Modelling in APOSDLE

Methodology and Tools

aposdle– New ways ...
... to work, learn and collaborate

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Knowledge in APOSDLE

The APOSDLE approach to work-integrated learning is based on:

- a general purpose learning platform +
- a knowledge base.

The knowledge base formalises the environment in which users operate:

- their learning (business) domain;
- the tasks (activities) they should perform;
- their learning goals;

The APOSDLE Knowledge Base

User profile

Task model requires Learning goal model

Learning goal model is about Domain model

Domain model of type Learning goal types

Learning goal types

Material uses

Instructional types

Snippets
The problem of modelling

- The core part of the KB is domain dependent but models are often not available in the enterprise;

- Conflicting requirements:
  - Quality of models vs cost of modeling

- Complex modeling team:
  - Several domain experts (domain/task/learning goals/...);
  - Knowledge engineers;
  - Different knowledge engineering skills;

- GOAL: Devise a “methodology” and tools to support:
  - Cost effective development of good integrated models;
  - Effective collaboration between different actors;
  - Right granularity for APOSDLE;
Our approach

A methodology to guide the applications partners in the construction of a good integrated model:

1. domain and task modelling;
2. learning goal modelling.

A new tool to support modelling based on two pillars:

1. Semantic MediaWiki
   → Collaborative (enterprise) modelling
2. Tight integration between informal and formal modelling
   → Informal/formal alignment of knowledge
Collaborative modelling

- Explicitation of new knowledge and feedback on existing formal models
- Facilitation and coordination of the process of knowledge elicitation
- Formalisation of acquired knowledge

INFORMAL

FORMAL
Alignment of informal/formal knowledge

- Informal specification
- Formal models
- Formalization of acquired knowledge
- Explicitation of new knowledge and feedback on existing formal models
The APOSDLE methodology

**Steps**

1. **Scope & Boundaries and Resources Collection**

2. **Knowledge elicitation**
   a) Domain Experts
   b) Digital Resources

3. **Creation of**
   
   **Requires knowledge of**
   
   domain model \(\xleftarrow{\text{Automatic Alignment}}\) task model

4. **Domain and Task Model Validation**

5. **Modelling of learning goals**

6. **Validation of learning goal model**

**Tools**

- Written guidelines
- Knowledge elicitation techniques
  - KnowMiner
- **Modelling WiKi tool**
- Manual Guidelines
  - Automatic Checks
- **TACT tool**
- Automatic checks
MoKi: the Modelling wiki

- Built to support our approach:
  - Collaborative modelling;
  - Informal/formal alignment of Knowledge.

- Built on top of Semantic MediaWiki;

- Why a (semantic) wiki?
  - Wikis support collaborative editing;
  - Users are quite familiar with wikis;
  - Wikis do not require any software installation on the client side;
  - Semantic information provided in the wiki can be automatically extracted to create the formal models.
Ideas behind MoKi

- Facilitate an informal but structured description via templates;
- Hides the complexity of formal modelling to domain experts;
- Allow import/export of formal models;
- Insert/reuse of already existing techniques for modelling (e.g., Know miner).

- DEMO.
TACT: the Task-Competence mapping Tool

- Model learning goals as a bridge between tasks and topics (domain concepts);
- Refines the “Knowledge required” relation between tasks and topics contained in MoKi with learning goal types;
- Friendly user interface which hides how the learning goals are actually stored in the learning goal ontology.

- Plans to insert TACT in MoKi to have a single interface/tool.
TACT: Task-Competence mapping Tool

Check that each individual SD model is complete and correct with stakeholder goals soft-goals tasks and resources
Currently devising models for Third prototype:

- Information and Consulting on Industrial Property Rights
- Information Technology Infrastructure Library (IT management topics)
- Electromagnetism simulation domain
- Innovation Management
- RESCUE (requirement engineering methodology)
- Statistical data analysis domain:
Extend MoKi to:

- Model ontology main elements;
- Model workflow and process aspects (eg with graphical tools);
- Better integrate informal/formal modelling;
- Include validation steps;
- Include TACT.