



# **aposdle**

## **learn @ work**

*aposdle - New ways ...*

*... to work, learn and collaborate!*

Wilco Bonestroo (w.j.bonestroo@utwente.nl)



**learn @ work**



University of Twente  
Enschede - The Netherlands

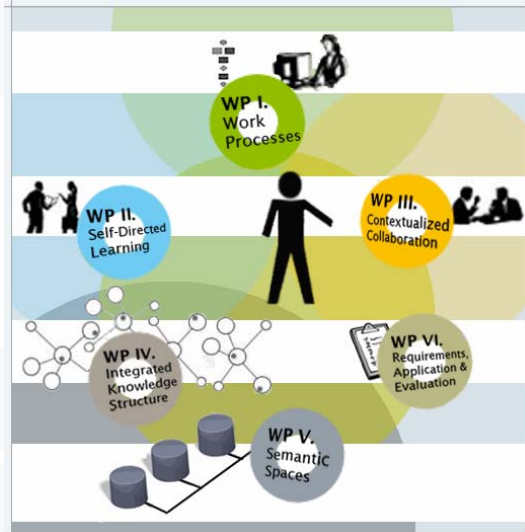
18-8-2007, Crete, Greece / 2

## Contents

- The APOSDLE Project
- Competency Model
- Learning Templates
- Future Work / Open Issues

**Learn@Work:  
Competency  
Advancement  
with Learning  
Templates**

## APOSDLE project



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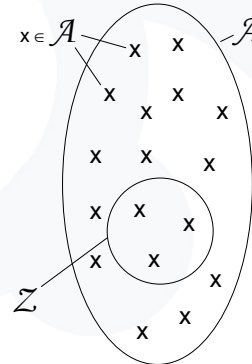
## Competency Model

### Knowledge Space Theory

(Doignon, J & Falmagne, 1985, 1999)

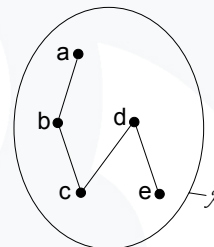
- Any field of knowledge can be parsed into a set  $\mathcal{A}$  of problems (**tasks**)  $x \in \mathcal{A}$
- For each task it can be decided whether the task is solved or not

Each person is able to solve a certain subset of tasks which constitutes the person's **performance state**  $\mathcal{Z} \subseteq \mathcal{A}$



## Knowledge Structure

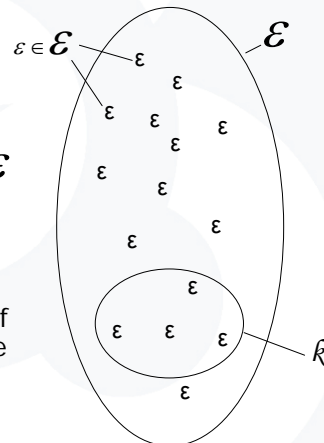
- **Performance states**
  - $\{\emptyset, \{a\}, \{b\}, \dots, \{a, b\}, \dots\}$
- **Surmise relation  $R \subseteq \mathcal{A} \times \mathcal{A}$** 
  - If you can solve a, then you can solve b
  - If you can solve b, then you can solve c
  - If you can solve d, then you can solve c and e
- **Collection of possible states: Knowledge structure**
  - $\{\emptyset, \{c\}, \{e\}, \{b,c\}, \{c,d,e\}, \{a,b,c\}, \{a,b,c,e\}, \{b,c,d,e\}, \{a,b,c,d,e\}\}$



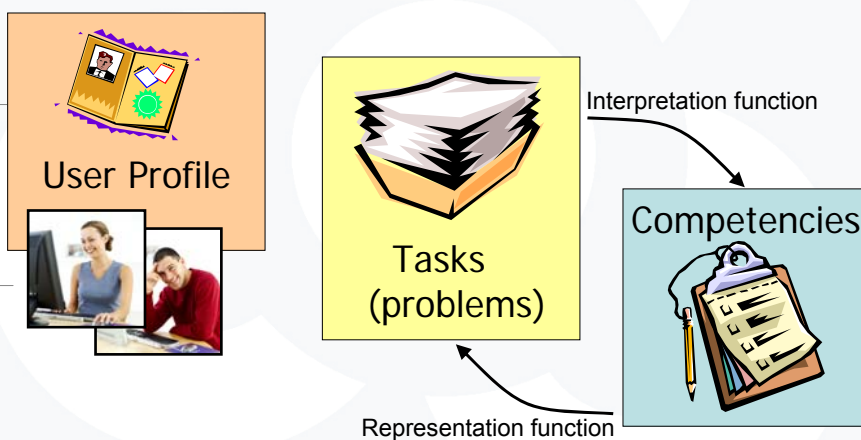
## Competency Based Knowledge Space Theory

(Korossy, 1993, 1997)

- Any field of knowledge can also be described by a set  $\mathcal{E}$  of **elementary competencies**  $\varepsilon \in \mathcal{E}$
- For each competency can be decided whether the person has this competency or not
- Each person has a certain subset of competencies which constitutes the person's **competence state**  $\mathcal{K}$



## Competency gaps



## Lessons learned

### ■ Tasks

- Task descriptions!!
- Naming conventions for tasks

### ■ Competencies

- Clear distinction between tasks and competencies
- Competencies should be represented by domain model elements (+ additional information, e.g., competency type)

### ■ Mapping

- Task Competency Matrix is a huge, demanding, and annoying task for experts
- Experts need support for task-competency assignment (tool)

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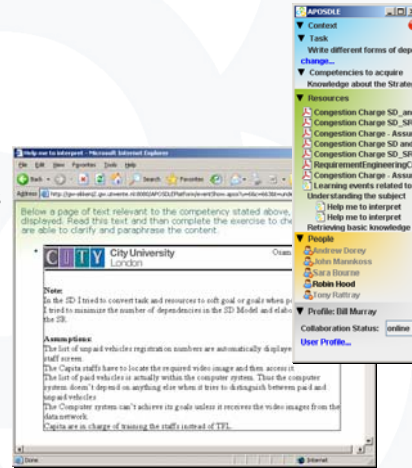
## Learn Tool

### ■ Sidebar

- Sidebar integrates learning, working and collaboration
- Sidebar presents Learning Events

### ■ Learning templates

- Documents with 'slots'
- Slots are filled with typed material
- Learning Event is a filled-in Learning Template



## Learning Templates

**Exercises**

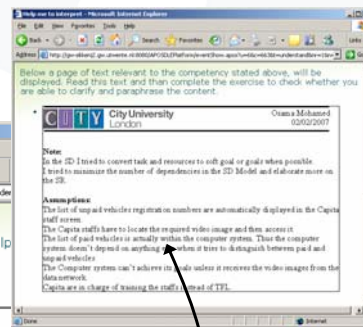
Rephrase the content of the document above in your own words. Tips to help this task: .....

- Try to translate the content to your own tasks

Please select a partner to discuss with:

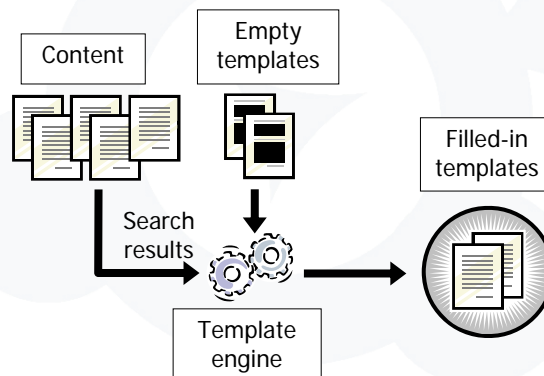
**Coworkers**

- Tony Rattray (offline)
- Andrew Dorey (offline)
- John Mannkoss (offline)



Slots

## Learning Templates Mechanism



## Prototype Evaluation

- **Multi-method approach**
  - Expert walkthroughs, evaluation sessions at application partners, lab studies
- **Lab studies**
  - 1 hour sessions, 12 participants (Computer Science students)
  - New task, predefined material
- **Results**
  - Participants did learn topic and were able to perform task
  - Engagement Activities only used by 17%

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## Future Work / Open issues

- **Employees don't want to go back to school**
  - Knowledge test / exercise
- **Granularity**
  - Competencies, tasks, contents
- **Models**
  - Modeling effort
  - Does the simplified set-inclusion mechanism for learning paths work?
  - Knowledge representation / contextualization
- **General applicable exercises**
  - Domain independent / Learner engagement



## References

Paper: Learn@Work: Competency Advancement with Learning Templates by Wilco Bonestroo, Tobias Ley, Barbara Kump, and Stefanie Lindstaedt.

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Korossy, K. (1993). *Modellierung von Wissen als Kompetenz und Performanz. Eine Erweiterung der Wissensstruktur-Theorie von Doignon & Falzagne*. Universität Heidelberg: Dissertation.

Korossy, K. (1997). Extending the theory of knowledge spaces: a competence-performance approach. *Zeitschrift für Psychologie*, 205, 53-82.