

The Social Semantic Desktop



# Handling of Task Hierarchies on the Nepomuk Social Semantic Desktop

Marko Brunzel

DFKI GmbH

Kaiserslautern, Germany

[Marko.Brunzel@dfki.de](mailto:Marko.Brunzel@dfki.de)

Roland M. Mueller

University of Twente

Enschede, The Netherlands

[r.m.mueller@utwente.nl](mailto:r.m.mueller@utwente.nl)



# NEPOMUK supports personal knowledge work



- **Knowledge work comprises**

- Collecting, structuring, connecting information
- Articulation of new ideas, observations, insights, thus generating information
- Sharing, exchange, and communication



**according to individual goals, perspectives, and processes**

- **The personal computer is a work environment which closely reflects the individual way of working in its internal structures**

- Files, folders, bookmarks ...



- **Modern work requirements ask for flexibility and collaboration within networks across traditional boundaries**

## Nepomuk - Motivation – How do you...?

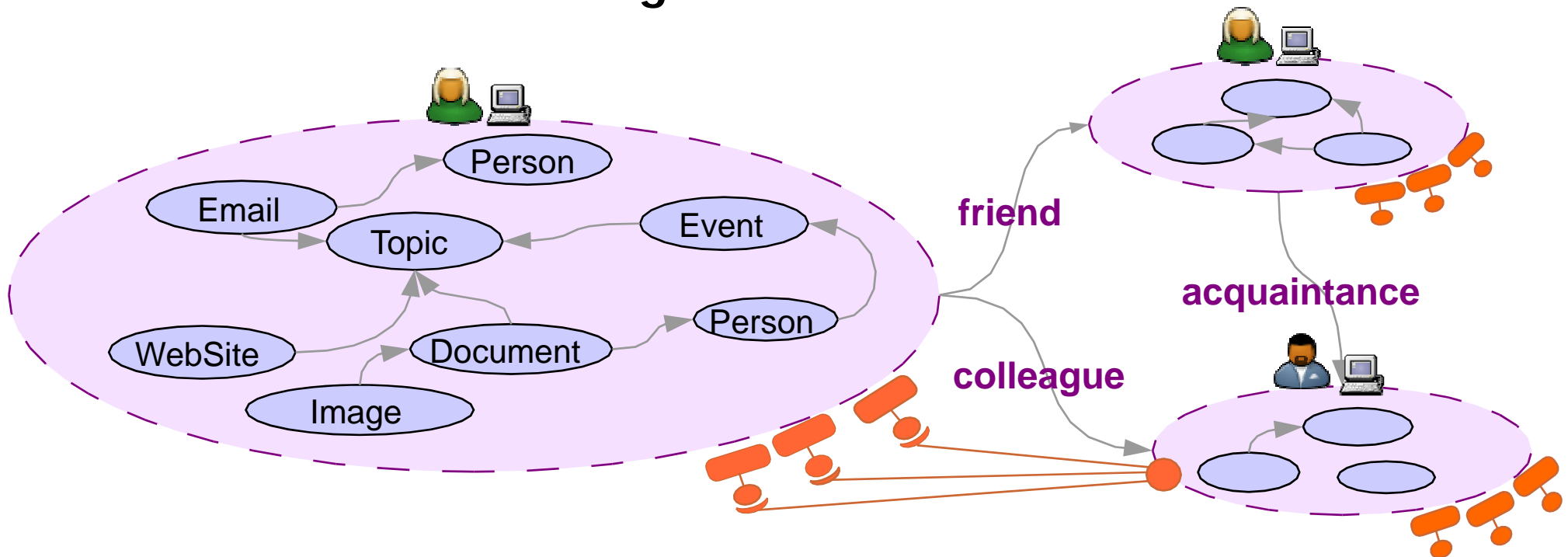
---

- How do you manage and structure your **personal information**?
- How do you **share and exchange data & knowledge** with your colleagues?



# Social Semantic Desktop

- Desktop:** Help individuals in managing information on their PC
- Semantic:** Make content available to automated processing
- Social:** Enable exchange across individual boundaries



**Personal Semantic Web:** *a semantically enlarged intimate supplement to memory*

**Social protocols and distributed search**

**NEPOMUK enabled peers**

# NEPOMUKs goal: Realize the Social Semantic Desktop

## The first society-scale semantic web application



### Driven by today's needs, in the spirit of seminal visions



#### Memex (Vannevar Bush)

A memex is "a device in which an individual stores all his books, records, and communications [ ]".



#### Open Hypertext System (Doug Engelbart)

"The open hyperdocument system (OHS) is a standards-based, open source framework for developing collaborative, knowledge management applications."



#### WWW (Tim Berners-Lee)

"There was a second part of the dream[...] we could then use computers to help us analyse it, make sense of what we re doing, where we individually fit in, and how we can better work together."

### Today necessary technologies & communities exist:

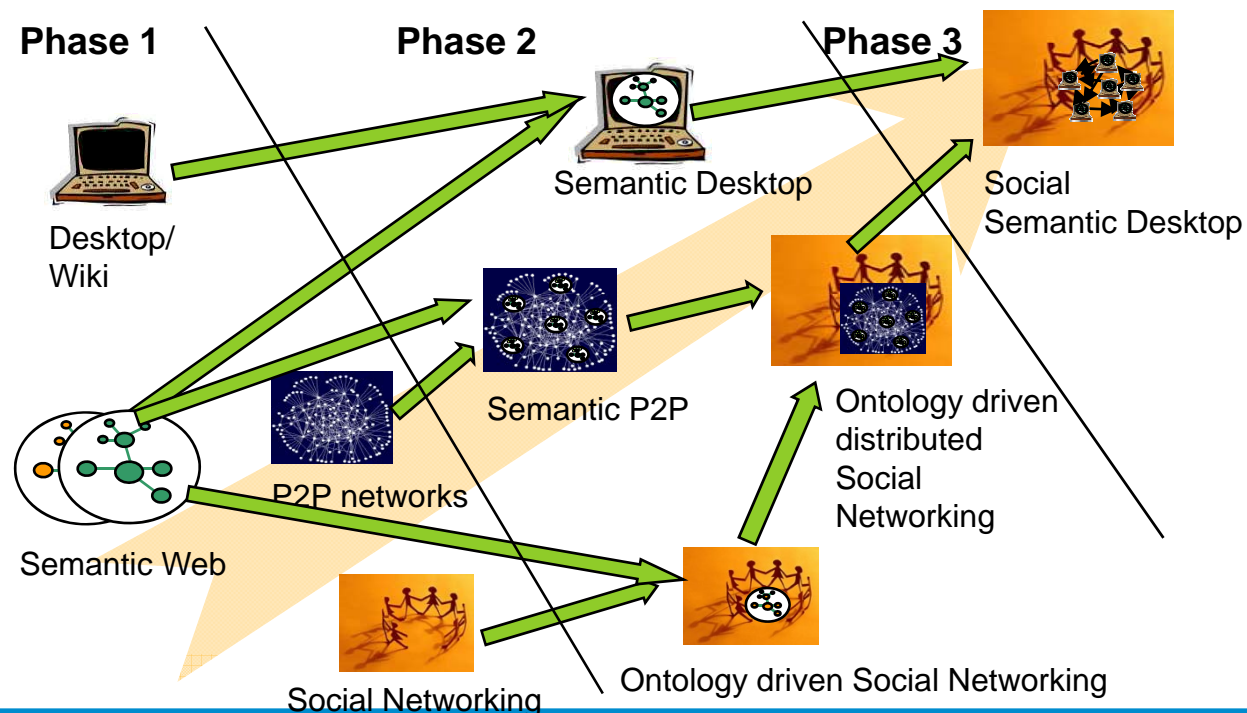
Standardized metadata: Semantic Web

Scalable distributed infrastructure: P2P Computing

Knowledge articulation and interaction: Desktop Technology

Human centric information exchange: Online Social Networks

### Challenge: Extension & merging of research streams



***„The personal workspace supports and reflects the individual way of information processing, thought articulation, and knowledge sharing“***

- **Build a comprehensive solution: The Social Semantic Desktop**
  - Standardized, open-source architecture & implemented middleware for the Social Semantic Desktop
  - Desktop aspect
    - Annotate & link; Articulate & visualize ; Integrate into work processes
  - Social Aspect
    - Relation building and knowledge sharing; Distributed search and storage

# NEPOMUK Ontologies

## Representational Layer

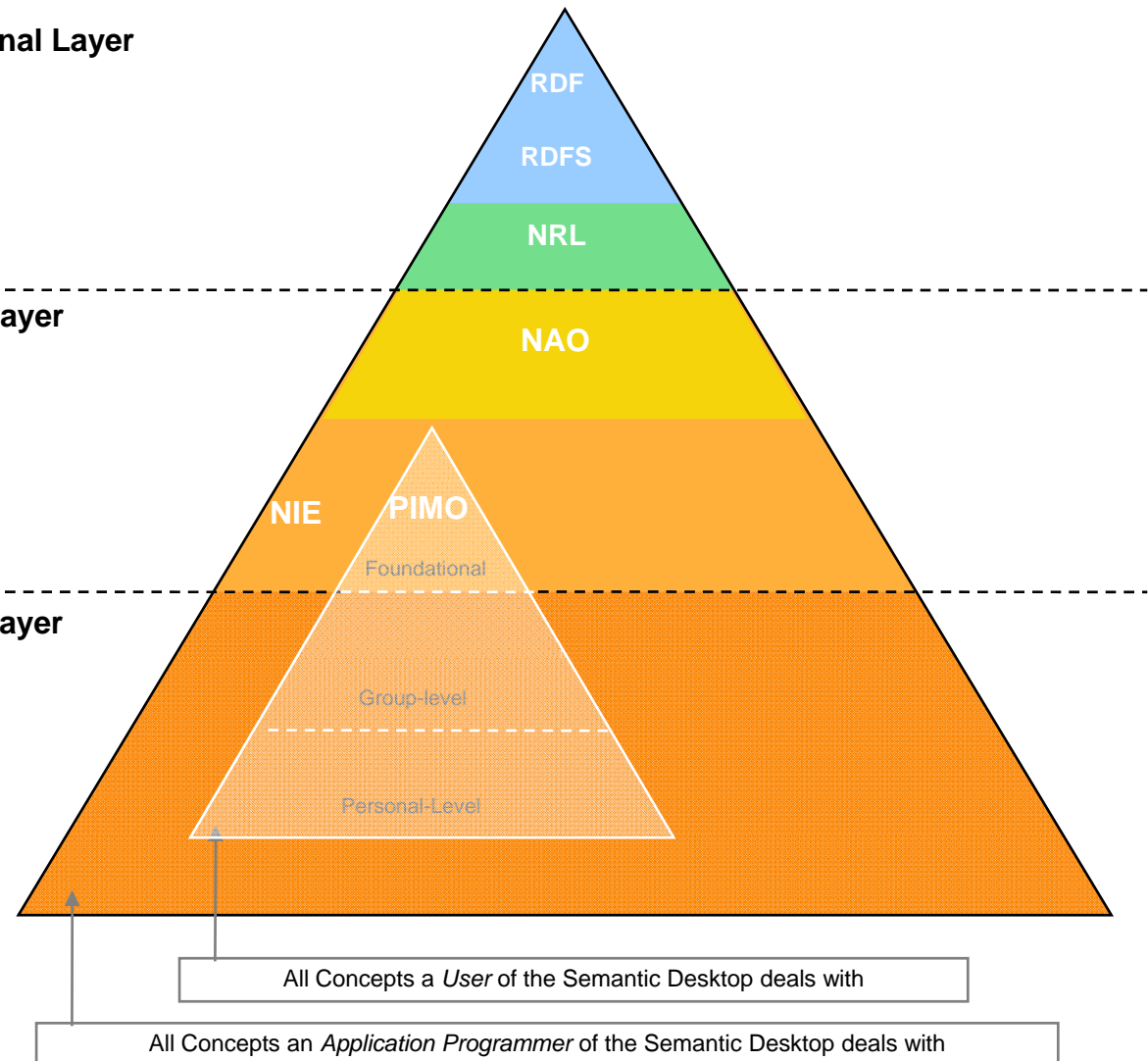
- vocabulary with which other ontologies are represented

## Upper-Level Layer

- high-level, **domain-independent** ontologies

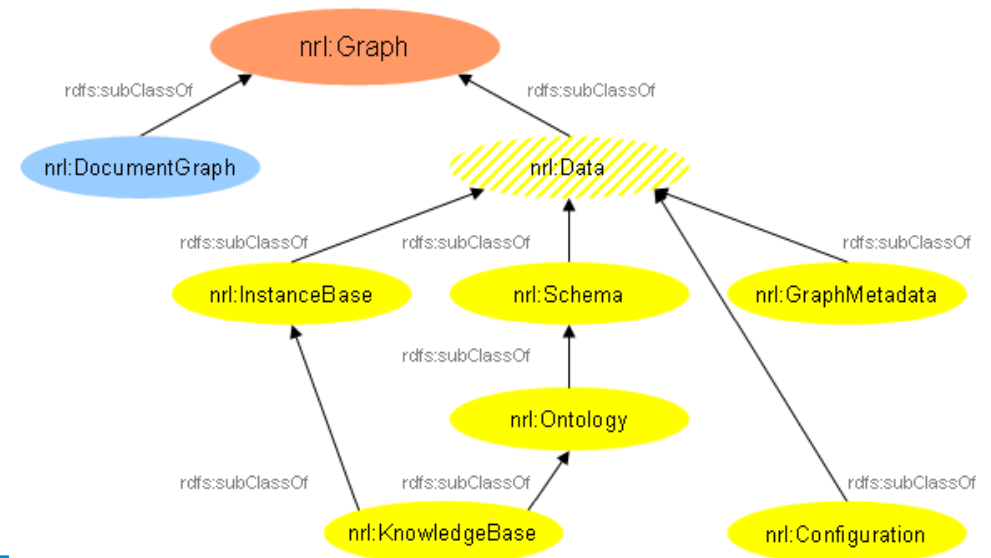
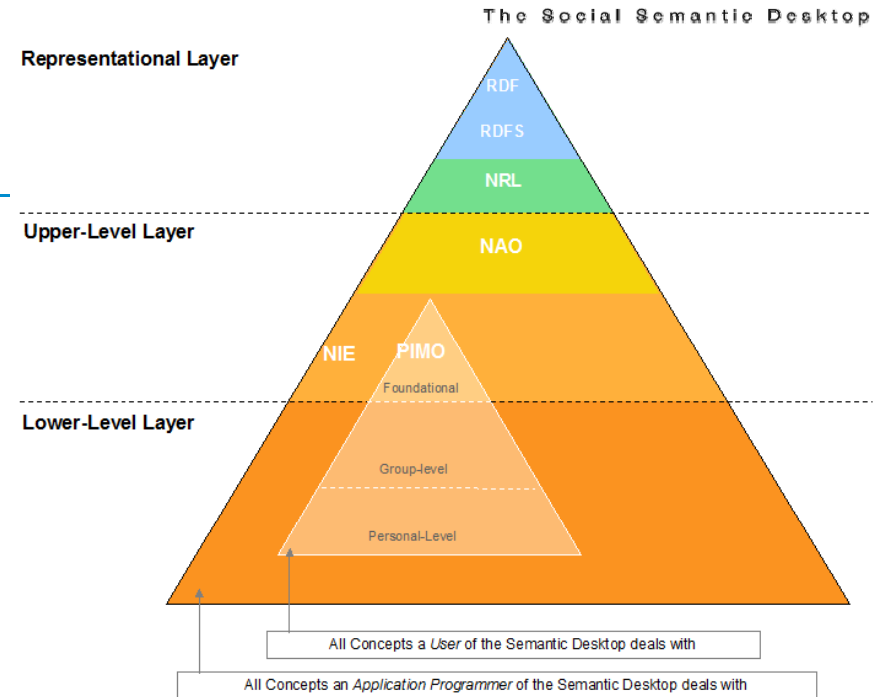
## Lower-Level Layer

- group and personal ontologies
- **Group**: domain-specific
- **Personal**: personalized extension of group level



# NEPOMUK Ontologies (cont.)

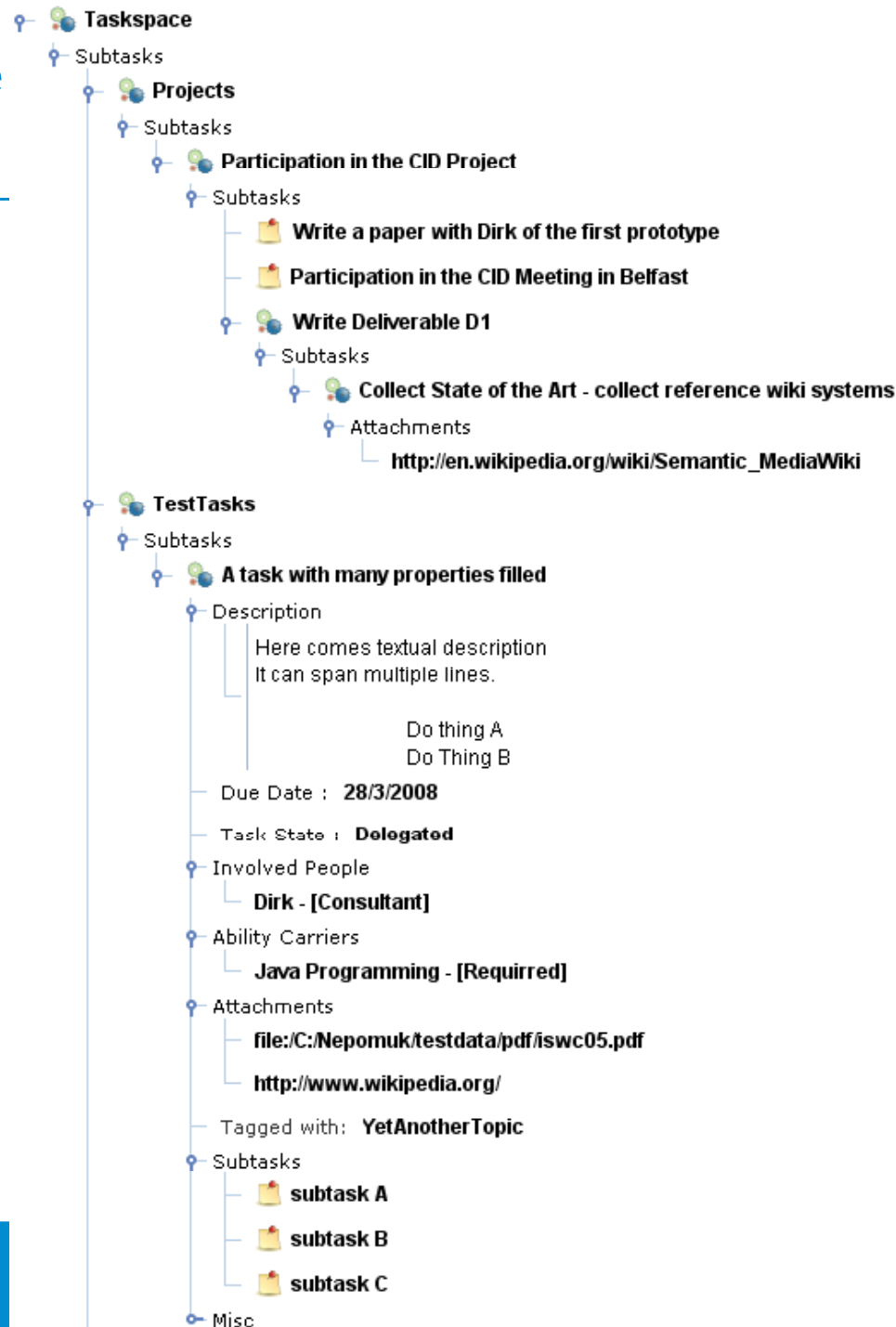
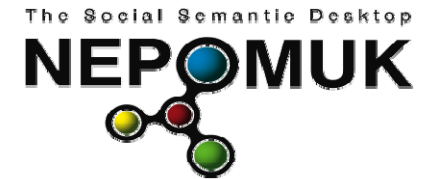
- **Representation Language (NRL)**
  - built on top of RDF/S
  - RDF triple, Named Graph and Graph Views
  - Graph Roles Vocabulary
- **Annotation Ontology (NAO)**
  - Tagging, semantic annotation, *nao:hasTag*, *nao:hasTopic*, *nao:isRelated*, ...
  - Graph Metadata Vocabulary
- **Information Elements (NIE)**
  - files (Word documents, images, PDFs), address book, entries, emails, etc.
- **Personal Information Model (PIMO)**



- **Connections to other ontologies**
  - Enhances PIMO
- **Properties for:**
  - Name, description, goal
  - Subtasks (→ Hierarchical task)
  - State, Due date
  - Attachments
  - Involved Persons (initiators, collaborators, consultants)
  - Involved Resources (skills, roles, organizational units)
  - Priority, importance, delegateability
  - Dependencies (Precursor, Successor)
  - ...

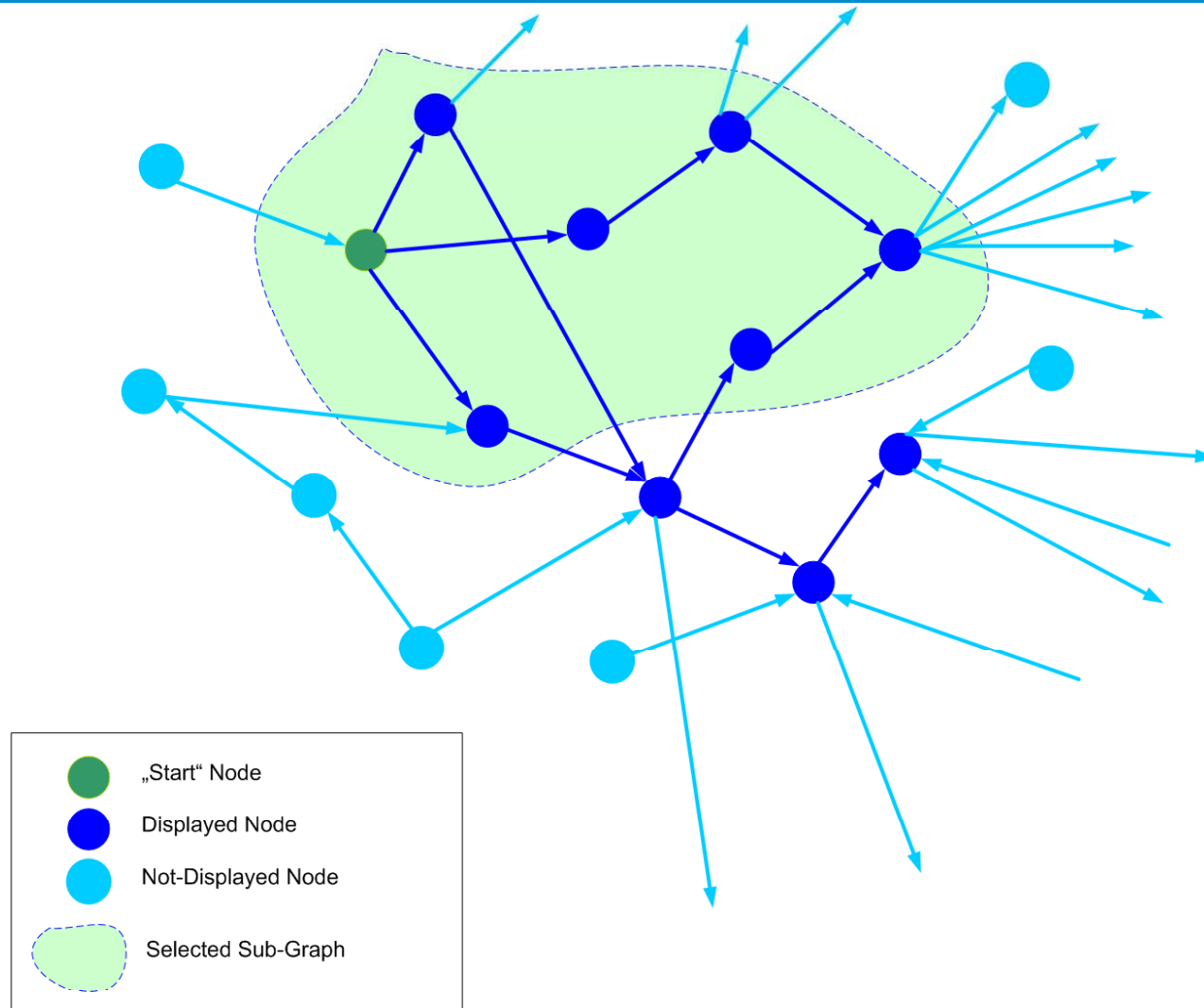
- **Many properties available**
  - Only small number of available properties explicitly set - on average
  - Sparse property usage
- **Traditional form based UI?**
  - almost all fields are empty

# DisTREEbute

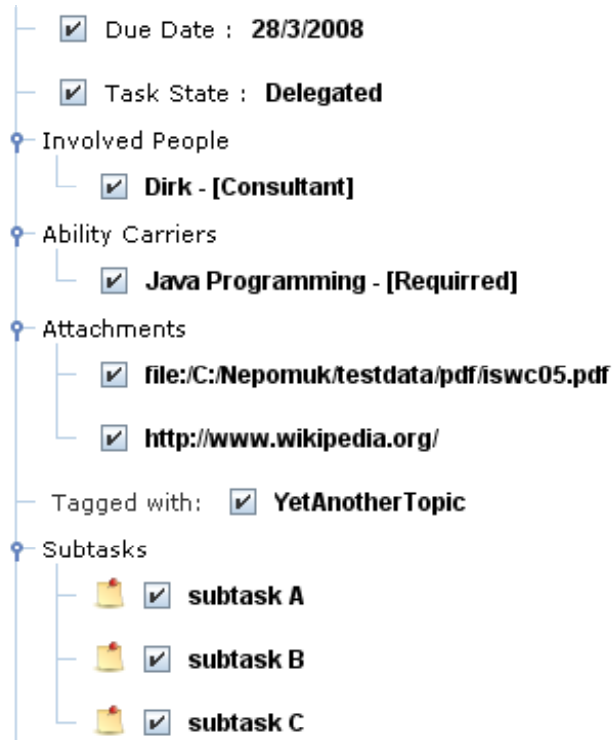


- **Collaborative tasks**
  - ad-hoc sharing of tasks
- **RDF Graph**
  - scoping of the parts to be shared is a challenge
  - Fixed closure/boundary is not feasible - exceptions expected
  - determining an appropriate sub-graph

# Graph-SubGraph



# What You See Is What You Share - WYSIWYS



- **unfolding (expanding) and folding (collapsing)**
  - scope broadened and narrowed by a all children of a node
- **checking (selecting) and / unchecking (unselecting)**
  - scope on the properties and individual children

# Why hierarchical UI?

---

- **PIM**
  - Find/Search vs. Structure
  - Sense making
    - Ease Drag&Drop - Rearrangement
    - Grouping/Clustering - human cognition – chunk size
- **Property Sparseness**
- **Sharing – WYSIWYS**
  - Addresses humans privacy concerns – facilitate sharing

# Get Involved!

---



- All core parts of NEPOMUK are open source
- Developer portal:
  - <http://dev.nepomuk.semanticdesktop.org>
- Try a Nightly Build
  - <http://dev.nepomuk.semanticdesktop.org/download>

The Social Semantic Desktop



Questions?

