SHIFTING CONCEPTUALIZATION OF CONTROL IN AGILE DIGITAL TRANSFORMATIONS

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Shifting Conceptualization of Control in Agile Transformations

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Abstract. Agile transformation implies that organizations apply agile methods also outside of software development units. One particular way of doing such transformations is to create cross-functional software development units. This represents new challenges for control for organizations as the unformal agile control mechanisms from the software units meet the more formal, bureaucratic and hierarchical control from other units. The research on how to manage control in agile transformations, however, is scarce. Through a case study of a new, cross-functional unit in a financial institution, we report on their work to implement control in agile transformations. To analyze our results, we draw on new perspectives for control in the digital era, which challenges existing presumptions on control. Our findings indicate how agile transformations require rethinking traditional control mechanisms and experiment with new control perspectives more suitable for the digital era.

Keywords: Agile transformation, agile program, empirical, case study, control, stewardship theory, OKRs.

1 Introduction

The pressure of digitalization with rapidly changing markets and technology developments drive organizations towards adopting agile ways of working, also outside software development units [1]. Such agile transformation implies that agile methods are used not only in software development teams but also by other parts of the organization, such as business units [3]. Agile transformations deal with challenges such as hierarchical management in waterfall mode, difficulties working across organizational boundaries [1], and units not willing or able to change [3]. One particular form of change aiming to overcome some of these challenges is creating semi-independent, cross-functional units (i.e. consisting of personnel from both business- and software-development units) that use agile methods to improve the value of the software developed [2].

Collaboration across different units while working in new ways represent new challenges for control for organizations. The informal agile control mechanisms from the

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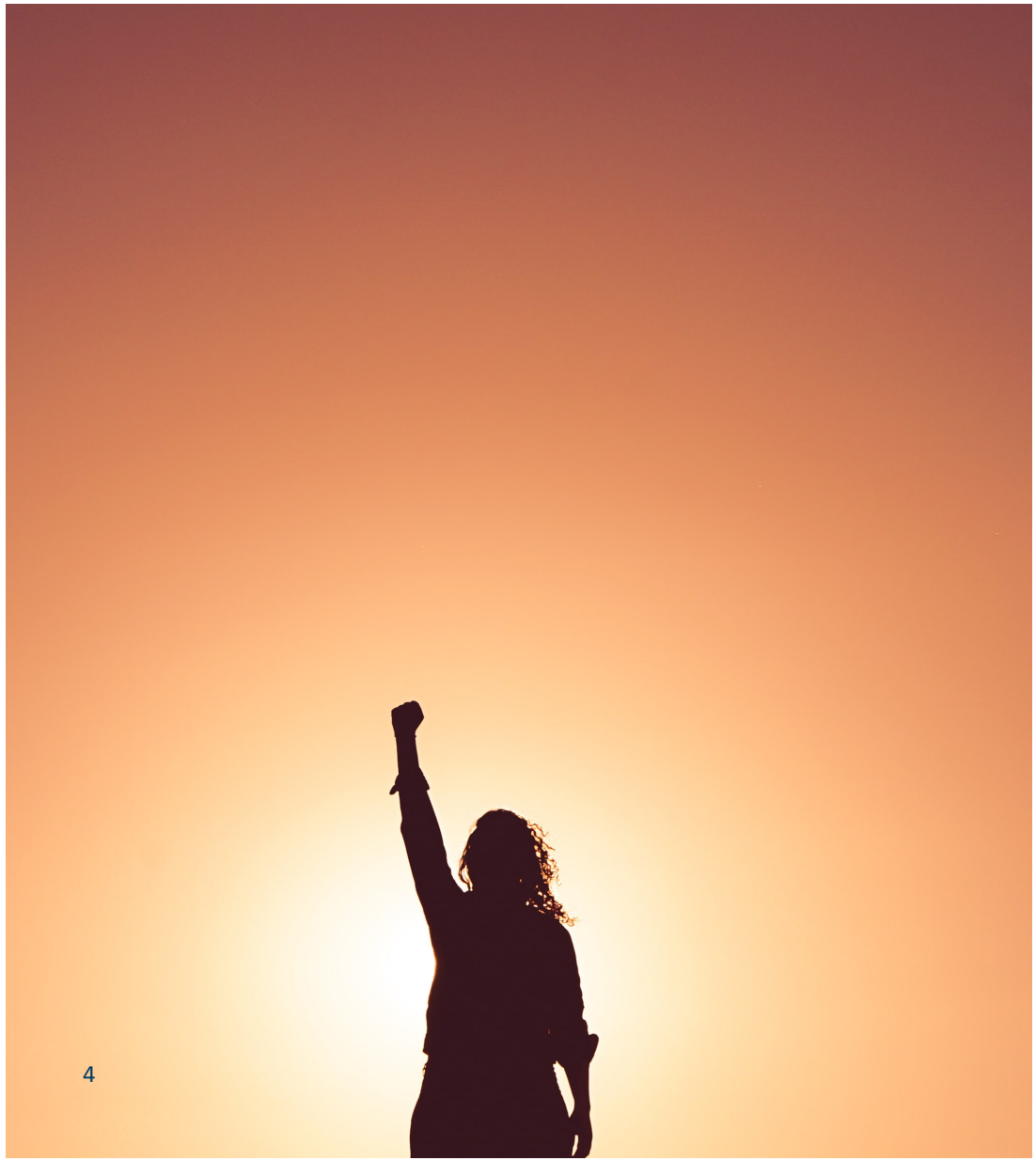
Agenda

- Defining agile digital transformation
- Challenges in agile digital transformation
- Cross-functional teams as a solution to some of these challenges
- Stewardship perspective on control
- Testing the stewardship perspective on a case from finance



New perspectives of control are necessary in agile digital transformations, and a stewardship perspective on control is suggested.

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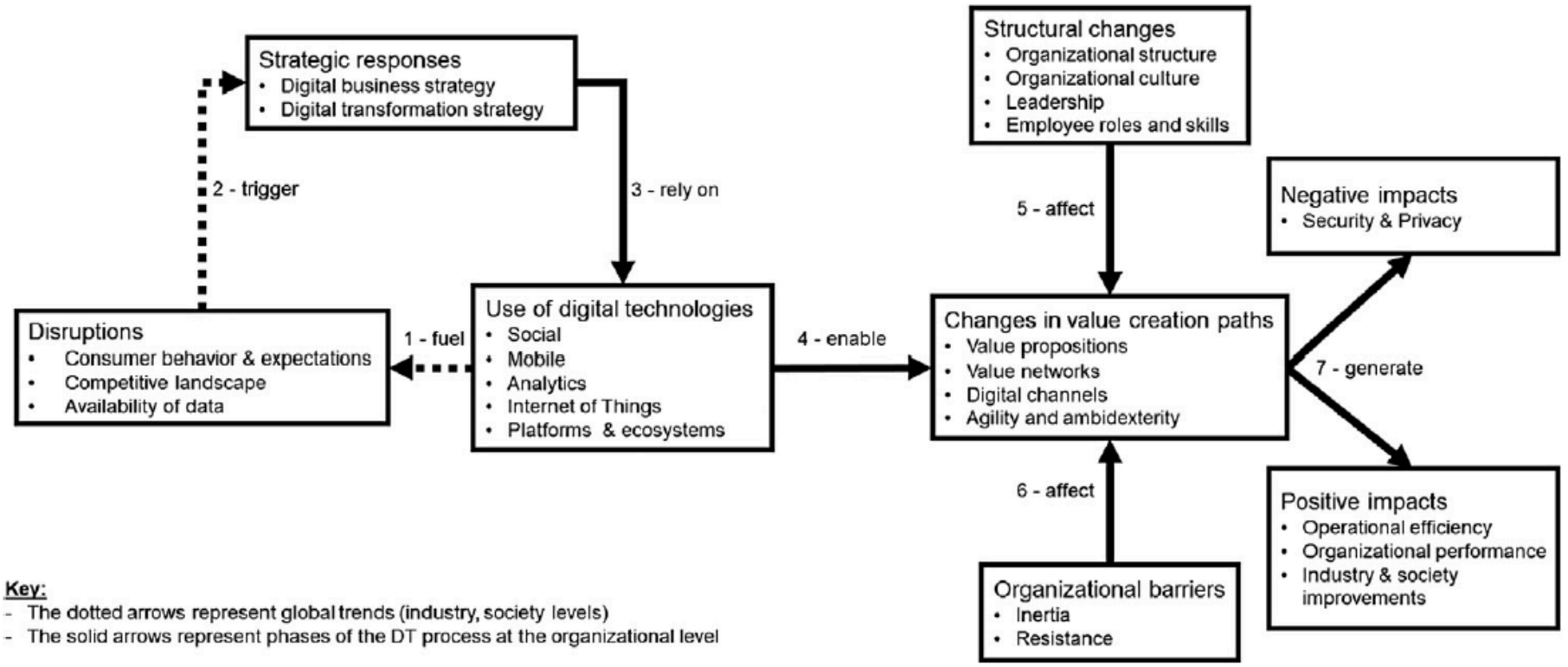
Changes

- rapidly changing markets, user behavior and technology developments (digital transformation)
- agile methods is not only used in software development teams but is used also by other organizational units (agile transformation)

Digital transformation



Vial, Gregory. "Understanding digital transformation: A review and a research agenda." *The Journal of Strategic Information Systems* 28.2 (2019): 118-144

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Agile transformation

“The agile mindset is now finding its way into the C-suite, and it is starting to radically change the way organizations are led and managed. Business agility is on everybody´s lips, for very good reasons”

Bjarte Bogsnes
Equinor and Chairman of Beyond Budgeting Roundtable
In foreword to “*Unlocking Agility*” by Jorgen Hesselberg, 2019

Benefits of agility

Word cloud of benefits reported in Version1 State of Agile Survey.

Challenges

Agile Transformation: A Summary and Research Agenda from the First International Workshop

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Abstract. Organisations are up-scaling their use of agile. Agile ways of working are used in larger projects and also in organisational units outside IT. This paper reports on the results of the first international workshop on agile transformation, which aimed to focus research on practice in a field which currently receives great attention. We report on participants' definitions of agile transformation, summaries of experiences from such transformations, and the challenges that require research attention.

Keywords: Agile · Transformation · Large-scale · Research agenda · Change management · Organisational change · Software engineering · Information systems

1 Introduction

In order to increase their ability to sense, respond and learn, organisations are up-scaling their use of agile. This implies that agile is used not only in larger projects and programs, but also in other organisational units outside of IT. In a foreword to the book "Unlocking Agility" [1], Bjarte Bogsnes writes: "*The agile mindset is now finding its way into the C-suite, and it is starting to radically change the way organizations are led and managed. Business agility is on everybody's lips, for very good reasons*".

While the implementation of agile methods traditionally has been studied at team level [2, 3], adopting agile practices across the organisation is widening this perspective and has been labelled "agile transformation". Research has discussed three main areas of such transformations. First, challenges and success factors in the transformation process [4–10]; second, changes in roles and practices that occur during such transformations [11–13]; and third, models for understanding agile transformations [14, 15]. As an emerging research field, there are many understandings of what agile transformation is; also, current empirical studies tend to be descriptive and place little emphasis on theory to explain findings. This was the motivation to host the first international workshop on agile transformation in order to focus research on practice in a field which receives great attention.

This paper summarises the workshop, which was conducted in half a day at the *International Conference on Agile Software Development*, XP 2019. The goal of the workshop was to challenge the scientific community to identify what should be of prime

R. Hoda (Ed.): XP 2019 Workshops, LNBIP 364, pp. 3–9, 2019.
https://doi.org/10.1007/978-3-030-30126-2_1

	Challenge	Description
1	Hierarchical management and organizational boundaries	Middle managers' role in agile unclear Management in waterfall mode Keeping the old bureaucracy Internal silos kept
2	Integrating non-development functions	Other functions unwilling to change Challenges in adjusting to incremental delivery pace Challenges in adjusting product launch activities Rewarding model not teamwork centric
3	Resistance to change	General resistance to change Scepticism towards the new way of working Top down mandate creates resistance Management unwilling to change
4	Coordination challenges in multi-team environment	Interfacing between teams difficult Autonomous team model challenging Global distribution challenges Achieving technical consistency
5	Agile difficult to implement	Misunderstanding of agile concepts Lack of guidance from literature Agile customised poorly Reverting to old ways of working Excessive enthusiasm
6	Lack of investment	Lack of coaching Lack of training Too high workload Old commitments kept Challenges in rearranging physical work space
7	Different approaches emerge in a multi-team environment	Interpretation of agile differs between teams Using old and new approaches side by side
8	Quality assurance challenges	Accommodating non-functional testing Lack of automated testing Requirements ambiguity affects QA
9	Requirements engineering challenges	High-level requirements management largely missing in agile Requirement refinement challenging Creating and estimating user stories hard Gap between long and short term planning

Dikert, K., Paasivaara, M., and Lassenius, C., "Challenges and success factors for large-scale agile transformations: A systematic literature review," *Journal of Systems and Software,* vol. 119, pp. 87-108, 2016.

Solution?

- Cross-functional teams
- Join software and business development
  - BizDev: close and continuous linkage between business and software development (Fitzgerald and Stol 2017).
- Sense, respond and adapt together
- New challenges for control

Fitzgerald, B., and Stol, K. J. 2017. “Continuous Software Engineering: A Roadmap and Agenda,” Journal of Systems and Software (123), pp. 176-189

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Stewardship perspective on control

- Martin Wiener, Magnus Mähring, Ulrich Remus, Carol Saunders, W. Alec Cram (2019) Moving IS Project Control Research into the Digital Era: The “Why” of Control and the Concept of Control Purpose. Information Systems Research 30(4):1387-1401

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Different forms of organization

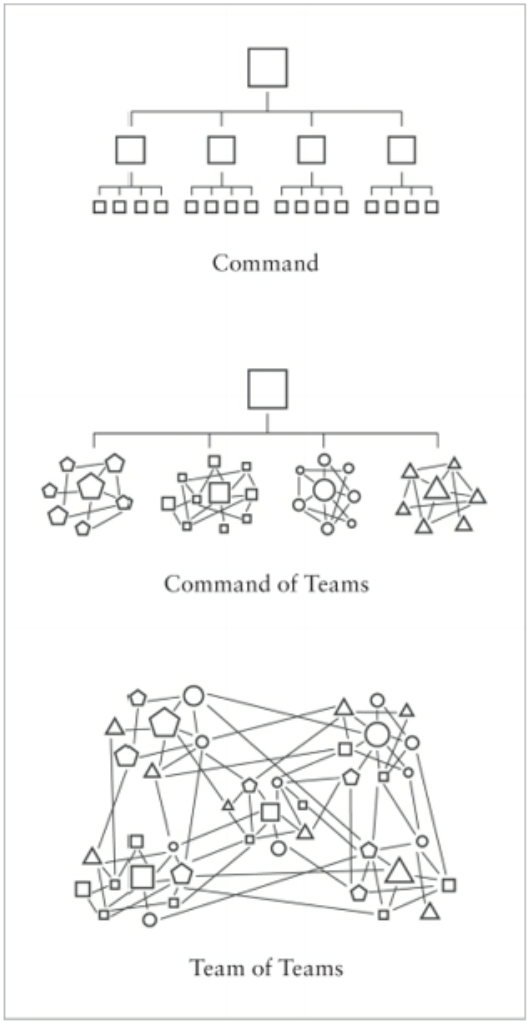

Image source:
McChrystal, Stanley. «Team of Teams: New Rules of Engagement for a Complex World (p. 57). Penguin Books Ltd..

Direct control: known problem and solution

Indirect management/autonomous teams: unknown problem, known solution

Mutual adaptation: rapid changes, new development, innovation

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“Old” definition of control

“control is defined as any attempt to ensure that individuals behave in a manner consistent with organizational objectives” (Wiener et al 2019)

- Individualistic, self-interest
- Informasjon assymetry is negative
- Extrinsically motivated agents
- Short-term focus
- Stable, hierarchical relationships

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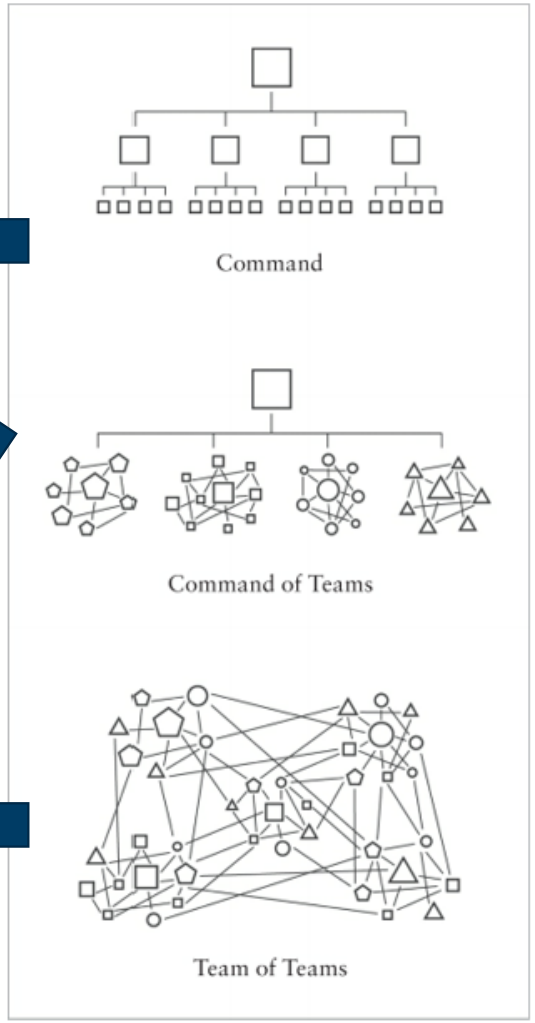

Direct control

Indirect management/autonomous teams

Mutual adaptation

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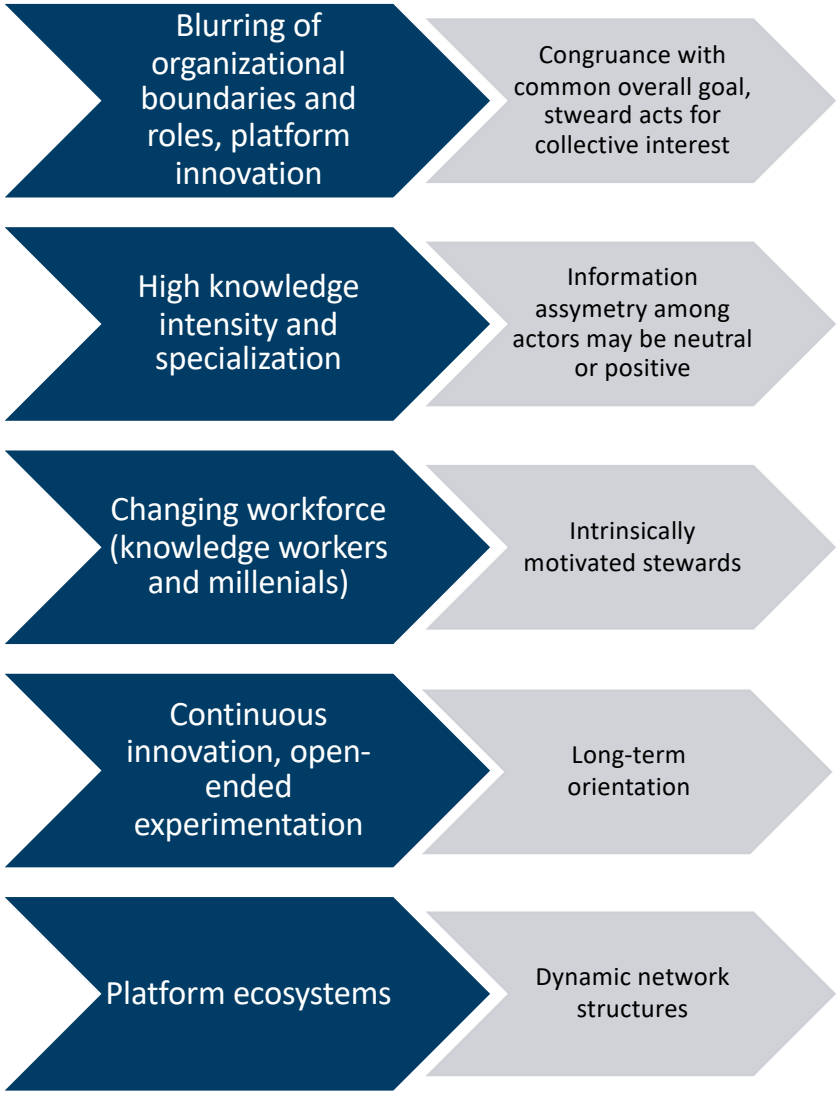
New trends



Stewardship assumptions

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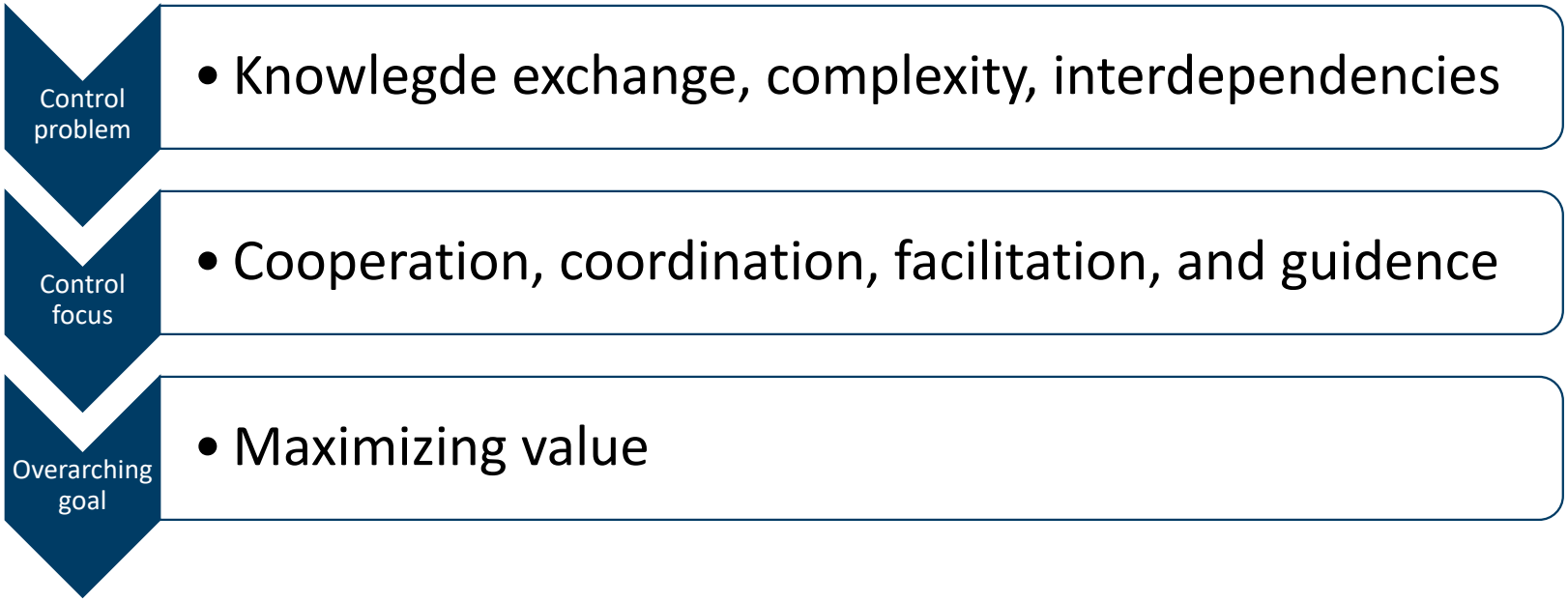
Purposes of control



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Case context: Banks, digital transformation and agile transformation

- Banks at the forefront of digital change, digital marketplace
- Legacy systems and legacy processes
- “digitalization hits at the core of a bank—i.e., the digitalization of money and all the related functions around money” (Sia et al. 2016)
- The European payment service directive (PSD2) is requiring banks to open parts of their payment infrastructure to third-party providers
- Aim for agile transformation

Sia, S. K., Soh, C., and Weill, P. 2016. “How DBS Bank Pursued a Digital Business Strategy,” MIS Quarterly Executive (15:2).

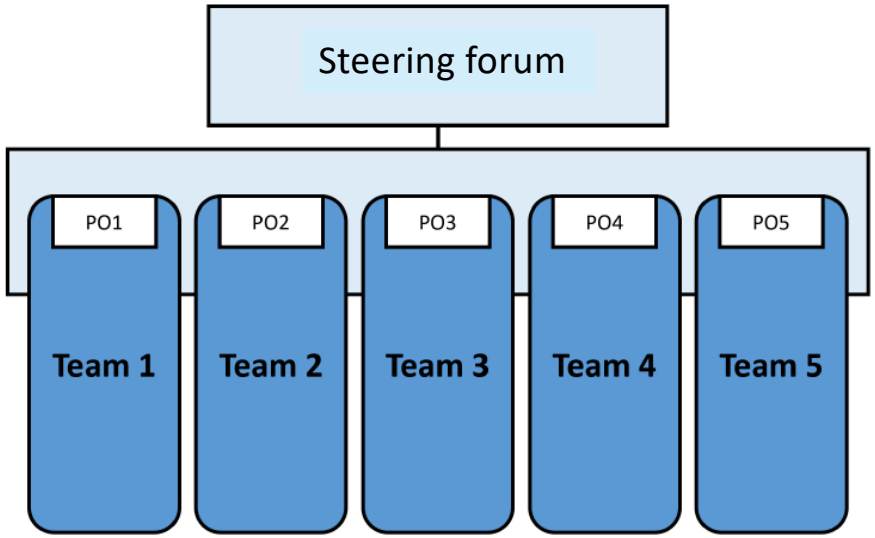
Case Background

- Bank, pension and insurance
- 2000 employees
- 2014: hierarchical and modular structure on IT organization (mirroring): business relationship management, banking and insurance, and digital and mobile
- Transformation programme
  - From technical modules as the central organizing concept to a delivery model consisting of five delivery streams (e.g., insurance, banking, pension)
  - Effects sought: giving development clearer frames regarding resources (i.e., hours), a more unified prioritization of tasks, rapid delivery, stable team participation, a unified development method, and a predictable frequency for prioritized deliverables.

Evaluations one year into the transformation

- Separation of business and IT development → Challenge
- Business orders, IT delivers
- Complex business side, many decision makers, challenging to prioritise
- Business side specified things that were challenging to implement → trust issues
- Need for mutual adjustment → create agile program with cross-functional teams

New approach: an agile program w/cross-functional teams



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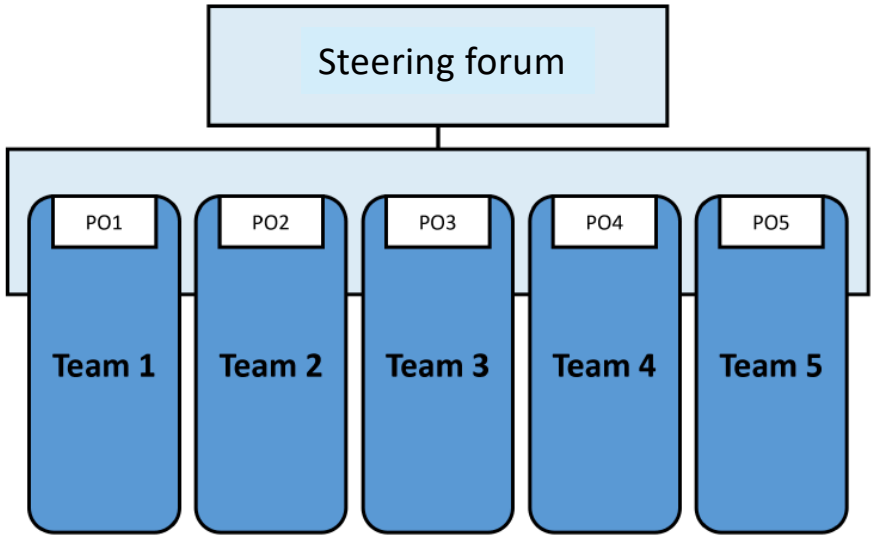
Stewardship in the agile program?



- Cross-functional teams
- Long term
- Agile methods

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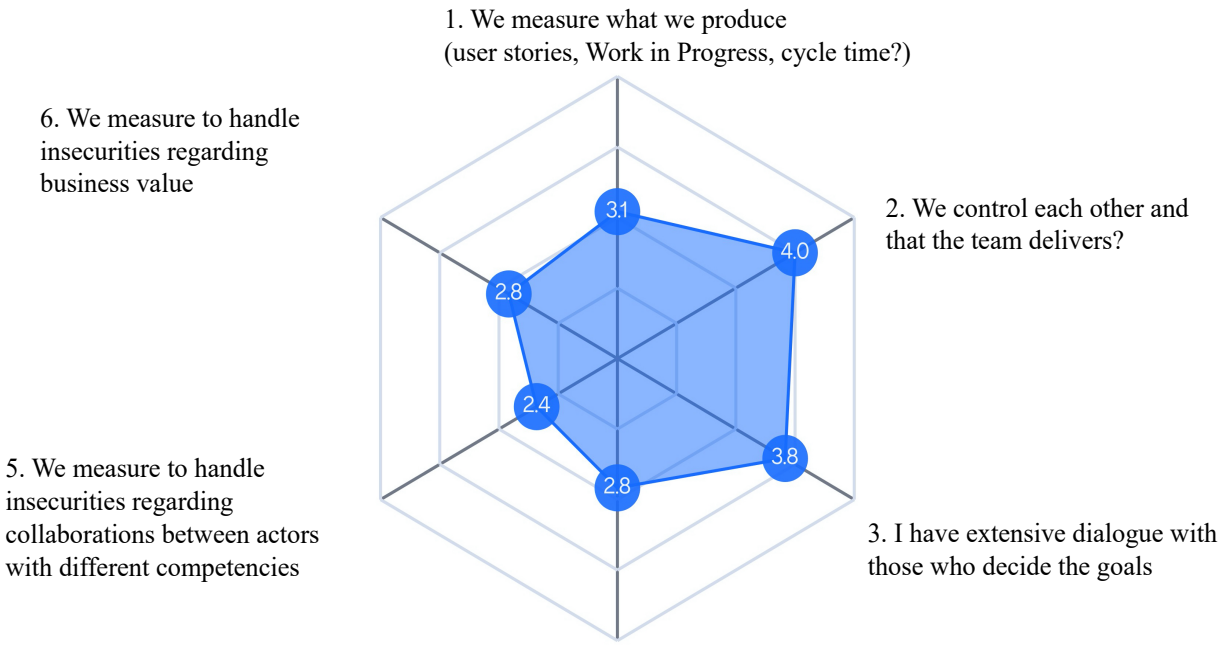
Control configuration, enactment and purpose



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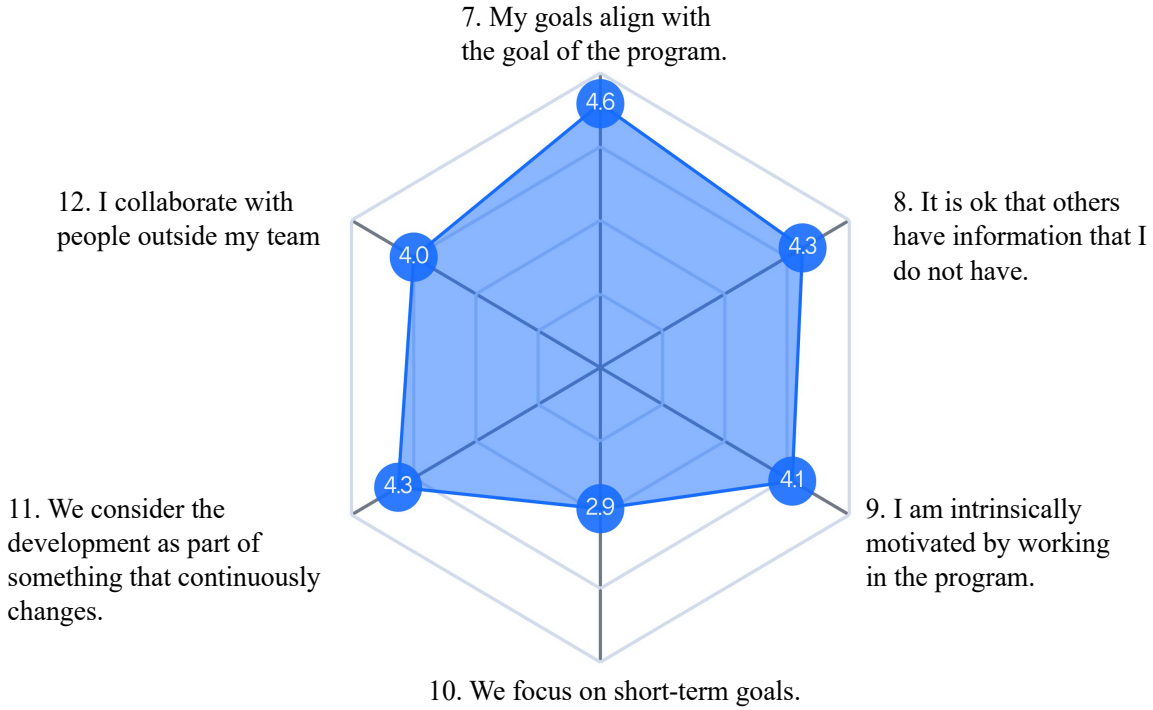
Different perspectives on value

- Product managers:
  - Dependencies outside of the program
  - Continious OKR reviewes to focus
  - Access key competencies
- Steering forum
  - Demonstrate business value
  - OKRs to involve business
  - Clarify roles and responsibilities

Digital-era characteristics of control



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Key takeaways

- Agile digital transformation by cross-functional (software and business development) means that forms of control will collide
- Digital era characteristics requires changing conceptualizations of control
- Stewardship perspective is promising to understand and experiment with novel forms of control in agile transformations

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Technology for a better society

Why cross-functional teams?

- Team **autonomy** and **diversity** is reported to be key to achieving agility (Lee and Xia 2010).
- Autonomous—that is, self-organized, self-directed, and self-disciplined—teams are necessary for achieving ISD agility (Nerur and Balijepally 2007).
- Diversity is defined as the heterogeneity of actors involved in ISD in terms of characteristics such as education, functional role, and technical abilities (Williams and O'Reilly 1998).
- BizDev: close and continuous linkage between business and software development. The process of continuously assessing and improving this link is described as BizDev (Fitzgerald and Stol 2017).

Lee, G., and Xia, W. 2010. "Toward Agile: An Integrated Analysis of Quantitative and Qualitative Field Data on Software Development Agility," MIS Quarterly (34:1), pp. 87-114.

Nerur, S., and Balijepally, V. 2007. "Theoretical Reflections on Agile Development Methodologies," Communications of the ACM (50:3), pp. 79-83.

Williams, Y., and O'Reilly, C. A. 1998. "Demography and Diversity in Organizations: A Review of 40 Years of Research," in Research in Organizational Behavior, M. Staw and L. L. Cummings (eds.), Greenwich, CT: JAI Press, pp. 77-140.

Fitzgerald, B., and Stol, K. J. 2017. "Continuous Software Engineering: A Roadmap and Agenda," Journal of Systems and Software (123), pp. 176-189