# Design of Knowledge Analytics Tools for Workplace Learning

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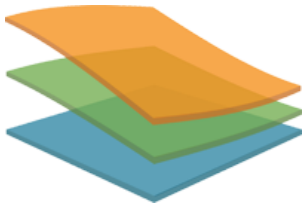


# EXECUTIVE SUMMARY

**Context.** many documents with organizational knowledge

+ need for workplace learning

➡ knowledge analytics

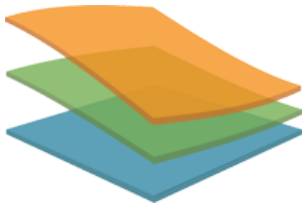
**Problem.** requirements for knowledge analytics tools

**Solution.** candidate design patterns

**(1)** provenance & traceability

**(2)** human factor & stakeholder rating

**(3)** visualization of the proposed solution



# BACKGROUND

**Workplace Learning.**

- important: informal learning [Boud et al 2003]
- unstructured, creative, expert driven [Maier et al 2010]
- content has to be assimilated for daily learning
  e.g. mobile devices [Schäper et al 2015]

How to select content to prepare for diverse learners' needs?

**→ Knowledge Analytics**

# BACKGROUND

**Knowledge Analytics.**

- analytics which use knowledge as input to create value as output

# LEARNING LAYERS

**Scaling up Technologies for**
**Informal Learning in SME Clusters.**

- clusters: health care (UK) & construction (DE)
- developed tools:

  Layers Tool Box, Living Documents, Bits & Pieces,

  Confer, AchSo! & KEPtool

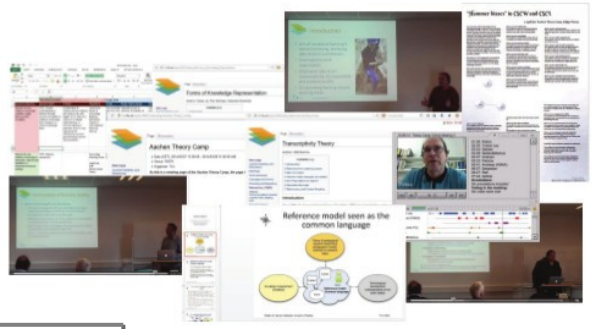
# CASE STUDY

**Content (data).** knowledge elements

**Context (meta data).**
rated wrt benefits/efforts

**Analytics.**
Knowledge Element Preperation
KEP model [Thalmann 2012]

**Value.** KEP proposed solution



KEPtool

| | Knowledge Element | Type | Adaptation Criterion |
|---|---|---|---|
| 1 | Aachen Theory Camp Video 2 | Video | Device Requirements |
| 2 | Aachen Theory Camp Video 3 | Video | Device Requirements |
| 3 | Aachen Theory Camp Video 4 | Video | Device Requirements |
| 4 | Communities of Practice | Wiki Page | Device Requirements |
| 5 | Communities of Practice | Wiki Page | Presentation Preference |
| 6 | Aachen Theory Camp Video 6 | Video | Device Requirements |
| 7 | Network Theory | Wiki Page | Device Requirements |
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| 9 | Connectionism and niche interrelatic | Presentation | Presentation Preference |
| 10 | Absorptive Capacity | Wiki Page | Device Requirements |
| 11 | Absorptive Capacity | Wiki Page | Didactical Approach |
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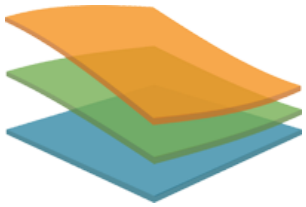
SEVENTH FRAMEWORK PROGRAMME
European Commission Information Society and Media

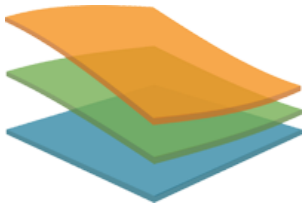


# PROCEDURE (I)

**Goal.** develop candidate design patterns for
a knowledge analytics tool used for workplace learning

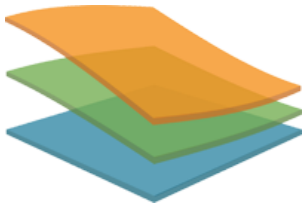
**Design Patterns.** [Alexander 1977]

"For **Context** C and **Problem** P **Solution** S has worked."



# PROCEDURE (II)

- 7 artifact-driven interviews with experts from Learning Layers on the topics **(1)** factors in KEP model
  **(2)** KEP proposed solution
  **(3)** requirements of GUI
- qualitative content analysis [Mayring 2014]
- iteratively identified & described 3 candidate design patterns [Mor et al 2014]



# CANDIDATE DESIGN PATTERNS (1)

## Provenance & Traceability

"noticed that there was nothing that was created [by her] work package" (Ex06)

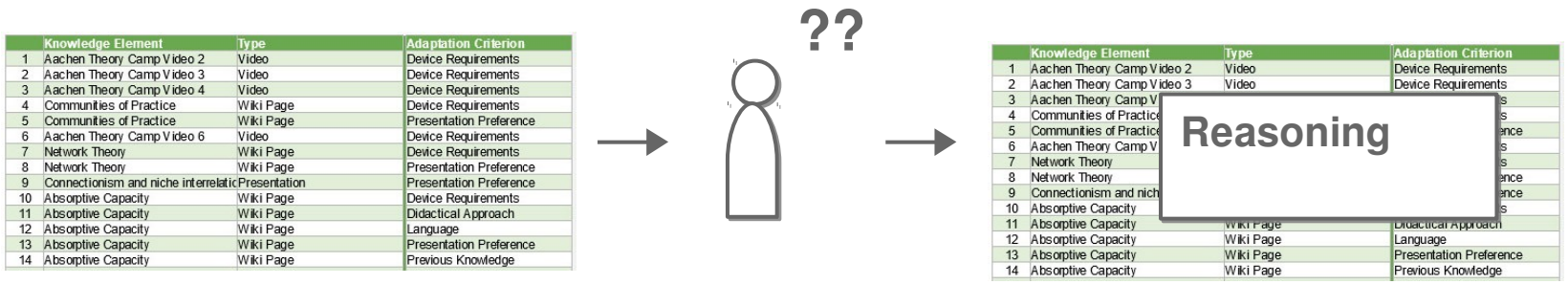
# CANDIDATE DESIGN PATTERNS (1)

## Provenance & Traceability

**Context.** complexity of proposed solution is very high

**Problem.** users don't accept solution

**Solutions.** present solution with reasoning behind it

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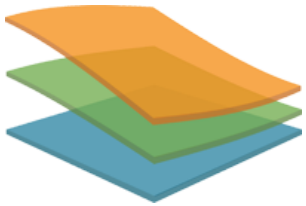


# CANDIDATE DESIGN PATTERNS (2)

## Human Factor & Stakeholder Rating

"happy doing the collaborative rating [..] it is important [..] for the project to collect this kind of data" (Ex05)

"you have got people like [A] defending [Topic A], [him] defending [Topic B], [C] defending [Topic C] " (Ex04)

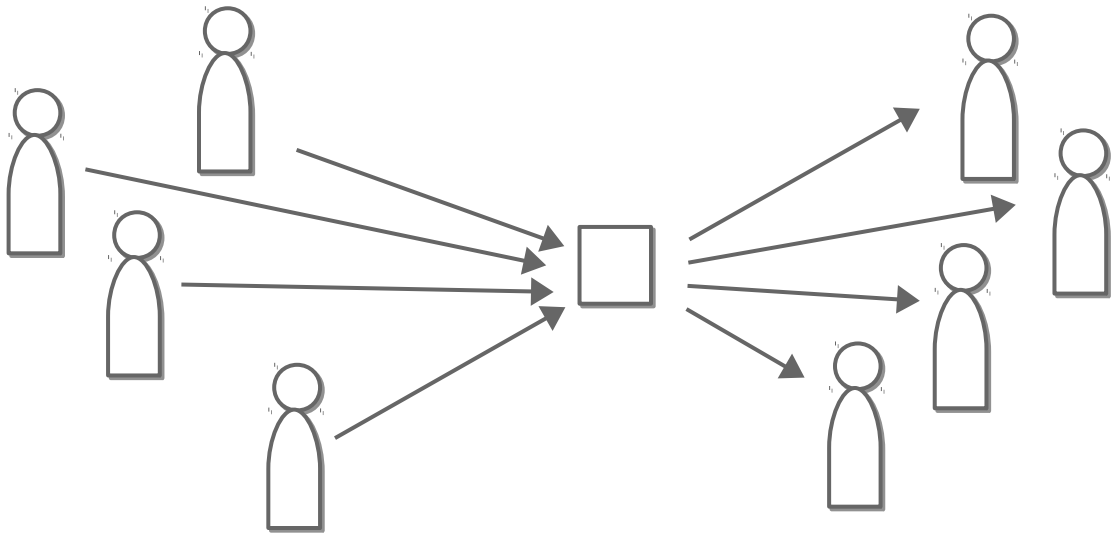
# CANDIDATE DESIGN PATTERNS (2)

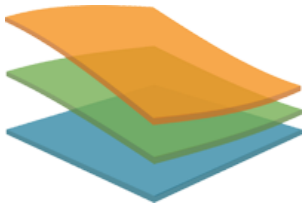
## Human Factor & Stakeholder Rating

**Context.** several users, different ratings

**Problem.** reflect all ratings

**Solutions.** support collective approach to rating





# CANDIDATE DESIGN PATTERNS (3)

## Visualization of the Proposed Solution

"more aggregate views on the results [and to] slice-and-dice results in a way" (Ex03)

# CANDIDATE DESIGN PATTERNS (3)

## Visualization of the Proposed Solution

**Context.** spreadsheet of selected knowledge elements

**Problem.** data-oriented and clunky

**Solutions.** different views to explore solution

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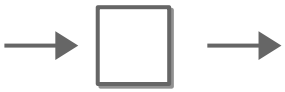

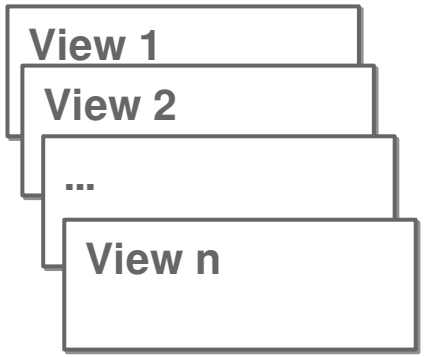

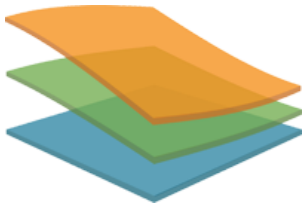

# CONCLUSION

**Summary.**

- knowledge analytics for workplace learning
- support with selecting content from large digital library
- developed candidate design patterns

**Outlook.**

- ground patterns in theories that explain effects
- implement functionality in KEPtool & validate patterns

**Thank you for your attention!**

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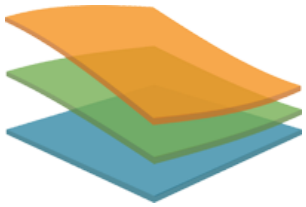

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