DASMOD

Dependable Adaptive Systems and Mathematical Modeling

ADIB – Adaptive Information Supply – The Big Picture

A project in the Rhineland-Palatinate cluster of excellence
"Dependable adaptive systems and mathematical modeling" (DASMOD)

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http://www.dasmod.de/twiki/bin/view/DASMOD/ADIB

Overview

- Motivation
- ADIB's Goal
- Approach
- Details
- First Prototype
- Summary

OVERVIEW

ADIB focuses on supporting knowledge workers in their daily work

MOTIVATION

- Knowledge workers spent a lot of time searching for available knowledge:
  - "More than 25% of the day is involved in searching for information **on the knowledge workers computer system**." [Delphi Group, 2002]
- Relevant available information is not considered during task execution
- Available Know-how is not retained systematically for re-use
  - Worst case: Errors are repeated
- User's personal view and problem context is not considered by knowledge management tools

ADIB – Goals: Information Support for Knowledge Work

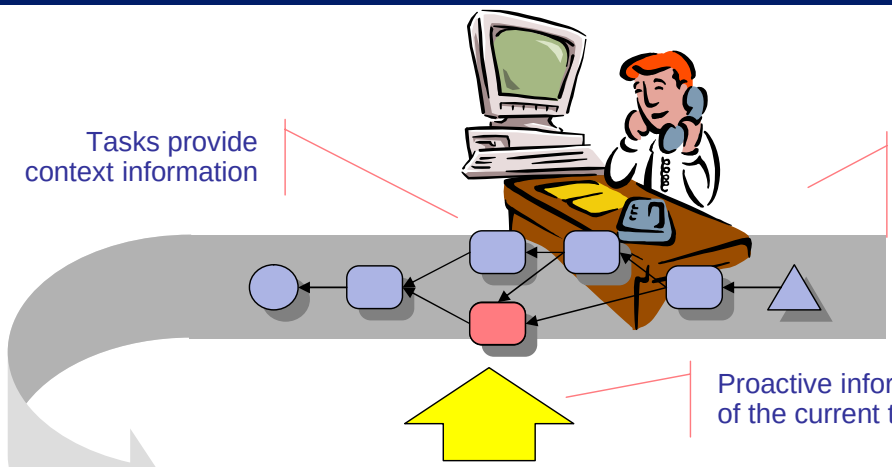
ADIB'S GOAL

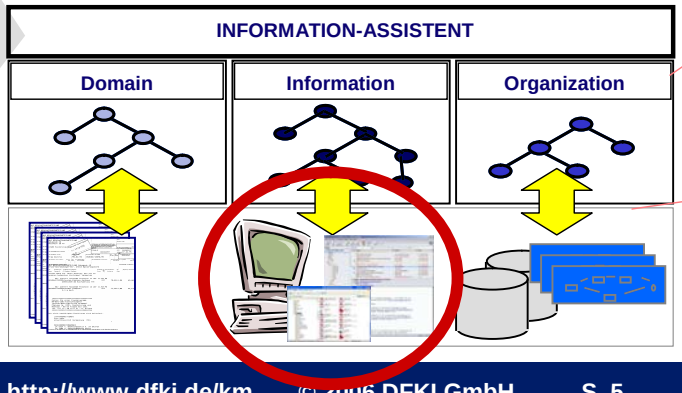
- **Individual**: Focus on supporting the individual knowledge work, thus motivating the system usage
- **Adaptive**: Adapt to the user and problem context
- **Task-oriented**: Consider personal tasks and organizational processes
- **Pro-active**: Support initiated also by the system if relevant information is available

- **Multiple information sources**: Retrieve information from various info sources such as
  - email, local and remote file systems, wikis, organizational structures, …
  - Personal task lists and organizational processes

Workers can be pro-actively supported with relevant information through the inclusion of their task context

APPROACH





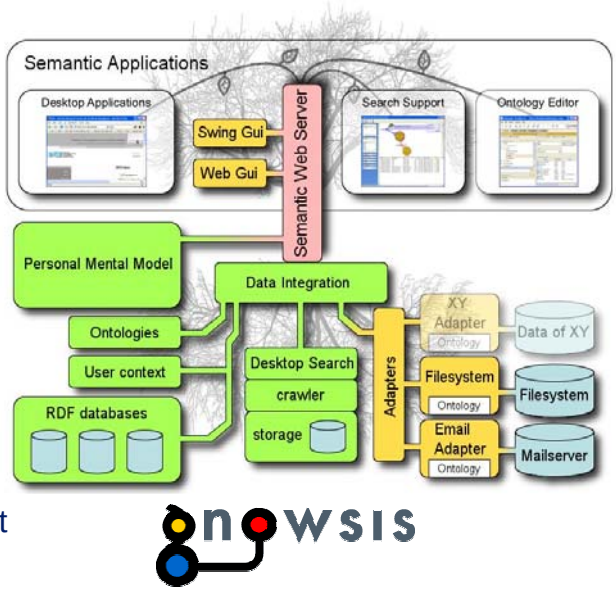
Ontologies as technical basis for the knowledge description

Access to different types of information sources based on formal descriptions where possible

ADIB is based on the gnowsis Semantic Desktop

DETAILS: SEAMNTIC DESKTOP

- Idea: Desktop as part of the Semantic Web
  - Desktop objects are semantically described, e.g, contacts from address book as the formal concept `Person`
  - Uses Semantic Web technology
- Realizes a desktop infrastructure:
  - capturing, storing, accessing, and manipulating personal info objects
- Provides means for various semantic applications, e.g.,
  - *Semantic* Search
  - Personal Information Management
  - User Observation



gnowsis Semantic Desktop

Open Source

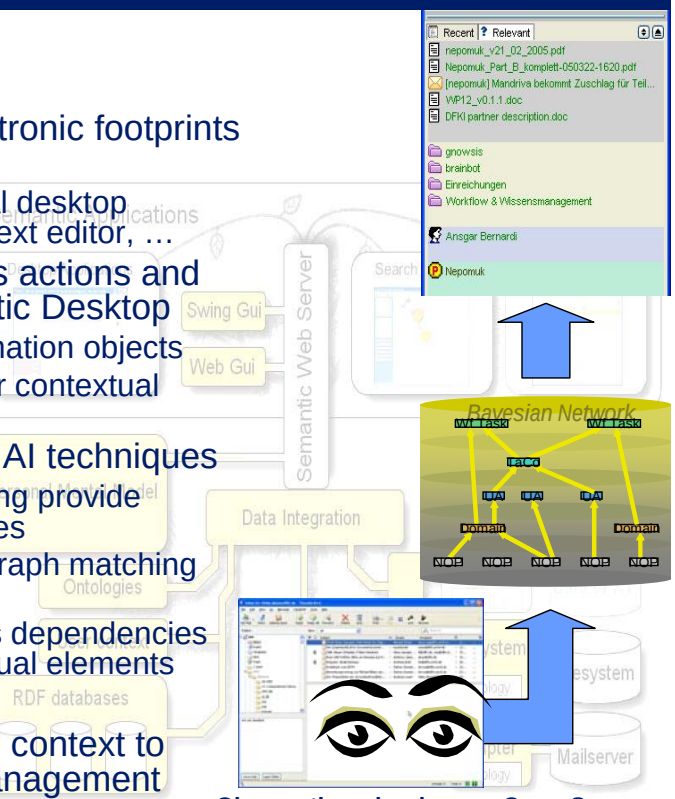
`http://www.gnowsis.org`

- ADIB realizes integration with Personal Task Management & Information Support

User observation delivers current context

DETAILS: USER OBSERVATION

- User observation delivers electronic footprints of user's desktop interactions
  - Realized by plug-ins for typical desktop applications: email, browser, text editor, …
- Context model reflects a user's actions and current interests in the Semantic Desktop
  - User actions & involved information objects
  - Context elicitation adds further contextual elements
- Context elicitation is based on AI techniques
  - Document similarity & clustering provide evidences of relevant structures
  - Case-based Reasoning and graph matching identify potential user tasks
  - A Bayesian Network manages dependencies and probabilities of all contextual elements
- ADIB extends observation and context to workflow systems and task management

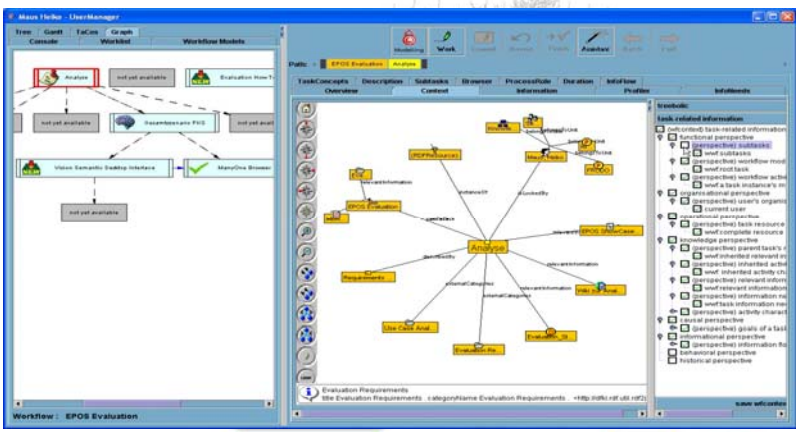


Observation plug-ins are Open Source
`http://www.OpenDFKI.de`

Agile Knowledge Workflows flexibly support knowledge work

DETAILS: AGILE KNOWLEDGE WORKFLOW

- Based on innovative design principles
  - hierarchical decomposition of tasks
  - modeling and enactment interleaved
  - lazy/late modeling
  - process-oriented information structuring
  - workflow context from workflow enactment



- ADIB integrates the workflow system in the Semantic Desktop for *personal* task management and as context provider

ADIB: First prototype integrated in Semantic Desktop sidebar

FIRST PROTOTYPE

current task

easy task creation

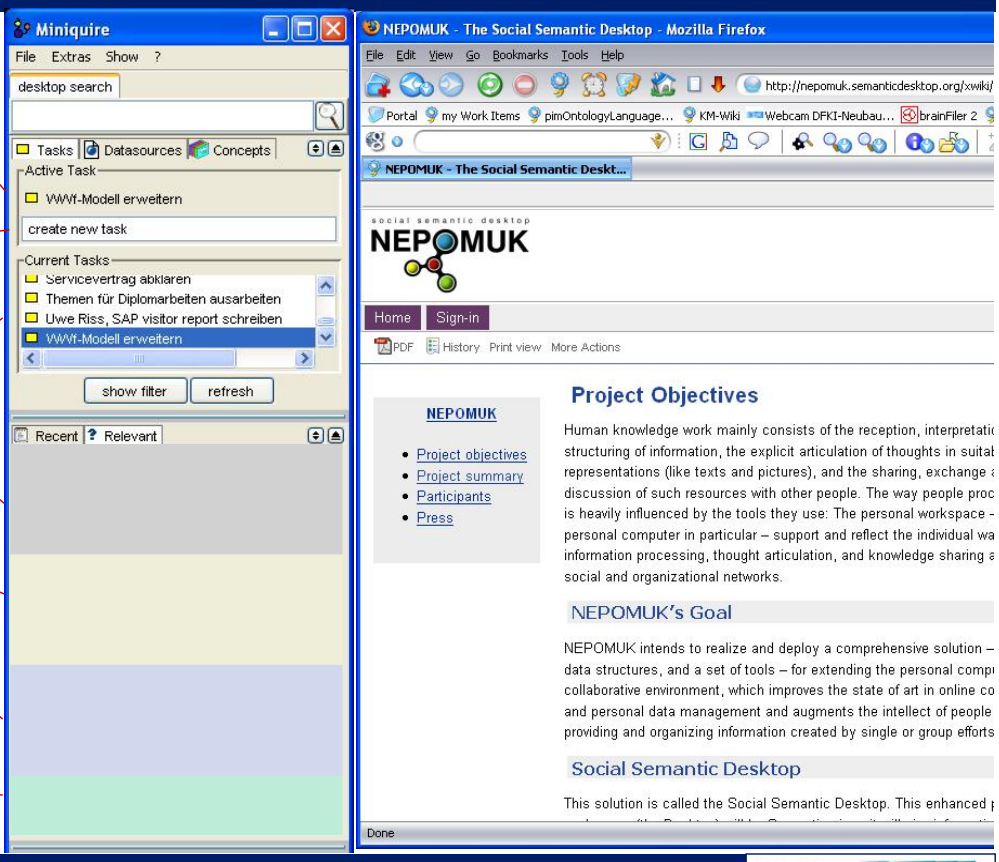
personal task list

documents

topics

contacts

projects



Summary

SUMMARY

- ADIB supports knowledge workers within their personal desktop
- Adaptation to their current context
- Extends the Semantic Desktop for personal task management within an organization
- Further contributions to project topics in cooperation with Image Understanding and Pattern Recognition Department (Prof. Breuel)
  - Task similarity with Case-based Reasoning
  - Document-retrieval and -similarity based on enhanced document analysis techniques
  - Information extraction based on statistical language models