

Enabling Agile Through Teamwork

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Abstract

For more than a decade, the Agile development process has seeped into the lives of software developers and customers, changing the way projects are planned, how teammembers and teams interact, and how customers receive their product. Agile is a teamwork heavy process, demanding superb communication and technical skills to develop projects where requirements can change the flow of the project between sprints. Similiarly, Agile teams must work together on larger scale projects to ensure project success. [Summary about importance attributes of agile teamwork here.] Furthermore, [summary about importance of design/architecture here].

Keywords agile, teamwork, design, architecture, software development process

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1 Introduction

Agile development considers an element crucial to all software processes in a uniquely different manner: customers as team members. The basis of all software development is planning out a project from start to end, but requirements are prone to change when considering the fluctuating world of technology. Agile handles change by valuing the people involved, customers and developers [3]. By interfacing with customers frequently, and considering their changing requests as the project progresses, change is a byproduct.

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However, the success of Agile is reliant on what Cockburn and Highsmith call "responsive people and organizations" as well as "[focusing] on the talents and skills of individuals" [2]. As a result, teamwork and communication become unavoidably ensconsed in the agile process. In this work, we first introduce a quick overview of Agile, delve into teamwork in agile, and then widen our scope to teamwork between teams in agile. Second, we discuss the importance of design and architecture within teams, where we highlight the ways they affect teamwork both positively and negatively.

2 Teams in Agile

A single team in agile consists of the product owner, the scrum master, and the developers. In order for their team to be successful, they must "have a common focus, mutual trust, and respect," be "collaborative, but speedy [in their] decision-making process" and be adept at handling ambiguity [2]. The Agile Manifesto reinforces these attributes by valuing customer collaboration and responding to change over contracts and plans [5]. Daily stand-ups incite communication, updating each other on task statuses, and conveying problems if they exist. Depending on the needs that follow the stand-up, the team will respond accordingly. e.g. team members may pair up to get a difficult or time sensitive task done.

2.1 Scaling Up Teams in Agile

As projects scale up, so does the number of teams. When considering this in an agile workspace, there is more work that must go into ensuring that teams themselves can collaborate effectively. If teams are in the same location, then promoting a collaborative environment is key. However, teams across more than one location must account for different cultures and providing as much possibility for communication as possible [4]. Distance increases the potential for misunderstandings. Other recommendations include having a single product backlog [7], cross-team daily stand-ups (and other cross-team activities) [6], and having communities of practice [1]. Each of these suggestions tackles a unique but very real and potential problem that occurs in large scale agile practices. Having a single product backlog allows all teams to see the whole picture, and see where work is needed. Cross-team activities allows for a deeper understanding of the project and each team's accomplishments and troubles.

Finally, communities of practices creates a valuable way to share information about relevant topics from other perspectives.

3 Design and Architecture in Agile

3.1 Design

3.2 Architecture

3.2.1 Importance of architecture

Organizations tend to fail if their agile process is not bounded by a fail-safe plan.

The fundamental reason for this is that we all operate within constraints, which can be financial, regulatory, technical or customer driven. While Agile practices have traditionally been confined to software development there is a significant push by organisations, particularly at the Enterprise end of the market, to use Agile practices to manage traditional business functions. This new trend is euphemistically referred to as New Ways of Working. The benefits of leveraging Agile practices are numerous, with the fundamental benefit that organisations see Agile practices as a way to deliver improved outcomes for their customers and stakeholders, more efficiently and consistently.

There are numerous case studies citing the achievement of these benefits at a project level, but very few examples (to date) of successful Agile Transformations at Enterprise Scale. Proponents of Agile practices will point to the Spotify Model as proof that Agile Practices can be used to build a 13 billion USD Enterprise. Which is true, however, they didn't do it without Architecture. They did it by leveraging Architecture and its practices as an enabler and not a governing framework. The way that Architecture worked within Spotify is quite different to how Architecture currently operates within Traditional Brick and Mortar Enterprises.

It is very hard to find a clear definition of the role of Architecture in Agile. The SAFe (Scaled Agile Framework) framework has done the most to identify the role of Architecture within an Agile environment. As with all things Agile the focus is to create consistent value and Architecture is no different. In SAFe they define two distinct elements of Architecture:

- Emergent Design
- Intentional Architecture

Emergent Design provides the technical basis for development and the incremental implementation of initiatives. It helps Designers and Architects to be responsive to changing customer/ stakeholder needs to ensure the initiative continually delivers value. At this level, SAFe practitioner's see Architecture as a collaborative and interactive exercise through which the design element can emerge.

Intentional Architecture is a much more structured approach and more aligned to what many would identify as being traditional Architecture, that is a set of defined and

planned Architectural initiatives which will both support and enhance the performance and usability of the initiative. In effect, Intentional Architecture is a clear recognition that we all need to operate within certain constraints such as choice of technology platform, financial budget, etc. If these constraints can be identified and incorporated into the initiative then the probability of the initiative being successful and delivering value is increased.

SAFe practitioners proposit that by balancing Emergent Design and Intentionality Agile practices can be scaled to deliver Enterprise level solutions. In Safe this combination is referred to the Architectural Runway which provides the technical foundation for creating business value. Which is in complete alignment with traditional views of Architecture.

The key to the success of this approach is the level of abstraction at which the balance of Emergent Design and Intentional Architecture occur. The fundamental behaviour that will determine this is collaboration. Architects need to be able to work productively with Agile Teams to provide fast and local support to manage Emergent Design while also helping Agile Teams to appreciate and navigate the constraints defined by the Intentional Architecture. One of the key attributes of Agile Practices is the fact that Agile Teams are encouraged to provide constant feedback to their stakeholders. As emergent designs develop Architects can use this information to adapt and develop the Intentional Architecture to ensure that the overall Architecture of the Enterprise is evolving with the organization in the medium to long-term.

So does "Agile need Architecture to be Successful? " I would say the better question is "What type of Architecture does Agile need to be successful? " Agile requires Architecture that supports the way the Agile Practices deliver of outcomes (value). The type of Architecture that will do this will be a combination of a nimble reactive style of Architecture supported by a more traditional structured approach to Architecture. The challenge as with many things is to get the mix right!

3.3 Design and Architecture in Agile Teams

4 Conclusion

In conclusion...

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