Business Process Oriented Identification and Visualization of Knowledge Work with B-KIDE

Early RE Seminar

University of Toronto

Markus Strohmaier, April 11 2006
mstrohm@cs.toronto.edu
Presentation Overview

Introduction & Motivation

Basic Approach

The B-KIDE Framework & Tool

Applications

Relevance
Knowledge Infrastructures are an Enabler for Knowledge Management [Siv01].

3 Main Dimensions:

- **People**
- **Technological Systems**
  - Intranets, KM-Systems, Portals, CSCW, ...
  - Business Processes, Roles, Projects, Institutions, ...
- **Organizational Systems**
  - Culture, CoP, Learning, Mentoring, Experience Mgt., ...

*B-KIDE focuses on ...*
Business Processes and Implications for Organizations

Example: A Logistics Center

Business Processes pose Implications for the Architecture of Knowledge Infrastructures.
Business Process Oriented Knowledge Management
An Overview

Knowledge oriented…

Aris [Sch96, Sch00],
K-Modeler [GPSW03],
Papavassiliou et al.
[PMA02, PNAM02], ...

AD-HOC [Far03], Advisor [SP01], MODEL [PPS02], ...

Business Process Modeling

Business Process Analysis

Business Process Learning

Business Process Support

Business Process Improvement

Milos [MH99, MT02],
Promote [KT00],
AHMM02, TK02,
WK02, Woi03, WK03,
Workbrain [WWT98],
EULE [RMS00], ...

BKM [BsV00, Har02], KNRM [RES+00], GPO-WM [Hei01, MHV03], [HHDG02], [Jan00], [MHA03], ...

KODA [AHMM02, DHB01], indiGO
[VA+02, DRA+03], ...

Knowledge oriented…
Introduce a set of instruments that allows for the development of business process supportive, technological knowledge infrastructures for knowledge intensive organizations.

In detail,

- Improve environments of knowledge workers
- Enable role-oriented access to knowledge
- Enable autonomous routing of knowledge
- Standardize the execution of knowledge work
- Increase transparency of knowledge
(Organizational) Knowledge = Information that is relevant for undertaking (business) actions
Presentation Overview

- Introduction & Motivation
- Basic Approach
- The B-KIDE Framework & Tool
- Applications
- Relevance
A Simplified Example – Work & Knowledge Flows

Acquisition Process

Dev. Process

Marketing Process

Problem: How can such knowledge flows be identified, visualized (and supported)?

Knowledge about customers

relevant knowledge flows
Basic Approach

Knowledge Process Perspective

Business Process Perspective

Data Transformation

Knowledge Processes

Generation | Storage | Transfer | Application

Business Process 1

Business Process 2

Business Process 3

Knowledge Domains A B C

Organizational Roles X Y Z

Knowledge Process Perspective

e.g. Portals

Waste of Resources?
So What are Knowledge Processes?

Simple Definition: The flow of information that is relevant for action
Precise Definition: Knowledge processes describe distributed, organizational knowledge work. Thereby, knowledge processes typically include descriptions of: knowledge flows, specific knowledge activities, involved persons or roles and associated business processes regarding a certain knowledge domain [Str03b].

<table>
<thead>
<tr>
<th>Knowledge Process - Knowledge About Design Decisions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowl.- Domain</td>
</tr>
<tr>
<td>----------------</td>
</tr>
<tr>
<td>Knowledge about Design Decisions</td>
</tr>
</tbody>
</table>

Design decisions that led to specific SRD & ADD are of interest for the employees that need to implement the requirements. (suggestion by the interview partners: meeting minutes, e-mail archives, TVYS)
The Principle Approach
Presentation Overview

- Introduction & Motivation
- Basic Approach
- The B-KIDE Framework & Tool
- Applications
- Relevance
The B-KIDE Framework and The B-KIDE Tool

**B-KIDE**: Business process oriented Knowledge Infrastructure Development
B-KIDE Model Architecture
The Modelling Structure in UML

PM stores knowledge about costumers in the CRM system within the business process project initiation.
The B-KIDE Tool
B-KIDE Tool
Principle & Functionality

B-KIDE Tool Principle Approach

B-KIDE Tool Internal Structure

KI Designer
What information do you need in order to be able to execute this business process?
Presentation Overview

- Introduction & Motivation
- Basic Approach
- The B-KIDE Framework & Tool
- Applications
- Relevance
## 3 Industry Applications

<table>
<thead>
<tr>
<th>Case Study 1</th>
<th>Pilot Study 1</th>
<th>Pilot Study 2</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Project Context</strong></td>
<td>Software Industry</td>
<td>Automotive Industry</td>
</tr>
<tr>
<td><strong>Project Goals</strong></td>
<td>Knowledge Portals</td>
<td>EDM System Improvement</td>
</tr>
<tr>
<td><strong>Study Style</strong></td>
<td>Explorative</td>
<td>Justificative</td>
</tr>
<tr>
<td><strong>Hypothesis Tested</strong></td>
<td>Tentative B-KIDE Framework</td>
<td>B-KIDE Framework &amp; B-KIDE Tool</td>
</tr>
<tr>
<td><strong>Framework Application</strong></td>
<td>Design</td>
<td>Evaluation</td>
</tr>
<tr>
<td><strong>Results</strong></td>
<td>4 Knowledge Portals</td>
<td>Improvement Potentials</td>
</tr>
<tr>
<td><strong>Evaluation Concerning</strong></td>
<td></td>
<td>B-KIDE Objectives</td>
</tr>
</tbody>
</table>

EDM...Engineering Data Management  
KI...Knowledge Infrastructure
Case Study 1
Framework Application

Business Process Reference Model

Knowledge Domain Reference Model

More than 50 Identified Knowledge Processes

Priorization and Filtering
Case Study 1: Results
A Developed Knowledge Infrastructure

Role Portal HR

Generation, Storage

Transfer

Role Portal VPE

Application

Role Portal TL

Knowledge Processes

other Portals

other Sources
Case Study 1: Results
A Developed Knowledge Infrastructure

Objectives:
- Improve environments
- Enable role-oriented access
- Enable autonomous routing
- Standardize the execution
- Increase transparency
Challenges

- Matching of Reference Elements
- Model Merging
- Scalability / Managing Complexity of Models
- Managing Modeling Productivity
- Model Interpretation
- „Solution Generation“
Presentation Overview

- Introduction & Motivation
- Basic Approach
- The B-KIDE Framework & Tool
- Applications
- Relevance
## KM Maturity Models - The KPQM Model

*Paulzen02, based on CMM, CMMI*

<table>
<thead>
<tr>
<th>Maturity Stage</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 - Initial</td>
<td>The quality of knowledge processes is not planned and changes randomly. This state can be best described as one of chaotic processes.</td>
</tr>
<tr>
<td>2 - Aware</td>
<td>Awareness for knowledge processes has been gained. First structures are implemented to ensure a higher process quality.</td>
</tr>
<tr>
<td>3 - Established</td>
<td>This stage focuses on the systematic structure and definition of knowledge processes. Processes are tailored to react to special requirements.</td>
</tr>
<tr>
<td>4 - Quantitatively Managed</td>
<td>To enhance the systematic process management, measures of performance are used to plan and track processes.</td>
</tr>
<tr>
<td>5 - Optimizing</td>
<td>The focus of this stage is on establishing structures for continuous improvement and self-optimization.</td>
</tr>
</tbody>
</table>
Industrial Relevance
B-KIDE and KnowFlow

KnowFlow represents a further development of B-KIDE and
A Strategic Professional Service of the Know-Center

Vision: KnowFlow represents a Solution
for the Identification and Visualization of
Knowledge Flows in Organizations
based on Employee Interviews and
Graph-based Analysis Reports

Ongoing development driven by the Know-Center and a spin-off company
Discussion

Dr. Markus Strohmaier

40 St. George St., Toronto, Canada
e-mail: mstrohm@cs.toronto.edu