Investigating the Establishment of Communities of Practice in Large-Scale Agile Software Development - A Literature Review

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Outline

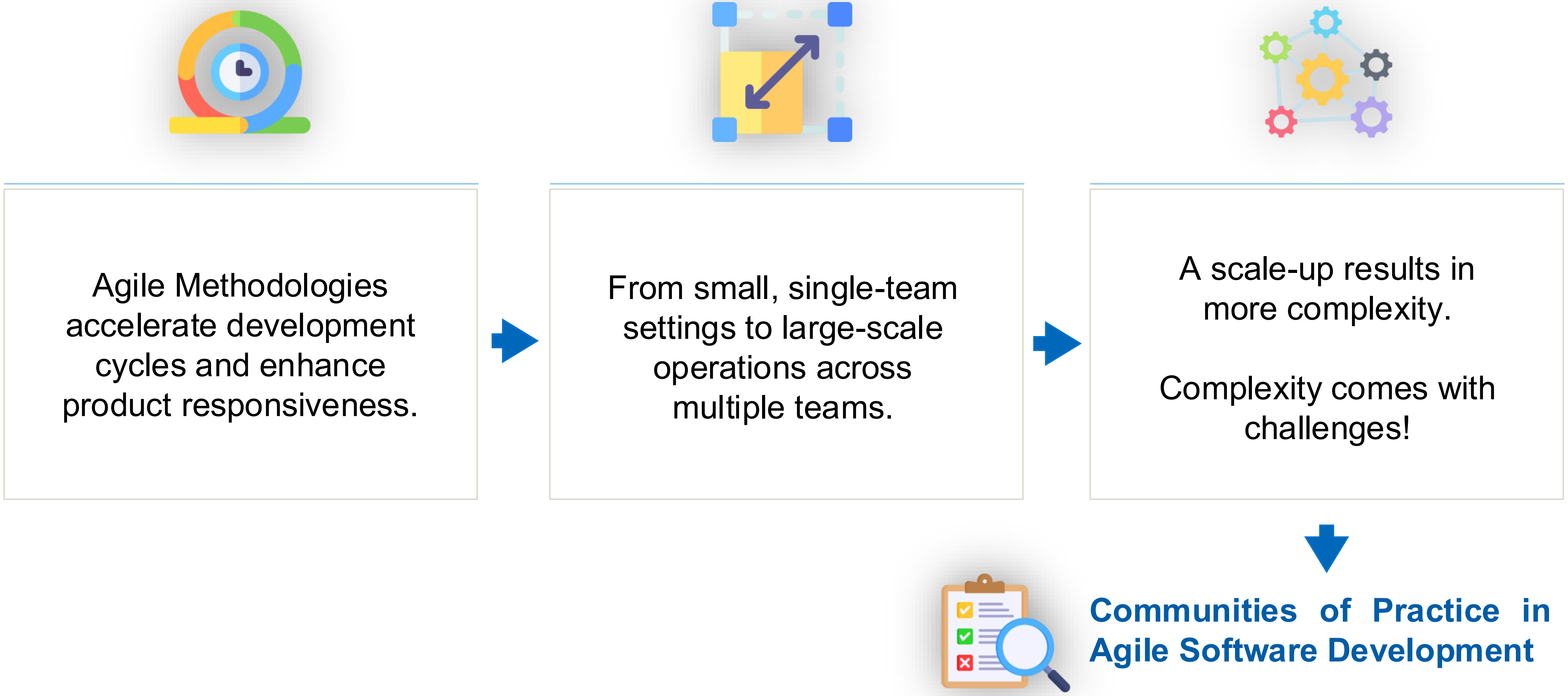
Motivation

Research questions

Research methodology

Timeline

Motivation (1/3)



Agile Methodologies accelerate development cycles and enhance product responsiveness.

From small, single-team settings to large-scale operations across multiple teams.

A scale-up results in more complexity.

Complexity comes with challenges!

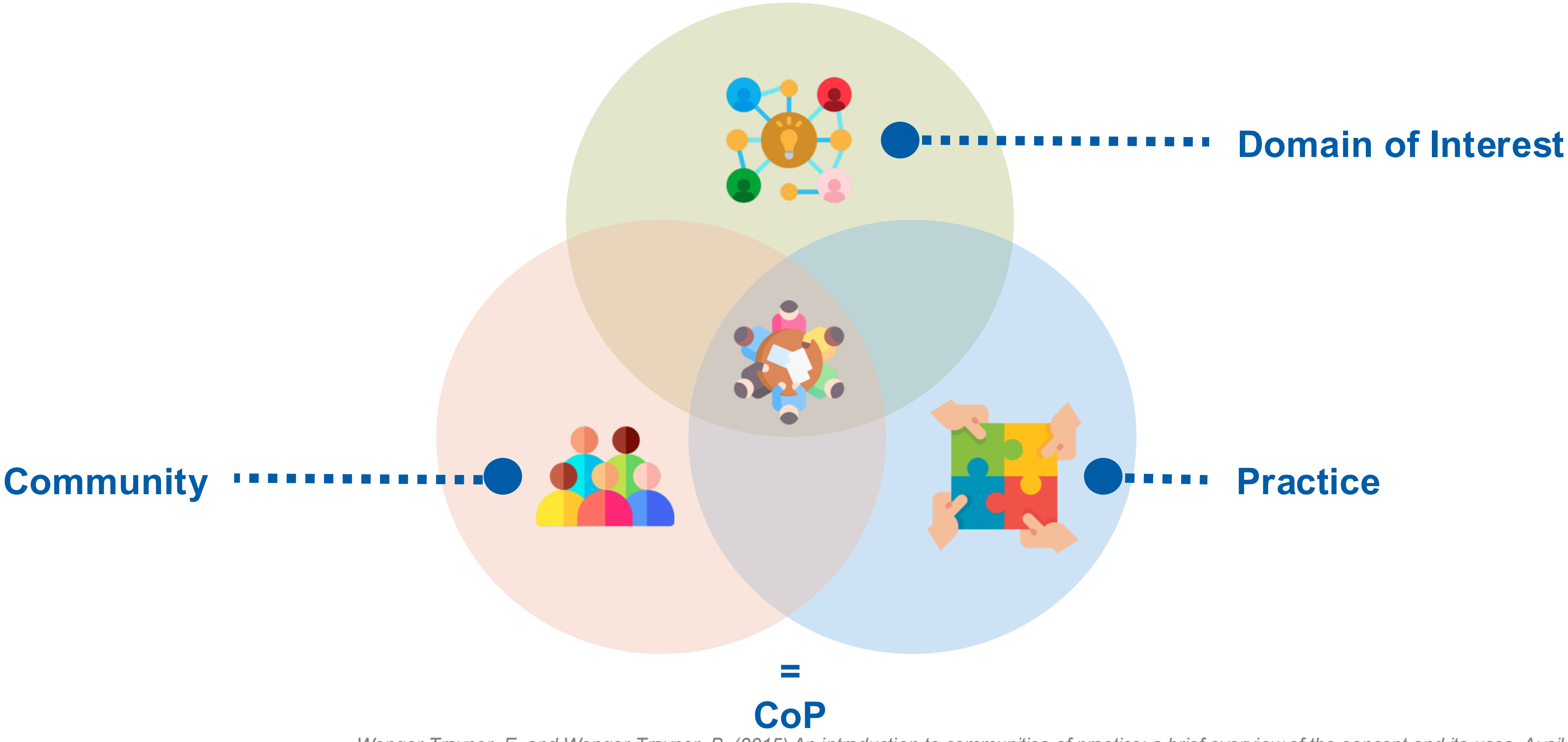
Communities of Practice in Agile Software Development

Paasivaara, M., & Lassenius, C. (2014). Communities of practice in a large distributed agile software development organization–Case Ericsson. Information and Software Technology, 56(12), 1556-1577.

Motivation (2/3)

Communities of Practice in Large-Scale Agile Software Development (CoPs)

- What are CoPs ?
  "Groups of people who share a concern or a passion for something they do and learn how to do it better as they interact regularly" (Wenger-Trayner & Wenger-Trayner, 2015).



Wenger-Trayner, E. and Wenger-Trayner, B. (2015) An introduction to communities of practice: a brief overview of the concept and its uses. Available from authors at https://www.wenger-trayner.com/introduction-to-communities-of-practice.

Motivation (3/3)

Communities of Practice in Large-Scale Agile Software Development (CoPs)

- Goal ?
  - Bridge cross-team gaps
  - Sustain agile practices
  - Adapt to c and changes
  - …

- The term “Community of Practice” is relatively recent, although the phenomenon it refers to has been perpetually evident in human behavior throughout history.

- Studies about the concept of CoPs exist, however, there remains a lack of a comprehensive synthesis of the existing research and conclusions in relation to Large-scale Agile Software Development.

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Research Questions

RQ1	What research endeavors exist investigating CoPs in large-scale agile software development?
RQ2	What types of CoPs exist in large-scale agile software development?
RQ3	Why and how were the CoPs established?
RQ4	What role do these CoPs play in the organizational context, and how are they organized?
RQ5	What challenges and good practices exist?

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Research Methodology

A Literature Review

- Steps ?
  - Identification and filtering of sources
  - Data Extraction

- **Currently: Identification and filtering of sources**
  - Definition of search strategy
  - Inclusion and exclusion criteria
  - Definition of search terms

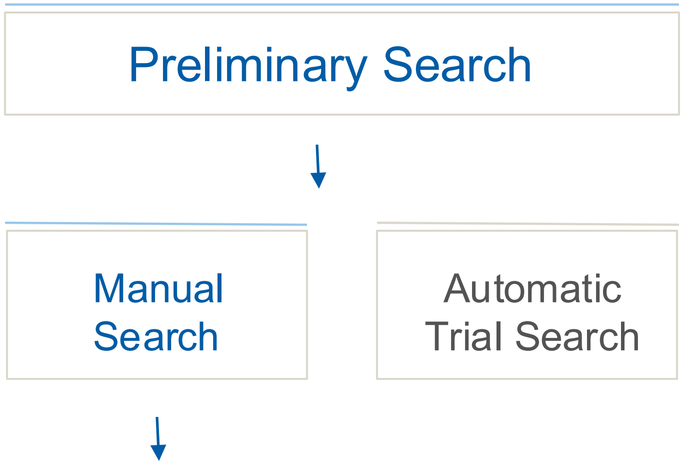
H. Zhang, M. A. Babar, and P. Tell. "Identifying relevant studies in software engineering". In: Information and Software Technology 53.6 (2011), pp. 625–637.
B. Kitchenham and S. Charters. "Guidelines for performing systematic literature reviews in software engineering". In: (2007).

Research Methodology

Example for definition of search terms

- Example of search strings:
  (community of practice **OR** communities of practice **OR** community of practices **OR** community of practices **OR** round table **OR** guild **OR** CoP **OR** Communities of Excellence **OR** Community of Excellence **OR** interest league) …
  AND
  (large-scale **OR** scaling **OR** scaled) …
  AND
  (agile **OR** agility **OR** extreme programming **OR** XP **OR** feature driven development **OR** FDD **OR** scrum **OR** crystal **OR** pair programming **OR** test-driven development **OR** TDD **OR** leanness **OR** lean software development **OR** lean development **OR** LSD) **AND NOT** manufacturing) …

Research Methodology



Preliminary Search

Manual Search

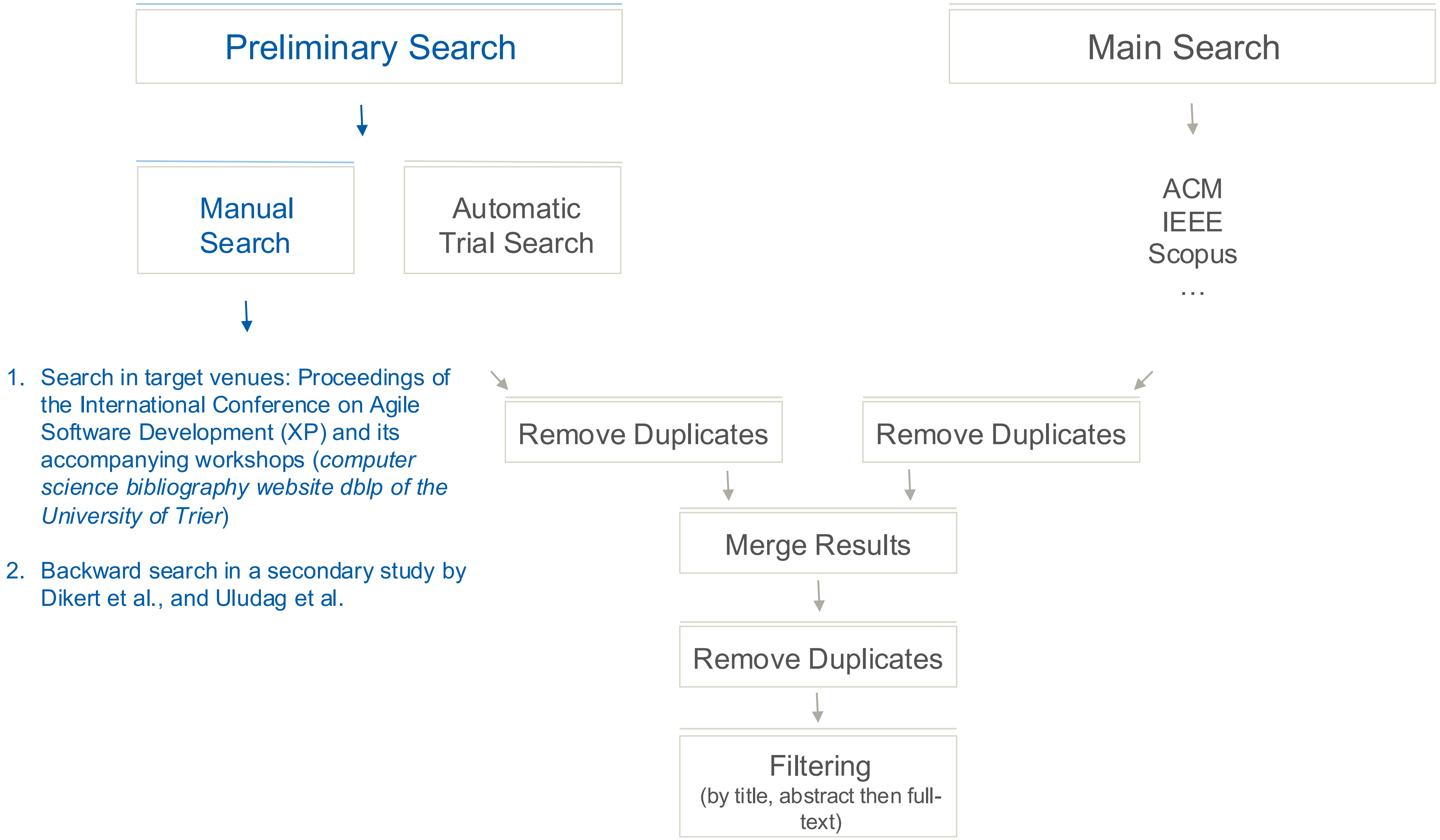
Automatic Trial Search

1. Search in target venues: Proceedings of the International Conference on Agile Software Development (XP) and its accompanying workshops (*computer science bibliography website dblp of the University of Trier*)

2. Backward search in a secondary study by Dikert et al., and Uludag et al.

Uludağ et al. "Revealing the state of the art of large-scale agile development research: A systematic mapping study." Journal of Systems and Software 194 (2022): 111473.

Research Methodology



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Main Search

ACM
IEEE
Scopus
…

Remove Duplicates

Remove Duplicates

Merge Results

Remove Duplicates

Filtering
(by title, abstract then full-text)

Uludağ et al. "Revealing the state of the art of large-scale agile development research: A systematic mapping study." Journal of Systems and Software 194 (2022): 111473.

Research Methodology

Next: Data Extraction

- Commonalities? Discrepancies?
- Categorization: Characteristics, Dimensions…
- Example of Dimensions:
  - Main Purpose/Focus: e.g., learning, training, creation of solutions
  - Scope: e.g., within one team of teams
  - Steering: self-organized, led by management
  - Target Group: e.g., role-based, topic-based
  - …

Research Methodology

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CoP is targeted at individuals who hold particular positions or job titles e.g., project managers, software developers…

CoP gathers individuals based on a particular topic or an area of interest. e.g., a technology, a method…

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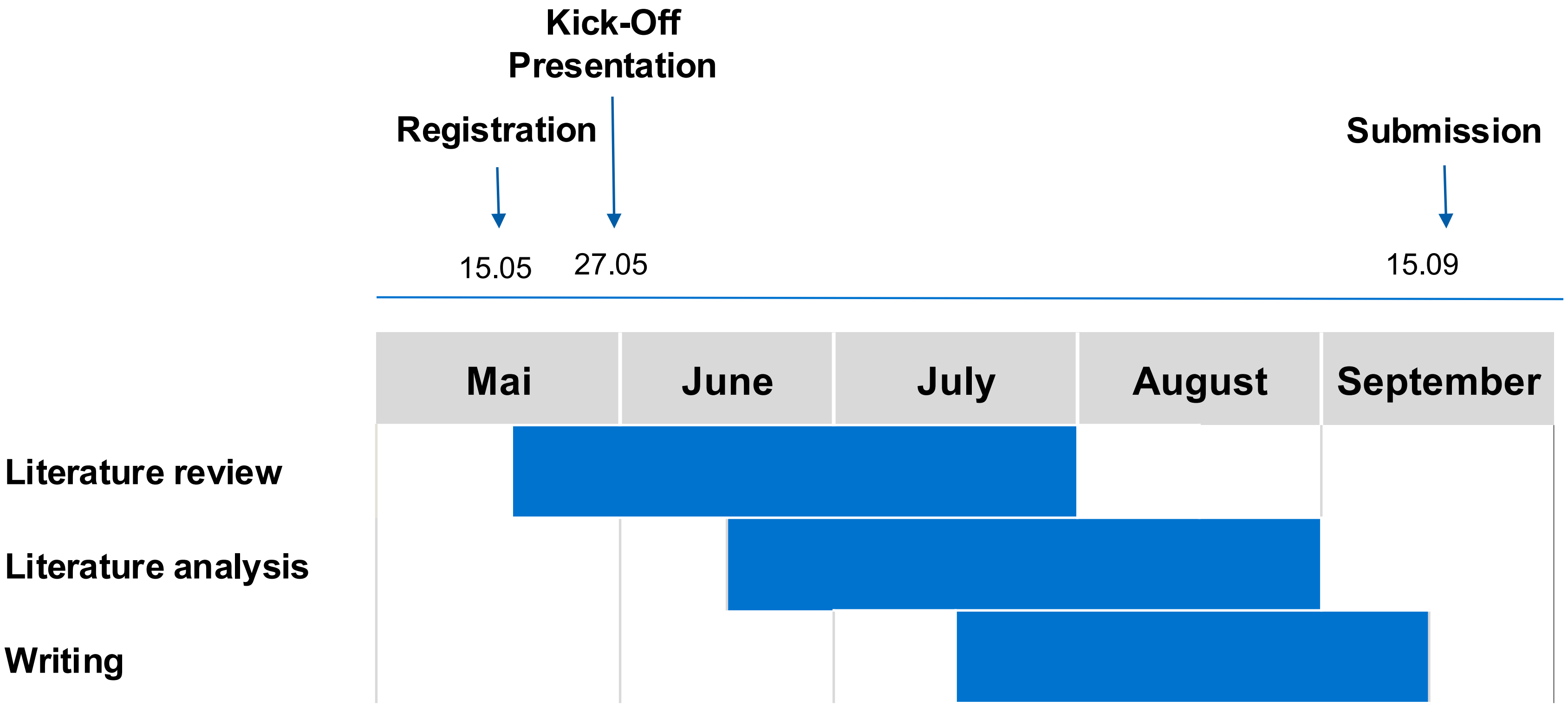
Research Roadmap



Kick-Off Presentation

Registration

Submission

15.05

27.05

15.09

Mai

June

July

August

September

Literature review

Literature analysis

Writing

Thank you for your attention!

Questions
&
Feedback

References

[1] *Paasivaara, M., & Lassenius, C. (2014). Communities of practice in a large distributed agile software development organization–Case Ericsson. Information and Software Technology, 56(12), 1556-1577.*

[2] *Wenger-Trayner, E. and Wenger-Trayner, B. (2015) An introduction to communities of practice: a brief overview of the concept and its uses. Available from authors at https://www.wenger-trayner.com/introduction-to-communities-of-practice.*

[3] *B. Kitchenham and S. Charters. "Guidelines for performing systematic literature reviews in software engineering". In: (2007), H. Zhang, M. A. Babar, and P. Tell. "Identifying relevant studies in software engineering". In: Information and Software Technology 53.6 (2011), pp. 625–637.*

[4] *H. Zhang, M. A. Babar, and P. Tell. "Identifying relevant studies in software engineering". In: Information and Software Technology 53.6 (2011), pp. 625–637.*

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