Applying the Teamwork Quality Model to an Agile Program of a Utility Organization

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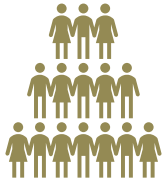
AGENDA

1. Motivation
2. Case Description
3. Research Questions
4. Methodology
5. Intermediate Results
6. Roadmap

Motivation

Large-scale agile development



Using agile software development patterns in large scale programs

Performance is crucial

150 FTE
100k p.a.
Δ2% → 300k p.a

Multiteam systems

Several strongly interdependent teams within a program

Limited researched

Influence factors on program performance

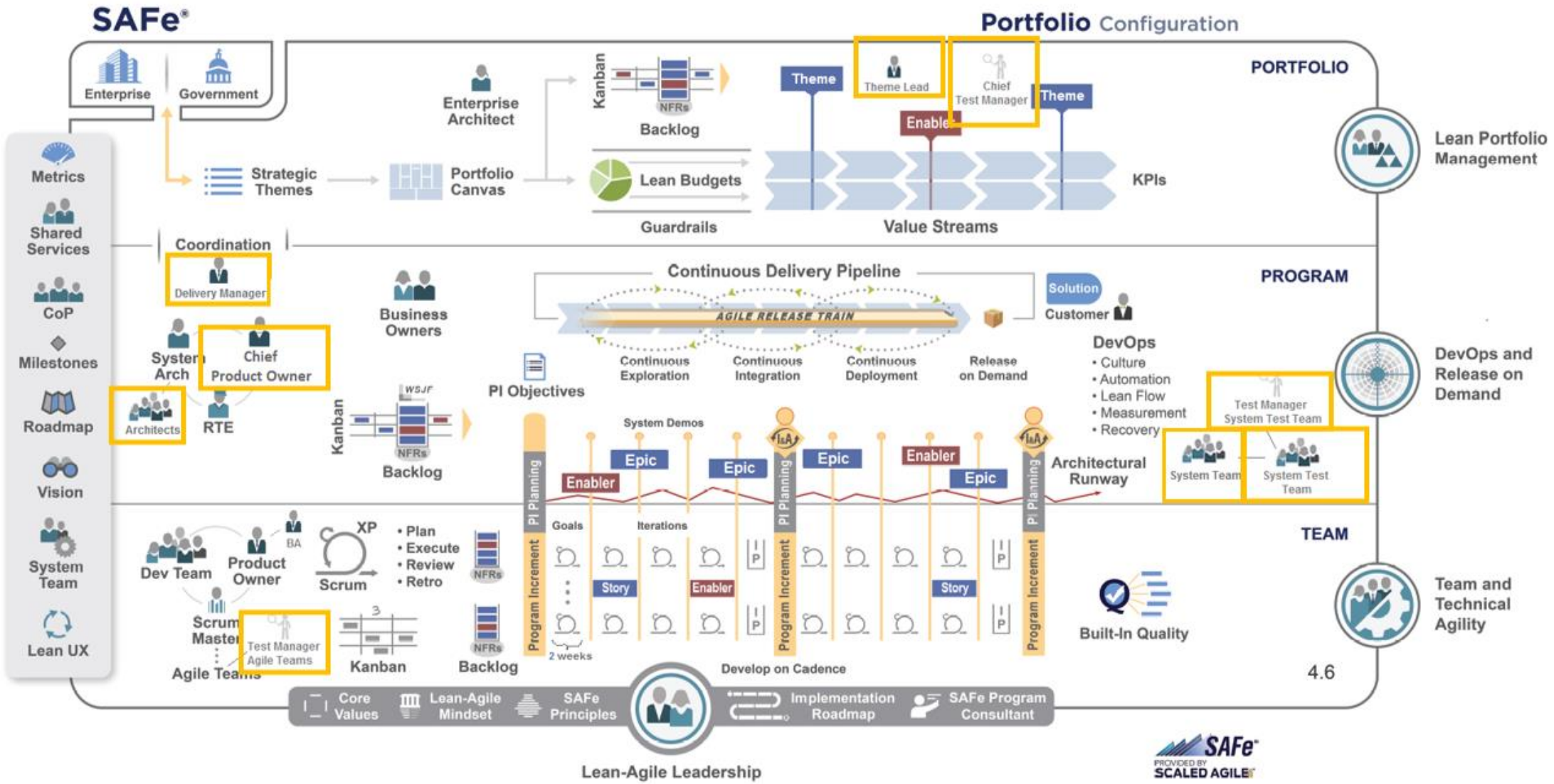
Sources
14th Annual State of Agile Report (2020)
J. Mathieu; M. A. Marks; S. J. Zaccaro. (2001)

Case description

- Company
  - Utility company
  - About 35.000 FTE
  - Based in Essen
  - Several agile programs
- Program
  - Product: Platform for charging stations across Europe
    - Go-live: Last year
  - Using Scaled Agile Framework (SAFe)
  - About 67 program members
    - 9 Coordinating roles
    - 3 Architects
    - 55 Developers in 9 Teams
  - International setting (Germany, Slovakia, Vietnam, Spain)

Sources
https://www.electrive.net/wp-content/uploads/2018/02/innogy-daimler-ladestation-charging-station.png

Case description – Adjusted SAFe 4.6



Research Questions

How is a large-scale agile development program performed at a utility company?	**RQ 1**
What are significant influence factors for improving the performance of agile teams at **team level** by using the TWQ Model?	**RQ 2**
What are significant influence factors for improving the performance of agile teams at **program level** by using the TWQ Model?	**RQ 3**
What are commonalities and differences between the TWQ Model at team and program level?	**RQ 4**

Methodology

Describing existing research on measuring team performance

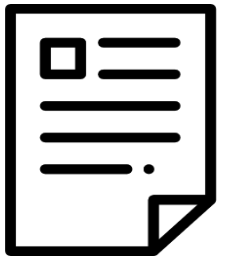
Literature Review

Describing how large-scale agile development programs at a utility company are performed

Interviews (RQ1)

Validating existing research on measuring the performance of agile teams on team level by using the Teamwork Quality (TWQ) Model

Survey (RQ2 & 4)



Extending existing research on measuring the performance of agile teams on program level by using the TWQ Model

Survey (RQ3 & 4)

Interviews

Objective

- RQ1: How is a large-scale agile development program performed at a utility company?
- General understanding of the agile program

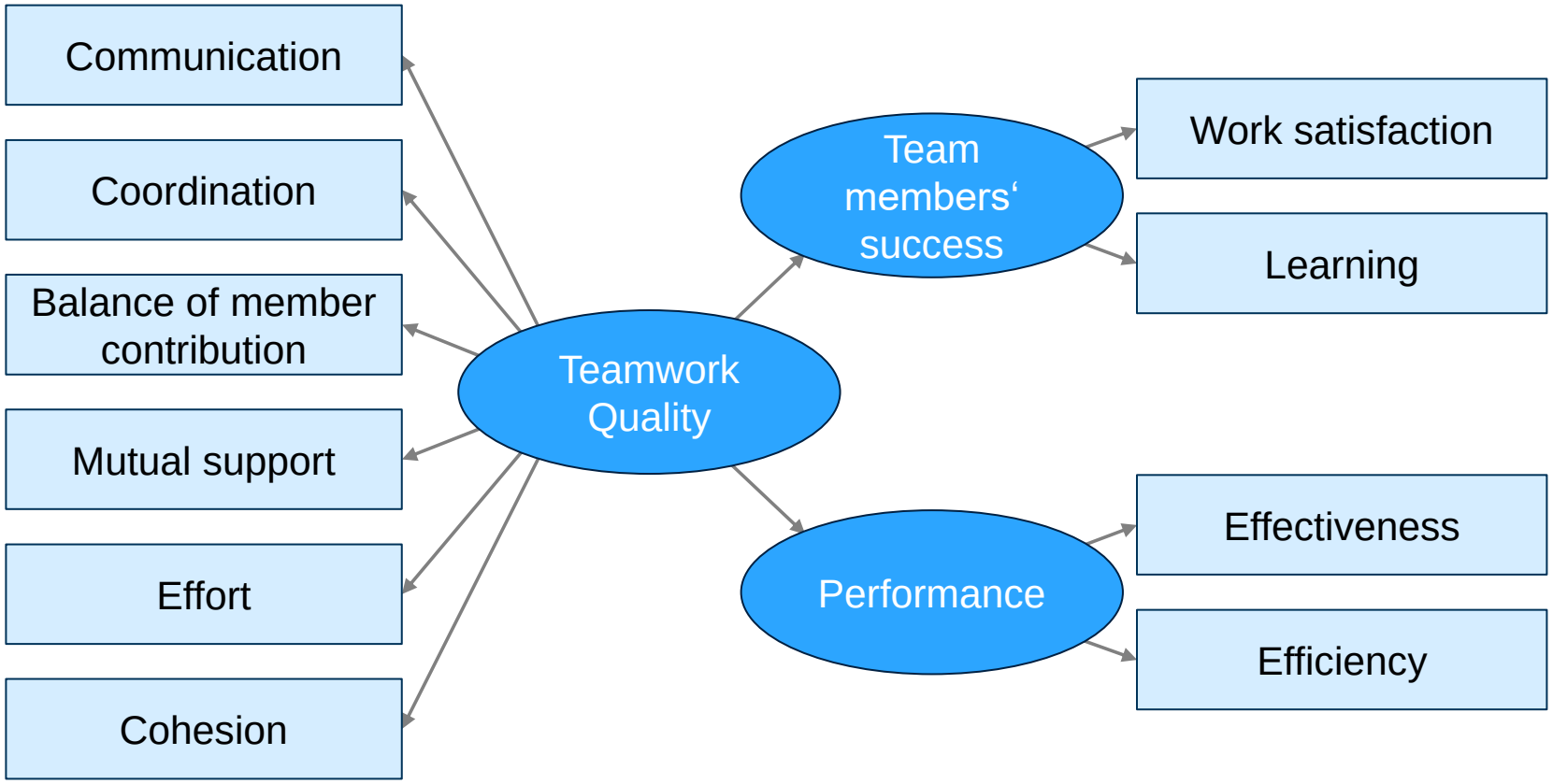
- Why did they use SAFe?
- Concerns and best practices?
- How do they measure success?
- How do they deal with architecting?

Interviewees

- 2 Members of the Leadership Team
- 2 Agile Coaches
- 2 Product Owners
- 1 Architect

- Semi-structured
  - Set of open questions
- Video-calls

Teamwork Quality Model



Why do we use this model:

- Model is already established on team level
- Model is validated for agile and classic teams
- Questionnaire is already developed and validated
- There are existing data to compare our results with

Sources
M. Hoegl and H. G. Gemuenden (2001)
Y. Lindsjørn et al (2016)

Survey

Structure

- About 10 questions to determine the context of the respondent
- 61 questions to determine the 10 TWQ factors
  - 5-Point Likert-Scale (+ do not know)
  - Based on the questions Hoegl and Gemuenden (2001)
  - Survey is already validated

- Two Surveys
  - Team level
  - Program level

Sources
M. Hoegl and H. G. Gemuenden (2001)
Y. Lindsjørn et al (2016)

Survey – Example questions

- There is frequent communication within the team
- There is frequent communication within the program

- The team members communicate often in spontaneous meetings, phone conversations, etc.
- The program members communicate often in spontaneous meetings, phone conversations, etc.

- In the team there are conflicts regarding the openness of the information flow
- In the program there are conflicts regarding the openness of the information flow

- So far, the team can be pleased with its work
- So far, the program members can be pleased with its work

- Going by the results, this teamwork can be regarded as successful
- Going by the results, this teamwork in the program can be regarded as successful

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Y. Lindsjørn et al (2016)

Survey

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  - Team Level
  - Program Level

Data processing

- M. Doepp (2019) has already conducted a survey on a program in the finance sector
  - The data basis is limited
  - Restricted to one program/sector
- Aggregate our data with data from Doepp
- Structural Equation Modeling (SEM)
  - Determine the correlation between the variables (latent and observed factors)
  - Determine whether the data fits the model
- Toolset
  - R
  - Package lavaan
  - SmartPLS

Sources
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Y. Lindsjørn et al (2016)

Intermediate results

Survey

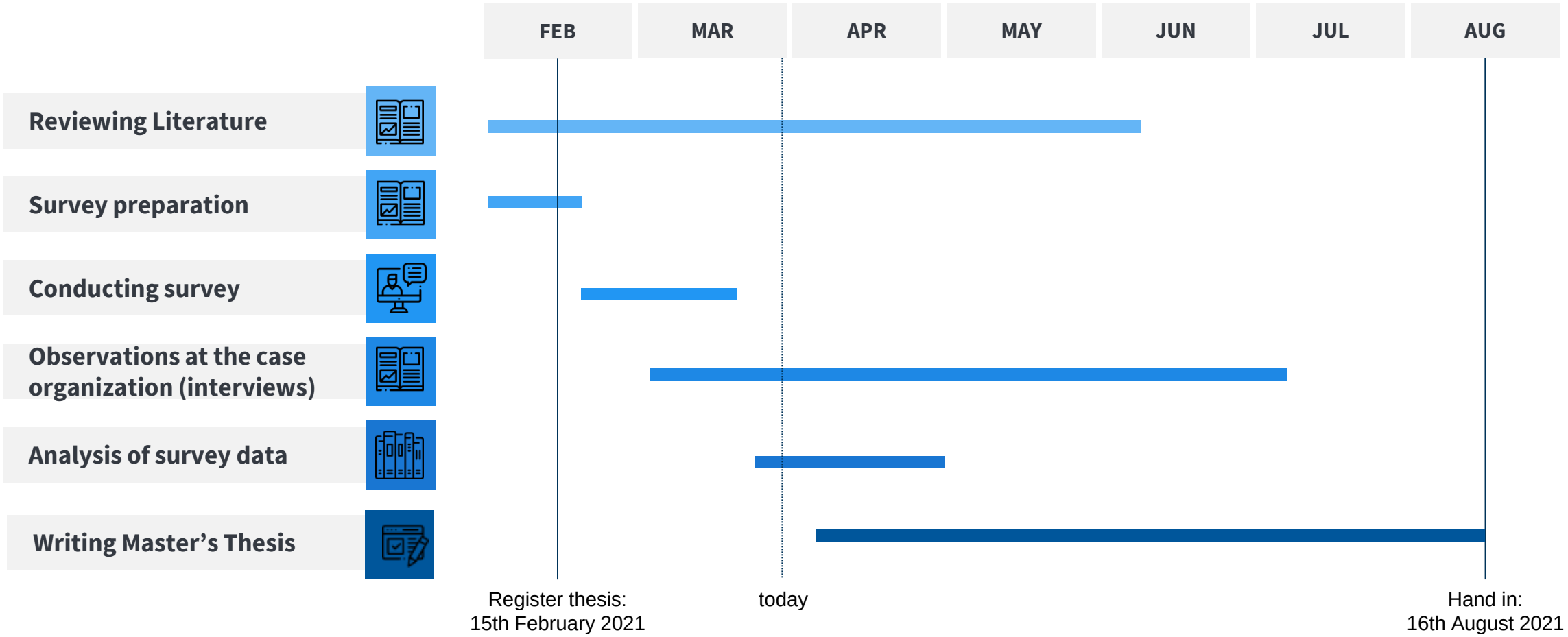
- Sent out both surveys to all 67 program members
- Minimum response rate should be 60%
  - $\lceil 40{,}2 \rceil = 41$

- Current responses
  - Team level
    - 48 (72%)
    - Sufficient → survey is closed
  - Program level
    - 41 (61%)
    - Ongoing collection of a few more responses

Interviews

- Participants are selected
- Question sets are defined
- Scheduled for the next two weeks

Roadmap


FEB
MAR
APR
MAY
JUN
JUL
AUG
Reviewing Literature
Survey preparation
Conducting survey
Observations at the case organization (interviews)
Analysis of survey data
Writing Master's Thesis
Register thesis:
15th February 2021
today
Hand in:
16th August 2021

References

M. Hoegl and H. G. Gemuenden *„Teamwork Quality and the Success of Innovative Projects: A Theoretical Concept and Empirical Evidence”* (2001)

Y. Lindsjørn et al. *„Teamwork quality and project success in software development: A survey of agile development teams”* (2016)

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