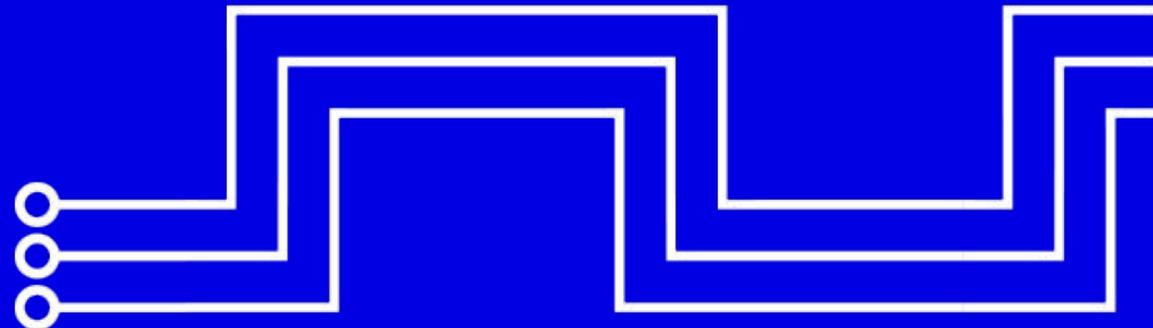# Agile Applicability in Academic Research

Mgr. Filip Svoboda

Presentation agenda

1. Agile introduction

2. Research context definition

3. Problems

4. State-of-the-art

5. Achieved results

6. Aims of future research

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Agile introduction

- A work organization paradigm

- Originated with „Manifesto for Agile Software Development", 2001

- Redefines many focal aspects of previous approaches

- People, value, customer, change

Agile introduction
People

– Foster collaboration, not processes

– Create environment, where spontaneous communication can thrive

– Unlock intrinsic potential of knowledge workers

– Motivate by autonomy, mastery, and purpose (Daniel Pink)

  – Not by simple positive and negative stimuli, e.g. by money (Taylorist approach)

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Agile introduction
Change

– Cynefin framework = problem classification

 pattern, based on Dave Snowden (1999)

– **Simple** = cause and effect is clear

 – Best practice realm – e.g. BPM process

– **Complicated** = cause and effect requires analysis

 – Good practice realm – e.g. Waterfall

– **Complex** = cause and effect visible only in retrospect

 – Agile realm – e.g. experimentation

– **Chaotic** = cause and effect completely unpredictable

 – Chaos realm – e.g. COVID-19 emergency

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Agile introduction
Paradigms and frameworks

- **Agile** = a paradigm
  - Contains principles and practices

- **Framework** = minimal set of prescriptions
- **Methodology** = maximal set of prescriptions

AGILE

- Scrum
- Kanban
- Lean
- Extreme Programming
- SAFe
- ...

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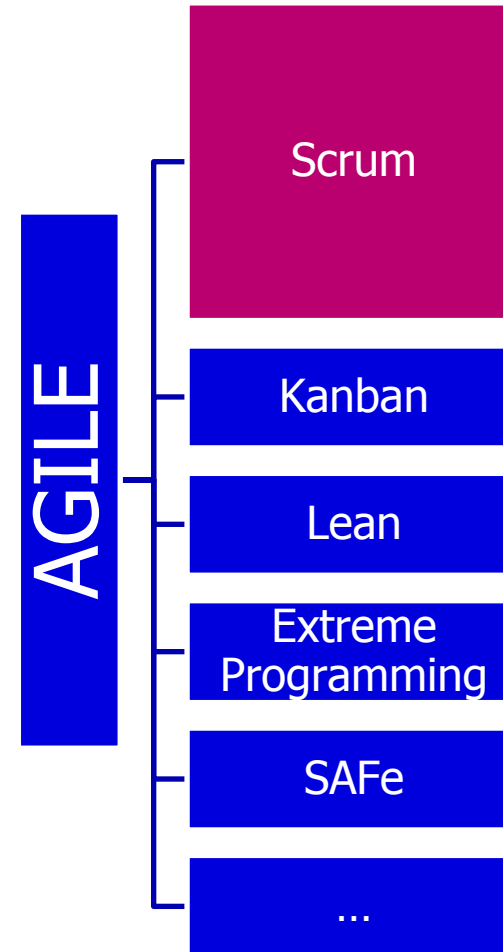
Research context definition

Academia

- Agile in the industry is well-known and well-tested

- Many new context are being explored (such as general IT, marketing, HR, sales, public management, ...)

- Research and academic environments are not exception

- Many laboratories and research groups are managed ad-hoc; research is by definition unpredictable (and thus change-based)
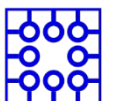
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Problems

- Ad-hoc management

- High stress on central figures

- Lack of transparency in processes, people, work products, status, ...

- Low teamwork and inadequate synergy finding

- Managing academic culture, management by KPIs, compliance

- Scaling

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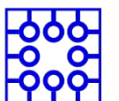
State-of-the-art

- Systematic literature reviews are missing

- Research body mostly composed of a large number of ad-hoc case studies

- Six studies analyzed in detail in my Master thesis (Americas, Europe, Asia)

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Achieved results - LabSeS

Methods

- Questionnaire for lab members (first round, May 2020)

  - Likert scales 1-5

  - Questions about working on final thesis and engaging with laboratory

- Process design based on results and observance

- Process implementation

- Questionnaire for lab members (second round, April 2021)

  - Hypothesis testing

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Achieved results

Agile Process in LabSeS

- Criteria: simplicity, motivating, decrease stress on faculty

- Biweekly Sync

  - Lab news, Scrum, smaller-group discussions

- Technical discussions on-demand

- Semestral Retrospective, Semestral Thesis Presentation

- Scrum Master role

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Achieved results

- Differences between May 2020 (n=5, 70 %) and April 2021 (n=7-8, 80 %)

- Better median achieved in 12 out of 13 measured questions

- Statistically significantly better distribution in 7 out of 13 measured questions

  - Quality of interactions with supervisor and his availability

  - Subjective evaluation of thesis quality, productivity, motivation, and overall feeling of writing

- Statistically significantly more inclination to write papers about Smart Cities and to represent the laboratory

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Aims of future research

In the laboratory and specific process

- Publication of results (European Management Journal?)

- Pulling customers (municipalities) into the process

- Uncovering synergies among laboratory members

- Implementing the process in another laboratory for control

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Aims of future research

Overall

- Systematic literature review

  - Focus on element enumeration

  - Focus on framework classification

- Correlation studies

- Standardization

- General (parametrized / decision-tree) process design

- Empirical verification

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