Management of knowledge intensive Processes with KMDL® v2.0

MKWI'06

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Content

- Process oriented knowledge management
- Concept of KMDL® v2.0
- KMDL® procedure model
  - Identification of knowledge intensive business processes
  - Capturing knowledge intensive business processes
  - Modeling based on KMDL® v2.0
  - Process analysis and -evaluation
- The KMDL® modeling and analysis tool K-Modeler

Experiences from KM-projects

- Classical business process perspective
  - Focus on activities in process
  - Just focusing on process steps does not reflect the real existing process
  - No transparency about existing knowledge assets (especially tacit knowledge of employees) within the organization

- Classical knowledge management approaches
  - No connection between concepts and approaches in knowledge management and the daily operations
  - Often isolated examination of business process and knowledge asset of the organization
  - Missing attention at existing knowledge transfer between people

- Overemphasis on information

cf. Gronau, Müller, Korf (2005)
Change of perspective in knowledge management

- Orientation on business processes
  - Business processes are the knowledge platform of the organization
  - Analysis of the existing environment -> context of
    - Knowledge application
    - Knowledge management activities
  - Identification of knowledge needs in the value-added chain
    - Orientation on knowledge demands
    - Direct intervention by introducing knowledge management activities in the process

KMDL® Concept

KMDL® Concept

Aims of the development of KMDL®

- Design and configuration of knowledge intensive processes by using the modeling metaphor
- Overcome the deficiencies of conventional business process management methods and tools
- Especially modeling of
  - Tacit knowledge
  - Knowledge conversions
  - Information flows
- Identification of weaknesses in knowledge intensive processes (i.e. knowledge monopoly, unsatisfied knowledge demands)

Explicit vs. Tacit Knowledge

- Differentiation of tacit and explicit knowledge
  - Characterization of explicit knowledge:
    - Can easily be articulated in formal and systematic language
    - Can easily be transferred and exchanged
  - Characterization of tacit knowledge:
    - Personal knowledge, context sensitive and hard to be articulated
    - Based on individual experiences, intuition, perception and cognition
Knowledge Conversions

Socialization:
- Transfer of tacit knowledge from one individual to another one
- Sharing experiences
- Example: training-on-the-job

Externalization:
- Tacit knowledge is made explicit
- Use of metaphors, analogies or models
- Example: writing a report, sketching a draft

Combination:
- Use of existing explicit knowledge to create new explicit knowledge
- Example: joining source code from different programmers

Internalization:
- Conversion of explicit knowledge into tacit knowledge
- Example: read and reflect

Nonaka, Takeuchi (1995)

KMDL® procedure model

Participation

Project Acquisition

Identification of Knowledge Intensive Processes

Process Analysis and Evaluation

Development of Qualified Concept

Implementation of Qualified Concept

Evaluation of the Implemented Actions

Evaluation of the implemented Actions

Knowledge Intensive Process

Knowledge intensity

Product innovation

Innovation

Knowledge management

Knowledge management

Process complexity

Planning

Information management

Complaints management

Leasing

System development

Law

High scope for decision-making

Autonomy

Various participants

Incompletely defined tasks

Knowledge intensity

Product innovation

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Capturing knowledge intensive business processes with KMDL®

1. Capturing of the knowledge intensive business process
   - Within a non-standardized interview
   - Aim: verbal process description

2. Post-acquisition and modeling
   - With aid of K-Modeler
   - Aim: graphical process model in KMDL® with involved people and their knowledge

3. Evaluation and release of the process
   - By project partner
   - Aim: clarification of outstanding questions and acceptance of the process description

Object types of KMDL® v2.0

- socialization (green)
- externalization (blue)
- internalization (red)
- combination (grey)

Types of conversions

- Atomic conversions:
  - Atomic conversions describe the smallest possible conversion
  - One starting and one arrival object

- Complex conversions:
  - Complex conversions consist of atomic conversions
  - Several starting and one arrival object or one starting and several arrival objects

- Abstract conversions:
  - Abstract conversions possess several starting and several arrival objects

Example of a KMDL® v2.0 process
1. Identification of weaknesses within the captured process
   - Using process patterns, reports and views
   - Validation of weaknesses with project partner
   - Aim: list of unordered weak points in the process

2. Derivation of process improvements individually
   - Aim: find possible improvement for the process

3. Classification and evaluation of the process improvement proposals
   - Classification by information flow, organizational, technical, communication oriented and knowledge aspects
   - Aim: ranking of the process improvement proposals

4. Evaluation of the improvement proposals
   - By the process partner
   - Aim: definition of requirements for the TO-BE concept

Multi-Step Socialization

- **Aim**: identification of knowledge deformation
- **Description**: knowledge is transferred repeatedly between different persons
- **Problem**: can lead to the "chinese-whisper" effect where knowledge gets lost or gets deformed

Process patterns

- Origin of pattern concept in architecture [Alexander, 1977]
- Applied to software engineering [Gamma et al., 1995]
- A process pattern describes a certain situation that occurs frequently within knowledge intensive processes
  - A certain object constellation in KMDL®
- Each pattern is an indicator for a possible weakness in the process

Analysis views

- Display a subset of KMDL®-Objects
  - show different aspects of the model
- **View on the model from a certain perspective**
- **Properties**
  - can be used for analysis
  - can be used for modeling
  - are dynamic
Reports

- Display facts about the process captured at a certain moment
- Summarize process relevant issues

Properties
- can be used for analysis
- cannot be used for modeling
- are static

Example: Externalization Report
- Displays all Information objects externalized in the process

The KMDL® modeling and analysis tool
K-Modeler

References

- Bahrs, J.; Gronau, N.: Modellierung, Analyse und Gestaltung wissensintensiver Geschäftsprozesse am Beispiel eines Softwareentwicklungsunternehmens. (in German) In HMD Heft 246, 2005, 29–37
- Fröming, J. Korf, R.; Fürstenau, D.: Knowledge Modelling and Description Language KMDL® v2.0 (in German)
Application areas of KMDL®

**Modelling**
- Instance-modelling
- Schema-modelling
- AS-IS-/To-Be-models

**Model use**
- Reevaluation of existing process models
  - i.e. import (i.e. ARIS)
- Process analysis
  - Anti-Pattern
  - Views and Reports
- Knowledge Mapping
  - Topic maps
  - Taxonomies
  - Ontologies
- Simulation
  - What is the velocity of propagation of knowledge?
  - How can this be improved?

**System conception**
- Process improvement
  - Reference process
  - Best Practices
  - Operation of complex ERP-systems
- Skill Management
  - Skill-profile
  - Search for experts
  - Human resource planning
- Alignment of IT-Infrastructure
  - Configuration of knowledge management systems

Process oriented knowledge management approaches

**ARIS-KPR**
- Introducing knowledge into ARIS
  - Bach, Vogler, Österle 2002

**PROMOTE**
- Distinction between process and functional knowledge
  - Hinkelmann/Karagiannis/Telesko 2002

**GPO-WM®**
- Verification of knowledge core process