

Adopting Agile in Large Organisations: Balancing the Old with the New

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10th Jan 2022

Abstract

The adoption of Agile in large organisations has been considered since Agile was devised twenty years ago. Central to the successful implementation of Agile within a large organisation is the need to understand and appreciate the existing environment and processes. In order to make this organisational shift all stakeholders must share an understanding of Agile values and work to find common ground for the implementation of that understanding.

1. Introduction: Agile Manifesto and History

Agile practices were originally developed as a reaction to the over-burdening, cumbersome and stifling amounts of documentation and planning which had become par for the course as a result of traditional plan-driven development.

It was designed to be customer focused- “Our highest priority is to satisfy the customer” (Agile Manifesto, 2001). Driven by the needs of the developers and the tools they required to accomplish this customer focus- “Continuous attention to technical excellence and good design enhances agility” (Agile Manifesto, 2001). This was to be supported by continuous and open communication both at team level and with other stakeholders- “The most efficient and effective method of conveying information to and within a development team is face-to-face communication” (Agile Manifesto, 2001).

The Agile Alliance also recognised the fact that Agile could not operate in a vacuum and that it had to consider the wider corporate environment in which it would be operating- “The Agile movement is not anti-methodology, in fact, many of us want to restore credibility to the word methodology. We want to restore a balance. We embrace modeling, but not in order to file some diagram in a dusty corporate repository. We embrace documentation, but not hundreds of pages of never-maintained and rarely-used tomes. We plan, but recognize the limits of planning in a turbulent environment” (Highsmith, 2001).

Through this essay I want to outline how the adoption of these core ideals has been attempted in the wider corporate culture context and where the discourse around

Agile adoption stands at present. I will do this by looking at several studies and talks related to Agile and its place in large organisations:

- Agile Software Development in Large Organizations (Lindvall et al, 2004)
- Adopting Agile in a Large Organization: Balancing the Old with the New (Abdelnour Nocera, J. and Sharp, H., 2007)
- Dimensions of Organizational Agility in the Software and IT Service Industry: Insights From An Empirical Investigation (Wendler, R., 2016)
- Why Agile Doesn't Scale and What You Can Do About It (North, D., 2013)

2. Initial Integrations of Agile

Early agile adoption was driven by several key factors. Smaller organisations were looking for alternative methods of software development which they found too inflexible. There was a “pressure to produce more at lower costs” (Lindvall et al, 2004).

Requirements proved another problematic area as by the time these had been decomposed using traditional methods they were often outdated or obsolete, “because mandated ship dates require software development begin after defining only a portion of the requirements, the organisation must look for better ways to manage projects for which requirements are not yet fully specified” (Lindvall et al, 2004).

Large organisations were no different in this regard and many of the same factors drove their adoption. The diagram below outlines where other frictions were observed during XP pilot programs in ABB, Daimler Chrysler, Motorola and Nokia:

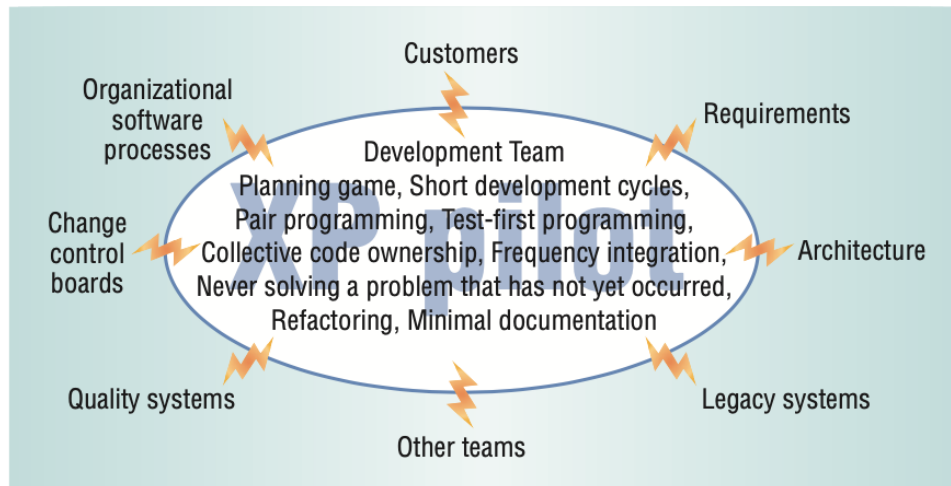


Fig. 1 Tailoring XP to the Organization.

(Lindvall et al, 2004, p.30)

It is clear from the above diagram that a lot of the frictions were generated from the agile team having to interact with the more static elements of the development environment. Organisational Software Processes, Change Control Boards (CCB) and Quality Systems all traditionally depend on having very clearly defined roles and parameters for operation. The clashes with the CCB for instance seem to have been around the implementation of Refactoring and Continuous Integration, concepts which run contrary to Plan-driven Development. However it is noted that “although some traditional practices such as the CCB clashed with XP practices- few defects could be traced directly to XP” and that “pilot projects succeeded because the team produced and tested code earlier” (Lindvall et al, 2004).

The structures of the Legacy Systems and Architectures in place would have been heavily influenced by the Organisational Software Processes, Change Control Boards and Quality Systems of the time, hence the associated difficulties with interactions.

The frictions experienced with Customers, Requirements and Other Teams was most likely due to communication issues as this was still an emerging development technique at the time. This is down to the fact that Agile had been devised with a single

team in mind, “XP practices do not address problems arising from communication + co-ordination between multiple teams” (Lindvall et al, 2004).

From all of this we can see that at this stage Agile was still viewed as having a very specific role within an organisation in that it was framed by the more technical interactions that a development team would have within the organisation and was very much a bottom-up approach to agile integration. “Challenge here lies not in applying agile practices to a project, but in effectively integrating the agile project into its environment” (Lindvall et al, 2004).

3. A Wider Acceptance of Agile

What was needed from this point was a shift in the technical and business environment to accommodate a wider acceptance of Agile methods. An understanding of Agile was required to be spread throughout organisations. This was done in order to “be responsive to the changing needs of the business” (Abdelnour Nocera, J. and Sharp, H., 2007). How this would be interpreted and how it would be practiced were key to this acceptance.

The study of Abdelnour Nocera and Sharp broke the organisation into four groups:

- Advocates/Coaches
- Agile Development Team
- Project Team
- The Business

These groups had varying levels of interpretation and practice of Agile ideals

Table 1: Technological Frames relating to Agile for the four groups identified				
	Advocates and Coaches	Agile Team	Project Z Team	The Business
Elements of Interpretation				
The value of Agile for me is	Customer Satisfaction, Responding to changing needs of business and market. Re-use.	Customer Satisfaction, Business Value, Continuous Delivery	Faster delivery, Structure to what we do. Re-usability.	Redundant
Applicability of Agile	Entire business process	Software Engineering	Entire product process	N/A
Project Scope should be	Flexible	Flexible	Fixed (but understand rationale for flexibility)	Fixed
Increased collaboration for a better product	Agree	Agree	Agree	Agree

Elements of Practice				
How to be agile	In negotiation: coaching, workshops, training.	Highly defined	Ad Hoc (willing to bring Agile for structure)	Highly Defined User Research
Tools and Artefacts	Agile manual, change process documents, wikis, online resource. story cards, MRDs.	The wall, user story cards, charts, wikis, audio 'culture'.	Ad Hoc: excel sheets, wireframes, flowcharts, audio 'culture', MRDs.	Audio 'culture', MRDs.
User Input	Workshops and meetings before and during the production process.	Continuous, they should be part of the team.	Only before production process. Then deadlines more important - but want to change	Only before production process. Then deadlines more important.
Problem Locus Construction: Agile vs. Existing Production Process	Agile will improve production. Senior Management Confirms this.	Agile will improve production. Senior Management Confirms this.	Agile will improve production processes, but do not know how.	Agile is not adequate for our product research processes. On the contrary, it is redundant.
Workarounds on adoption	Translating Agile to entire business: - User stories from MRDs. - Business Scenarios	Retrospective writing of detailed documents to fit the organization official processes.	Extracting User Stories from MRDs	N/A

Fig. 2 Technological Frames relating to Agile for the four groups identified (Abdelnour Nocera, J. and Sharp, H. 2007, p.5)

In terms of interpretation of Agile we can see that all groups accept that increased collaboration will produce a better project. However from here the interpretations seem to diverge.

The Advocates/Coaches and Development Team seem to be closest aligned in their understanding of Agile. They both rate Customer Satisfaction highly in terms of Agile's value and both see the need for a flexible project scope. The Advocates group view of Agile's applicability being business-wide may be a bit ambitious at this stage as Agile had been in practice for less than a decade.

Overall the Agile Development Team were noted as having the greatest understanding of and adherence to agile principles and are described as "following most of the principles suggested by the Agile Manifesto" and that their "interpretation of Agile was more focused and consistent than that presented in the group of Advocates and Coaches" (Abdelnour Nocera, J. and Sharp, H., 2007). Their interpretation of Agile's Applicability has to be noted however as they viewed it as being a set of software development tools, "They saw agile as a set of software engineering practices that help to deliver business value, but not as an organisational 'change of mind'."

However the Project Team and The Business seem to diverge from the Advocates and Development Team in their interpretation of the Project Scope and Value of Agile. Both ultimately would like to keep the Project Scope fixed, with some mitigation from the Project Team in seeing the value of flexibility. The Business even goes so far as to label the Value of Agility to them as Redundant.

From the Elements of Practice we can see that in terms of How to be Agile, Tools and Artefacts, User Input and Agile vs. Existing Production Process, the Advocates/Coaches and the Agile Development Team again seem to be pretty much aligned in their implementations of Agile. Again there is some divergence in terms of the Project Team and The Business, but it is worth noting that the Project Team are "willing to bring Agile for structure" and "want to change".

One aspect of the Tools and Artefacts that sticks out is that the development team are the only group to exclude Marketing Requirements Documents (MRDs). This

is most likely due to the fact that these MRDs required a workaround in order to be decomposed into User Stories and they most likely viewed this as 'double work', one developer is even quoted as saying they were "not based in reality at all" (Abdelnour Nocera, J. and Sharp, H., 2007). The Project Team also noted the difficulty in working with "such detailed documents in a project whose scope could change rapidly" (Abdelnour Nocera, J. and Sharp, H., 2007)

From all of this we can see that one of the greatest hurdles to the acceptance of Agile is the wider corporate culture or environment in which it is being implemented, the "importance of ensuring that all stakeholder groups are consulted and engaged in the adoption process, and that existing practices need to be understood and taken into account in devising new procedures" (Abdelnour Nocera, J. and Sharp, H., 2007) cannot be stressed enough.

This can also be seen in Roy Wendler's empirical study which contains this table of factors influencing Agile adoption:

Table 2. Systematic Mapping of Agility-related Subconcepts to Available Frameworks

Concept	Source										
	Agile manufacturing									Agile workforce	
	Agarwal, Shankar, & Tiwari (2007)	Gunasekaran (1999)	Gunasekaran & Yusuf (2002)	Kasperska-Moron & Swierczek (2009)	Meredith & Francis (2000)	Sharifi & Zhang (1999)	Sharifi, Colquhoun, Barclay, & Dunn (2001)	Vázquez-Bustelo et al. (2007)	Yusuf et al. (1999)	Zhang & Sharifi (2007)	Breu et al. (2001)
Adaptivity											
Authority											
Change									x		
Collaboration											x
Cooperation	x		x	x	x			x	x	x	
Coordination											
Customer				x						x	
Education									x		
Flexibility						x	x			x	
HRM practices								x			
Information							x				
Innovation							x			x	
Intelligence											x
Integration	x								x	x	
Market	x		x						x		
Motivation											
Org. abilities / competences						x	x		x	x	x
Organizational culture							x			x	x
Organizational learning								x			
Proactivity										x	
Processes	x				x			x			
Product			x								
Project											
Quality									x		
Quickness						x	x			x	
Resiliency											
Responsiveness						x	x			x	
Strategy		x			x						
Structure											
Systems		x	x							x	
Technology		x	x	x			x	x	x	x	x
Welfare									x		
Workforce / teams		x	x		x		x		x	x	

Table 2. Systematic Mapping of Agility-related Subconcepts to Available Frameworks

Concept	Source																Sum	
	Agile Software Development						Agile Enterprise / Organization											
	Becker et al. (2001)	Chan & Thong (2009)	Chow & Cao (2008)	Kettunen (2009)	Misra, Kumar, & Kumar (2009)	Sarker & Sarker (2009)	Botinne (2010)	Charbonnier-Voirin (2011)	Eshlaghy, Mashayekhi, Rajabzadeh, & Razaviani (2010)	Goldman et al. (1995)	Lin, Chiu, & Tseng (2006)	Ren, Yusuf, & Burns (2000)	Sherehly et al. (2007)	Tallon & Pisonneault (2011)	Tseng & Lin (2011)	Tsoureloudis & Valavanis (2002)	Zelbst, Sower, Green Jr., & Abshire (2011)	
Adaptivity													x				1	
Authority													x				1	
Change	x						x	x	x		x	x	x				8	
Collaboration																	1	
Cooperation	x						x	x	x	x	x	x	x	x	x	x	18	
Coordination						x							x				2	
Customer	x				x			x	x	x				x	x	x	10	
Education							x				x	x					4	
Flexibility									x						x		5	
HRM practices									x				x				3	
Information									x						x	x	4	
Innovation															x		3	
Intelligence																	1	
Integration							x				x	x			x		7	
Market							x				x	x		x	x	x	10	
Motivation		x							x								2	
Org. abilities / competences	x	x			x		x		x		x	x			x		14	
Org. culture	x		x	x	x	x			x	x				x			11	
Org. learning		x												x			3	
Proactivity														x			2	
Processes	x		x	x		x											9	
Product				x											x		4	
Project					x												2	
Quality	x			x			x				x	x					7	
Quickness									x						x		5	
Resiliency														x			1	
Responsiveness									x						x		5	
Strategy																	x	3
Structure									x					x			2	
Systems																x	4	
Technology							x	x		x	x			x	x		x	16
Welfare								x			x	x					4	
Workforce / teams	x	x	x	x	x	x	x	x	x	x	x	x				x	19	

(Wendler, R., 2016, p.446-447)

From this we can see Cooperation, Technology, Org Abilities/Competences and Culture, Workforce, Market, Customer and Change are key factors in an organisations ability to operate in an agile manner. With Workforce, Cooperation, Technology, Org Abilities/Competences and Org Culture being rated the most highly among these. This would imply that the ability for a project to be implemented in an agile manner is heavily dependent on the environment in which the development is undertaken and the availability of the right technological toolset to undertake the task. An organisational culture must be established which is underpinned by agile values and this must be backed up by an appropriate technology base to work from. “The first and probably most important aspect to become agile is establishing an organisational culture that shares agile values. The second aspect is the availability of an appropriate

technological basis that enables and supports the necessary communication and collaboration processes.” (Wendler, R., 2016)

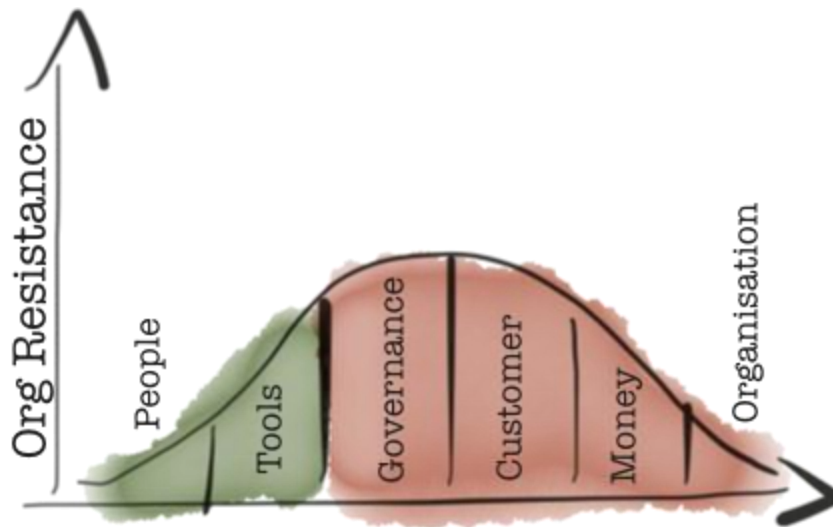
4. Agile Use in Large Organisations Today

The above, all points to the fact that while there is an interest in and willingness to use Agile methods within production processes there is still a degree of skepticism towards and reticence to fully accept Agile in the wider corporate culture. As Dan North states in his 2013 GoTo talk, a lot of this can be traced back to the Agile Manifesto itself, he contends that:

- Agile was originally developed to ensure delivery and was not concerned with scale
- Agile is team-scale & locally optimized
- Agile was designed to be concerned with People and Tools, it doesn't take Governance and Money into account.
- Organisation structures are traditionally Plan-driven or orientated, particularly in terms of funding which clashes with Agile ideals.

These factors often lead to the wider adoption of Agile encountering problems being accepted by the more static elements of an organisation or those with more engrained processes.

North uses this rough graph to highlight the point at which most agile adoption gets stuck:



(North, D., 2013)

All of this is to be expected as the Governance, Customer, Money and Organisation are the most risk averse elements of any corporate transaction, essentially where the money comes into the equation. Traditionally funding structures in organisations are almost like a waterfall with a large pot at the top, filling smaller ones underneath. This is echoed in the findings of Abdelnour Nocera and Sharp who stated that “staff were trying to deliver in 90-day cycles, which meant that they had only ‘shrunk’ the Waterfall process without any qualitative change” in relation to the Elements of Practice of the Project Team.

To change the culture of finance and governance in organisations might well be a tall order just to facilitate a production method that has only been in existence for the past twenty years. Therefore what is needed is a framework to allow Agile to operate within the current corporate governance structures.

5. What’s needed to make Agile work within an organisation?

Dan North, again in his GoTo 2013 talk, states that in order to make Agile work within an organisation the following is needed to be agreed upon and implemented by all stakeholders in a project:

- Create and share a clear vision

- Establish guiding principles
- Strong, consistent, collaborative leadership
- Local decisions guided by global principles
- Transparent, accountable decision making

These principles are also echoed in the conclusions of the other studies mentioned in this essay with Lindvall et al stating “To fully benefit from agile practices, organisations must better define the inter-faces between the agile team and its environment”.

Wendler, noting the fact that references to technology occurred so frequently in his interviews, observes “agile organisations need integrated information systems and easily accessible information to enable employees to rapidly make decisions and, hence, support decentralized decision making”. Abdelnour Nocera and Sharp stress “the importance of ensuring that all stakeholder groups are consulted and engaged in the adoption process, and that existing practices need to be understood and taken into account in devising new procedures”.

6. Conclusion

The greatest levels of Agile interpretation and implementation are still at the ground levels of organisations. Agile was originally envisioned as a means of circumventing the dominance of unwieldy and cumbersome documentation which originated from the middle and upper management levels of organisations. Given that Agile has only been in practice for the last twenty years its no surprise that there is still resistance to its wider application from middle and higher levels of management in organisations.

However, as more and more employees who have only ever worked in an agile manner, or who prefer working this way, begin to hold positions in upper management a greater understanding of where to apply Agile methods will emerge. This wider acceptance will be made easier by open and regular communication between all stakeholders involved.

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