DIVERSITY

NAP Industry User Panel 15-11-23

Marian Bosch-Rekveldt

Associate Professor @IDM

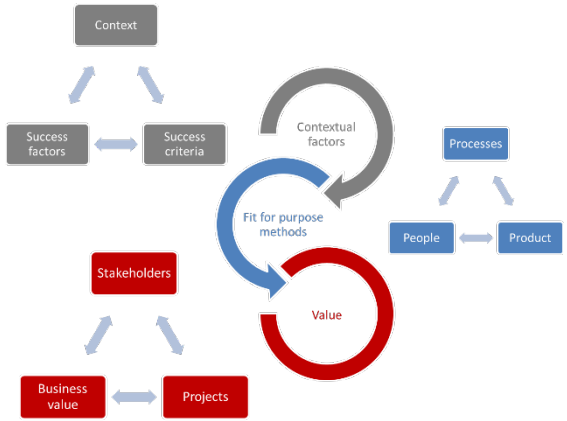
Integral Design and Management of Socio-Technical Systems

TU Delft

Creating Value by Projects

Projects as the vehicles,
project management as enabler
for a sustainable future!

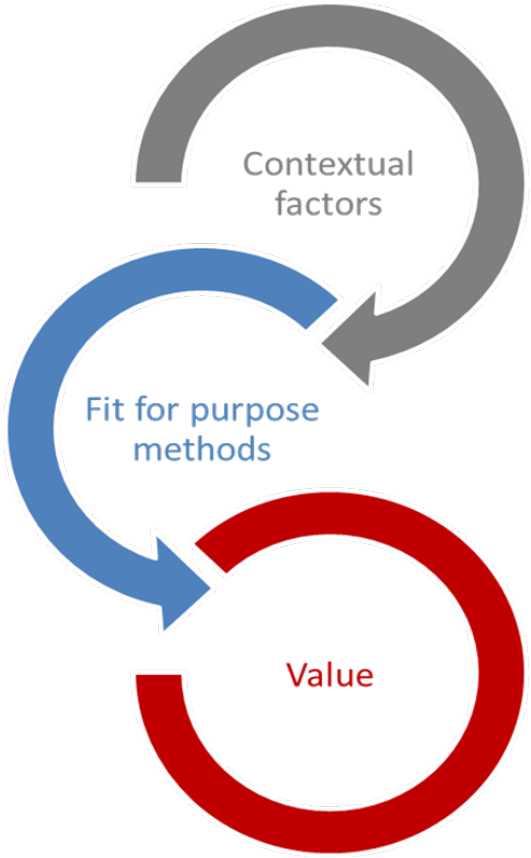
- Collaboration is key
- No one-size-fits-all, mastering complexity
- T-shaped engineers
- Leveraging education with research



Maturing project management research & practice: lifelong learning!

Research vision

"How can **fit-for-purpose** project management contribute to creating **value** in large engineering projects, given different **contexts**?"



- Development of the profession
  - **Creating value**
  - Fit for purpose methods
  - Contextual factors
- Collaboration & cross-sectoral learning!
- Mixed methods research

TU Delft

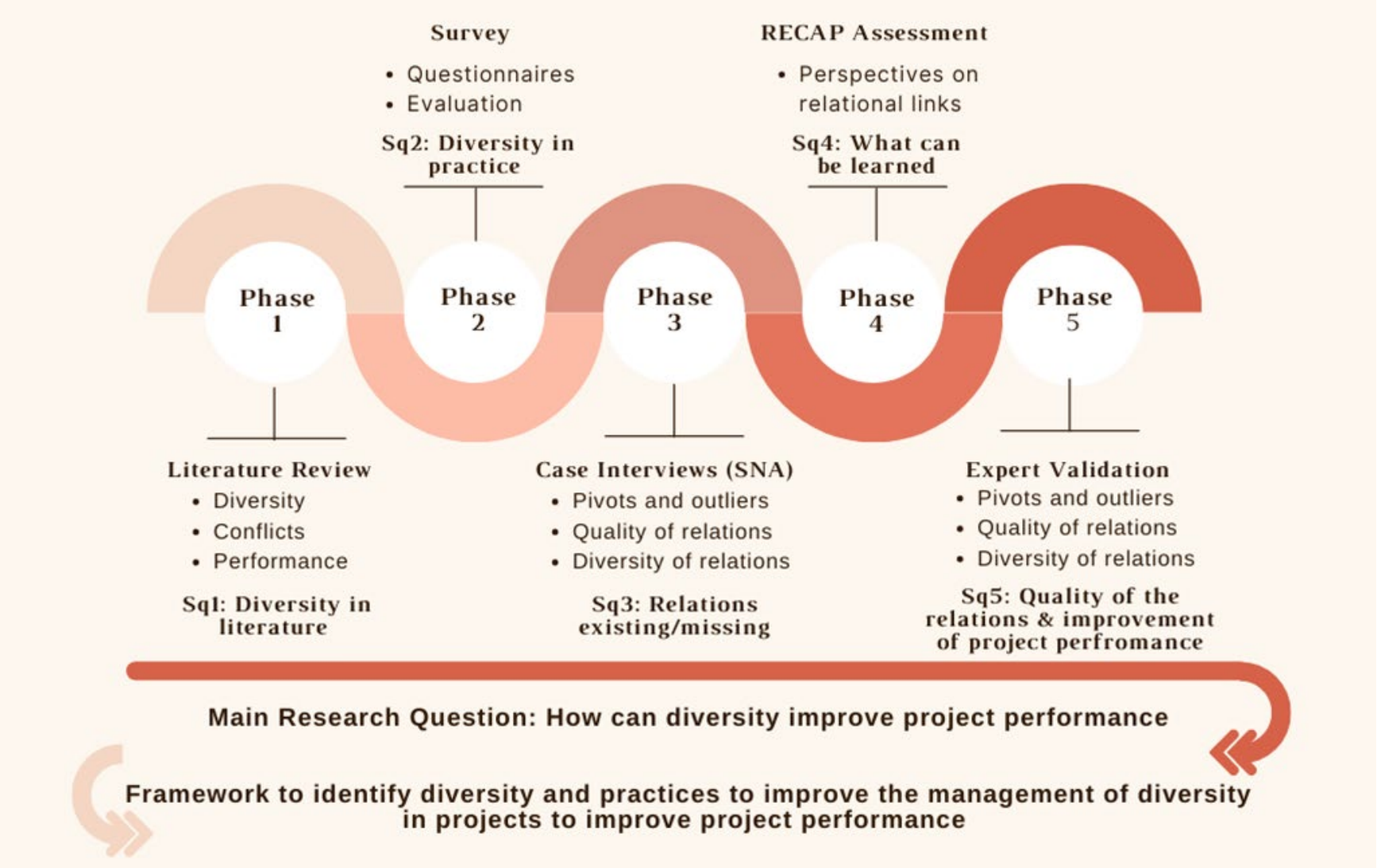
PMI-grant on *Diversity in Projects*

- 50kUSD
- 2022-2023
- Lead: Hans Bakker
- Junior researcher: Anastasia Kyriakou
- Others involved: Leon Hombergen, me
- Support from several companies & NAP network

Background

- More diverse teams due to globalisation
- Management of projects shifts from task and technology focus to people focus
- Hypothesis: more divers teams deliver better performance because of broader perspectives and ability to adapt to changing situations
- Main question: *How can diversity improve project performance?*

Research setup



Phase 1: literature review - matrix

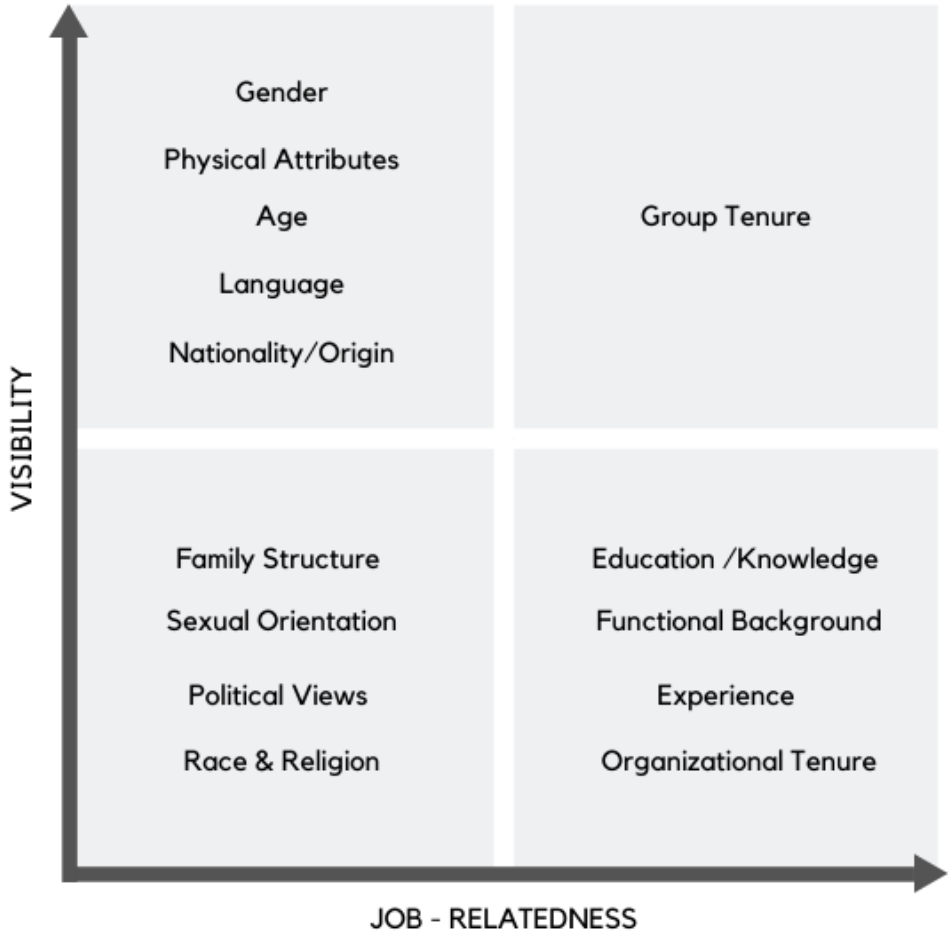


Figure 1 Matrix of the diversity dimensions - adjusted from Pelled (1996)

Phase 1: literature review - effects

References: Ancona & Caldwell (1992), Pelled (1996), Wu et al. (2019), Watson, Johnson & Merritt (1998)

Effect	**Description**
Cohesion & Coordination	Because of conflicts, internal communications become more complex and lower cohesion and coordination
External Communications	Wider expertise and backgrounds increase the network
Creativity	More attitudes and experiences assist in a more creative way of working and finding solutions
Cooperation	The ability to cooperate can be either enhanced or reduced, due to the different ways of thinking
Innovation	Variety in the way of thinking leads to more innovative ideas and solutions
Decision-Making	Either enhanced due to constructive criticism, or impeded due to the difficulties in reaching a decision
Support of Complex Systems	Because of knowledge diversity, complex systems like the team are supported
Problem-Solving	Enhanced by the constructive character of conflicts and the various experiences and viewpoints
Task Conflicts	Their constructive character fosters the exchange of opposing views and creative criticism
	Enhance performance on cognitive tasks
Relationship Conflicts	Because of disagreements on interpersonal issues, leading to negative emotions, frustration, anxiety
Process Conflicts	Based on disagreements about the logistics of a task, are harmful since the real reason is deeper

Figure 1 Matrix of the diversity dimensions - adjusted from Pelled (1996)

Phase 2: quantitative survey

- How is diversity perceived in practice?
- 5 companies participated
  - 2 contractors
  - 1 technical consultant
  - 2 management consultants
- 150 respondents answered partly, 74 in full

TU Delft

Phase 2: diversity in practice

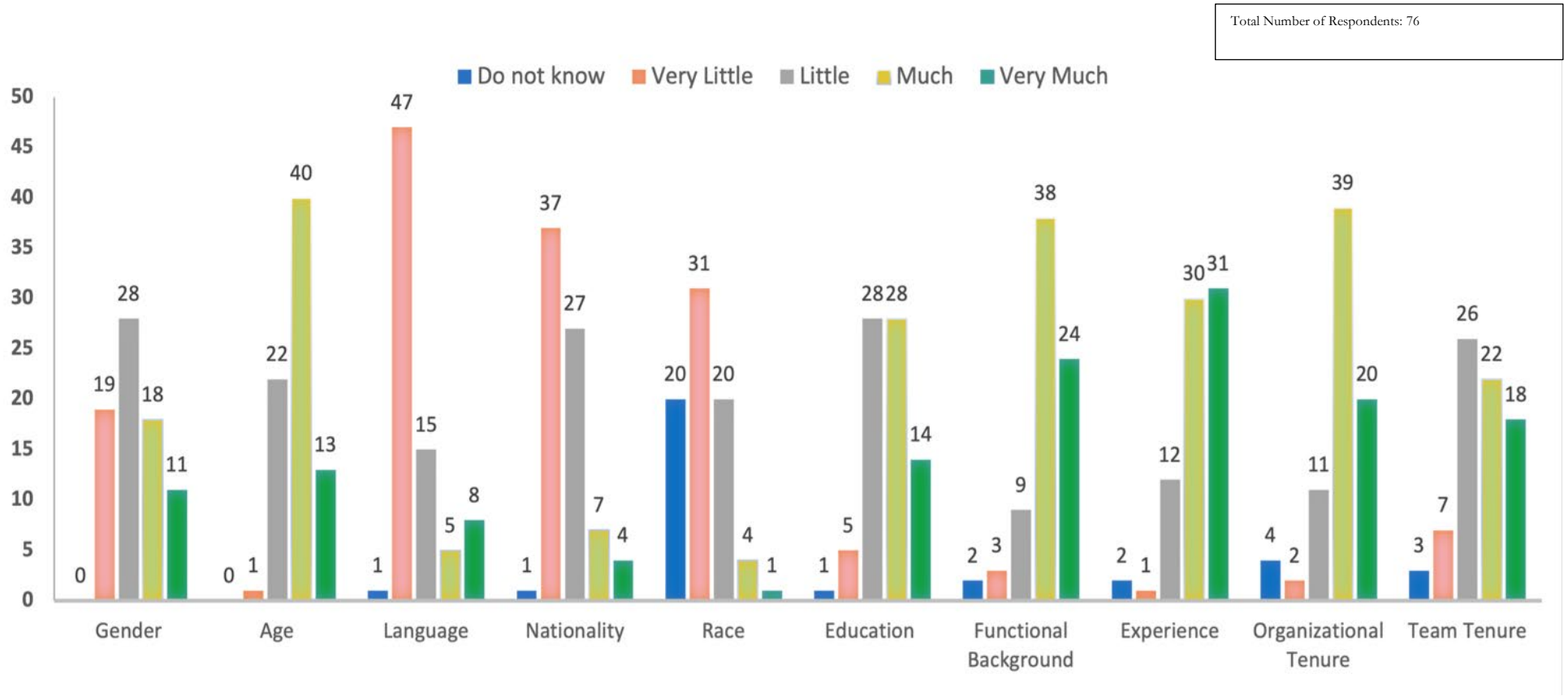


Figure 2: The degree to which each diversity dimension is recognized in practice - results

Phase 2: importance in practice

Low Perceived Importance	Medium Perceived Importance	High Perceived Importance
Race & Religion (1.14)	Gender (2.28)	Functional Background (3.04)
Language (1.63)	Team Tenure (2.59)	Experience (3.14)
Nationality/Origin (1.68)	Education/Knowledge (2.64)	
	Age (2.86)	
	Organizational Tenure (2.91)	

Phase 2: revised matrix of dimensions

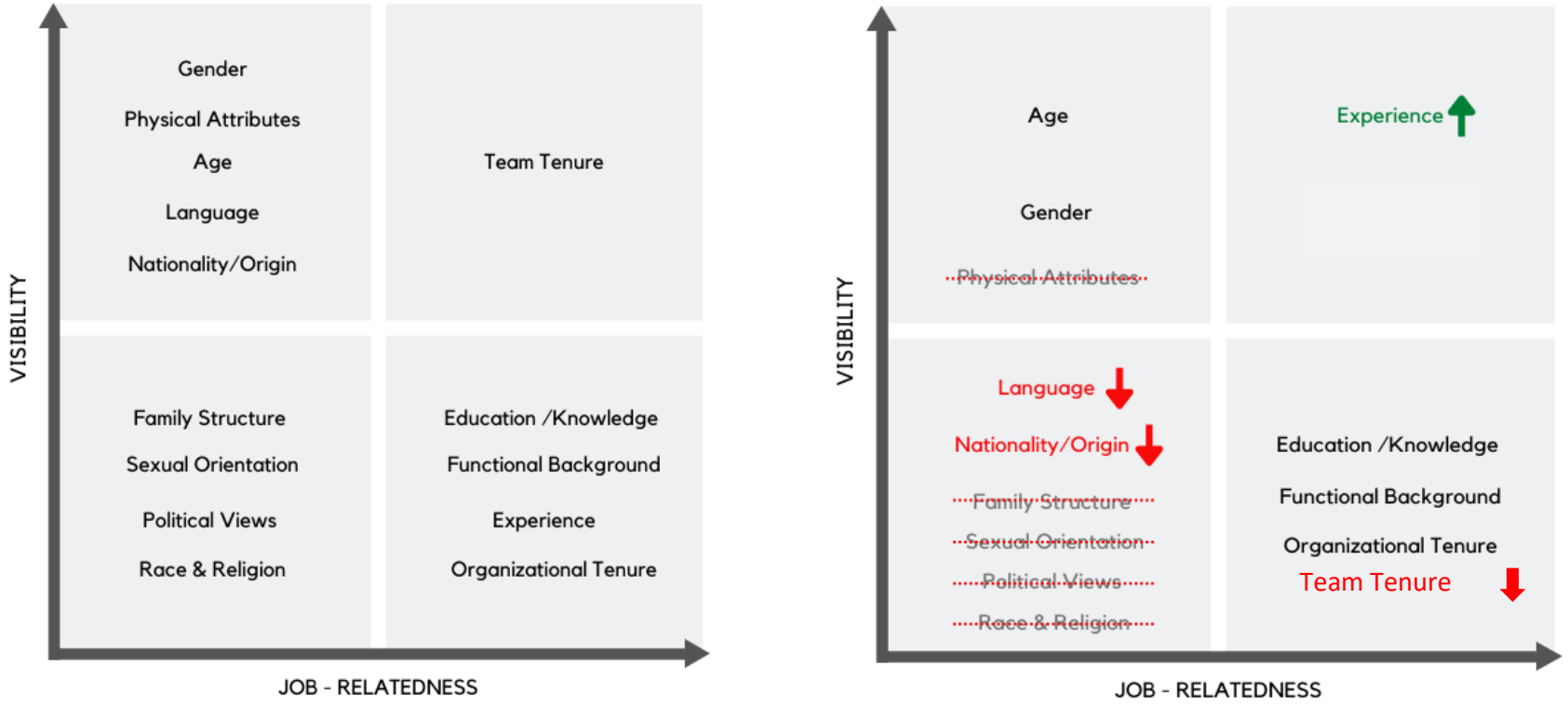
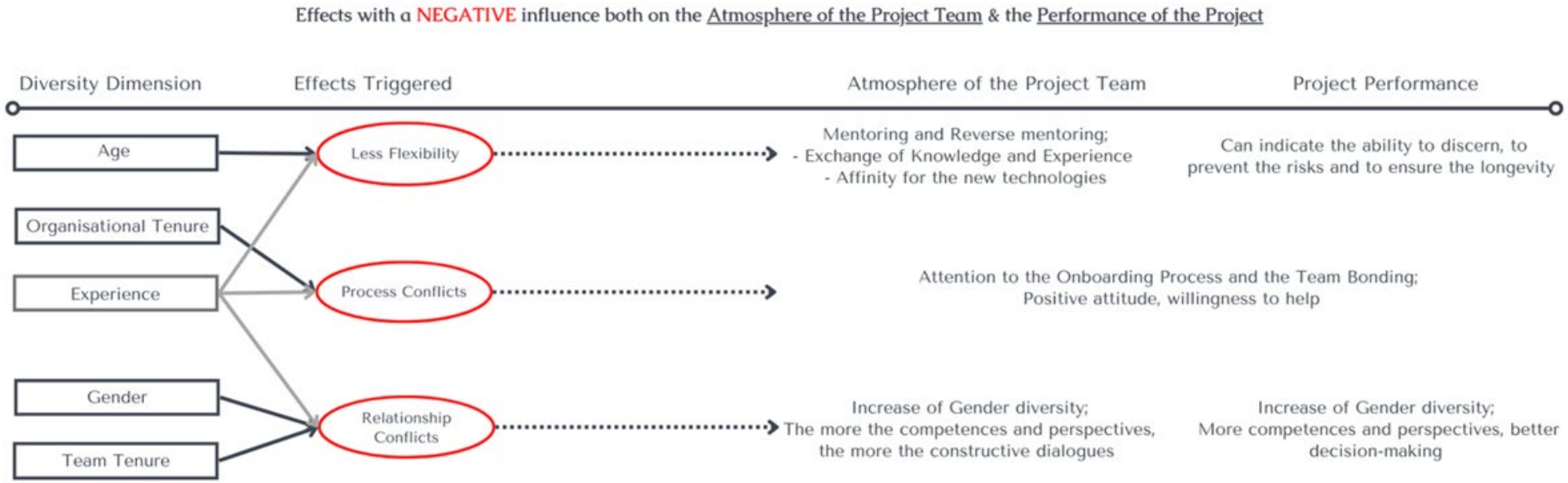


Figure 3: The initial (left) and adjusted matrix (right)

Phase 2: diversity effects

- Main obstacles for balanced collaboration
  - Relationship Conflicts
  - Process Conflicts



Phase 3: focus on relations

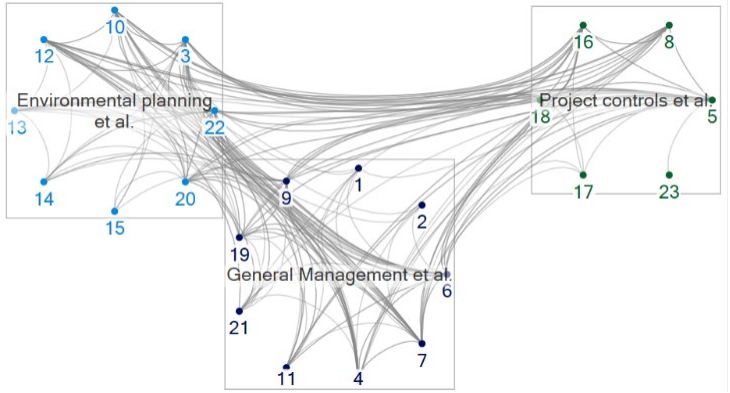
- Survey provides broad view, but no in-depth understanding => Social Network Analysis does

- For 9 projects was investigated
  - Networks
  - Diversity
  - Project performance

- 2 examples follow (case 1, case 6)

TU Delft

Phase 3: Social Network Case 1



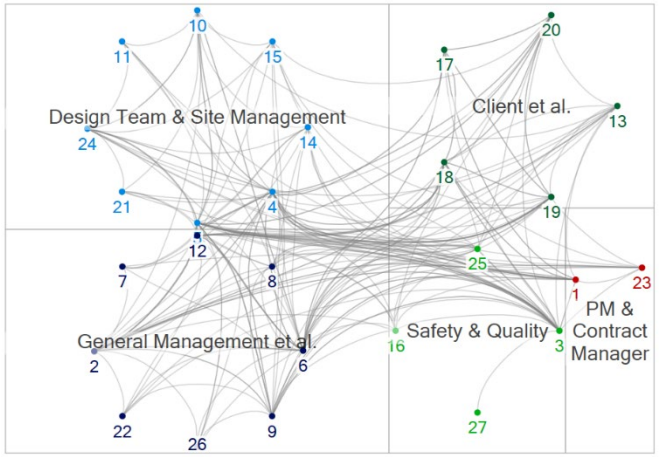
- Average team size: 22 members
- Partnership of two companies
- **Not diverse**; Some diversity in Age, Functional Background and Organizational Tenure
- Task & Relationship Conflicts
- **Poor performance**; 2/5

Findings:

- The informal clusters and increased contacts interrupt the communication
- Low levels of Age diversity constitute decision-making more complex
- Organizational Tenure seems responsible for some of the Task Conflicts
- Average Centrality scores → The upper management focused on decision-making and not very Flexible

15

Phase 3: Social Network Case 6



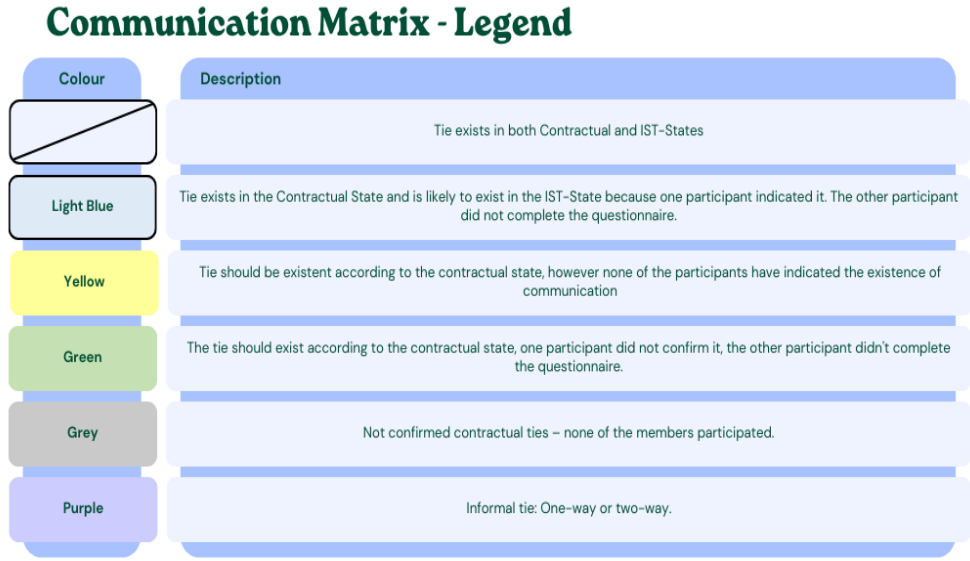
- Average size; 26 members, integrated Design & Execution sub-teams
- **Diverse**; Gender, Age, Experience and Functional Background, Tenure
- Task & Relationship Conflicts present
- **Good performance**; 4.5/6

Findings:

- The informal clustering seems to be successful, with effective collaboration among the members
- Diversity acts supportively, while the negative effects are minimized
- Evidence that diverse teams can achieve good atmosphere and high performance

16

Phase 3: relations in practice (SNA)



Phase 3: analysis

- **Degree Centrality**: Refers to the number of ties (direct contacts) that an individual has with the other vertices
- **Closeness Centrality**: It is a social distance measure, emphasizing the distance of a vertex when it comes into spreading an information to others in the network
- **Betweenness Centrality**: It is based on the frequency in which the vertex lies in the shortest path between two others

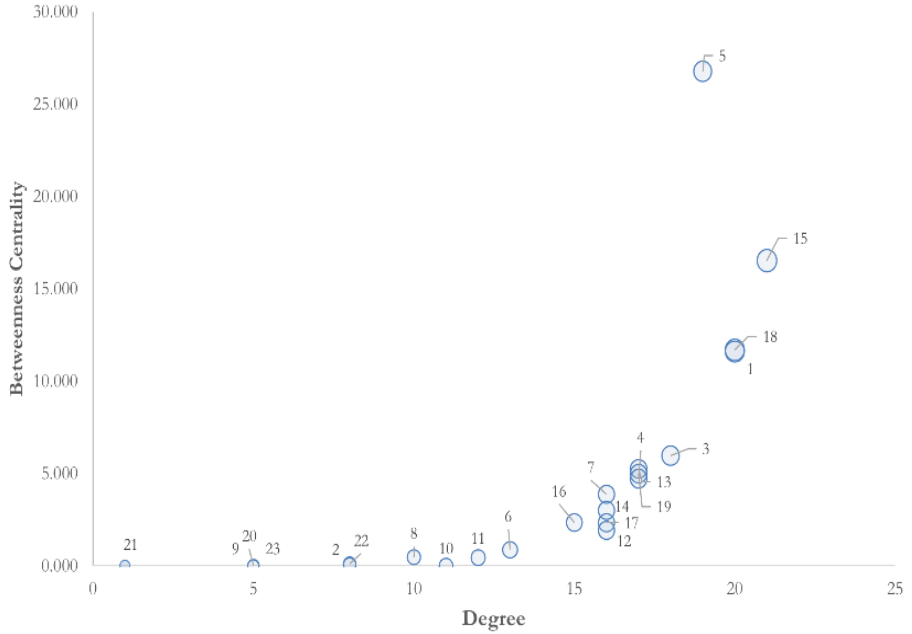


Figure 5: Centrality results on individual level for Case 1.

The size of the circles represents the Closeness Centrality.

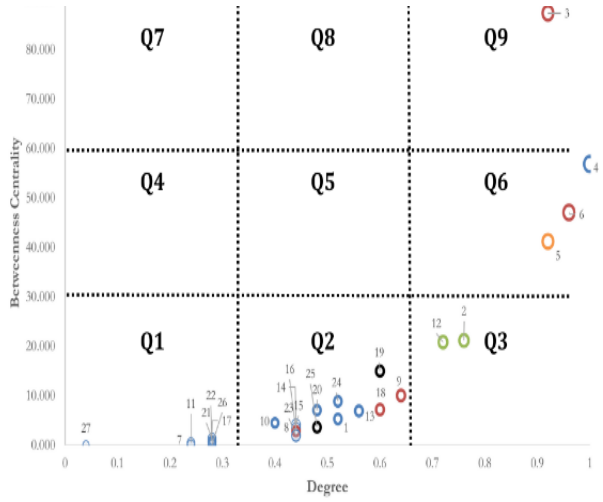
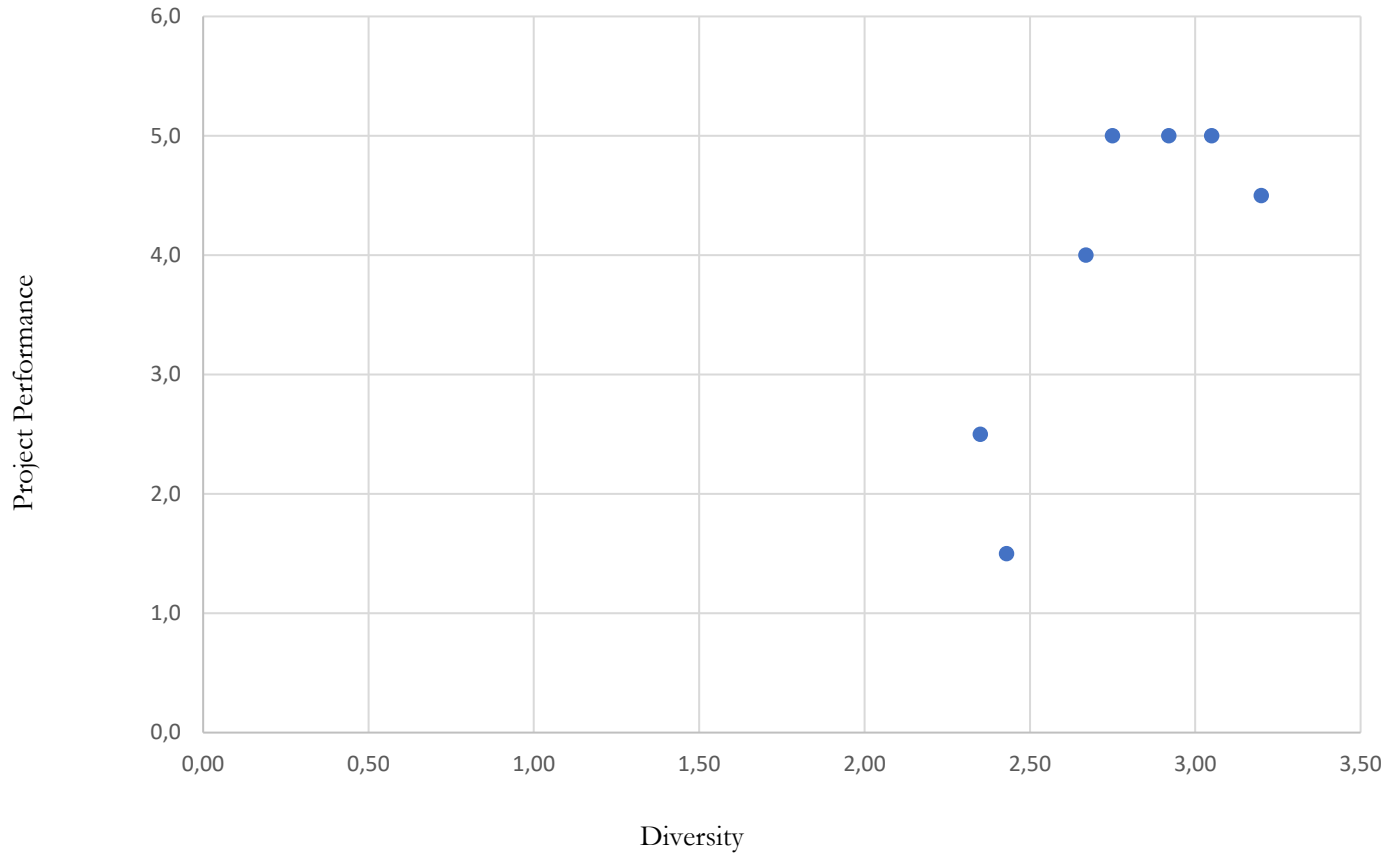


Figure 7: The centrality measures of Case 6 as a representative example of the comparison approach

Phase 3: diversity vs performance



Phase 3: specific findings

- More diverse teams have better gender balance in terms of **connectivity**
- Targeted communication (**avoiding ties with low connectivity**) in cases with good performance
- Diversity in “Age”, “Gender” and “Experience” positively affects the performance of the project
- Task and relationship conflicts seem mainly triggered by “Team tenure” and “Organizational tenure” diversity

TU Delft

Phase 4: RECAP on two projects

- Investigating relationship quality

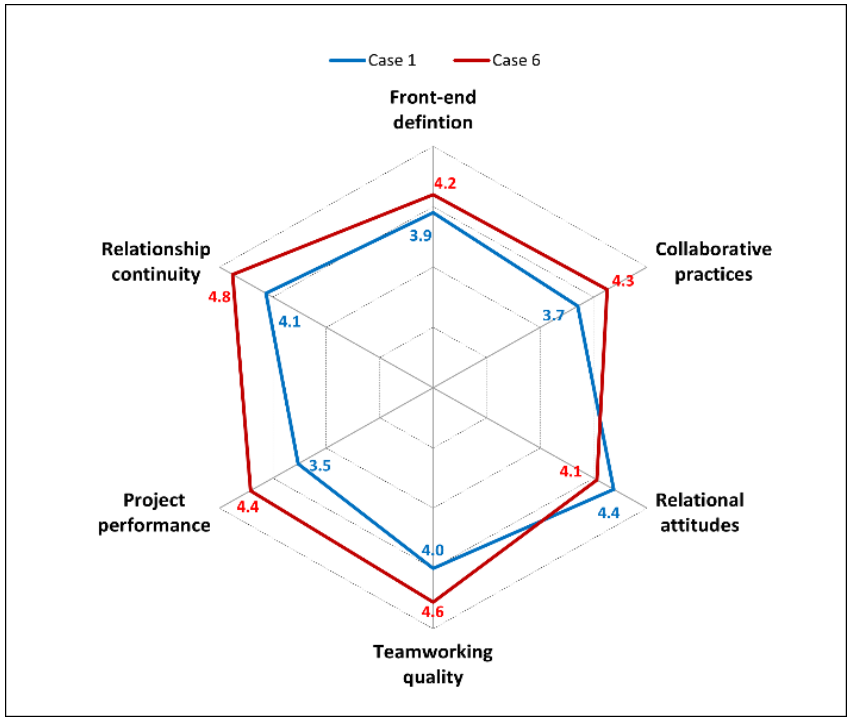


Figure 8: The comparative RECAP results

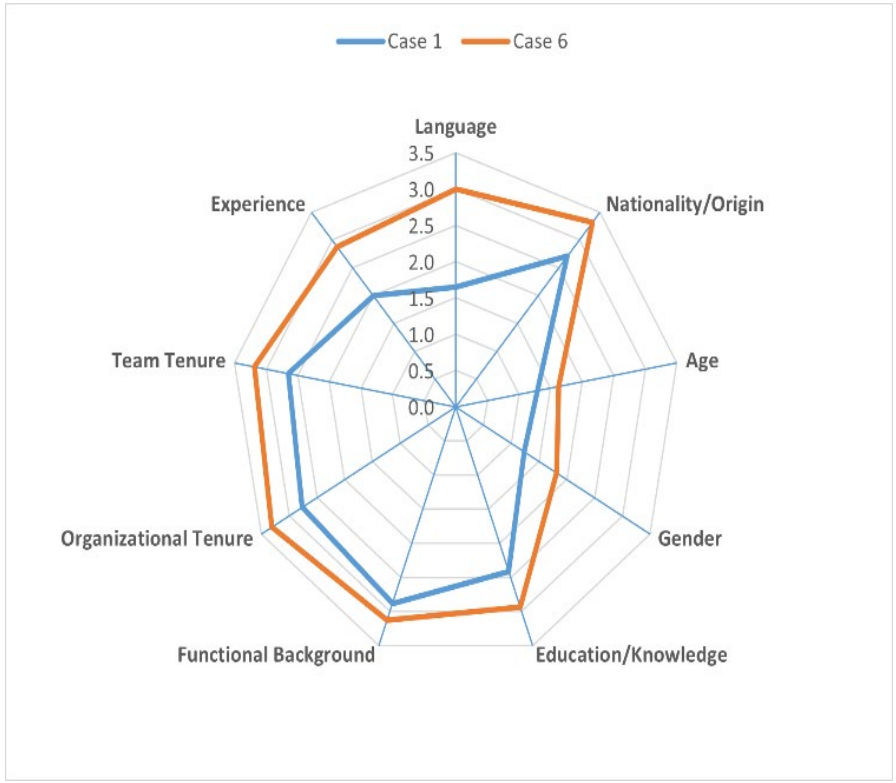
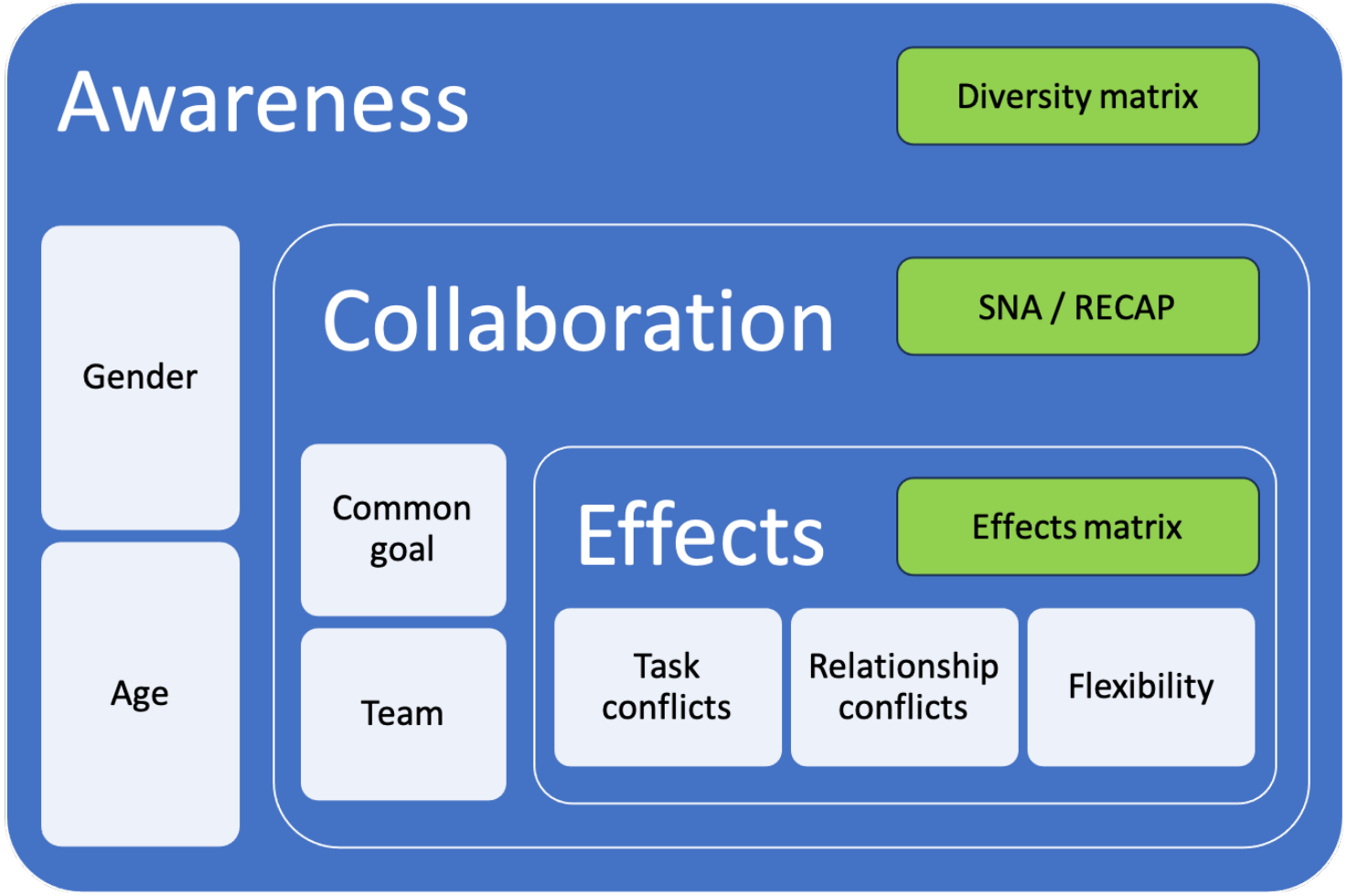
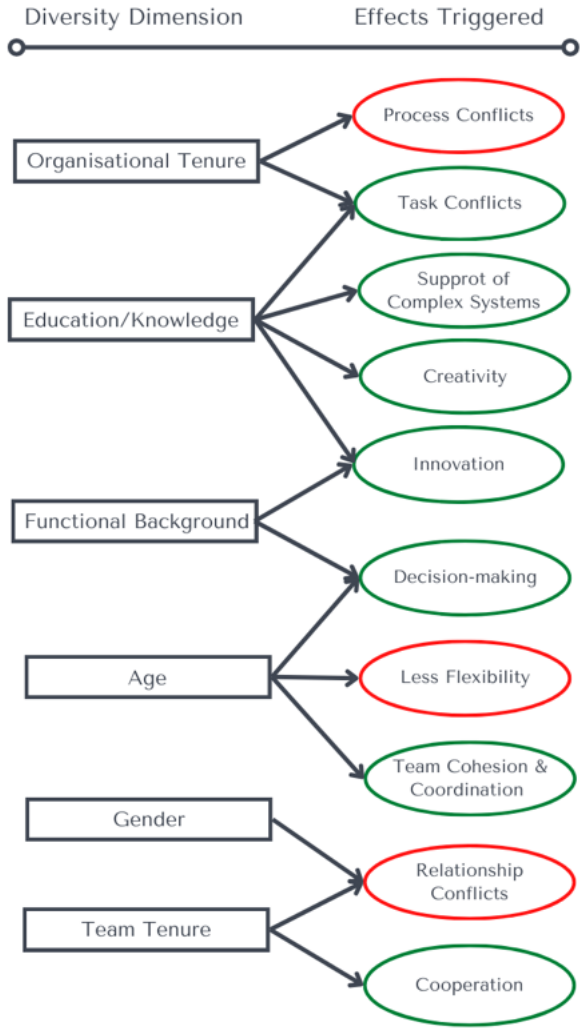


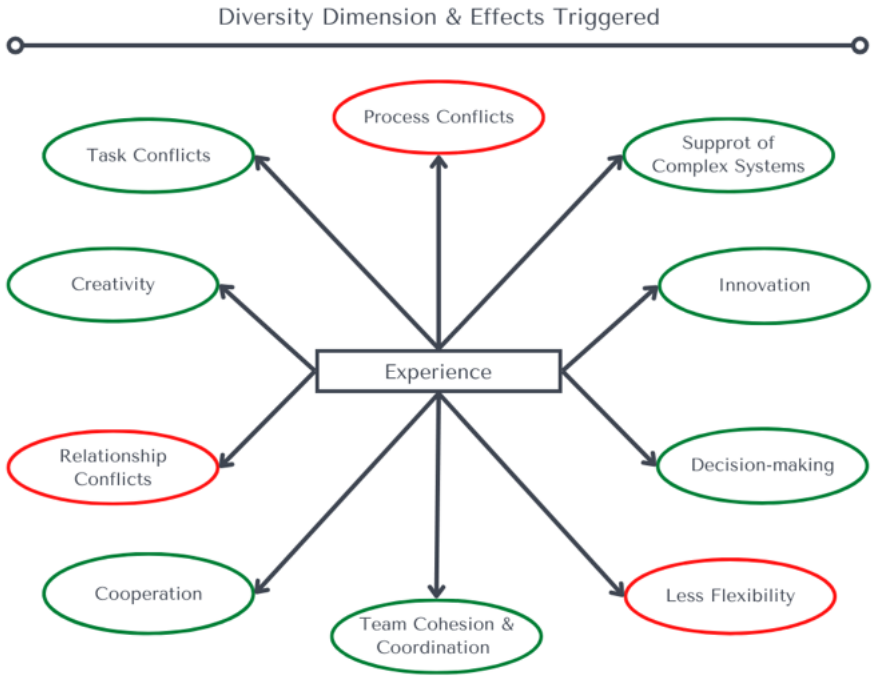
Figure 9: The diversity dimensions as observed in Cases 1 and 6

Phase 5: Framework



Phase 5: Effects triggered by diversity





How can diversity improve project performance?

Our study indicates that it is important to consider and understand the effects of the different dimensions of diversity, while splitting between visible and job-related categories.

Although diversity might lead to conflicts, particularly task conflicts are considered as constructive for improving the project.

TU Delft

Diverse people are key

for mastering success

Thank you for your attention

TU Delft