LoExtractor - Rapid Authoring Tool to Support Workflow-Embedded Authoring

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Outline

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- Workflow embedded authoring
- Requirements to the authoring process
- SLEAM authoring process
- LoExtractor authoring tool
- Identified problems
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Workflow-Embedded Adaptive e-Learning

Problem setting

- Introduce process embedded e-learning in a small company or a team:
  - No learning content available
  - No budget available for creating content
  - No employees who can devote their time fully to content creation
  - Employees and managers have prejudices about e-learning of any kind
  - BUT:
    - Employees still spend their time to find necessary information in internet or DMS
    - Search results remain on local computers, bookmark lists and are not shared
**Workflow-Embedded Authoring**

**Requirements to the authoring process**

- Shall be embedded into the working process
- Shall reuse existing learning content rather than create new one
  - From wikis and blogs
  - From company DMS
  - From internet or intranet
- Results of the authoring process
  - Trade off “Quality/Time spent” should be considered
  - Shall be fine-granular reusable LOs rather than courses
    - Not the whole documents but their parts shall be extracted as LOs
  - Shall be annotated with minimal set of metadata (author, type and keywords) to support adaptive learning
  - Shall be mapped to the learning concept ontology (or concept map) to get computer-understandable semantics
SLEAM (Search-Learn-Extract-Annotate-Map) process

Workflow

1. Identify knowledge gap
2. Search (info)
3. Learn (info)
4. Perform Task
5. Yes
6. Extract (LO)
7. Annotate (LO)
8. Map (LO)
9. No
10. Extract (LO)
11. Annotate (LO)
12. Map (LO)

LoExtractor authoring tool

- Purpose: support SLEAM authoring process
  - Search (only partially, e.g. in wikipedia)
  - Learn (not supported by LoExtractor)
  - Extract (browse and manipulate document tree)
    - Parts of document can be concatenated
    - Parts of document can be extracted as LOs
  - Annotate (extract and edit the metadata)
    - Publisher
    - Title
    - Type (e.g. definition, example, illustration)
    - Keywords (TF/IDF algorithm)
    - Level (any, difficult, medium, easy)
    - Presentation (embedded, illustrated)
  - Map (generate concept mapping proposals)
    - Concept map is prepared by LeCoOnt tool
    - Ranked automatic concept proposals (based on DocuTag system developed at DFKI)
LoExtractor: snapshot

LoExtractor: eclipse RCP-based architecture
Identified problems

- Copyright problems
  - Protected documents must not be changed

- Low motivation of employees
  - Better integration into process of work is needed, e.g.:
    - Integration of LoExtractor as browser plugin
    - Starting it from the web-GUI of the corresponding Workflow- or Task-management system.

- Automatic metadata extraction
  - Type (definition? example?)
  - Level (difficult? middle?)
  - Possible heuristics:
    - Wikipedia article – easy
    - Scientific paper - difficult

Next steps

- Implement parser plugin for PDF-documents
- Use hyperlinks and links between document parts
- Integrate the tool into process of work, e.g. start from browser using Java Web Start
- Advanced metadata extraction
- Identify sources of Wikimedia content
  - Wiki-books, PM-pedia …
- Evaluate SLEAM approach and LoExtractor tool
Evaluation plan

Individual test usage: creating set of learning objects covering the Project Management Body of Knowledge (PMBOK) standard (autumn 2007).
- Feasibility of approach in individual usage has to be checked
- Elicitation of new requirements for the LOExtractor tool

Collaborative test usage: deploying LoExtractor at DFKI GmbH in knowledge management department (Spring 2008)
- Feasibility of approach in collaborative usage has to be checked
- Elicitation of new requirements for the LOExtractor tool
- Elicitation of new opportunities of integration into working process
- Will be conducted in parallel with workflow-embedded learning case study

Real case study at project partner’s side (Summer 2008)
- Will be conducted in parallel with workflow-embedded learning case study

Conclusion

SLEAM (Search Learn Extract Annotate Map) authoring process is created to support process-embedded LO authoring and content repurposing in small enterprises or teams with limited budgets

LoExtractor tool created to support the SLEAM process
- LoExtractor helps employees to extract relevant parts of existing documents, convert them to reusable LOs and map to the ontology
- LoExtractor has extensible architecture and can integrate new data sources as well as generate LOs in different formats
Thank you for attention!

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See you also at the poster session!