

Agile and Lean: Organizations, Products, and Development

Jeffrey Saltz
Syracuse University
jsaltz@syr.edu

Edward Anderson
University of Texas
Edward.Anderson@mcombs.utexas.edu

Alex Sutherland
Scrum Inc.
alex.sutherland@scruminc.com

Abstract

Over the past two decades, research in the area of agile and lean software development has mirrored the strong growth of the use of agile and lean methodologies. Agile and lean management practices (which we define broadly to include Scrum, XP, Lean Startup and other related approaches) roughly triple the success rate of software projects over traditional management approaches. Because software projects contribute so broadly to economic and social improvement, research on agile methods may produce significant productivity gains. However, much work remains to enable all the benefits of agile and lean concepts to be realized.

1. Introduction

An agile approach focuses on using a cycle of experimentation, inspection and adaptation to improve production. Agile is most often applied to software development, and there are many papers in this mini-track to discuss software organizations and software engineering practices. However, the concepts also are applicable for other types of organizational “production”, such as business intelligence, management initiatives, manufacturing, marketing, sales and finance.

A lean approach focuses rapid experiments by trying to continually reduce waste and minimizing work-in-progress. Lean has recently been popularized as a construct for start-up organizations (“Lean Startup” or “Lean Entrepreneurship”). Advocates claim a lean approach produces greater market satisfaction and customer engagement, earlier discovery of hidden market opportunities, higher revenues and more efficient use of development staff.

These approaches claim superiority in new product development over traditional approaches (such as “waterfall management”) that fail to test development and market assumptions in long-range plans.

Agile and lean approaches challenge organizations large and small. People typically conflate small failures

(learning) with large failures (organizational threats), assume that innovation means taking long-range untested risk, and establish and protect budgets with many baked-in production and market assumptions. These cultural realities interfere with agility and real innovation.

As a result, companies often invest enormous amounts of money in incomplete or abandoned agile transformations. What can organizations do to improve agile uptake? How do we know that the organization is improving? How can organizations diagnose problems without motivating gaming? What types of people are more likely to thrive in agile and lean organizations, and what roles should they take? What hiring practices result in better candidates? What training programs produce better results? What coaching structures work? How do we measure these activities?

The Agile/Lean mini-track explores these questions – to better understand agile and lean methods and their effects on quality, speed and communication. We solicited research papers and experience reports that explored agile development, lean product management and agile/lean organizations, and that we, as a community, help to ensure relevance and rigor [1].

2. Sessions

At this year’s conference, we divide the papers into two loosely related themes. The first theme focuses on new and enhanced theories, processes and frameworks. The second theme focuses on case studies and surveys to identify challenges and opportunities.

2.1. New or Enhanced Theories, Processes and Frameworks

This mini-track starts with “Agile Project Management: A Systematic Literature Review of Adoption Drivers and Critical Success Factors” by Noteboom et al, who report on the adoption drivers and the critical success factors that influence agile success. They provide recommendations for the development of agile best practices. Specifically, they conducted a literature search that focused on ‘agile’ and ‘project management’ to discover insights regarding adoption drivers and

critical success factors. Nine (9) drivers of adoption and thirteen (13) critical success factors related to the project dimensions of Project, Team, and Culture were identified.

The next paper, "A Theory of Coordination: From Propositions to Hypotheses in Agile Software Development" by Kanaparan and Strode, explores the operationalization of transitioning from research propositions to research hypotheses. The paper illustrates the process using the Theory of Coordination. The paper offers six practical guidelines, identifies seven challenges encountered, and explores potential solutions for each noted challenge. In addition, this paper contributes to agile software development and theory offering seven recommendations for research practice.

In the final paper for this session, "A Dynamic Model of Platform Versioning and Its Impact on Third-Party Developers" by Tan et al. leverage the system dynamics methodology and extant research on digital platforms and Agile development from the information systems and strategic management literatures to create a dynamic framework for considering the effect of digital platform versioning under different levels of market dynamism. They find that the impact of platform versioning release cycle time (RCT) and the scope of platform updates on platform outcomes (number of packages available and number of downloads) depends on market dynamism, sensitivity of users' utility to app breakage, and value of the platform's core functionality to the developers. Specifically, they find that smaller, incremental updates of functionality are generally preferable to larger, radical updates, even in dynamic markets. In contrast, longer RCTs are preferred in less dynamic markets, while small to moderate RCTs are preferred in more dynamic markets.

2.2. Case Studies and Surveys

In the first paper for this session, "Investigating the Role of Stakeholders in Agile Information Systems Development Projects: A Mixed Methods Approach" by Huck-Fries, Nothaft, and Wiesche explores how agile practices affect the work of stakeholders by investigating the impact of agile practices on stakeholders' job satisfaction. Via an exploratory case study they developed a theoretical model, which was then evaluated with a survey among stakeholders in agile projects. In short, they provide empirical evidence on stakeholders' job satisfaction and highlight the

relevance of interaction and collaboration between team members and stakeholders in agile projects.

Although much is known about the concept of technical debt in software development, less is known about its social counterpart, also known as social debt, which is the focus of next paper by Dreesen et al. "The Second Vice is Lying, the First is Running into Debt. Antecedents and Mitigating Practices of Social Debt: an Exploratory Study in Distributed Software Development Teams". The authors utilize an exploratory case study approach, and present antecedents and mitigating factors of social debt related to communication, collaboration, and coordination.

In the next paper, "A Survey of DevOps in the South African Software Context" by Rowse and Cohen, explores DevOps practices and experiences in the South African software development context. Rowse and Cohen report on their survey of 80 software development professionals. They found that more frequent builds, earlier detection of bugs and reduced project lead times were the top three benefits, while getting DevOps capable members into a team, finding experienced professionals to support DevOps practice and changing deep-seated company culture to support DevOps were the top three challenges.

Finally, in the last paper, Stray, Tkalic, and Moe observe that it is increasingly common to introduce agile coaches to help gain speed and advantage in agile companies. Furthermore, they note that the role of the agile coach has branched out in terms of tasks and responsibilities, but little research has been conducted to examine how this role is practiced. Their paper, "The Agile Coach Role: Coaching for Agile Performance Impact", examines the role of the agile coach through 19 semi-structured interviews with agile coaches from ten different companies. They provide empirically based advice for agile coaching, for example companies giving their agile coaches the authority to implement the required organizational changes within and outside the teams.

3. References

[1] Tripp, J., Saltz, J., & Turk, D. (2018). Thoughts on Current and Future Research on Agile and Lean: Ensuring Relevance and Rigor, in *Hawaii International Conference on System Sciences (HICSS)*, 2018.