

Master's Thesis Kick-Off Presentation:

Investigating Metric Management in Large-Scale Agile Software Development

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Outline



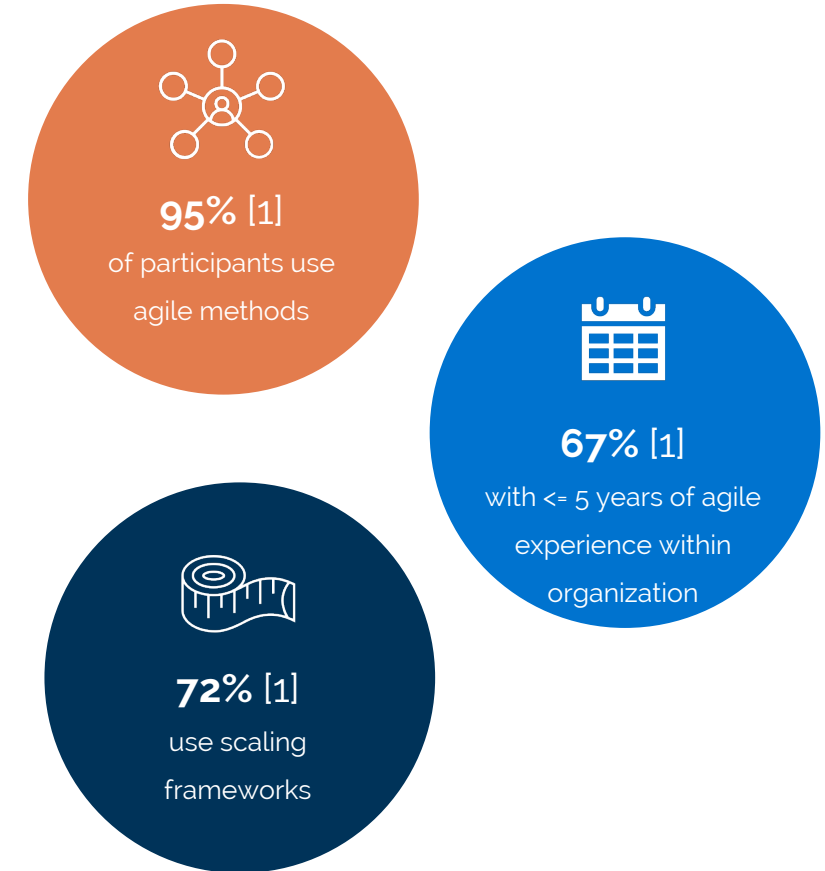
- Motivation
- Research Questions and Methodology
- Progress
- Timeline

Growing Relevance of Large-Scale Agile Software Development

- Software has become important part of products and services [2]
- Due to fast changing environment, agile methods are used in development [2]
- Original design of agile was made for small teams [3]
- During the last decade, adoptions for large-scale agile development came up [1]

→ Growing maturity and economic relevance

→ Demand for process optimization



[1] State of Agile Report, Digital.ai, 2020

[2] The effect of moving from a plan-driven to an incremental software development approach with agile practices, K. Peterson, C. Wohlin, 2020

[3] Extending software project agility with new product development enterprise agility, P. Kettunen, 2007,

Metric Management Process

- Recent research was conducted on a metric catalogue [4]
- Emerging from Enterprise Architecture, a holistic management process is missing [5]
- Multiple general approaches are available, but none tailored especially for LSAD [6] [7]

Maturity Grid

- *[məˌtjʊərəti]* The state of being mature; fullness or perfection of development or growth [8]
- Metrics can be used to determine maturity of organization
- From research partners we noticed interest in self-assessment
- Current available maturity models lack of scientific evidence and generalizability, but show industry relevance [9] [10]

[4] Design of a Metric Catalog for Large-Scale Agile Software Development, Tobisch, 2021

[5] Integrated Software Support for Quantitative Models in the Domain of Enterprise Architecture Management, Monahov, 2014

[6] ISO/IEC/IEEE International Standard - Systems and software engineering-Measurement process, IEEE, 2017

[8] Maturity, Oxford English Dictionary, 2021

[9] Capability Maturity Model, Carnegie Mellon University, 1993

[10] Measures and Grow, Scaled Agile Inc, 2021

RQ1 How does the metric management process look like in traditional software engineering?

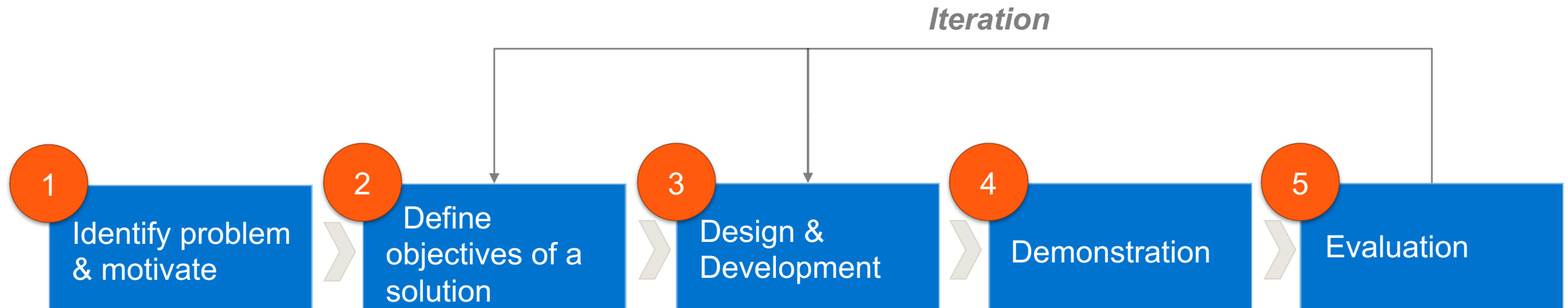
RQ2 How can a metric management process be designed for large scale agile software development?

RQ3 How can a scientifically grounded maturity grid for large scale agile software development be designed?

RQ4 How can a prototypical web application to support this maturity grid be designed?

Research Questions and Methodology

The Design Science Process



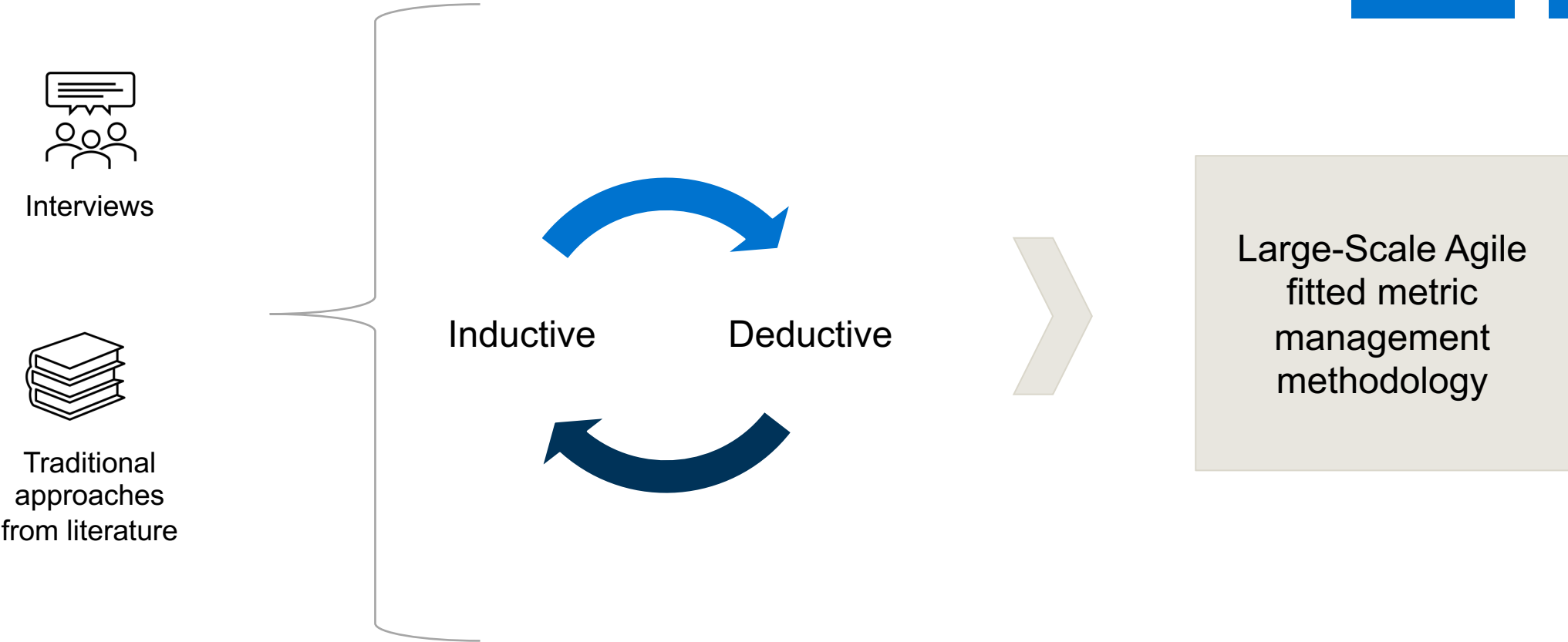
[11] A Design Science Research Methodology for Information Systems Research, Pfeffers et al., 2007

Research Questions and Methodology

Metric Management Methodology

RQ1

RQ2

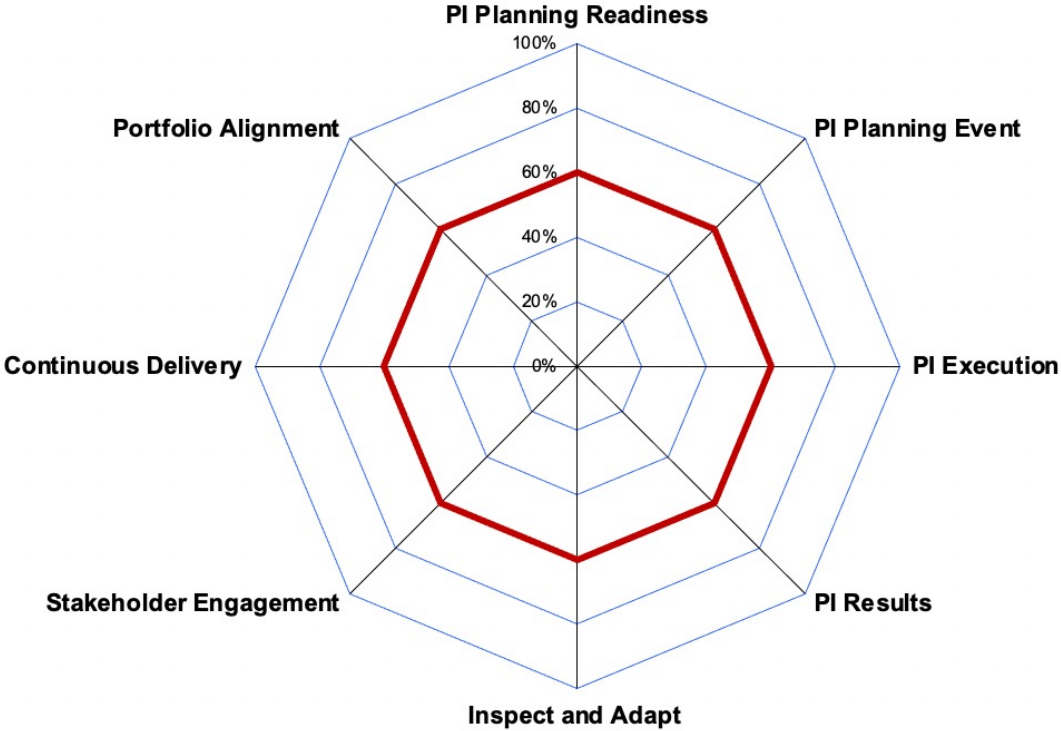


Research Questions and Methodology

Maturity Grid Example from SAFe

RQ3

RQ4



Area / Question	Score
PI Planning Readiness	
Program Kanban System is effectively used to facilitate exploration, analysis, refinement, and readiness of features	3,0
Program backlog is ready and socialized with the Agile Teams and other key stakeholders 1-3 weeks prior to the event	3,0
Features are prioritized ahead of time using WSJF	3,0
Vision briefings are ready and reviewed prior to event	3,0
Architects are extending runway by identifying upcoming enablers	3,0
LeanUX practices are used to design collaboratively and split features into Minimal Marketable Features	
RTE has prepared and announced events, agenda, attendance, venue, and remote access information	3,0
Total Planning Readiness Score	18,0

[12] Program Self-Assessment, Scaled Agile Inc., 2017

A scientifically grounded maturity grid

- Enables self-assessment within organization [14]
- Reduces human bias in assessment
- Creates value to determine improvement potential

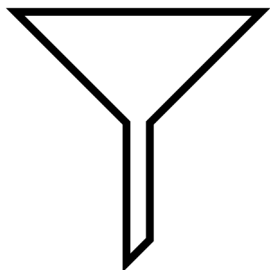


[14] Assessing Organizational Capabilities: Reviewing and Guiding the Development of Maturity Grids , Maier et al, 2012

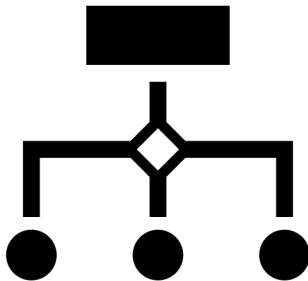
RQ3

RQ4

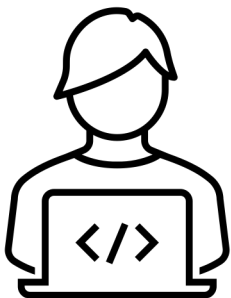
Past Research on
Success Factors in LSAD



Critical Success Factors



Maturity Model [13]



Tool Support

[15] A Model for Business Process Management Maturity, Roseman et al, 2004



Literature research conducted



Examined previous **interviews**



Standards evaluated (Spotify, SAFe, LeSS)



Research questions refined



Created attention at possible **research partners**

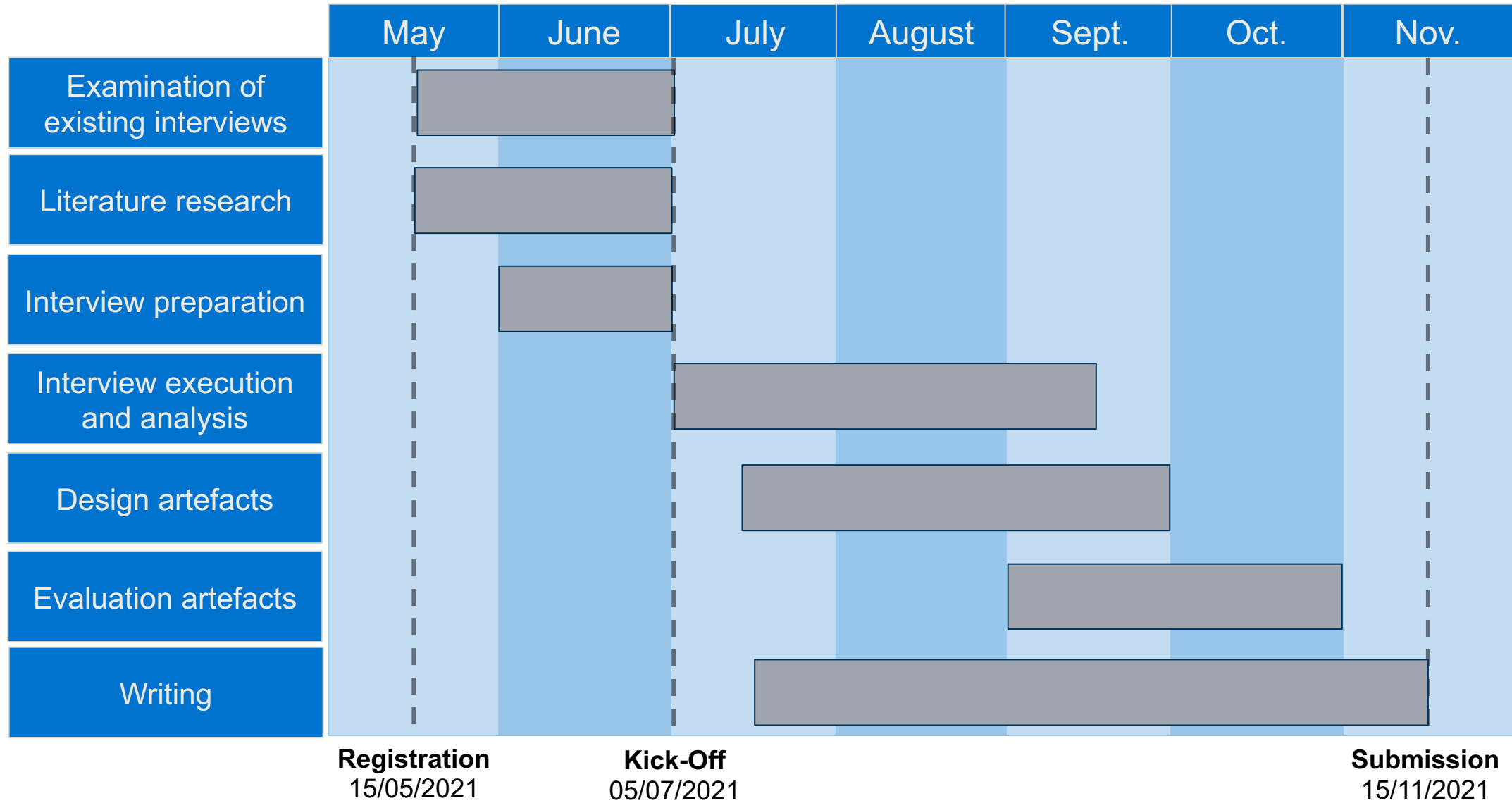


Interview sheet created



One Interview conducted &
preliminary evaluated

Timeline





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