Work in Agile Software Development Teams

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Abstract. Agile Software Development evolved partially in response to failures associated with waterfall methods. Early Agile research explored adoption, techniques and success stories. More recent work points to challenges when Agile teams interact with wider organizational structures. This work uses Ethnography to explore tensions and challenges between tradition management structures and Agile teams that favour self-organization and 'light-touch' management. Ethnographic Fiction is used to convey to readers the experience and challenges of those working in Agile teams in such environments. This provides insight into how Agile techniques shape working practices for both developers and project managers.

Keywords: Agile, project management, ethnography, ethnographic fiction

1 Research Problem

The Project Management literature tells us that many successful organizations still use a 'command and control' approach to management [1]. Agile teams, however, are required to be empowered and self-organizing to facilitate faster delivery of useful products [2]. The tensions that emerge through these opposing cultures leave Agile Project Managers with a role that is not yet fully understood. This uncertainly of the Project Managers role leads to the first research question in this study: **How do Agile teams interact with management?**

Early indications from Focus Groups carried out at the beginning of this study point to challenges around 'Agile by Stealth'. In many organizations the introduction of Agile methods has been from the bottom up. Software developers react to difficulties with more traditional, bureaucratic ways of working by seeking better, more agile ways of doing things. On a small scale this may often be successful but as techniques and practices are scaled up they encounter rule-based processes that lack the flexibility to cope with these more dynamic methods. In considering these issues a second research question emerges: **How do differences in autonomy and control influence interactions between Agile teams and management?**

2   Motivation, Contribution, Originality

This work aims to consider the factors at play as Agile teams work within wider organizational structures because these factors are not currently well understood. The objective is to gain a better understanding of 'how' and 'what' software development teams do in their work. By offering real world descriptions the aim is to understand in order to consider 'why'. This should provide insights into how Agile techniques shape the working practices of developers. It will also contribute by critically reflecting on the changing role of the project manager.

A unique element of this study is the use of Ethnographic Fiction [3] to tell stories that capture qualitative research in a more meaningful way that should appeal to a wider audience. The stories use a collection of data from real experiences and real people. The stories are re-crafted to highlight specific issues. The aim is to promote 'active readership' [4] where the audience is able to interact, feel and think about the situation in order to draw their own conclusions, rather than accepting truths offered by 'experts'. In Watson's [5] words the "whole purpose is to advance our understanding of human signifying practices"

3   Literature Review

Early research into Agile Software Development (ASD) looked at specific methods, techniques or tools [6], considered the current state of uptake and research [7] or focused on Agile team success [8]. Wider literature of relevance to this study includes project management and team working. In project management there are tensions between the seemingly opposing requirements of traditional 'command and control' values and adoption of a more facilitative coaching approach required of Agile teams [9].

From the team based perspective the aim of ASD is to foster self-organizing, empowered, co-operative teams. Yet prior work reports tensions on a number of fronts; difficulties empowering teams [10]; motivation for working in Agile teams [11], stress resulting from working in this way [12] and decision-making difficulties that can occur in cohesive teams [13].

More recently the literature has begun to reflect the wider issues that are relevant to ASD. [14] identified both team-based and organizational factors that affect team success while [8] notes that successful Agile teams emphasize human involvement that goes beyond skills and planning abilities. The need for self-organizing teams, light touch management and strong user involvement places a different challenge on Agile projects, how this impacts on team members and project managers is under represented in the literature.

4   Research Method

There is evidence to show that the extent to which Agile is successful relies heavily on wider organizational culture within the workplace [15, 16]. Therefore, a research approach that goes beyond a surface understanding of Agile teams is needed to carry out more detailed studies of work to gather 'data on concrete work activities' to help make sense of wider organizational issues [17].

Ethnography was selected as the research method as it provides an iterative approach of data collection and because sense making is a key characteristic of producing rich descriptions on which to build understanding and knowledge. [18] describes ethnography as 'the study and representation of culture as used by particular people, in particular places, at particular times', being a pragmatic way to determine what culture does. Therefore, ethnography provides a good fit to explore how ASD teams navigate between the seemingly opposed requirements of self-organizing Agile teams and the traditional needs of management.

There is a growing literature on the use of ethnography in IS. [19] suggests that ethnographic methods "are indispensible when trying to understand software practice" while [20] provides an example of the understandings that can be gained through this type of research

At the core of any ethnographic work is 'textwork' [18]. Writing is the mode by which to convey 'cultural representations' to a wider audience. The 'textwork' here will use an Ethnographic Fiction [3] style that draws on a range of memories, experiences, observations, conversations and interactions with a number of people across a variety of roles within one organization. The stories are constructed from a range of data and observations made up of incidents and experiences that have been observed by or told to the researcher by those who work in such situations. This makes the story plausible and realistic. The test to determine whether such stories are good research would be that the reader is able to cope in that practical situation better than if following alternative suggestions [5]. In the words of [21] "We have two jobs as scholars: Answering interesting questions and telling the story", the use of Ethnography gathers data to both reveal and answer interesting questions whilst Ethnographic Fiction uses stories to tell the tale in a more palatable form.

5   Current and Future Agenda

Fieldwork took place over a 12 month period and is ongoing. The data collected is currently being analyzed. A number of themes have emerged and stories have been created based on the data for particular practices, e.g. daily stand-ups. These are used to give a sense of what it is like to work in an Agile team and to surface some of the difficulties experienced by people working in those teams. Refinement of the stories follows an iterative cycle of data collection then sense making, both supported by on-going literature review. Thesis write-up has begun with completion planned for 2015.

6   References

1   Hodgson, D.E. Project Work: The Legacy of Bureaucratic Control in the Post-Bureaucratic Organization. Organization, 11, (1) 81-100 (2004)

2   Highsmith, J.A.: Agile software development ecosystems Addison-Wesley Professional. Addison-Wesley (2002)

3   Watson, T.J.: Making Sense of Managerial Work and Organizational Research Processes with Caroline and Terry. Organization, 7, (3) 489-510 (2000)

4   Sparkes, A. C.: "Bodies, Identities, Selves: Autoethnographic Fragments and Reflections," In Moving Writing: Crafting Writing in Sports Research, J. Denison & P. Markula, eds., New York: Peter Lang, pp. 51-76. (2003)

5   Watson, T. J.: Ethnography, Reality, and Truth: The Vital Need for Studies of 'How Things Work' in Organizations and Management. Journal of Management Studies 48[1], 202-217. (2011)

6   Abrahamsson, P., Warsta, J., Siponen, M. T., & Ronkainen, J.: New directions on agile methods: a comparative analysis, IEEE, pp. 244-254. (2003)

7   Dyba, T., Dingsoyr, T.: Empirical studies of agile software development: A systematic review. Information & Software Technology 50 (9-10)833-859 (2008)

8   Dingsoyr, T., Nerur, S., Balijepally, V., & Moe, N.B.: A decade of agile methodologies: Towards explaining agile software development. Journal of Systems and Software, 85, (6) 1213-1221 (2012)

9   Highsmith, J.A.: Adaptive software development: a collaborative approach to managing complex systems (2013)

10   Hoda, R., Noble, J. Marshall, S.: Organizing self-organizing teams. In 32nd ACM/IEEE International conference on Software Engineering, Vol 1. (2010)

11   McHugh, O., Conboy, K., Lang,M.: Using agile practices to influence motivation with IT project teams. Scandinavian Journal of Information Systems (2011)

12   Barker, J.R.,: Tightening the Iron Cage: Concertive control in Self-managing Teams. Administrative Science Quarterly. (1993)

13   McAvoy, J., Butler, T.: The role of project management in ineffective decision making within Agile software development projects. EJIS 18 (4) 372-383. (2009)

14   Moe, N.B., Dingsoyr, T., Dyba, T.: Overcoming barriers to self-management in software teams. Software IEEE (2009)

15   Tolfo, C., Wazlawick, R.S., Ferreira, M.G.G., & Forcellini, F.A.: Agile methods and organizational culture: Reflections about cultural levels. Journal of Software Maintenance and Evolution: Research and Practice, 23, (6) 423-441 (2011)

16   Ilvari, J. & Ilvari, N.: The Relationship between organizational culture and the deployment of agile methods. Info &|Software Technology 53(5)509-520 (2011)

17   Barley,S.R.&Kunda,G: Bringing work back in. Organization Science12(1) (2001)

18   Van Maanen, J: Tales of the field: On writing ethnography Chicago Press. (2011)

19   Passos, C., Cruzes, D. S., Dyba, T., & Memndona, M.: Challenges of applying ethnography to study software practices, ACM, pp. 9-18. (2012)

20   Sharp, H., Robinson, H., & Petre, M.: The role of physical artifacts in agile software development: Two complementary perspectives. Interacting with Computers, 21, (1-2) 108-116 (2009)

21   Pollock, T.G. & Boni, J.E.: Being Scheherazade: The Importance of Storytelling in Academic Writing. Academy of Management, 56, (3) 629-634 (2013)