

Learning From Experience via Data-Driven Reflection

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About me

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Team

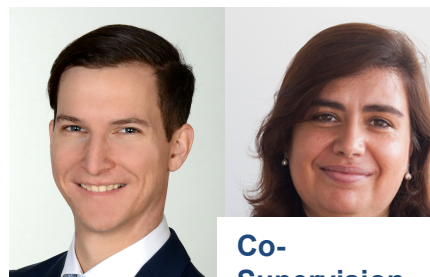
Senior Researchers



PhD Students



Junior Researchers and Research Developers



Co-Supervision
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External Co-Supervision @
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Monica Divitini



Business Area Manager



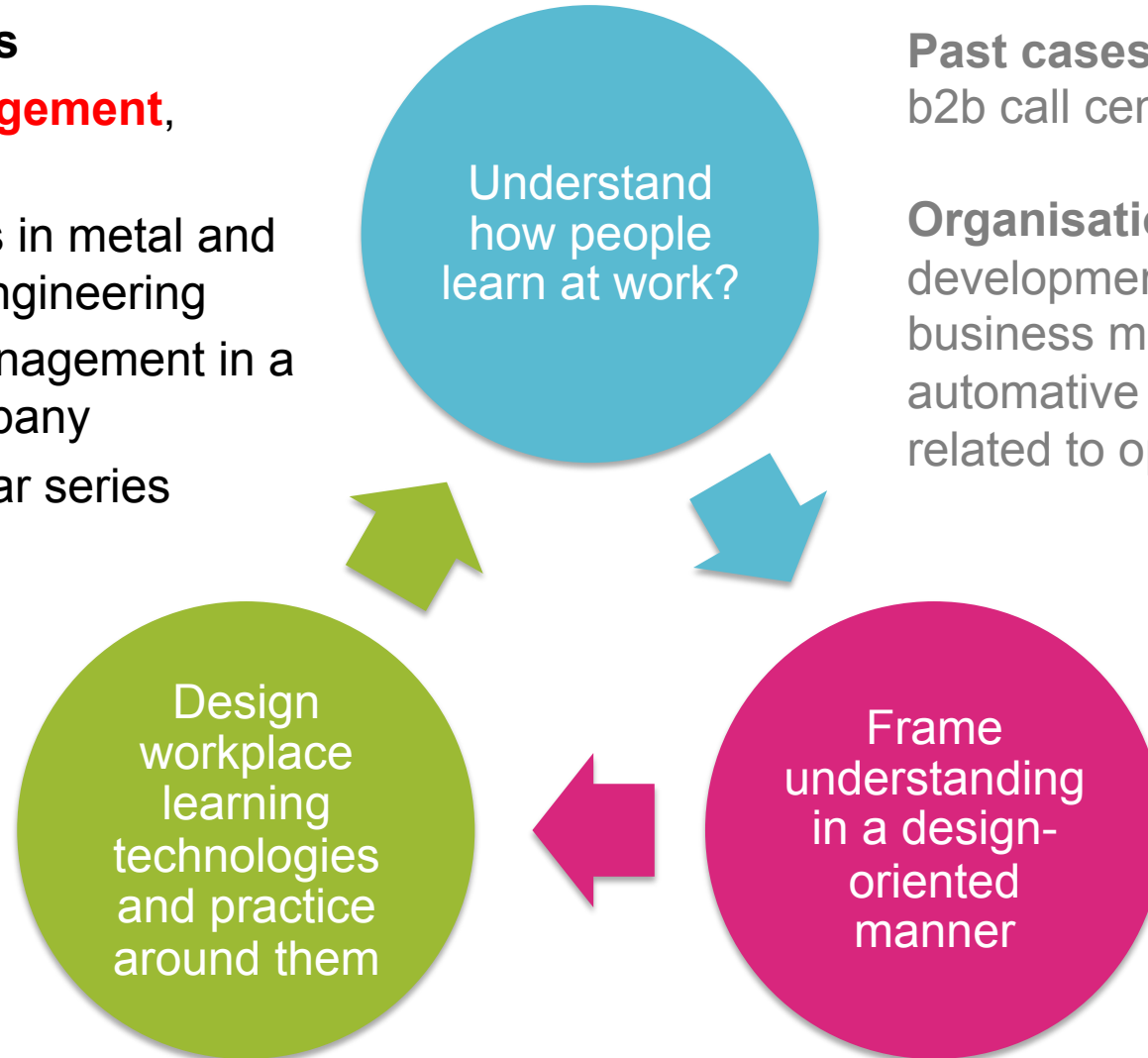
Designing for Workplace Learning

Current cases

- **time management**, searching
- apprentices in metal and electrical engineering
- training management in a global company
- rework in car series production

Past cases: Stroke nurses, b2b call center, IT consulting

Organisational learning: development of data-driven business models in automotive industry, and related to open science



Learning from Experience via Data-Driven Reflection

Why reflection?

Learning mechanism that refers to and impacts action without necessitating a curriculum or teacher

Why data?

- Use data as representing relevant aspects of work practice, as complement to human memory and perception
- Fitness apps (Runtastic, Fitbit, etc.), quantified self, and learning analytics as examples in private life and educational settings.

What you can expect in the next 30 minutes

1) Design-oriented Theory

Naming concepts in reflection: Pammer et al. (2017) - Let's Talk about Reflection at Work (IJTEL); Pammer & Prilla (in submission) - Reflection Object

Design-oriented understanding

2) Socio-technical interventions and reflection guidance

Activity-log based learning about and improving time management: Pammer et al. (2015) – The Value of Self-Tracking and the Added Value of Coaching in the Case of Improving Time Management (ECTEL); Pammer & Bratic (2013) – Surprise, surprise: activity log based time analytics for time management (CHI EA)

Adaptive reflection guidance: Fessler et al. (2017) – In-App Reflection Guidance: Lessons Learned across Four Field Trials at the Workplace (IEEE TLT)

Design

3) Vision: Conversational Intelligent Mentoring for Professionals

Naming concepts in reflection

Pammer et al. (2017) - Let's Talk about Reflection at Work (IJTEL)

- Terminology that enables
 - interdisciplinary discussion
 - fine-granular differentiations and analysis of reflective practice

Naming concepts in reflection

Pammer et al. (2017)

Reflection process

- Work/plan
- Reflection trigger – what starts reflection
- Reflection session – a concrete time and space for reflection
- Reflection outcome: intended change in practice

Process characteristics

- Observable vs unobservable processes
- Who reflects vs who learns vs who should learn

Naming concepts in reflection

Pammer & Prilla (in submission): The reflection object

Perspective

Reflection as longer-term endeavour (activity), with multiple iterations of time-limited reflection sessions

Reflection object

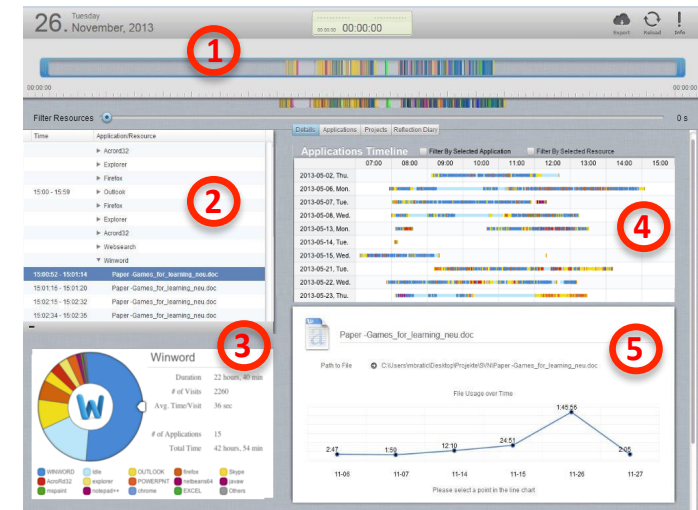
- That which is reflected upon
- That which changes through reflection
- Missing in literature – named only via examples

Activity-log based learning about and improving time management

Design

Pammer & Bratic (2013) – Surprise, surprise: activity log based time analytics for time management (CHI EA)

- No evidence that activity logging “works” despite commercial tools
- Perspective: Activity log data plus manual annotations represent those aspects of work practice that are relevant to TM
- Finding: Data are surprising, especially worktime fragmentation



Adaptive reflection guidance

Why reflection guidance?

Minimal or no guidance only works for domain experts

Fessler et al. (2017) – In-App Reflection Guidance: Lessons Learned across Four Field Trials at the Workplace (IEEE TLT)

Implementation

- In-action, on-action, contextualisation prompts
- Reminding to reflect and highlighting salient data

Evaluation

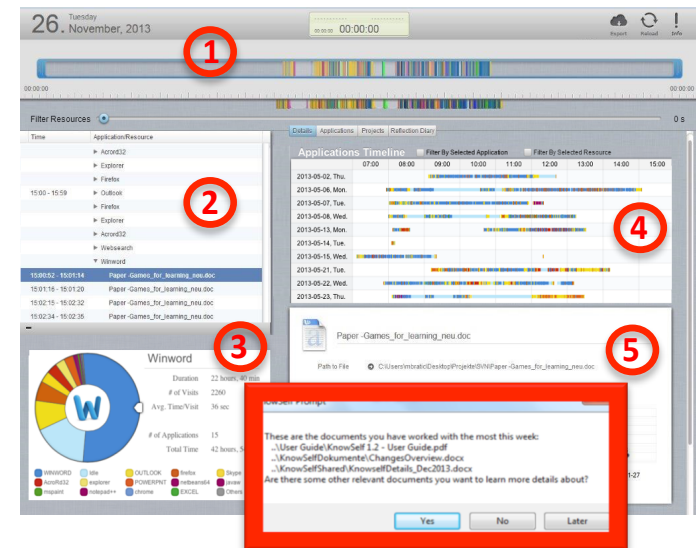
- Four field trials using three different prototypes (activity logging, mood tracking, quiz-based learning)
- Adaptive prompts incite users to reflection

Activity-log based learning about and improving time management

Design

Pammer et al. (2015) – The Value of Self-Tracking and the Added Value of Coaching in the Case of Improving Time Management (ECTEL)

- Activity logging and reflection guidance in two studies
- Rationale for adding coaching: Plausible evidence that coaching works



Activity-log based learning about and improving time management *(Pammer et al., 2015)*

Design

Self-tracking incl. generic reflection guidance:

Users reflect on data and experiment with different time management strategies

Users found data to become less interesting over time

Coaching:

Same, and

- Conscious intention to change behaviour
- Significantly better self-reported TM behaviour (post)

Meta-Reflection: What's Different about Workplace Learning?

- ➔ Social context of work defines what is relevant for learning
 - **Data represents relevant aspects of work practice**
- ➔ Social context is not designed for learning – **finding time and space for reflection is challenging**. Esp: manual tracking needs time, but serves as reflection-in-action; automatic tracking requires time f. reflection-on-action
- ➔ **Manually curated materials** complement data; and support i) explanation of data, ii) documentation and explication of reflection outcomes, iii) representation of reflection activity
- ➔ **Sensitivity and confidentiality of data**, w.r.t. the learner, clients/patients, and organisation.

Meta-Reflection: What to do better/differently next time

- Design for exchange with peers – even though time management is strongly framed as individual endeavour in literature
- Support data interpretation with respect to learning domain
- Support identification and implementation of learning strategies
- Interactivity and feedback

Working towards a vision...



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Mentoring for
Professionals

Working towards a vision...

Reflection Guide for Time Management

- Goal setting, planning, and task completion as evidence-based TM practices
- Describing, judging, drawing insights, and planning as structure for reflection
- Data collection: Survey, interviews
- Design: Bazaar-based chatbot

HELP!

<http://tiny.cc/timeTool> - it only takes 15 minutes and the design intention is that your answers help me AND you!

+ I'm looking for people who'd volunteer 30-45min of follow-up interview

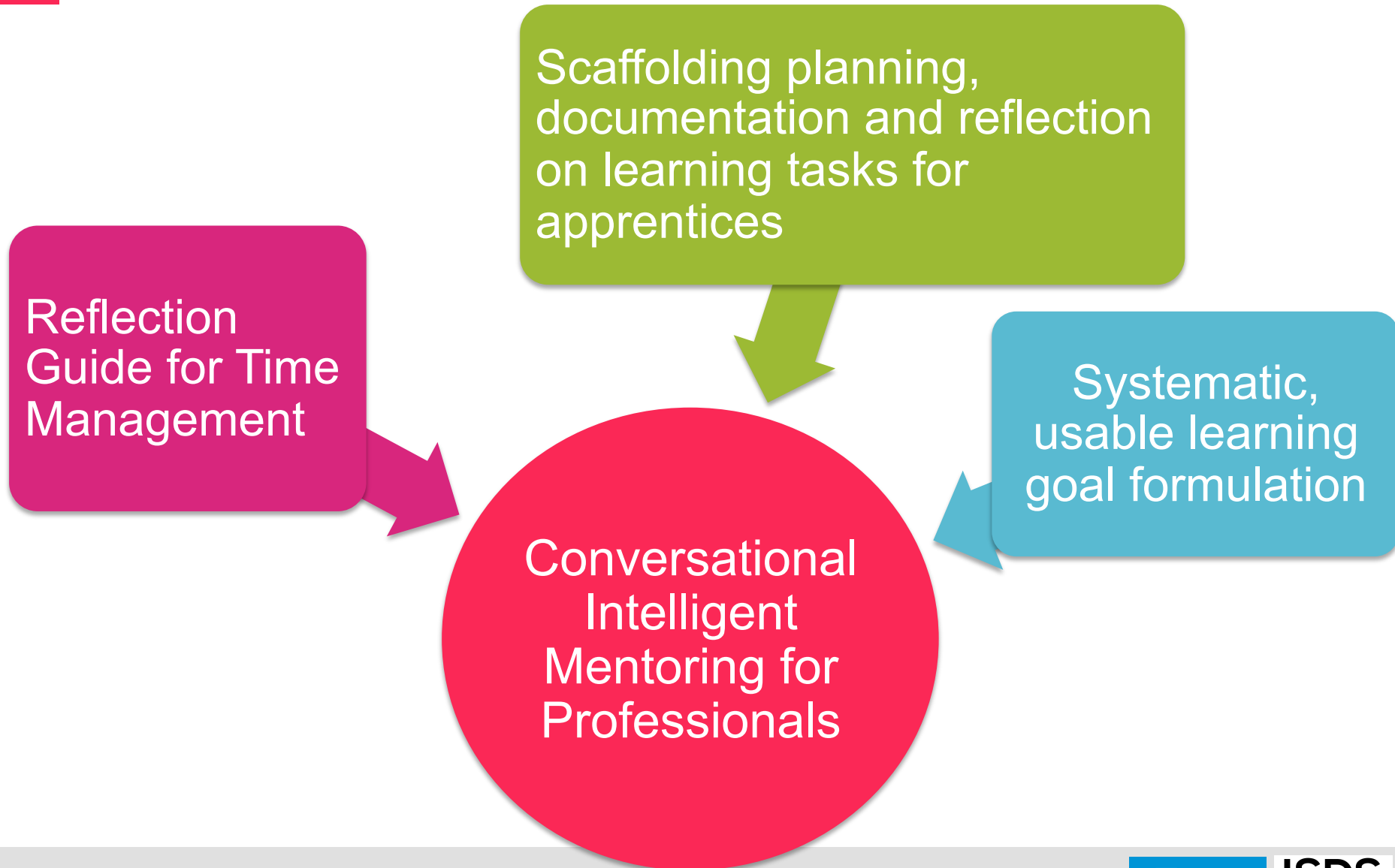
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Reflection Guide
for Time
Management

Scaffolding planning,
documentation and reflection
on learning tasks for
apprentices

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19 Working towards a vision...



Working towards a vision...

Scaffolding planning, documentation and reflection on learning tasks for apprentices

Systematic, usable learning goal formulation

Reflection Guide for Time Management

Work guidance and conditional guidance for team/organisational learning

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Working towards a vision...

Scaffolding planning, documentation and reflection on learning tasks

- Learning tasks based on pre-defined learning goals
- Reflection chatbot

Systematic, usable learning goal formulation

Reflection Guide for Time Management

- Goal setting, planning, and task completion as evidence-based TM practices
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Work guidance and conditional guidance for team/organisational learning

- Usable, navigational access to living organisational memory
- On request: scaffolded interaction to update knowledge base and set in motion team and organisational collaboration procedures

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