Community Hypermedia in Collaborative and Self-reflective E-learning Applications

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Agenda

• Research setting & research question

• Media-centric IS for cultural science communities
  - Community characteristics
  - Learning processes

• Community hypermedia for TEL in the cultural sciences
  - Self-reflective research methodology
  - Self-reflective software architecture (ATLAS)
  - Lightweight application server (LAS)
  - Proof of concept applications
    ▪ MECCA & MEDINA (TEL in communities of the film studies)
    ▪ VEL 2.0 (Entrepreneurial knowledge sharing)

• Conclusions & Outlook
Communities of Practice (CoPs) in the Cultural Sciences

• CoPs in the Cultural Sciences are characterized by:
  - Collaboration within the scope of a project
  - Legitimate peripheral participation
  - Limited financial resources to hire experts (in computer science)

• How to support/develop IS for Cultural Science Communities?
  - Collaborative, evolving & semi-formal classifications
  - Fostering discourses about media
  - Sharing knowledge via a repository

⇒ Requirements for IS:
  - Community specific development process
  - Collaboration features
  - Retrieval & exploration tools

But: Simply setting up a process repository is not sufficient!

⇒ Media-centric community IS

CAiSE 2003: [Klamma et al.]
SIGGROUP Bulletin 2003: [Klamma and Spaniol]
How to support E-Learning in Cultural Science Communities?

- Metadata management
  - Context sensitive content description
  - Loose classification criteria
- Coverage within standards
  - Dublin Core, MPEG-7 & IEEE LOM
  - (Semi-) automatic conversion of media descriptions
- Repository technologies
  - Scalable & media-centric archives
  - Ontology mediation

Transcription
- PAKM 2002: [Spaniol et al.]
- ICWL 2003: [Spaniol et al.]

Addressing
- SOFSEM 2002: [Spaniol et al.]
- WWW 2003: [Klamma et al.]

Localization
- PAKM 2004: [Spaniol and Klamma]
- ICITA 2005: [Klamma et al.]
Self-Reflective Research Methodology

Support of evolving Community/ies (may involve frequently reassessing community needs)

Self-monitoring tools for Communities

Socio-technical Information System Development

Architecture for Transcription, Localization, and Addressing Systems

Measuring, Analysis, Simulation

Multimedia Community Information Systems

Community Software

Access community needs

EC-TEL 2006: [Spaniol]
J.UKM 2006: [Klamma et al.]
Lightweight Application Server (LAS)

- Basic Elements
  - Connectors
  - Components
  - Services

- Service Methods Call
  - SOAP Connector
  - HTTP Connector

- MPEG-7/21 Multimedia Services

- Extension & Reload at Runtime
MECCA: Multimedia screening and categorization in the film studies

- Media exploration & learning via:
  - Learner driven media screenings („Semantic zapping“)
  - Connected organisational media memory („Hypermedia graphs“)
  - Annotation of multimedia artifacts („Media collections“)

Informing Science 2005: [Klamma et al.]
ICWL 2005: [Spaniol et al.]
MEDINA: Knowledge creation by collaboratively annotated multimedia

- (Semi-) automatic DC import
- Export to DC
- Assignment of media to (sub-) communities
- Temporal decomposition
- Media management via affiliated FTP server

I-Know 2005: [Spaniol and Klamma]
VEL 2.0: Entrepreneurial knowledge sharing by non-linear story-telling

- Creation of non-linear multimedia stories
- Definition of story paths compliant to Movement Oriented Design
- Linkage of story elements with multimedia contents

Declarative Knowledge
Episodic Knowledge
Semantic Knowledge

Storyboard
Plot
Annotations

I-Know 2006: [Klamma et al.]
ICWL 2006: [Spaniol et al.]
Conclusions

• **ATLAS methodology and architecture:**
  - integrates communities in the design process of information systems
  - ensures the flexibility of evolving and adaptable community engines
  - increases multimedia interoperability by metadata standards

• Three further case-studies on the basis of **ATLAS** conducted
  - **ACIS**: Afghan Community Information System for Cultural Heritage Management
    - ICAL 2005: [Klamma et al.]
    - Geographic Hypermedia 2006: [Klamma et al.]
  - **SOCRATES**: Automated analysis and transcription of discourses in aphasics communities
    - ICCHP 2004: [Spaniol et al.]
    - ICWL 2004: [Spaniol et al.]
    - Distance Education Technologies 1/2006: [Spaniol et al.]
  - **PROLEARNmeasure**: Cross-media analysis for professional learning communities
    - I-Know 2006: [Klamma et al.]
    - EC-TEL 2006: [Klamma et al.]
    - “Die Listen der Evidenz” 2006: [Spaniol et al.]

⇒ **ATLAS** methodology and architecture is capable to serve as a comprehensive framework for collaborative media-centric information systems in cultural science communities
Outlook

• Transfer of results in other areas of application:
  - **CUELC** (Cairo University E-Learning Center)
  - **Multimedia Metadata Community** (Certified MPEG-7 test sets)

• Mobile community hosting:
  - GPS-awareness
  - Mobile end devices
  - E-tourism

• Conceptual enhancements:
  - Graphical editors for community interface design
  - Analysis of “Agency & Patienthood” phenomena in communities
  - Web-based interface to trigger (large) simulation runs of digital media usage in cultural sciences communities

⇒ Local simulation of global digital social network activities