

Exploring the Method Jungle of Large-Scale Agile Software Development

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About Me



● UNIBZ,
Italy (Ph.D,
2014)

● Lero, NUIG,
Ireland (MC
Fellow, 2018)

● MMMI, SDU,
Denmark (Asst.
Prof., 2021)

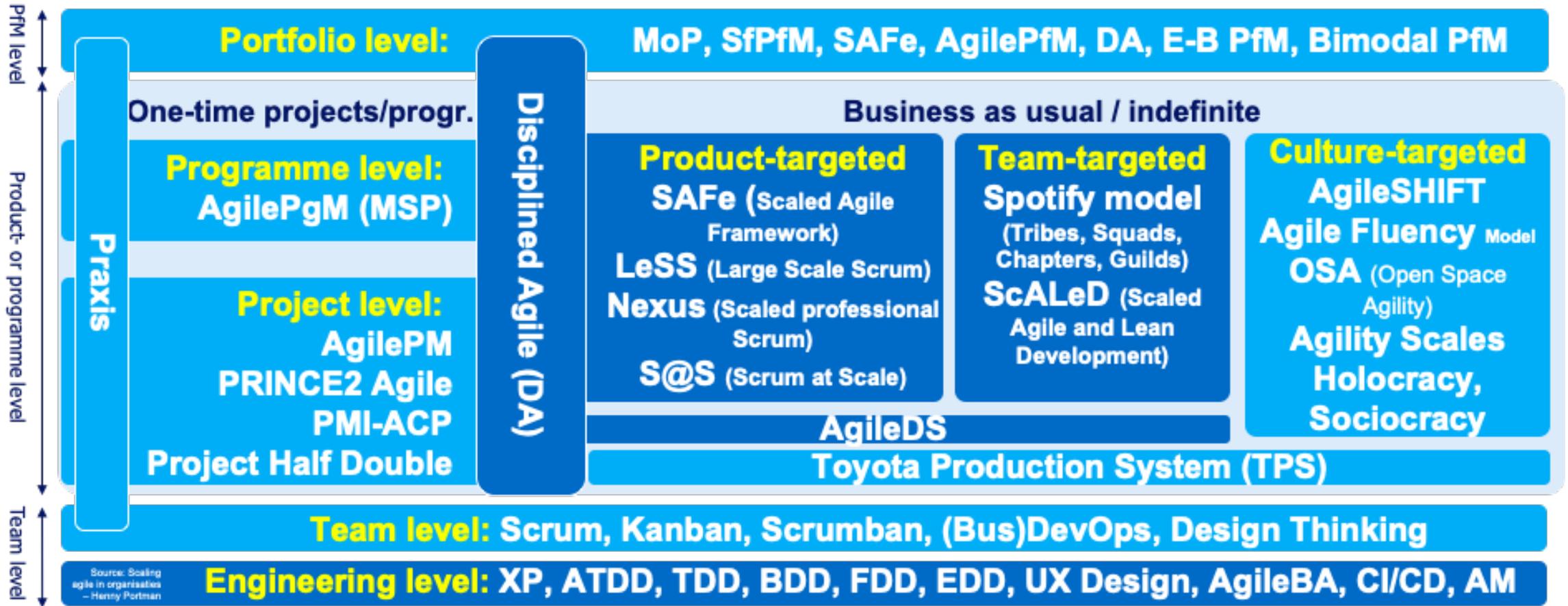




Agenda

- Method Jungle
- Large-Scale Development Methods
- Examining the State-of-the-Art
- Key Takeaways

Method Jungle





Large-Scale Development Methods

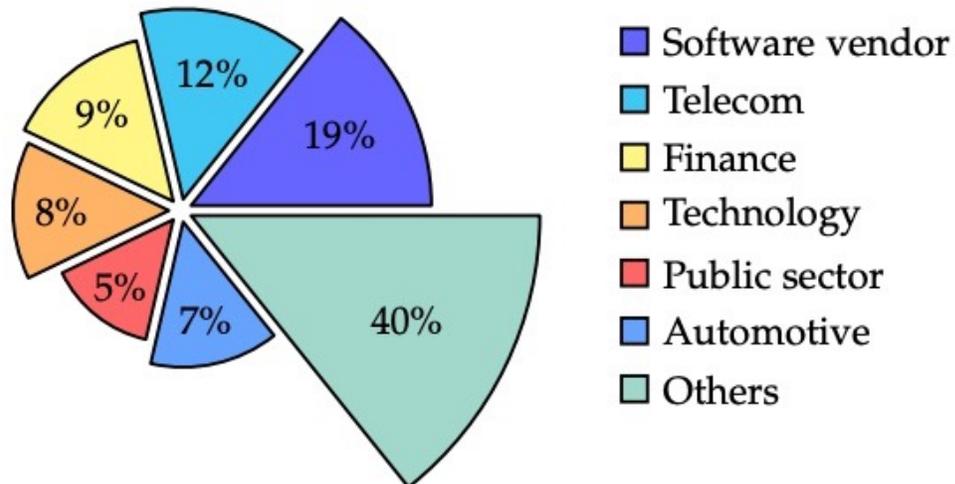
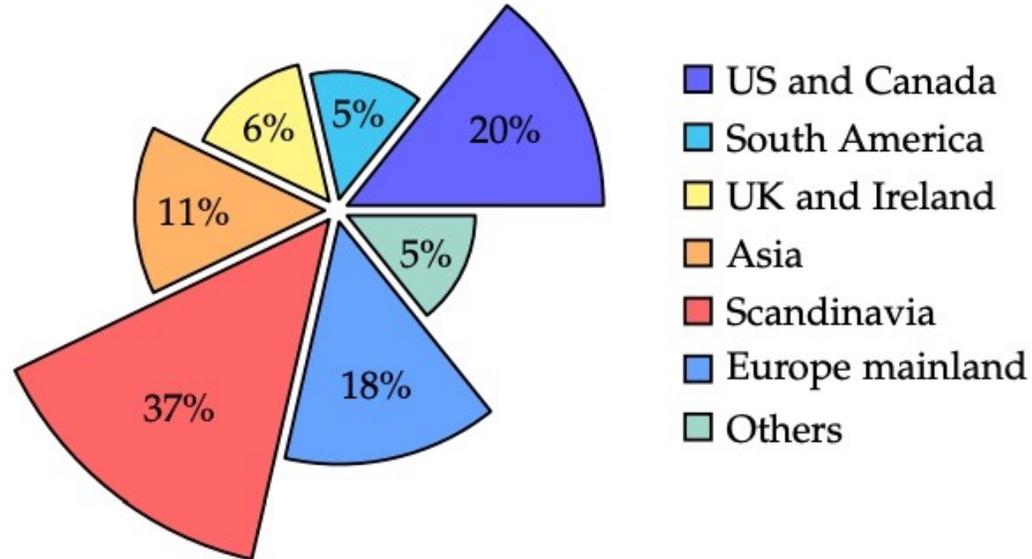
- Based on incorrect assumptions (Rolland et al. 2016)
- Diverse and inconsistent in terms of level of abstraction, level of details, prescription and clarity, technical vs. management/business focus

Examining the State-of-the-Art

- Large-scale agile methods
- Method abstraction levels: principles, practices, tools and metrics
- Challenges and success factors for large-scale agile methods

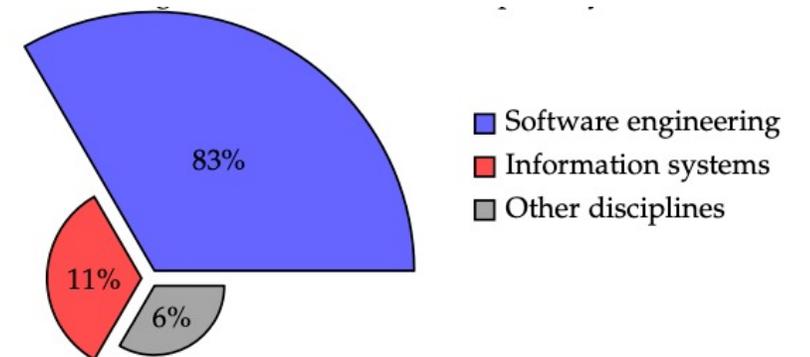
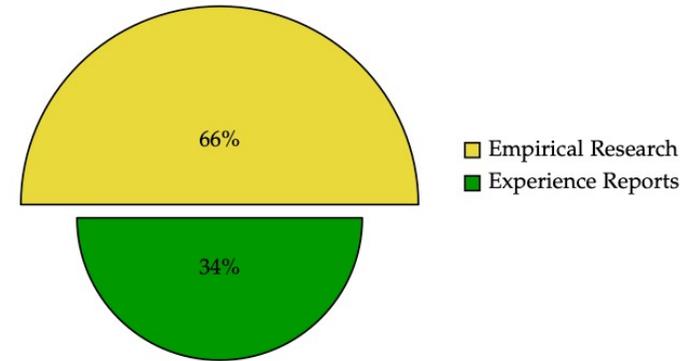
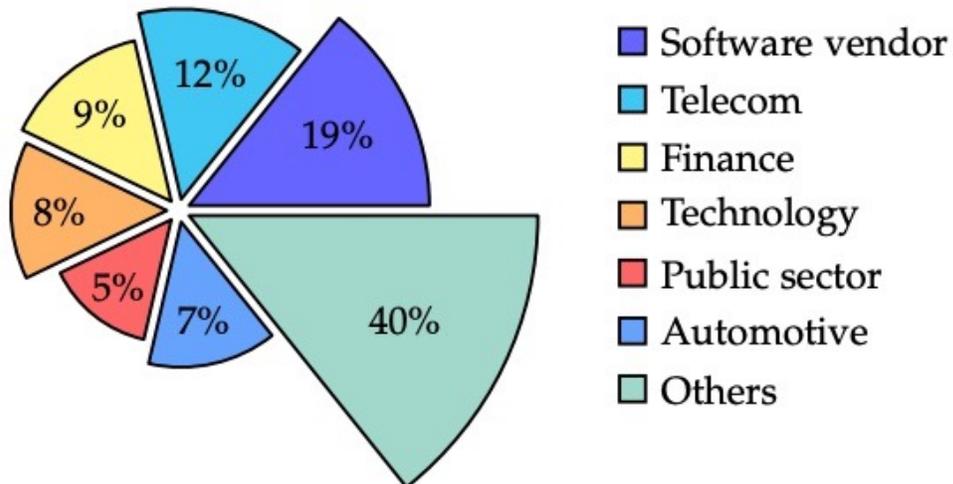
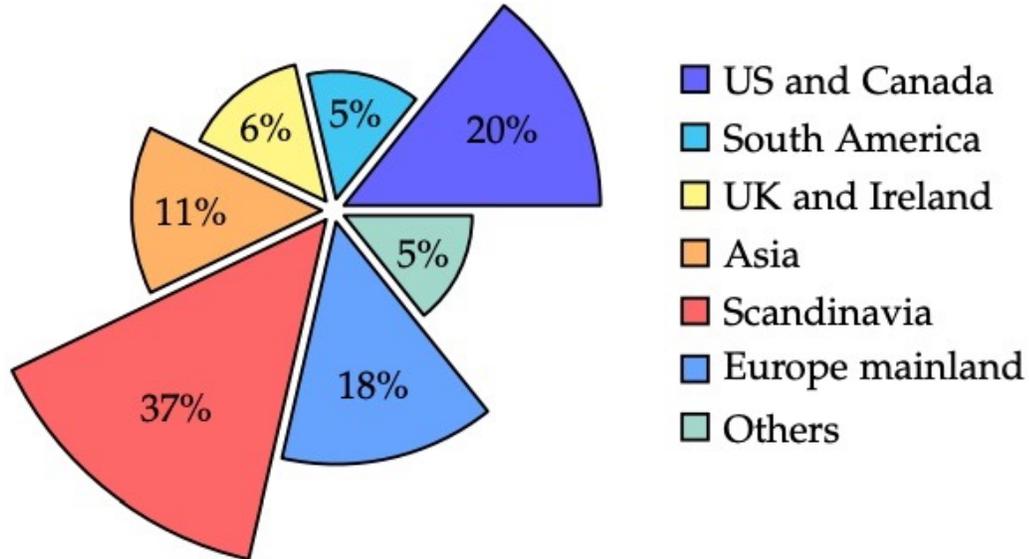


Primary Studies, Authors and Case Organisation

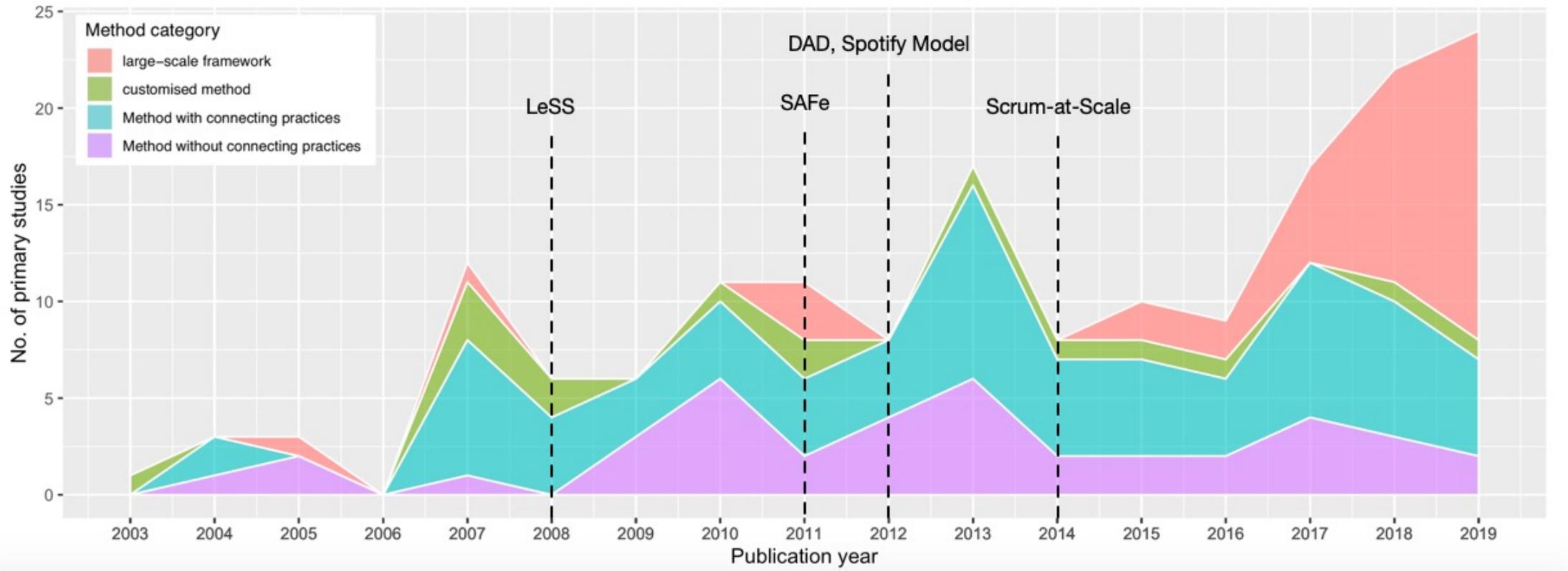


191 primary studies, 325 authors and 134 case organisations

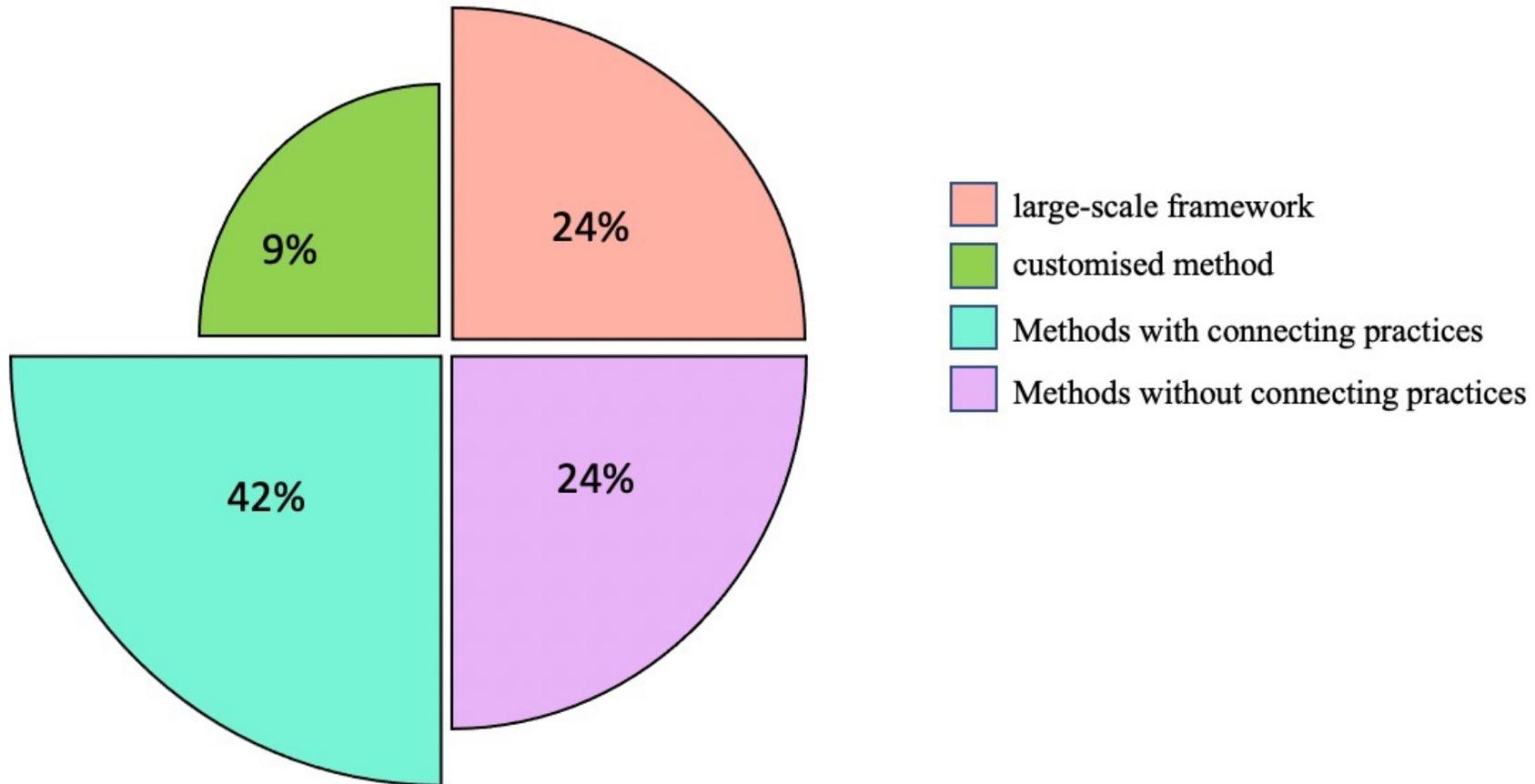
Primary Studies, Authors and Case Organisation



Temporal Distribution of the Articles by Method Category



The Use of Large-Scale Agile Methods



Method Abstraction Levels

Level	SAFe	LeSS	Spotify Model	Scrum-at-Scale	DAD
Principles (values, mindset, etc)	✓		✓**		
Practices (structures, etc)	✓**	✓**	✓**	✓	✓
Tools				*	
Metrics	✓**	*			✓**

*: indicates that there are no elements at the corresponding level of abstraction prescribed by the corresponding method

** indicates that new elements are proposed by the primary studies

Disclosed Challenges

Challenges	SAFe	LeSS	Spotify Model	Scrum-at-Scale	DAD	Custom-Built	Scaled Method
Inter-team Coordination	✓	✓		✓		✓	✓
Organisation Structure	✓	✓	✓			✓	✓
Architecture	✓	✓			✓	✓	✓
Requirement Engineering	✓					✓	✓
Customer Collaboration							✓
Method Adoption	✓	✓	✓		✓	✓	✓
Change Management	✓	✓	✓				✓
Team Related	✓					✓	✓
Project Management	✓	✓			✓	✓	✓

XP (2004)	Scrum (2010)	LeSS (2016)
Tailoring the method for a specific situation		
Communication and coordination issues	No big picture of the system	Lack of agile mindset
	Lack of long term planning	

Example: Nokia's Challenges

→ 10+ years journey with scaled methods and commercial method

Disclosed Success Factors

Factors	SAFe	LeSS	Spotify Model	Scrum-at-Scale	DAD	Custom-Built	Scaled Method
Management & Organisational	✓		✓	✓	✓	✓	✓
Process	✓	✓	✓	✓	✓	✓	✓
People	✓	✓	✓		✓	✓	✓
Technology					✓		✓

→ Strong leadership support and commitment to the agile adoption and roll-out

→ “...you cannot implement agile unless top executives accept that they are surrendering some status and power.”

→ Fluid agile team structure

→ “...revisit your organizational structure to make sure it maps to the real needs of customers.”

→ Balancing oversight and autonomy

→ “you still need top-level oversight in an agile organization — to continually tweak the framework for goals and reporting, and to keep the level of ambition high”

Example: ING Bank's Success

→ Restructuring more than 3,500 employees into squads



Key Takeaways



Researcher

The use of large-scale method

Research on some methods are largely missing (e.g. Scrum-at-Scale, DAD, or in-house methods)
Connecting practices to scale traditional agile methods (e.g. XP and Scrum)

Method's Abstraction

Stronger theoretical underpinning the methods (principles, practices, tools and metrics) and to fill the gap

Challenges and Success Factors

Deep examination on the challenges and success factors
The impact of challenges and success factors
Examine the findings of experience reports



Practitioners

No defined pattern for approaching large-scale development
Consider to use various connecting practices to support the viability of custom-building own large-scale method

Be aware of "doing agile" trap in large-scale development

Consult the primary studies to implement respective methods or frameworks
Reflect, write-up and publish own journey

Thank you!

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