Capturing of Information about Knowledge Documents and Learning Resource Usage

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Outline

- Lifecycle of Learning Resources and Knowledge Documents
- Lifecycle Information about Learning Resources and Knowledge Documents
- LIS. KOM scheme and framework
- Own Capturing approach - ReCap.KOM Examples
  - ReCap.KOM AddIns for ppt and doc
  - Docendo
- Usage of information
Learning Resources

Definition

A Learning Resource is a digital resource used for E-Learning.

Important occurrence

- Web based Training
- SCORM Content Packages
Lifecycle Models for Learning Resources

A. Strijker [Str04]
Lifecycle Models for Learning Resources

Our own model [RBH+05]
Lifecycle Models for Learning Resources

K. Cardinaels [Car07]
Knowledge Documents

Definition

A Knowledge Document is a digital resource containing knowledge.

Examples

- Learning Resources
  - WBTs
  - Multimedia LRs
  - Teaching Material

- “Local” / “File-based” Knowledge Documents
  - Letters
  - E-Mails
  - Personal / Group Presentations
  - Papers e.g. Protocols
  - personal / Group Reports

- Web Documents
  - WiKis
  - Chats
  - Blogs
  - Forum Discussion Board

Counterexamples

- Invoice, delivery note
- Phone book
- Time table
Lifecycle Model for Knowledge Documents

Our own model

Creation / Authoring / Revision

Labeling

Provision / Access

Usage
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Possible Approaches to get information

- User interaction
  - System gets information from the user
    → Work for the user
    → Users are usually lazy
    → Users' decisions can not be trusted generally

- Post processing
  - Like data mining, content analysis, …
    → Complicated
    → Quite high effort (implementation and computation)
    → Information can not be trusted 100%

- Our approach: information capturing
  - Capture information when it occurs
    → Low computation effort
    → No work for the user
    → Information can be trusted (which have to be validated)
Lifecycle Information about Learning Resources and Knowledge Documents

Object oriented Metadata
- For Learning Resources
  - Learning Object Metadata
- For Knowledge Documents
  - Office File Information
  - ...

Process oriented Metadata
- See next slides
Usage Information – CAM Framework

Contextualised Attention Metadata (CAM) Framework [WN+07]
Usage Information – CAM Scheme
Relation Information – ALOCOM Framework

Schematic view

Source: [VJGD05]

Complete view

Source: [VOD08]
Abstract Learning Object COntent Model (ALOCOM) [VOD08]

Source:[VOD08]

Source:[VD08]
## Comparison

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<th>ALOCOM</th>
<th>CAM</th>
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LIS.KOM Framework

LIS.KOM Utilization Application
- Repositories & PIM Tools
- Authoring- & Office-Tools
- Learning Management Systems
- Authoring & Office Tools
- Repositories & Marketplaces

LIS.KOM Client
- Validation
- Local Cache
- Lifecycle-information
- Filesystem Monitor
- SyncApp

LIS.KOM Server
- Weighting & Consolidation
- Central DB
- Lifecycle-information
- Validation & Enrichment
- Web Service
- Web Service Client
- Document Repository
- LIS.KOM API
- Utilization-Plug-Ins
- Capture-Plug-Ins

KOM – Multimedia Communications Lab
Knowledge Document Lifecycle Information Scheme (LIS)

Own approach

Maps to CAMS
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1st Application Scenario: PowerPoint

- PowerPoint presentations have high potential of being re-used
- Re-Use information is not captured anywhere
- … but would be helpful for retrieval and authoring:
  - How do documents (presentations) connect / relate?
  - Which slides are most popular for re-use?
  - Who is re-using / updating my presentation?
  - Where is the presentation I re-used slides from?
  - …

→ Try to capture re-use information in PowerPoint
  - Copy & Paste of slides, images etc.
  - Re-use of whole presentations
  - Editing and saving existing presentations
  - …
Information Captured in PowerPoint

- Relations resulting from PowerPoint internal re-use of slides, shapes or text (`deliversElementTo / containsElementOf`)

- Relations resulting from external re-use of content from other documents (e.g. Word documents) or websites (`deliversElementTo / containsElementOf`)

- Relations resulting from re-use of media objects (like e.g. pictures), including "secondary relations" between two presentations (re-)using the same object (`isPartOf / contains`)

- Variant or identity relations connecting different presentation instances, e.g. when a presentation is saved under a different name or copied in the filesystem (`isVariantOf / hasVariant`)
Relation Information

Case 1: A is Part of O

Case 2: O Delivers Element to A, O Contains Element of B

Case 3: A Has Variant A', O Is Variant of A

Case 4: O Links to A, A is linked from O

KOM – Multimedia Communications Lab
Plug-In Architecture

PowerPoint Capturing-Plug-In

Event-Bus
- Clipboard-Events
- Keyboard- & Mouse-Events
- PowerPoint-Events
- Operating System-Events

Copy-Handler
1. PowerPoint-Handler
2. HTML-Handler
3. Filesystem-Handler
4. Window-Heuristics

Paste-Handler

Stack-Handler
- Insert-Stack
- Delete-Stack

Basic-Handler

Session-Cache

API-Client

LIS.KOM API

LIS.KOM Client
2nd Application scenario: Open Learning Content Authoring & Management System

docendo

Local PC
- Production of media assets

Learning Management System
- Course upload
- Course management

Author & Tutor

Repository
- Metadata editing
- Upload / Download of resources
- Retrieval using Metadata
- Full Text Search

Authoring
- Course structuring
- Section editing
- Test-Item editing
- References & glossary editing
- Generation of SCORM-Content Packages
- Generation of courses in HTML
Docendo: Capturing of relations
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Usage of information – Explorer View
Usage of information – Explorer View Details
Usage of information – Slide Information
Summary

LIS.KOM Approach

- Framework for system spanning capturing and usage
- Storing and capturing of relation information (& usage information)
- Capturing during Emergence
- Document centric
Thanks to

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References


Own Publications


Farbschema + Halbtransparenz der Farben

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