



Blog

Agile research organisations: oxymoron or reality?

Agile principles are a response to the evolving operational landscape and a method for improving organisational performance. Two essential aspects of agile research are the transformation of research practices and organisational transformation.

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Today, 'Agility' is seen as a response to the rapidly evolving operational landscape and a method for improving organisational performance. Whilst its use in research is certainly not by exception, nevertheless implementing Agile principles in the research process and research organisations is challenging. In this blog post, we will share our experiences of implementing Agile at both levels.

Agile as a way to go!

In 2001 a group of software developers gathered to create an Agile Manifesto, in which they formulated Agile Principles. These have become the governing elements of Agile teamwork in software development, as follows:

- Individuals and interactions over processes and tools
- Working software over comprehensive documentation
- Customer collaboration over contract negotiation
- Responding to change over following a plan

Since then, Agile software development has primarily become a basic method due to its key advantages of providing flexibility, user-centrality and assuring better performance. Furthermore, due to its various advantages it has expanded beyond software development and been adopted in other domains.

In research settings, the need for Agile ways of working is even greater because of multi-project settings and different levels of stakeholders that should be included. Moreover, flexibility is an essential feature of all research activity, given that the process is non-linear and essentially a dynamic undertaking, which is looking for external contributions.

Effective research requires Agile research organisations that can facilitate and support each researcher's project investigations. However, it must be

recognised that scaling Agile to work at an organisational level is challenging even in its original domain of software engineering.

Next, we consider two essential aspects of agile research, namely the transformation of research practices and organisational transformation.

Making your research processes Agile

We highlight here specific principles that act as essential guidance for introducing Agility into research activities. These principles are broadly based on values contained within the Manifesto for Agile Software Development, but are extended to include certain elements that are key for the research environment.

Research impact and contribution OVER processes

Research processes are often built around specific methods and guidelines. While these are important for delivering valid results, it is also essential to prioritise results and impact, visualising a precise contribution that research can make both in practice and theory. Methodologically sound results which do not make a meaningful contribution to scientific knowledge and lack practical benefit are rendered irrelevant and often insignificant. Hence, this impact vision should not only be the driving force behind any research but also the basis for selecting appropriate and sound methods. Furthermore, such a focus facilitates strategy development, aligns researchers and relevant stakeholders, scopes research and prioritises tasks.

Collaboration OVER the inputs and outputs

The original Agile manifesto prioritised individuals and interactions over processes and tools in order to emphasise better flexibility, rather than tool

or process-constrained rigidity. In research, while interacting with other analysts within one or between work topics, we often focus on outputs that should be delivered to others, ignoring interactions that would bring about better alignment. This is also the case in large research projects when work topics often develop their deliverables with minimal interaction elsewhere. Instead, 'live' and regular interaction should not just be occasional, but integrated into the very fabric of the research process. In deciding about the form of interaction, roles involved and duration of iterations, any artefacts produced would improve researchers' adapting to change, making better decisions and overcoming challenges.

The absence of interaction is one of the issues that causes a low level of response to changes that we consider next.

Responding to change ahead of following a plan

A good research process should respond not only to changes in the needs of stakeholders, but also other complex changes across many related research topics and the external environment. The History of Science reveals many examples of concurrent discoveries or inventions. During the COVID-19 pandemic responding to discoveries across the whole scientific community within optimal time was key in the development of vaccines. In a dynamic environment responding to change is needed not only to conduct good research, but also manage any risks resulting from 'competing' results or discoveries. By responding to change as part of their accepted activity, researchers can better identify aspects that are likely to evolve and follow them more effectively.

Prioritising stakeholder interaction and promoting ownership

One of the cornerstones of Agile working is collaboration with customers. This seems to be challenging in a research environment for various reasons,

such as a disparity between the pace of industry and research. Nevertheless, in our opinion alternative techniques can be applied for the implementation of this value. In particular, a structured and agreed understanding of stakeholders' needs or introduction of the role of the product owner who is responsible for communication with stakeholders and analysis of their needs can be beneficial. Ownership can not only facilitate self-organisation (which is essential in research), but also enable a granular and deep understanding of the problem as well as the customer.

Making organisations Agile

Agile research organisations:

- Should integrate the main principles into their DNA to support agile research practices. Simultaneously research organisations need to be aware of differences between classic agile methodologies in software development and their organisational needs.
- Should reconcile their strategic goals with goals already existing in the teams and projects. Hence, organisations need to apply collaborative feedback sessions that help to reflect on the work done, understand the current status of the work and plan for the future. Such collaborative feedback sessions should provide inputs on further activities to achieve goals, 'reflections' about the progress in achieving goals and determining the definition of when those goals can be considered as having been reached. In addition, correctional measures and resources should be considered. That should serve as input for future sprint planning. As the planning horizon in research is long-term, organisations could tailor Agile methods and conduct planning for later iterations.
- Play a key role in enabling researchers to facilitate maximum impact through the involvement of stakeholders. In research settings, maintaining contact with stakeholders is challenging, while an appropriately organised communications process can help researchers to derive the information required for successful research. In particular,

organisations could help researchers to find the right key contacts, manage the communication process, enable stakeholders to provide regular feedback and 'tolerate' research experiments.

- Encourage openness in communication as well as the acceptability of negative results.

This way Agile research can become a reality in everyday scientific practice through both research and organizational changes.

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