

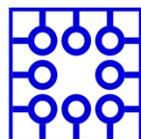
# Adapting Agile for Research Laboratory

## Motivation

- Since the inception of Agile Manifesto in 2001, Agile has become a cutting-edge approach in Software Engineering
- Traction in other contexts is growing: sales, HR, operations, marketing, real estate, public institutions, education, research, and services
- Promised benefits include improved flexibility, adaptability, transparency, rapid feedback, stakeholder satisfaction, and encouraged team collaboration and knowledge flow
- Thesis analyses Agile as applied in academia

## Goals

1. Review contemporary approaches to Agile in academic context
2. Design and implement an Agile process for Laboratory of Service Systems (LabSeS)



Laboratory  
of Service  
Systems

## State-of-the-Art

- Research has specific challenges, including lack of transparency, lack of vision, and inadequate know-how sharing in highly heterogenous teams
- Many researchers try Agile, but often in an informal and ad-hoc manner
- Systematic literature reviews are missing
- We discuss 6 specific reports across the world (Americas, Europe, Asia)

## LabSeS Agile Process

- Main criteria: simple, motivating, decreasing stress on key laboratory leadership

Biweekly Sync	Technical Discussion	Semestral events	Scrum Master role
<ul style="list-style-type: none"> <li>• News</li> <li>• Scrum</li> <li>• Discussions in smaller groups</li> </ul>	<ul style="list-style-type: none"> <li>• On-Demand</li> </ul>	<ul style="list-style-type: none"> <li>• Retro-spective</li> <li>• Thesis presentation</li> </ul>	<ul style="list-style-type: none"> <li>• Facilitation</li> <li>• Coaching</li> </ul>

## Methods

- Survey in May 2020
  - 1-5 Likert scales, yes-no ordinals
- Process design based on results
- Process implementation
- Survey in April 2021
  - Hypothesis testing the results

## Results

- Improved median in 12 out of 13 measured questions, statistically significant in 7 out of 13

Table: Statistical significance of improvement in attitudes

Factor	Group	DM <sup>a</sup>	Signif. <sup>b</sup>	p-value
Advisor Quality	Thesis	2.0	*	0.011
Advisor Availability	Thesis	1.0	*	0.042
Student Quality	Thesis	1.0		0.398
Student Availability	Thesis	1.0		0.274
Consultant Quality	Thesis	1.0		0.151
Consultant Availability	Thesis	0.0		0.242
Quality of thesis	Thesis	1.0	*	0.015
Productivity	Thesis	1.0	*	0.035
Motivation	Thesis	2.0	*	0.033
Overall	Thesis	1.0	*	0.044
Transparency	Laboratory	1.0	.	0.051
Fulfillment of Expectations	Laboratory	1.0	.	0.053
Overall	Laboratory	2.5	*	0.020
Write thesis	Engagement	-		1.000
Advise fellow students	Engagement	-		0.147
Get involved with municipalities	Engagement	-	.	0.088
Smart City paper co-authorship	Engagement	-	*	0.041
Different paper co-authorship	Engagement	-		0.147
Participate in lab presentation	Engagement	-	**	0.007

a. Difference of medians  
b. Significance level (single-tailed) of different distributions

## Conclusion

- Expected direction, but unexpected amplitude(s)
- Informal discussions confirm high satisfaction with implemented process and possibilities for future laboratory activities

## Next Steps

- Laboratory-specific: increase customer engagement, find synergies, implement in second laboratory to confirm findings
- In general: enumerate existing „Agile“ elements, correlation analysis, standardization