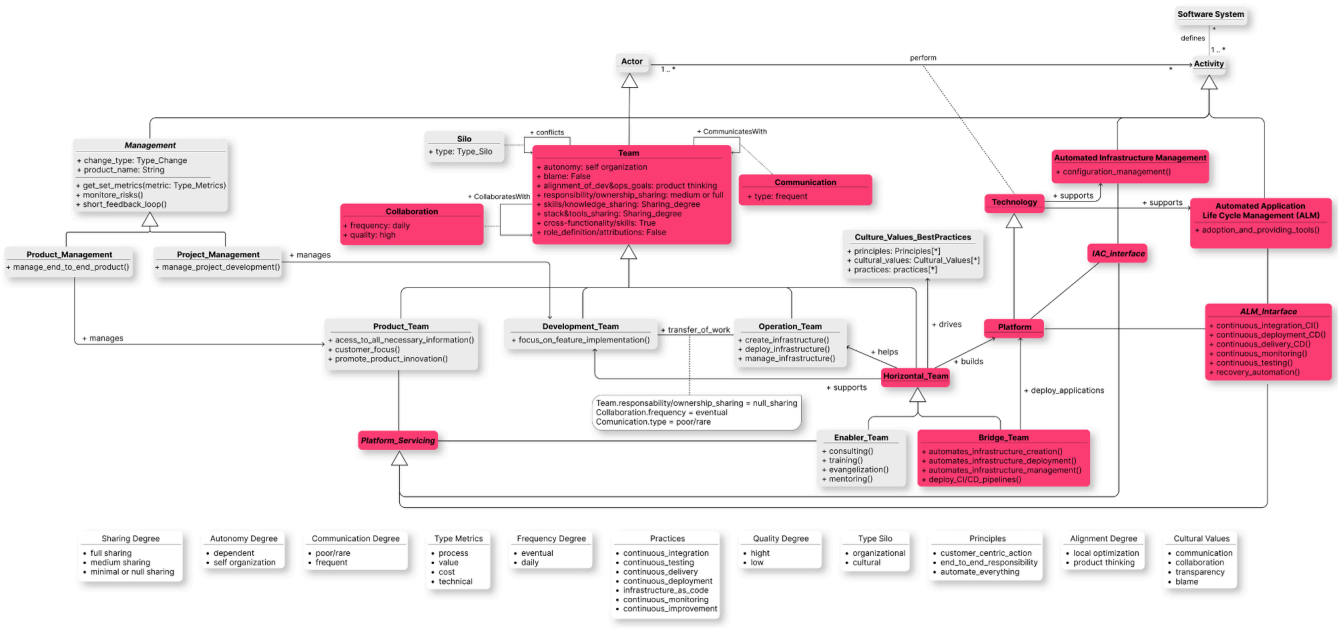
Operationalizing Software Engineering Theories for Practical Validation

Appendix-F. Hypotheses for the Bridge Team Structure

This appendix presents the 30 hypotheses related to the Bridge team structure.



P1. A TEAM CULTURE BASED ON RESPONSIBILITY/OWNERSHIP SHARING ENABLES COLLABORATION

Categoric relationship			Team		
			responsibility/ownership sharing		
			full sharing	medium sharing	minimal or null sharing
Collaboration	frequency	daily	h1.1	h1.2	
		eventual	h1.4	h1.5	
	quality	high	h1.7	h1.8	
		low	h1.10	h1.11	

• H1.1 (h1.1 and h1.4): A team culture based on the full sharing of responsibilities makes it possible to move from eventual collaboration between team members to daily collaboration.
• H1.2 (h1.7 and h1.10): A team culture based on the full sharing of responsibilities makes it possible to move from low-quality collaboration between team members to high-quality collaboration.
• H1.3 (h1.2 and h1.5): A team culture based on the medium sharing of responsibilities makes it possible to move from eventual collaboration between team members to daily collaboration.
• H1.4 (h1.8 and h1.11): A team culture based on the medium sharing of responsibilities makes it possible to move from low-quality collaboration between team members to high-quality collaboration.

P3. AUTOMATED APPLICATION LIFE-CYCLE MANAGEMENT IS ASSOCIATED WITH COLLABORATION. COLLABORATION IMPACTS AUTOMATED APPLICATION LIFE-CYCLE MANAGEMENT AND VICE VERSA. AUTOMATION AND COLLABORATION MUTUALLY FACILITATE THE ADOPTION OF THE OTHER, SO THEY ARE COMPLEMENTARY

Categoric relationship			Automation	
			type	
			Automated application life-cycle management	Automated infrastructure management
Collaboration	frequency	daily	H3.1-H3.1’	
		eventual	H3.2-H3.2’	
	quality	high	H3.3-H3.3’	
		low	H3.4-H3.4’	

• H3.1 Teams using automated application life-cycle management are associated with daily collaboration
• H3.1’ Teams with daily collaboration are associated with automated application life-cycle management
• H3.3 Teams using automated application life-cycle management are associated with high collaboration
• H3.3’ Teams with high collaboration are associated with automated application life-cycle management

P4. A TEAM CULTURE BASED ON KNOWLEDGE SHARING ENABLES COLLABORATION

Categoric relationship			Team		
			knowledge sharing		
			full sharing	medium sharing	minimal or null sharing
Collaboration	frequency	daily	H4.1	H4.2	H4.3
		eventual	H4.4	H4.5	H4.6
	quality	high	H4.7	H4.8	H4.9
		low	H4.10	H4.11	H4.12

• H4.1: A team culture based on full knowledge sharing are associated with daily collaboration between team members
• H4.7: A team culture based on full knowledge sharing are associated with high quality collaboration between team members

P5. IF A TEAM IS CHARACTERIZED BY CROSS-FUNCTIONALITY/SKILLS THIS WILL INCREASE COLLABORATION

Categoric relationship			Team	
			cross-functionality/skills	
			true	false
Collaboration	frequency	daily	H5.1	
		eventual	H5.2	
	quality	high	H5.3	
		low	H5.4	

- H5.1 Multidisciplinary/poly-skilled teams (i.e., teams with all the necessary skills such as development, infrastructure, etc.) are associated with a daily collaboration with other teams
- H5.3 Multidisciplinary/poly-skilled teams (i.e., teams with all the necessary skills such as development, infrastructure, etc.) are associated with a high collaboration with other teams

P6. COLLABORATION IS A PROPERTY OF TEAMS IN WHICH SKILLS TAKE PRECEDENCE OVER ROLES, I.E., THE ROLE DEFINITION/ATTRIBUTIONS CODE; HENCE, IF THERE ARE ALREADY SEPARATE ROLES, RESPONSIBILITIES ARE VERY CLEAR AND COLLABORATION IS NOT FOSTERED OR PROMOTED

Categoric relationship			Team	
			role definitions/attributions	
			true	false
Collaboration	frequency	daily	H6.1	H6.2
		eventual	H6.3	H6.4
	quality	high	H6.5	H6.6
		low	H6.7	H6.8

- H6.2: Teams where skills take precedence over roles are associated with daily collaboration
- H6.6: Teams where skills take precedence over roles are associated with high-quality collaboration

P7. A COLLABORATION-BASED CULTURE REQUIRES ALIGNMENT OF DEV & OPS GOALS

Categoric relationship			Team	
			alignment of dev & ops	
			Local optimization	product thinking
Collaboration	frequency	daily	H7.1	H7.2
		eventual	H7.3	H7.4
	quality	high	H7.5	H7.6
		low	H7.7	H7.8

- H7.2: Teams aligned with product thinking are associated with daily collaboration
- H7.6: Teams aligned with product thinking are associated with high-quality collaboration

P9. RESPONSIBILITY/OWNERSHIP SHARING IS A PROPERTY OF CROSS-FUNCTIONALITY/SKILLS TEAMS

Categoric relationship			Team	
			cross functionality/skills	
			true	false
Team	responsibility/ ownership sharing	full sharing	H9.1	H9.2
		medium sharing	H9.3	H9.4
		Minimal or null sharing	H9.5	H9.6

• H9.1: Teams characterized by cross-functionality/skills are associated with full responsibility/ownership sharing.
• H9.3: Teams characterized by cross-functionality/skills are associated with medium responsibility/ownership sharing.

P12. RESPONSIBILITY/OWNERSHIP SHARING IS A PROPERTY OF TEAM SELF-ORGANIZATION AUTONOMY

Categoric relationship			Team	
			Autonomy	
			self organization	dependent
Team	responsibility/ ownership sharing	full sharing	H12.1	
		medium sharing	H12.2	
		Minimal or null sharing	H12.3	

• H12.1: Teams characterized by self-organization autonomy are associated with full responsibility/ownership sharing.
• H12.2: Teams characterized by self-organization autonomy are associated with medium responsibility/ownership sharing.

P13. A TEAM CULTURE BASED ON RESPONSIBILITY/OWNERSHIP SHARING ENABLES COMMUNICATION

Categoric relationship			Communication type	
			poor/ rare	frequent
team	responsibility/ ownership sharing	full sharing	H13.1	H13.2
		medium sharing	H13.3	H13.4
		Minimal or null sharing	H13.5	H13.6

• H13.2: Teams characterized by full responsibility/ownership sharing are associated with frequent communication.
• H13.4: Teams characterized by medium responsibility/ownership sharing are associated with frequent communication.

P15. AUTOMATED INFRASTRUCTURE MANAGEMENT ENABLES RESPONSIBILITY/OWNERSHIP SHARING

Categoric relationship			Automation type	
			Automated Infrastructure Management	Automated Application Life Cycle Management
Team	responsibility/ ownership sharing	full sharing	H15.1	
		medium sharing	H15.2	
		Minimal or null sharing	H15.3	

• H15.1: Teams relying on automated infrastructure management are associated with full responsibility/ownership sharing.
• H15.2: Teams relying on automated infrastructure management are associated with medium responsibility/ownership sharing.

P16. AUTOMATED APPLICATION LIFE-CYCLE MANAGEMENT ENABLES RESPONSIBILITY/OWNERSHIP SHARING

Categoric relationship			Automation	
			type	
			Automated Infrastructure Management	Automated Application Life Cycle Management
Team	responsibility/ ownership sharing	full sharing		H16.1
		medium sharing		H16.2
		Minimal or null sharing		H16.3

• H16.1: Teams relying on automated application life-cycle management are associated with full responsibility/ownership sharing.
• H16.2: Teams relying on automated application life-cycle management are associated with medium responsibility/ownership sharing.

P17. SKILLS/KNOWLEDGE SHARING IS A PROPERTY OF TEAMS CHARACTERIZED BY CROSS- FUNCTIONALITY/SKILLS

Categoric relationship			Team	
			cross-functionalityskills	
			true	false
Team	skills/knowledge sharing	full sharing	H17.1	
		medium sharing	H17.2	
		Minimal or null sharing	H17.3	

• H17.1: Teams characterized by cross-functionality/skills are associated with full skills/knowledge sharing.
• H17.2: Teams characterized by cross-functionality/skills are associated with medium skills/knowledge sharing.

P20. IF A TEAM IS CHARACTERIZED BY CROSS-FUNCTIONALITY/SKILLS THIS WILL INCREASE AUTOMATED APPLICATION LIFE-CYCLE MANAGEMENT

Categoric relationship			Team	
			cross-functionality/skills	
			true	false
Automation	type	Automated Infrastructure Management		
		Automated Application Life Cycle Management	H20.1	H20.2

• H20.1: Teams characterized by cross-functionality/skills are associated with the use of automated application life-cycle management.

P23. AUTOMATED APPLICATION LIFE-CYCLE MANAGEMENT ENABLES SKILLS/KNOWLEDGE SHARING

Categoric relationship			Team		
			skills/knowledge sharing		
			full sharing	medium sharing	minimal or null sharing
Automation	type	Automated Infrastructure Management			
		Automated Application Life Cycle Management	H23.1	H23.2	H23.3

• H23.1: Teams relying on automated application life-cycle management are associated with full skills/knowledge sharing.