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Home Office 2.0 - Collaborative Working
Related Work

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HAW-Hamburg
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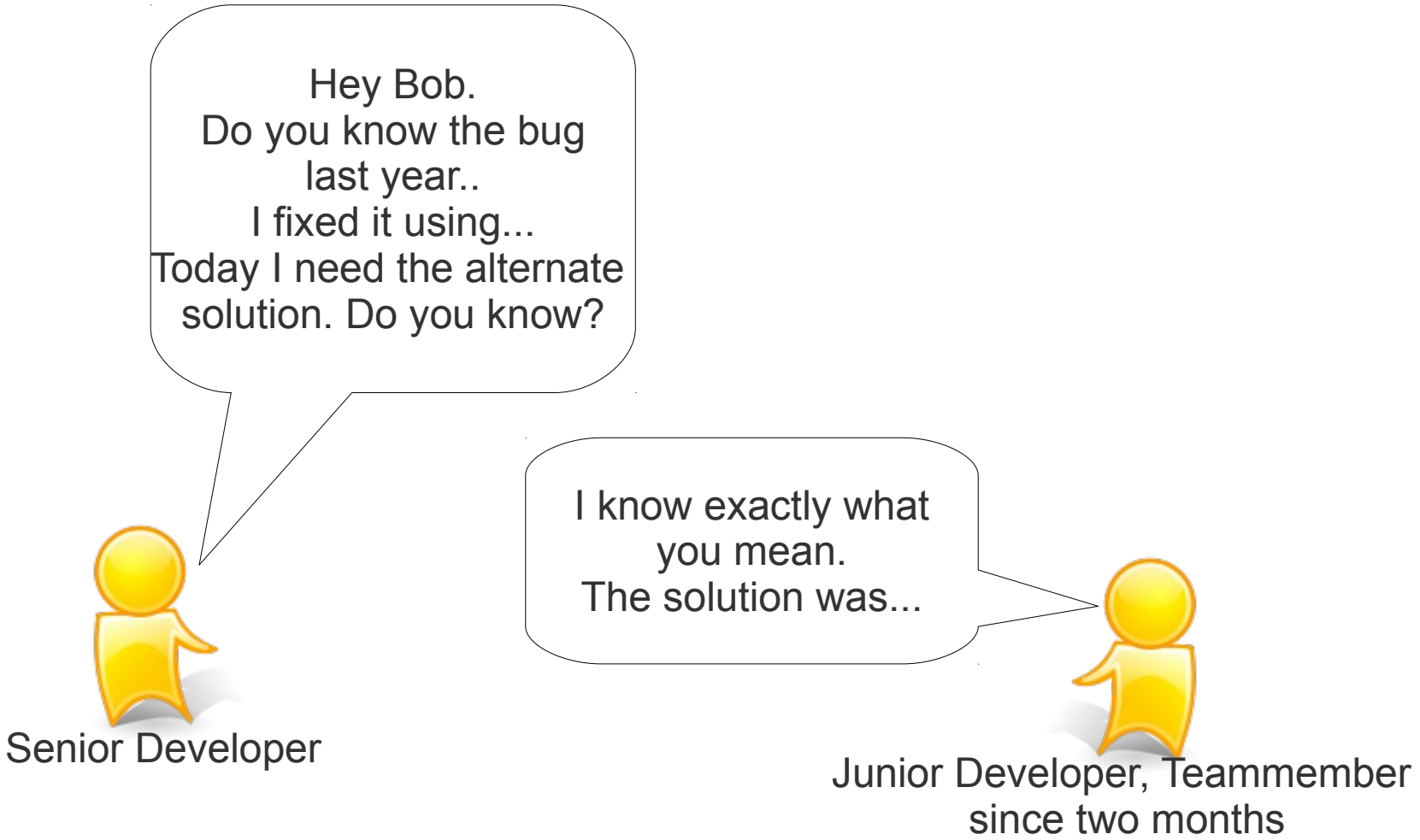
Summary

- Vision
- Home Office 2.0 Topics
- Related Work
  - Context
  - Task Context
  - Socio-Technical Congruence
- Conclusion

Vision


Hey Bob.
Do you know the bug last year..
I fixed it using...
Today I need the alternate solution. Do you know?
I know exactly what you mean.
The solution was...
Senior Developer
Junior Developer, Teammember since two months

Home Office 2.0 Topics

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- Knowledge work
- Software development
- Follow the discourse
- Reduce information overload
- Task switching
- Collaboration
- Geographically distributed work
- Information retrieval

Related Work

- Knowledge work
  - Create / Modify informations
  - Research
  - Working to solve a task
  - Set informations in a context

→ **Context Awareness**

→ **Task Context**

Home Office 2.0 Topics

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Context in Knowledge work

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- EU Project: Active

http://www.active-project.eu/

- Three research themes:
  - Easier sharing informations
  - Sharing and reusing knowledge processes
  - Understanding the user context

Context Aspects

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- Informational
  Used documents
- Organizational
  Role of the user in the organization
- Behavioral
  Performed operations and actions on the system
- Operational
  Used tools to complete the task
- Causal
  The goal of the task
- Chronological
  Time line of the events created by the user

Context and Process

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- Informal knowledge process
  - Not fully defined at the start
  - Actions
  - Decisions
- Contexts for informal knowledge processes
  - Work Context
  - Business Context
  - Task Context
  - Environment Context

Task Context

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THE UNIVERSITY OF BRITISH COLUMBIA
Computer Science

Mik Kersten's PhD Thesis:
“Focusing knowledge work with task context”

protégé

Tasktop

User Interaction History

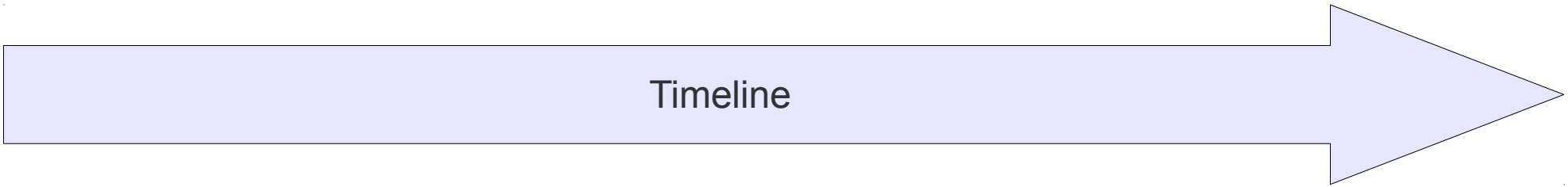
- Select Task
- Capture User Interaction
- Associate Interaction History with Task

Create Document A

Edit Website

Research on the Web

Edit Document A



User Interaction Model

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- Time
  Time of the event
- Kind
  Classification of the Event
- Content Type
  The kind of element operated upon
- Handle
  Identity of the target element

Event Classification

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- Direct Interaction
  - Selection
  - Edit
  - Command
- Indirect Interaction
  - Propagation
  - Prediction

From history to context

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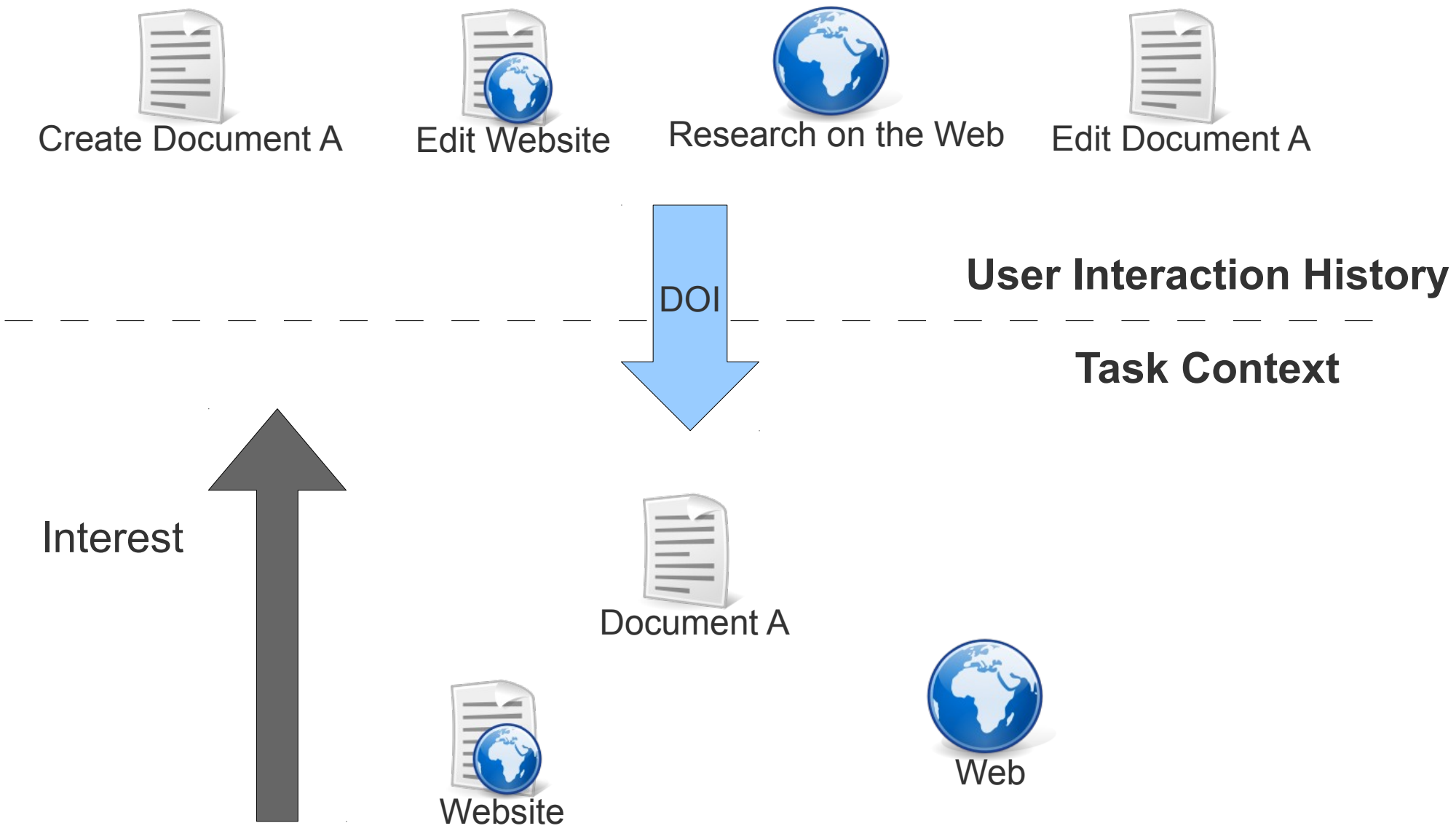
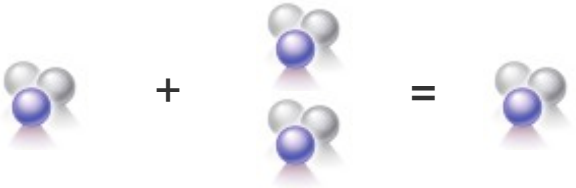
How to get from interaction history
to a task context?

Degree Of Interest (DOI)



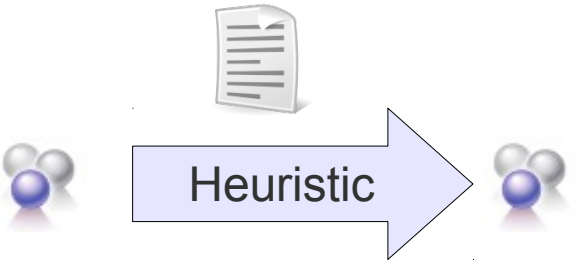
Context Operations



Composition

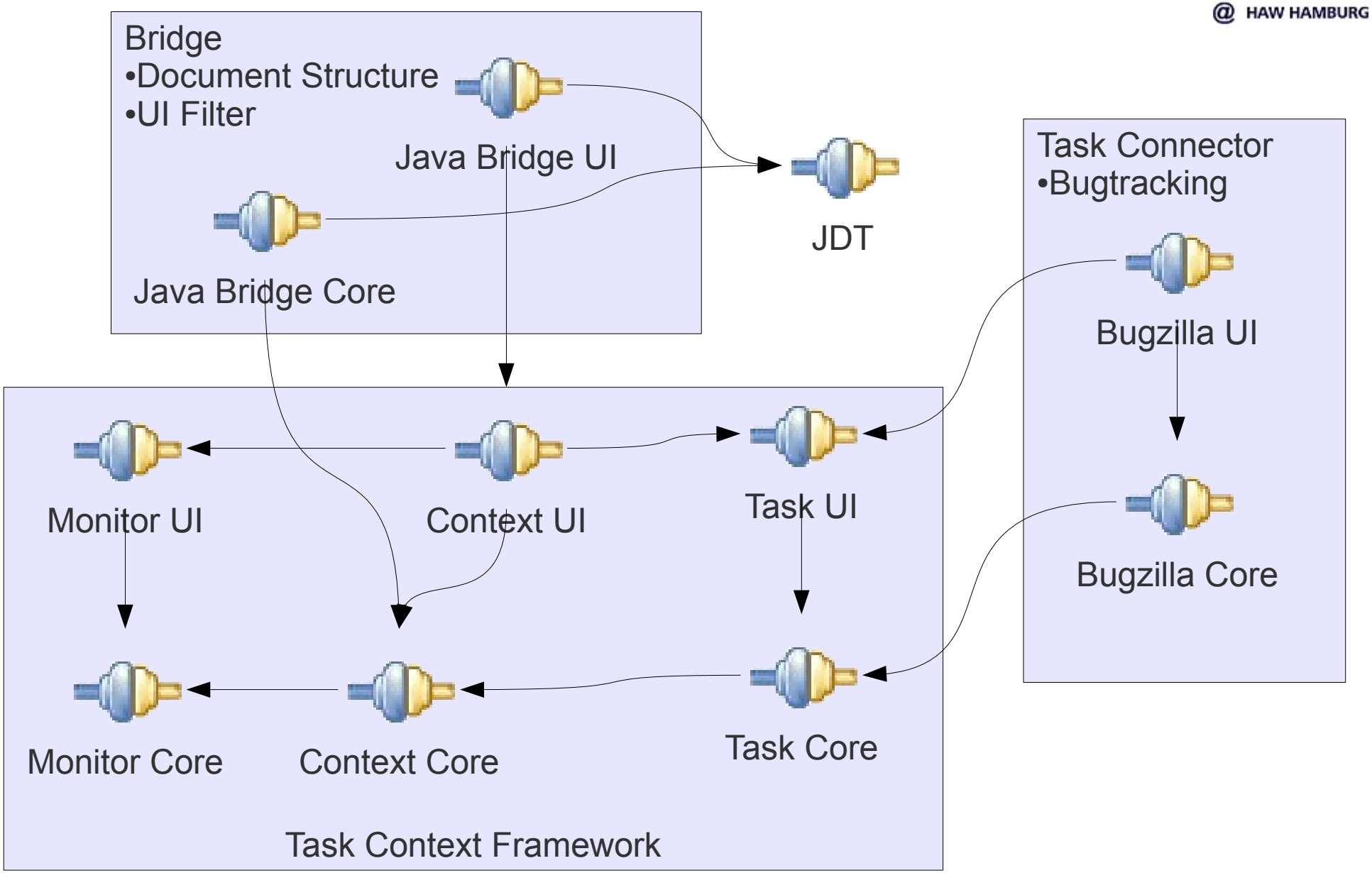
Slicing

Manipulation



Induction

Architecture



Related Work

- Knowledge Work in Teams
  - Social Networks
  - Communication
  - Collaboration
  - Teaching

→ **Socio-Technical Congruence**

Home Office 2.0 Topics

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Socio- Technical Congruence

- Social impact on software development
- Since 2008 part of the International Conference on Software Engineering

Conway's law

Organizations which design software systems are constrained to produce design

which are copies of the communication structures of the organizations.

Socio- Technical Congruence

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- Social
  - Organization
  - Communication
  - Social Networks
- Technical
  - Modularity
  - Sources
  - Documents

Research topics

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- Challenges in Data Collection
  - Privacy concerns
  - Connecting artifacts, tasks and communication
  - What data in each particular context
- Characterization of Coordination
  - Domain
  - Organization
  - Culturally
- Socio-Technical Congruence and Practitioners
  - Interventions
  - Transparency
  - Feedback

Data- mining in Software Repositories

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Using Software Repositories to Investigate Socio-technical Congruence in Development Projects

Giuseppe Valetto, Mary Helander, Kate Ehrlich, Sunita Chulani, Mark Wegman, Clay Williams

IBM T.J. Watson Research Center

Socio-technical software network

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- Nodes
  - Stakeholders / People
  - Software artifacts
- Arcs
  - Communication / Collaboration
  - Relationships between artifacts
  - Work relationships

Socio-technical software network

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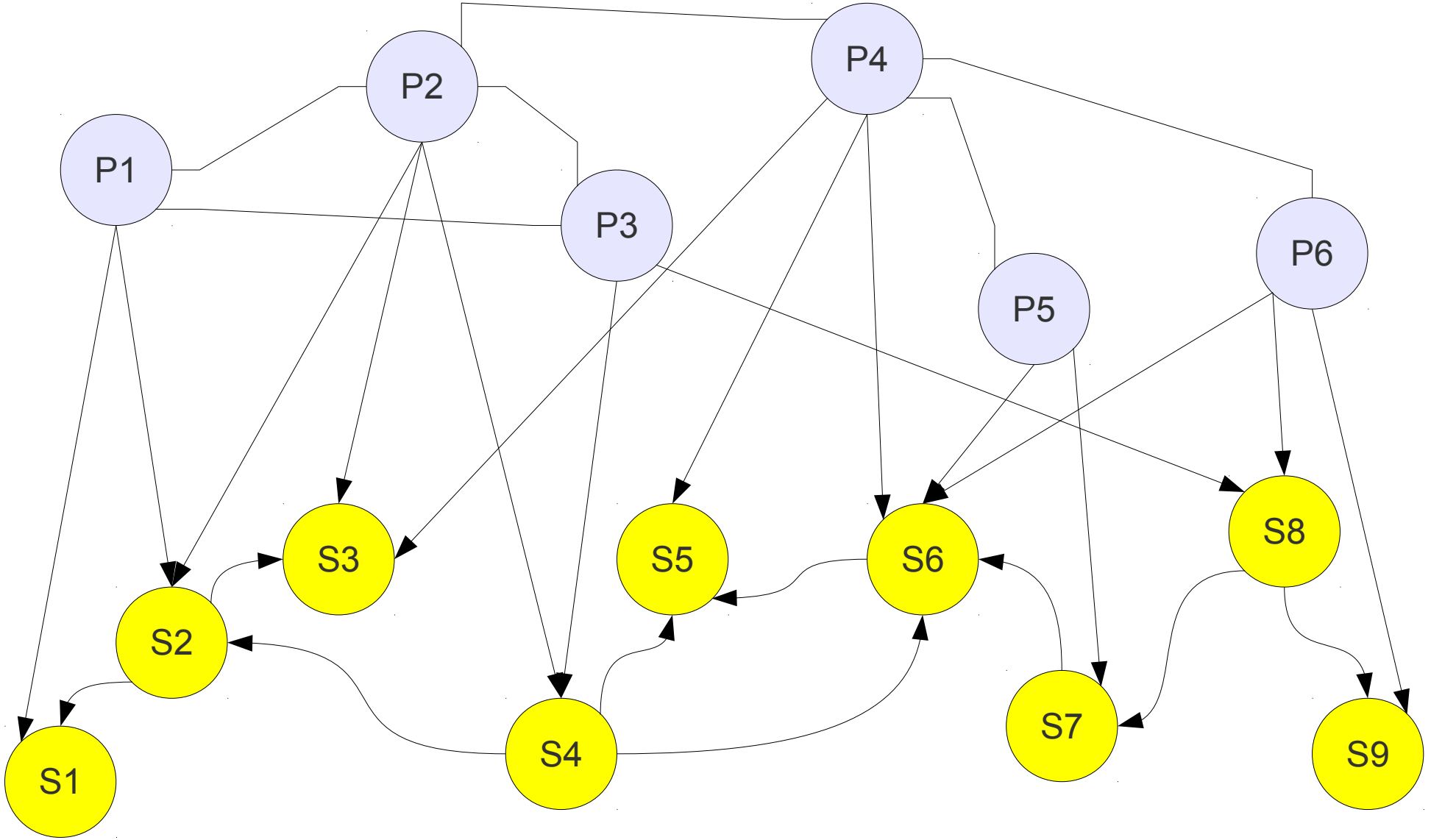

Applications and Future Work

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- Applications
  - Degree of alignment between social relationships and software relationships
  - Project leads can better govern the process and organization
- Future Work
  - Evolution of the congruence value over time
  - Adding quality metrics
    - Defect density
    - Frequency of modification requests

Conclusion Task Context

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- ✔ Reduces information overflow
- ✔ Support information retrieval
- ✔ Support task switch
- ✔ Support review

- ✗ Only a snapshot of the discourse
- ✗ Where is the end of the context?
- ✗ User centric
- ✗ Needs additional user interaction

Conclusion Socio- Technical Congruence

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- ✔ Social orientated
- ✔ Team orientated
- ✔ Communication orientated
- ✔ No additional user interaction

- ✗ Value of Metric
- ✗ Privacy
- ✗ Offline system

Relevance to the Project

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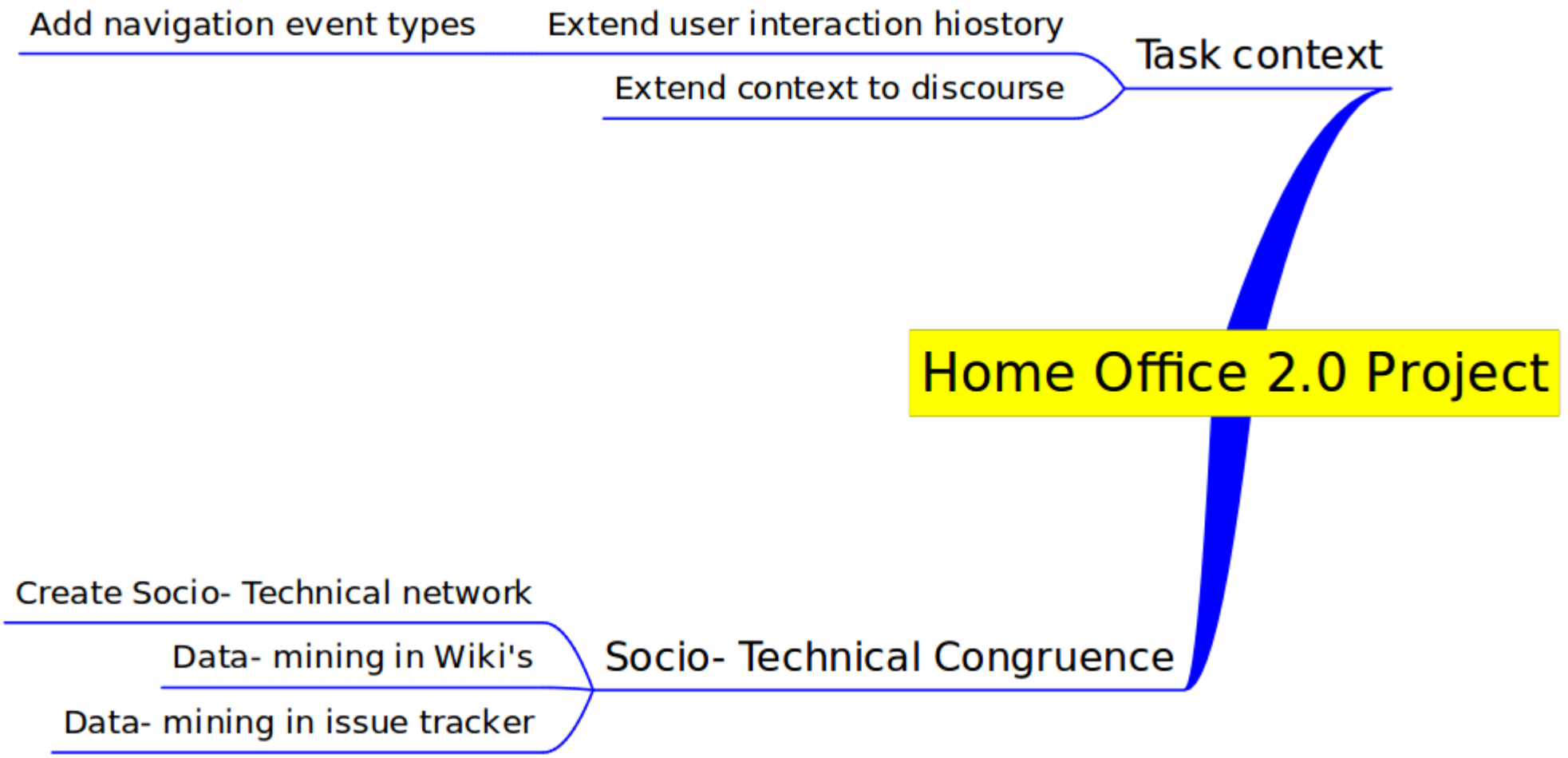

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