

Exploring the Sources of Enterprise Agility in Software Organizations

Jayakanth Srinivasan^{1,2}

¹Lean Advancement Initiative
Engineering Systems Division
Massachusetts Institute of Technology

<http://lean.mit.edu>



Kristina Lundqvist², Christer Norström²

²The PROGRESS Centre
School of Innovation, Design and Engineering
Mälardalen University

<http://www.mrtc.mdh.se/progress/>

The logo for the PROGRESS Centre. The word 'PROGRESS' is written in a bold, black, sans-serif font. The letter 'O' is replaced by a green circular icon containing a white gear-like shape.



SWEDISH FOUNDATION for
STRATEGIC RESEARCH

'The software product is embedded in a cultural matrix of applications, users, laws, and machine vehicles. These all change continually, and their changes inexorably force change upon the software product'

- (Brooks 1987)

“Software is a place where dreams are planted and nightmares harvested, where terrible demons compete with magical panaceas, a world of werewolves and silver bullets.”

- (Cox 1990)

Brooks, F. P. 1987. No silver bullet: Essence and accidents of software engineering. *IEEE computer* 20, no. 4: 10-19.

Cox, B. J. 1990. Planning the software industrial revolution. *IEEE software* 7, no. 6: 25-33.t

Agenda

- **Why study software organizations?**
 - Characteristics of software organizations
 - Underlying theory
 - Case sampling strategy
- **Research Approach**
 - Engaged Scholarship
 - Mixed-Methods
- **Mechanisms for gaining Enterprise Agility**
- **Organizational Enablers**

Why Software Organizations?

NAICS Code	Explanation
<i>Explicitly Includes Software</i>	
511210	Software Publishers
54151	Computer Systems Design and Related Services
5416	Management, Scientific, and other Technical Consulting Services
<i>Implicitly Includes Software (Illustrative examples)</i>	
3345	Navigational, Measuring, Electromedical, and Control Instruments Manufacturing
3361	Motor Vehicle Manufacturing

- **Classification**
 - **Shrink-Wrap Software**
 - **Software-intensive systems**
 - **Software Services**
- **Characteristics**
 - **Ubiquitous**
 - **Fast-clockspeed**
 - **Project teams as the primary value creation mechanism**
 - **Purest form of knowledge work**

Framing the Research

Why are some software organizations more successful than others?

- How do they do work?
- Continuous Process Improvement
- What do they choose to do?
- Creating Systems of Innovation
- Who does the work?
- Leveraging Globally Available Capabilities

Building on Existing Theory

“The firm's ability to integrate, build, and reconfigure internal and external competencies to address rapidly changing environments. Dynamic capabilities thus reflect an organizations ability to achieve new and innovative forms of competitive advantage given path dependencies and market positions.”

- Teece, Pisano & Shuen

“A set of specific strategic and organizational processes that create value within dynamic markets by manipulating resources into new value creation strategies.”

- Eisenhardt & Martin

enterprise agility is the outcome when the organization can
develop dynamic capabilities

“The ability of the organization to sense changes in its environment (both internal and external), and reconfigure its resources and capabilities to meet those needs.”

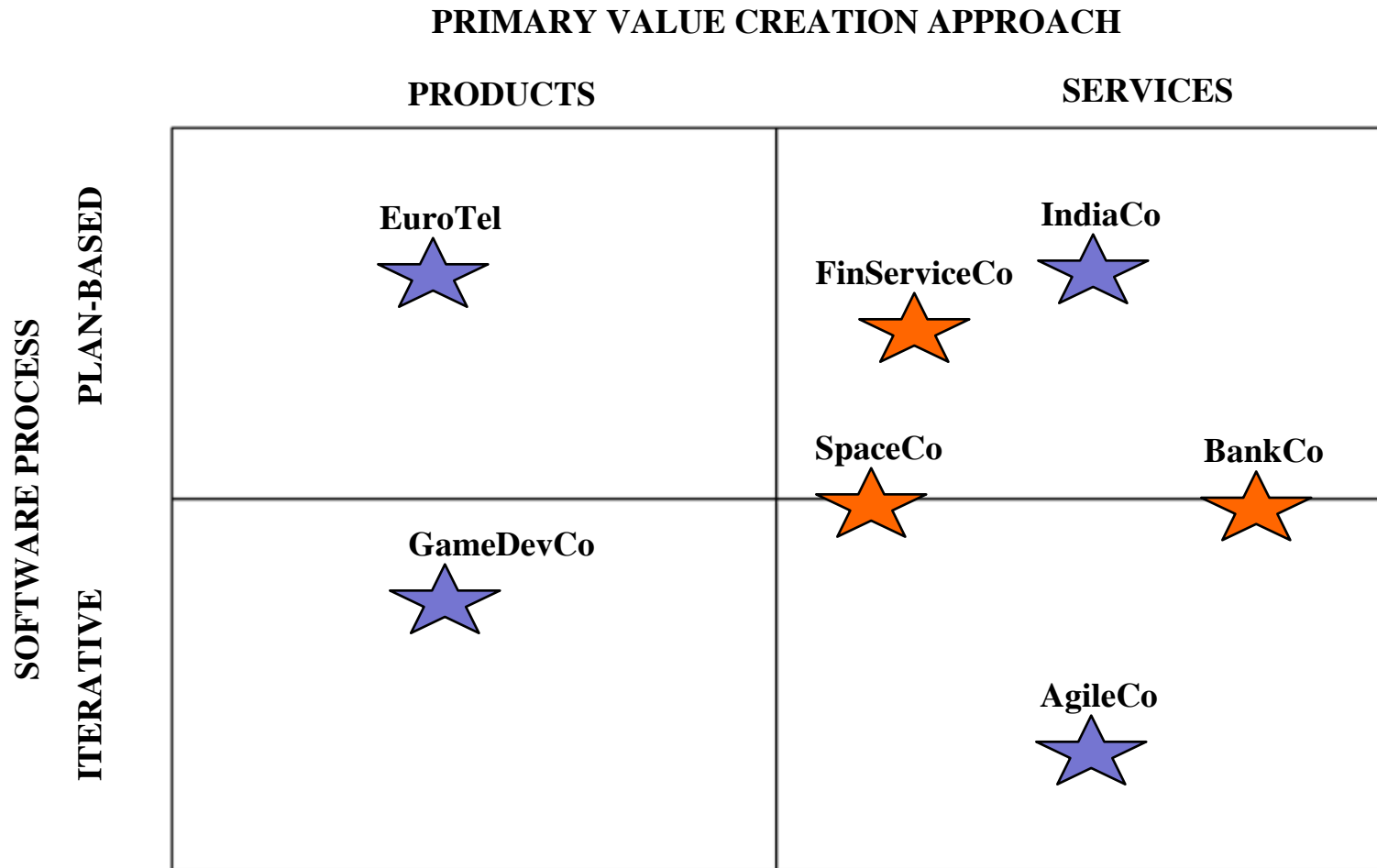
- Srinivasan

D.J. Teece, G. Pisano, and A. Shuen, “Dynamic capabilities and strategic management,” *Strategic management journal*, 1997, pp. 509-533.

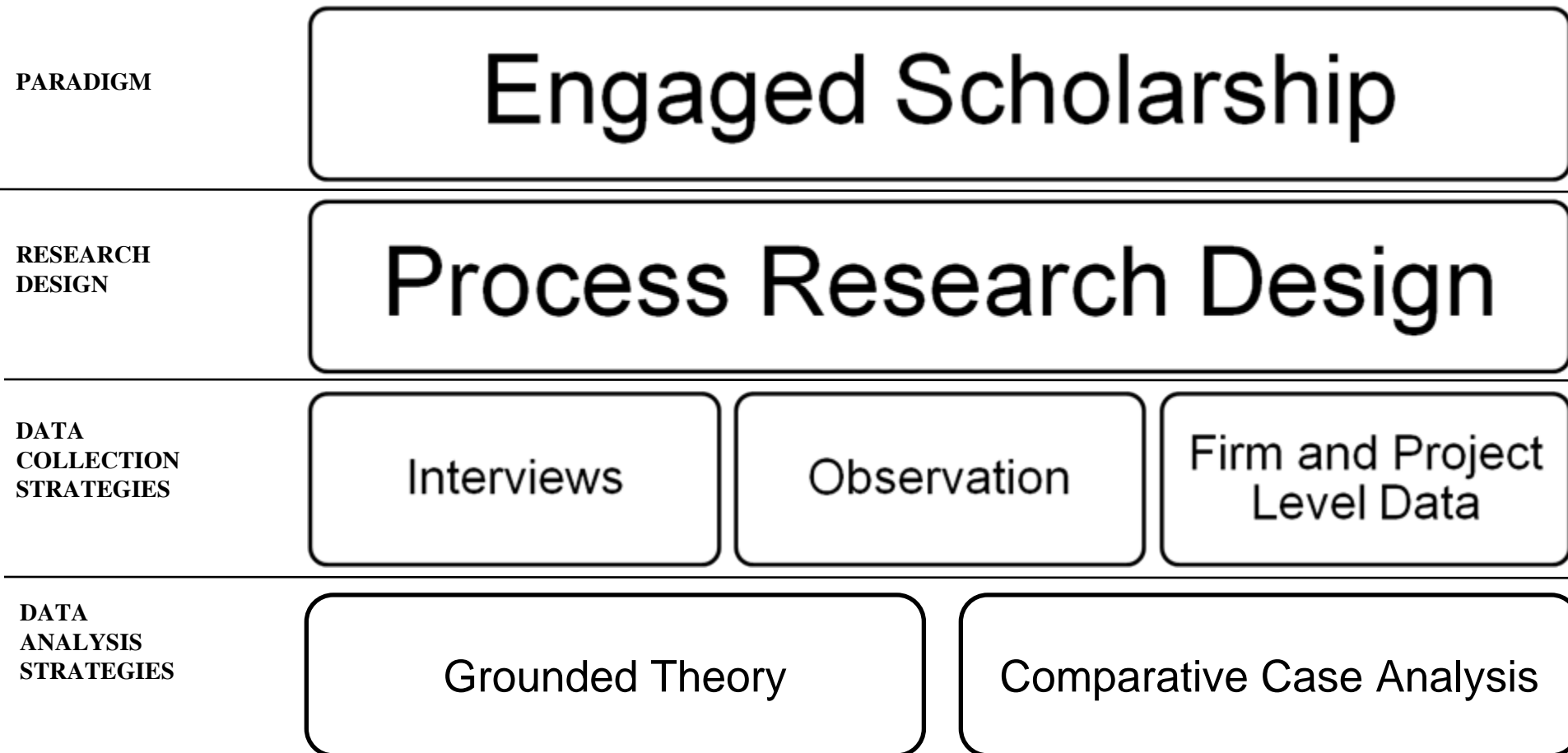
K.M. Eisenhardt and J.A. Martin, “Dynamic capabilities: what are they?,” *Strategic management journal*, 2000, pp. 1105-1121.

Srinivasan J, “Exploring the Sources of Enterprise Agility in Software Organizations”, Unpublished Doctoral Dissertation, Mälardalen University, 2009

Case Sampling Strategy



Research Approach



A.H. Van de Ven, *Engaged scholarship: A guide for organizational and social research*, Oxford University Press, USA, 2007.

R.K. Yin, *Case study research: Design and methods*, Sage Publications, Inc, 2008.

K. Charmaz, *Constructing grounded theory: A practical guide through qualitative analysis*, Sage, 2006.

<http://leanit.mit.edu>

Case Overview

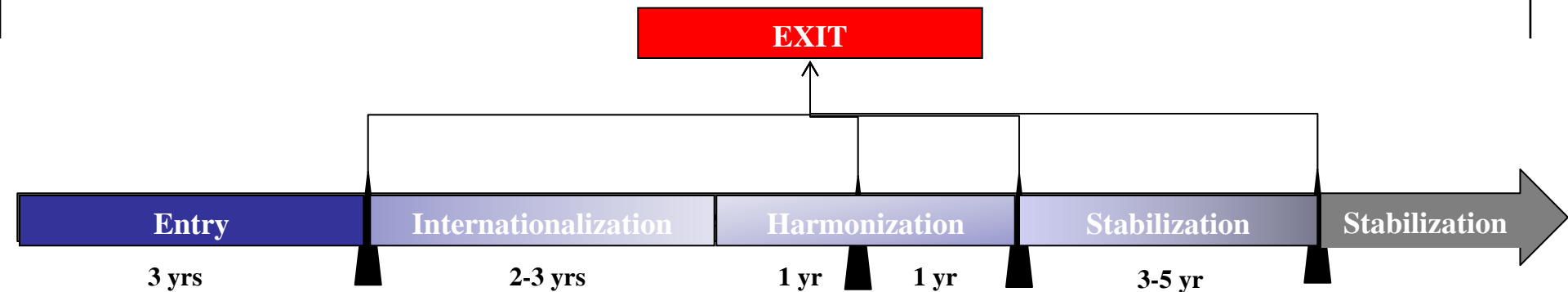
- **AgileCo**
 - 12 interviews (2 rounds)
 - 2 workshops
- **GameDevCo**
 - 22 interviews
 - 2 reviews
 - 1 TLT meeting
- **EuroTel**
 - 8 senior leadership interviews
 - 1 Workshop
 - 12 project interviews
 - 1 TLT meeting
- **IndiaCo**
 - 1 Workshop
 - 16 senior leadership interviews + 7 project team interviews (3 rounds)
 - 2 TLT meetings

Stakeholder Alignment

Stakeholder Alignment	Organization-Level Stakeholders			Project-Level Stakeholders				
	Senior Leadership	Customers		Customer	Architect	Developer	Maintainer	User
		External	Internal					

“I only see GANTT charts on project progress”

“Are we developing NGP the way we want? Is it easy to add new features we want? That is what it was designed for – but we are not sure if we are?”



Employee Empowerment

Empowerment Characteristics	Self Determination	Meaning	Competence	Impact
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“We are losing talent all the time – if the right thing came up, I would move. I love what I do but it doesn’t feel like they have the same focus on technology anymore”

“ I am a contractor who has been here for a year, and I still don’t know what SCRUM is”

“We are demonstrating to the real world, while NGP is working towards a vision – you cannot compete against a vision”

Individual/Group/ Organizational Learning



Systemic

- 20 hours of training per year
- Structured learning program
- Leaders as Teachers

Organic

- Peer-to-Peer mentoring
- Formalized knowledge transfer from the client

“When we find a bug or get a new requirement set from the product manager, We get into a room, and hash it out together, agree upon the design. The challenge is that the decision stays on the whiteboard, and often we forget what we agreed upon”

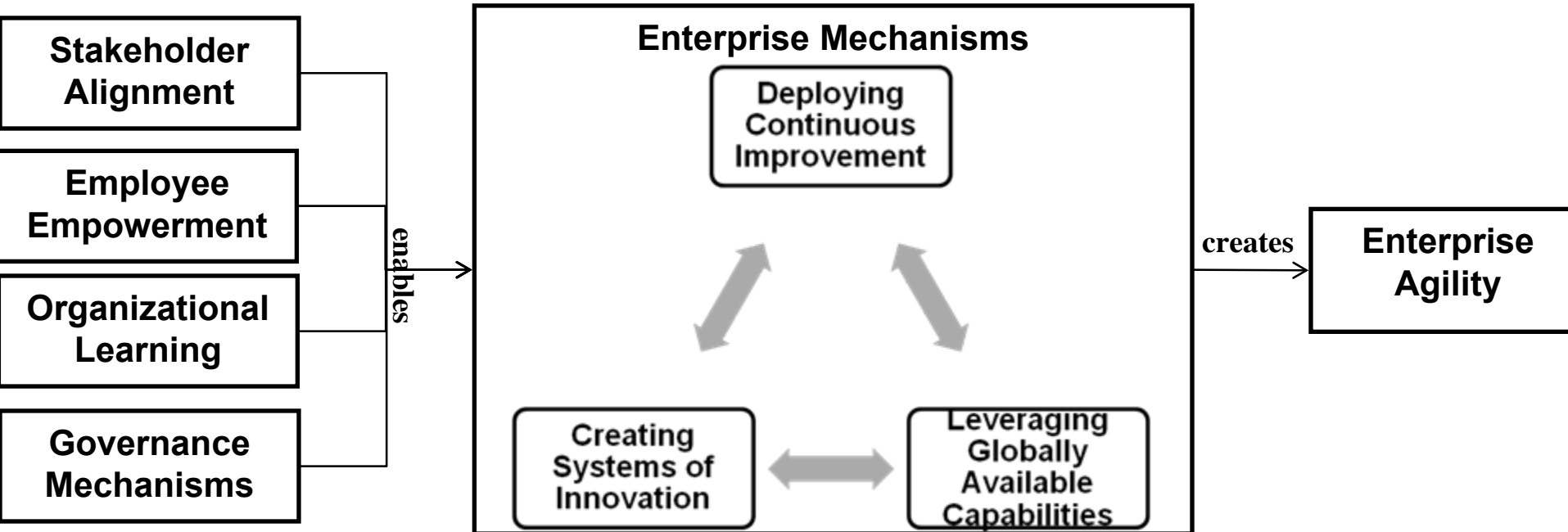
Governance

Governance Analysis	Strategic Governance			Project Management	
	Business Model Alignment	Project Portfolio Management	Decision Rights	Policy/Process	Tool Support

“We don’t have a systems owner – so you don’t know if the system-level is actually correct. Since we don’t have good requirements, had to hire an external consultant to generate the system level requirements. The consultant was very good for the first three months, but other people found out about it, and started using the consultant.”

“We spend more time arguing about what SCRUM should be, rather than talking about what SCRUM should be doing for us”

Synthesis



Software organizations use some combination of the three mechanisms in the presence of the four organizational enablers to effectively generate enterprise agility

Questions?

Jayakanth Srinivasan

jksrini@mit.edu

1-617-253-0672

<http://leanit.mit.edu>

Assessing Learning

Learning Strategies	Individual	Group	Organizational
IndiaCo	Ramp-up Training, Mandated Annual Training, Sponsored Students,	Personnel Rotation, Project Artifacts, Communities of Practice	Project Management Process, Content Management System, University Collaboration, Leaders as Teachers, Expertise Locators
EuroTel	Industrial PhD Students	Project Artifacts	University Collaboration, Competence Assessment, Multiple web-based tools
GameDevCo	Process Training	Informal Communities of Practice, Standup meetings, Retrospectives	University Collaboration
AgileCo	Ramp-up Training, Teaching, Mentoring	Pair Programming, Pair Rotations, Standup meetings, Retrospectives, Communities of Practice	Leaders as Teachers