Applying Topic Maps to Ad Hoc Workflows for Semantic Associative Navigation in Process Networks

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Agenda

- Context at the GCC and motivation for the project
- Introduction to GroupProcess
- Introduction to Topic Maps
- Ex post analysis of ad hoc workflows
- Summary and outlook
Context at the GCC (1/2)

- Paperless Office / Virtual Communities
- Office Management
- Computer based teaching and learning
- Project Management
- Workflow Environments
- Content Management of the chair’s Website

„We live Groupware“
Context: Chronology of projects at GCC (2/2)

Research projects

1990
- GroupOffice

1992
- WAGS
- GroupProject
- GroupFlow

1994
- PAVONE
- Espresso
- Prozessware

1996
- GroupOrga
- GroupProcess
- Enterprise Office

1998
- Lotus Domino
- WorkFlow

Commercial products

1990
- GroupOffice

1992
- PAWONE

1994
- Lotus Domino

1996
- WorkFlow

1998
- ONEStone
- Prozessware
Motivation for Ad Hoc Workflow Management (1/3)
1. Execution of ad hoc processes is done with currently existing different media, often e-mail
   ✤ Ex post analysis of processes is often not possible
   ✤ Knowledge from ad hoc processes, i.e. knowledge of the involved persons can not be used

2. Practical experience from daily work of a groupware-based office environment
   ✤ Office management, administrative processes
   ✤ Learning processes
   ✤ Small projects

3. Workflows are often only used for core processes of organizations
   ✤ Design of workflows is nearly always done by specialists
Motivation (3/3)

- GCC: more than 4,000 ad hoc workflows in the last 5 years
- Combination of the approaches of two research projects:
  - GroupProcess: Groupware based workflow management for ad hoc processes
  - K-Discovery: Identification of distributed knowledge structures in groupware environments
Objectives of the GroupProcess project (1/2)

- Ad hoc workflow management system for Groupware-based office environments
- Transform implicit process knowledge into explicit process knowledge
- Transition from ad hoc workflows into structured/predefined workflows
- Integration of an ad hoc workflow component into a traditional workflow management system
For the use of synergetic effects from a process driven view, the GroupProcess system establishes the missing link between office management, workflow management and knowledge management.
## GroupProcess Continuum

<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>a) Ad hoc WF</td>
<td>b) Open team task within Ad hoc WF</td>
<td>a) Ad hoc sub-workflow within standard WF</td>
</tr>
<tr>
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<td>c) Ad hoc WF with sub-workflow/ or cluster</td>
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<td>c) Ad hoc modification of standard WF</td>
<td></td>
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- E-mail, store-and-forward
- Combination of determined and open tasks within a single ad hoc workflow
- Integration of a sub-workflow within an ad hoc workflow
- Predefined workflow with one part being ad hoc planned and executed
- Combination of predetermined and open tasks within a single workflow
- Completely predetermined workflow with exception

- E-Mail, store-and-forward - or - partially predefined
- Combination of determined and open tasks within a single ad hoc workflow
- Integration of a sub-workflow within an ad hoc workflow
- Predefined workflow with one part being ad hoc planned and executed
- Combination of predetermined and open tasks within a single workflow
- Completely predetermined workflow with exception

- urgent  - short-lived  - exceptional  - confidential
- determined  - recurrent  - easy-to-apply ad hoc modification / re-routing
- urgently  - repeatedly  - well structured  - pre-determined

- e.g. new type of request
- e.g. co-authoring of publication
- e.g. boss wants some job to be done but does not know the details
- e.g. solving software problems
- e.g. co-editing of annual report
- e.g. consumer credit application with particular customer request
- e.g. consumer credit application

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**Tendency of processes to develop over time**

flexible, changeable, unique  
determined, structured, recurrent
### 1. Ad hoc Workflows

<table>
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<th>b) Open Team Task within Ad hoc WF</th>
<th>c) Ad hoc WF with sub-workflow or cluster</th>
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- urgent
- short-lived
- exceptional
- confidential
### 2. Semi-structured Workflows

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<th>b) Open Team Task within standard WF</th>
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- highly recurrent
- pre-determined
- easy-to-apply ad hoc modification / re-routing
3. Standard predefined Workflows

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- highly recurrent
- well structured
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Ad Hoc Workflow Modeler
Conceptual Approaches / Challenges

- Participatory, distributed Design
- Simultaneous execution
  - Build Time = Run Time
- Transition from specific to abstract process modeling
Architecture: Documents and Message Objects

**Frontend Fields** (visible)

Display of the **process model** as an overview with the current state and the option to change the model while the process is running.

**Content** of the workflow case. In most cases in an office environment these fields contain rich text, also fields for structured information are possible.

**Backend Fields** (not visible)

Storage of the process model and other **routing information** within the backend fields of the document.
Introduction in Topic Maps

„GPS of the information universe“:

.splitext(Applying topic maps to information resources generates knowledge structures
.splitext(Structured semantic link network above great sets of information resources
.splitext(Searching in a topic map can be compared to searching in knowledge structures
.splitext( Base technology for knowledge representation and knowledge management
Introduction in Topic Maps (cont‘d)
Technical Realization

- Workflow DB
- XML access Component
- Workflow to TopicMap Transformer
- Konfiguration DB
- GTME
- Relational DB
- XML access Component
Navigation in Workflow Models

Topic – Task

Association – Connection between Tasks

Topic – Task
Prototype
Summary & Outlook

✧ Substantial synergies by combining concepts of ad hoc workflow managements and knowledge management
✧ Continuing work on the prototype
✧ Case studies
Contact

☞ GCC @ Web: http://gcc.upb.de
☞ „Research & Projects“ \ „Projects“

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