Semantic Technologies for the Project Management Life Cycle Improvement

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Outline

- Background
- Scenarios
- Ontological Engineering Approach
- Ontology & Terminology
- Prototype
- Evaluation
Project SemProM

- Semantic based Project Management
- 3 year funded fellowship – FFG (FIT IT)

Research Question:
Do semantic technologies improve project management processes?

- Project management system enhanced with semantic technologies
  ➔ Project management knowledge base
Problem Relevance

- Project management still contains lots of shortcomings

- Current shortcomings:
  - companies do not reuse existing knowledge of finished projects
  - they do not archive information in a central and well-structured storage
  - cockpit of up-to-date information is missing

→ PM systems mainly support the ongoing phase of the PM life cycle and do not consider the initiating and closing phase
Project Management Life Cycle

- Initiating
- Closing
- Monitoring & Controlling
- Planning
- Executing
Benefits

- Knowledge of projects is easier detectable and can be retrieved for further projects
- The system is able to react on unforeseen circumstances
- The interchange of relevant information gets simplified
- PM systems should be easily extensible
How to implement?

- Project management ontology
- Semantic annotations
- Semantic search
- Stored information is semantically linked and archived in a central storage

→ Semantic knowledge base to query project relevant information improving the project management life cycle
Working Steps

Interviews → PM Evaluation → Scenarios

Evaluation ← Prototype ← Ontology
2 SCENARIOS
Scenario 1—Bob needs Holidays
Scenario 2 - A new Project

- **Project Manager** inserts new project, tasks and dependent information into the system.
- The system checks for similarities of lessons learned and similar tasks.
- The system monitors the process for advice output.
Scenario 3 - Team Suggestions, etc.

- Project Manager interacts with the system.
  - Inserts information.
  - Receives advice on tasks, competences, and further information.
  - Outputs advice on employees, competences, availability, and team allocation.
  - Monitors the system's checks.

System tracks and manages tasks, competences, and allocation information.
3

ONTOLOGICAL ENGINEERING APPROACH
Ontological Engineering Approach

- Mixture of Uschold and King & Grüninger and Fox

1. Identify Purpose
2. Motivating Scenario
3. Informal Competency Questions
4. Ontology & Terminology
5. Formal Competency Questions & Evaluation
6. Documentation
Ontology – main concepts
5

PROTOTYPE
Prototype – Key Facts

- Open source project management system **dotproject**
- Ontology
  - RDF
- Semantic Search
  - Ontological Reasoning
  - SPARQL
Rough Architecture

- Interface modules
- dotproject – PM ontology
- dotproject
- Apache
- SemProM Server
- Database
- PM Ontology
- Project Documents
6

EVALUATION
Evaluation

- Prototype testing
- Define guided test procedure & questionnaire
- 4 test persons (project manager)

→ Evaluation of the research question
  → Ontology
  → Prototype
CONCLUSION
Conclusion

- Purpose of this project:
  - semantic based project management knowledge base
  - improve the project management life cycle, especially the initiating and closing phase

- On the way:
  - Ontology engineering approach
    - lots of different engineering approaches
    - define the right approach for the present requirements
  - Ontology
    - modular
    - arbitrary extendable
  - Evaluation
    - covers ontology as well as prototype
THANKS FOR YOUR ATTENTION