laurin)
2. Development of common workspaces (I-Dove and Scholnet)

Knowledge domains (involve users' intentions):

1. Film knowledge (Collate)
2. Newspaper content (Laurin)
3. Design and development knowledge (I-Dove and Scholnet)

Case studies of advanced digital libraries

Tasks/services

Tasks:

- Integration of documentary knowledge (Collate, Laurin)
- Development and management of distributed knowledge (I-Dove, Scholnet)

Services:

- Indexing and annotation (Collate)
- Multilingual thesaurus (Laurin)
- Social navigation tools, tools for VE construction (I-Dove)
- Annotation and IR with relevance feedback (Scholnet)

Case studies of advanced digital libraries

Users:

Stakeholders/experts:

- Film archive staff, researchers (Collate)
- Librarians in public libraries, journalists (Laurin)
- Content managers (I-Dove, Scholnet)

End-users:

- Broad spectrum (Collate, Laurin)
- Developers (I-Dove, Scholnet)

Case studies of advanced digital libraries

First results:

Development of a preliminary taxonomy of domain, user, task, services in advanced digital libraries

First suggestions for integration of taxonomy with taxonomy for interface design:

1. Domains, tasks, users
2. Abstraction levels (means and ends for each level of analysis)
3. Action scenarios (task situations)
4. Skill-rule-knowledge behavior (users' cognitive behavior)

Questionnaire surveys:

1. Questionnaire for digital library end-users
2. Questionnaire for digital library stakeholders

Main variables:

User background and characteristics
Current experience
Functional requirements
Non-functional requirements (eg. Usability, safety, ethics)

45 responses (12 stakeholders)

Questionnaire surveys, Preliminary results

Functional requirements:

Communication, collaboration important to stakeholders, less important to end-users

Preeminence of the ’document metaphor’

Non-functional requirements:

Conceptual rift between end-users and stakeholders re. usability and accessibility

Questionnaire surveys,

Stakeholders:

+ DLs should be easy to learn
- DLs should be satisfactory to novel users

End-users:

+ Universal usability support
- Satisfactory to expert users

Future work, 1:

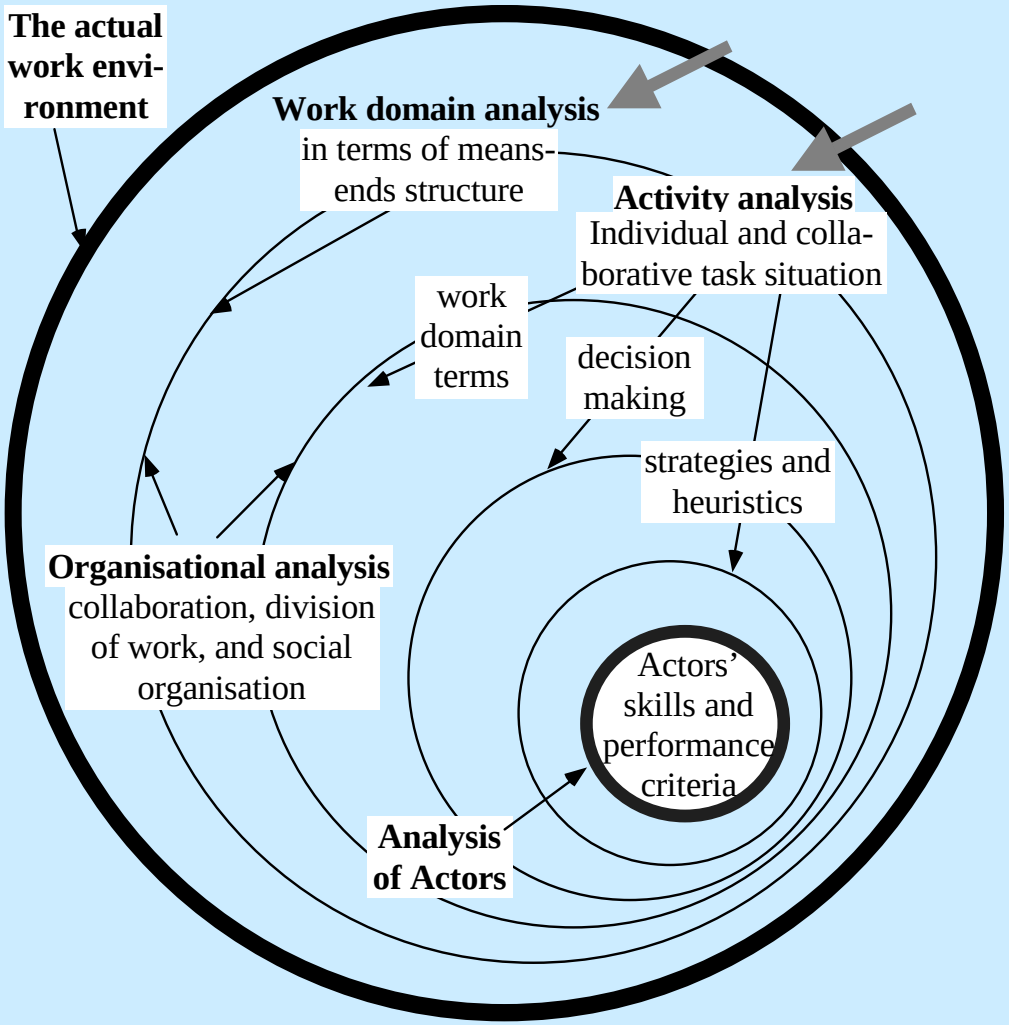
- Evaluation of DLs througout their entire life cycle
  Analytical – empirical, when and how, and who to involve (stakeholders, end-users)

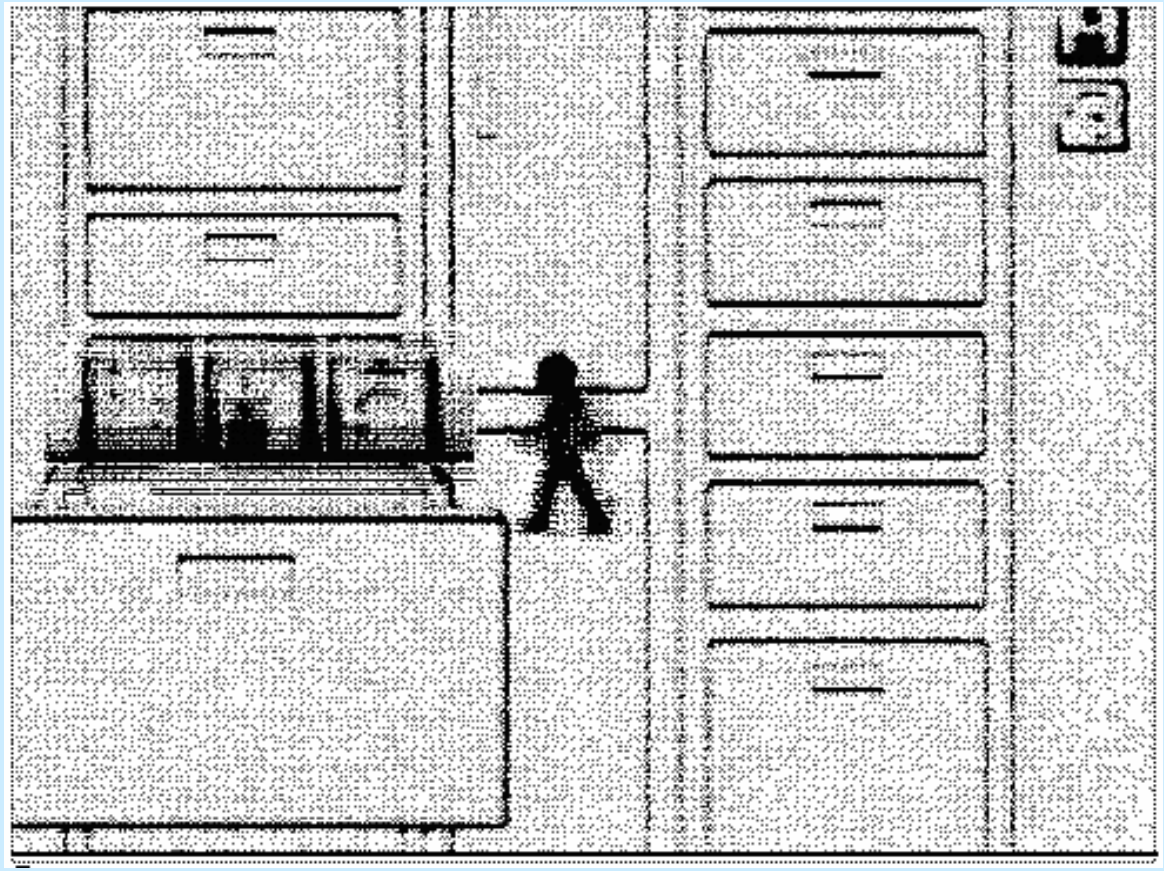
2. Visualization based on empirical analysis of
   ’domains, tasks, users’
   Stable features: models for characterization
   Dynamic features: action scenarios, design collaboratories, evaluation collaboratories

Future work, 2:

3. Taxonomy of interface metaphors for inspiring the creation of visual, audial etc. representations in the user interface of DLs

The ’Onion model’ for empirical analysis of domain task user



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