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Practically best friends?!

Agility and ISO 9001

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Zusammenfassung/Abstract

Agility is considered the silver bullet for survival in the VUCA world. However, many organisations are afraid of endangering their ISO 9001 certificate when introducing agile processes. A joint research project of the University of Applied Sciences and Arts Hannover and the DGQ has set itself the goal of providing more security in this area. The findings were based on interviews with managers and team members from various organisations of different sizes and industries working in an agile manner as well as on common audit practices and a literature analysis. The outcome presents a clear distinction of agility from flexibility as well as useful guidelines for the integration of agile processes in QM systems - for QM practitioners and auditors alike.

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PRACTICALLY BEST FRIENDS?! AGILITY AND ISO 9001

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Abstract: Agility is considered the silver bullet for survival in the VUCA world. However, many organisations are afraid of endangering their ISO 9001 certificate when introducing agile processes. A joint research project of the University of Applied Sciences and Arts Hannover and the DGQ has set itself the goal of providing more security in this area. The findings were based on interviews with managers and team members from various organisations of different sizes and industries working in an agile manner as well as on common audit practices and a literature analysis. The outcome presents a clear distinction of agility from flexibility as well as useful guidelines for the integration of agile processes in QM systems - for QM practitioners and auditors alike.

Key Words: Quality Management, QM, Agile Practices, Processes, Agile Manifesto

1 Introduction

Leaders and employees of all kinds of organisations are afraid – afraid of the VUCA world and its disruptive effects. The ***VUCA*** world stands for its acronyms, as it is characterised by volatility, uncertainty, complexity and ambiguity. It causes considerable changes in markets, business models and internal processes and thus forces organisations to adapt. Organisations hit by the VUCA world are no longer able to broadly rely on controlled conditions. Instead, flexible organisational structures, new work methods and project-oriented procedures are needed and applied. In this context, the use of agile practices plays a criticial role. According to the vast number of books published and seminars held about it, agility is deemed to be the silver bullet against the VUCA world. So its implementation is often seen as a necessity from a management perspective. Unfortunately, it is not clear, how much agility a quality management (QM) system is able to tolerate. Logical consequences are that either organisations shy from establishing agility in order to protect their certificates or that they try to hide their agile experiments from their quality auditors. Both situations are far from optimal. Reason enough for the DGQ (German Organisation for Quality) and the author from the University of Applied Sciences Hannover to launch a research project. Its aim was to create guidelines for the integration of agile procedures and processes into ISO 9001. To this end, in-depth interviews were conducted with representatives of companies from a wide range of industries who already had practical experience with the use of agile approaches in their companies. In particular, they were asked about their understanding of agility, the actual use of agile approaches, the results and challenges they had encountered

and any experience they had acquired in QM audits. The insights gained were supplemented by a comprehensive literature analysis and transferred to ISO 9001:2015. A first interesting fact was this: Everybody was talking about agility, nobody had a clear definition what agility actually was.

2 Understanding Agility

The range of explanations or attempted definitions of agility is very broad. Mostly, it is understood as a kind of flexibility in organising activities so that changes can be made quickly and people with knowledge about newly appeared aspects can easily be drafted to help finding new solutions. Sometimes it follows the ideas first published in the Agile Manifesto. Often, agility is even used as a synonym for specific agile methods like Scrum or Design Thinking. In order to capture the main variations found during the interviews and in the books in a common definition it was necessary to start from a broad view. At the same time, the definition needed to clearly differentiate agility and agile practices from an everyday kind of flexibility which often is just “laisser faire” or “management by chaos”. Otherwise, it would not be possible to provide comprehensible guidelines for the use of agility in management systems later on.

The definition found and successfully deployed acts on the logic used in the ISO standards: A general statement backed up by supplementary notes providing comments on practical use. Agility in the organisational context is therefore defined as follows:

“***An agile organisation understands that dealing with constant uncertainty and the resulting unplanned situations are a natural part of its existence. Therefore, it systematically integrates these situations into the management of its activities. The degree of agility of an organisation is determined by the use of agile practices and methods and the alignment with agile values and principles.***

Note 1: *Agile values and principles are based on the four Agile Values and twelve Agile Principles defined in the Agile Manifesto and are to be customised depending on the organisation, its environment and industry.*”

For practical use, this clarification is not sufficient, as agile practices still need to be developed further. Thus, the following definition for agile practices offers the necessary details for its use in a (quality) management system context:

*“**Agile practices are approaches to develop and implement solutions to achieve organisational goals in unplanned situations under uncertainty by independently working groups of competent individuals. In prinicple, agile practices can be informal or predefined. The approaches used are typically iterative.***

Note 1*: Independently working groups of competent individuals are characterised by the fact that they act as a group in a self-directed and autonomous manner. This means that they are at least free to choose the methods of working on the solution and to make decisions independently without having to name leadership functions or to involve further responsible persons. These groups are also called self-controlled teams or* ***agile teams****.*

Note 2: *Iterative approaches are characterised by the fact that the specific approach is not planned into detail from the very beginning, but is developed gradually. Short decision and feedback cycles are the key factor, so that the path taken is regularly reviewed and unfavourable effects or unwanted results can be corrected at short notice.*

Note 3: *Examples of agile practices include self-directed ad hoc working groups, stand-up meetings, and service design labs.*

Note 4: Agile methods *are special cases of agile practices, which are defined for predetermined use cases and can be applied in a standardised way in different kinds of organisations. Examples of agile methods are Scrum, Kanban Boards and Extreme Programming."*

3 Using Agility in QM Systems

3.1 Agility as a Special Form of Disposition

The definitions above already imply that agility is not a fundamental counter-draft to process-related control of an organisation. Rather, it is a complementary organisational principle for special situations of the VUCA world. Agility can be understood as the third choice alongside process and project organisation. While ISO 9001 explicitly requires a process organisation, also a project organisation is accepted without any problems if applied using a systematic approach. Still, the critical question arises: How much agility can an organisation with a certified QM system tolerate?

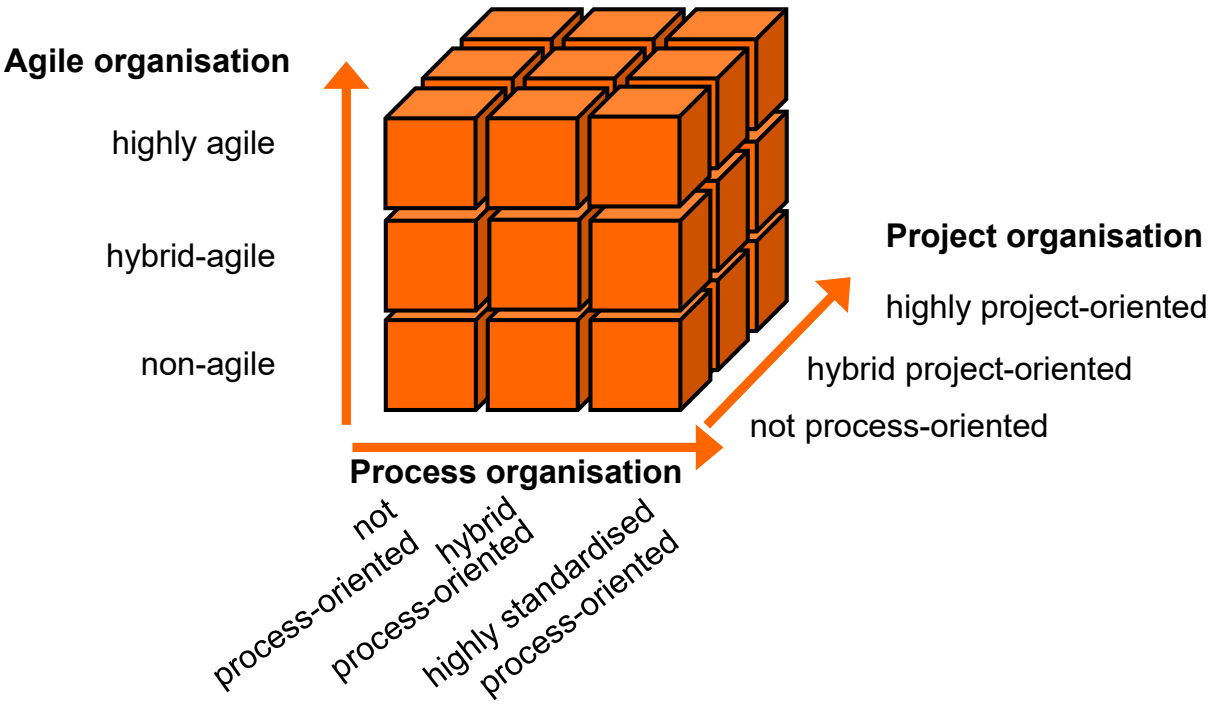

Figure 1: Organisational Principles (System Cube)

To answer this question it is worthwhile to find out where something really new is hidden in agility. After all, management literature has been differentiating between organisation, disposition and improvisation for decades. By its very nature, the organisation - i.e. the establishment of binding procedures with long-term validity for standard situations - is the one that most closely corresponds to the ideal image of the quality manager. For less standardised environmental conditions, however, a dispositive approach is accepted as well. Whether in the processing of applications, daily deployment planning or individual seminar design: A discretionary scope of competent employees that goes beyond basic regulations has long been part of "classic QM". From this understanding, agile practices can be seen as a special form of disposition, which allows (unusually) high degrees of freedom at team level.

3.2 Agile Teams and ISO 9001

Organisations with classical QM systems based on ISO 9001:2015 are highly process-oriented and rigourously use control mechanism. ISO 9001 requires that both, the QM system and all operations e.g. the core processes, are planned and procedures are controlled. Usually, planning, steering and monitoring activities are typical management tasks and are carried out either by managers or by specific departments, for example quality or process management functions. However, ISO 9001:2015 does not specify who should carry out these tasks. In principle, any function or level of hierarchy could perform these activities, provided that the persons responsible possess the necessary skills. ISO 9001 simply requires the organisation’s regulation to be adequate. In addition to the competencies of the parties involved, the type of activity under consideration, the process objective and the associated risk profile are decisive factors for assessing the adequateness of the regulations for a QM system.

Thus, it is not to be rejected in principle if an agile team, as part of its self-control, independently sets its goals, determines the types of acitivities to be performed, divides the tasks among the team members and, after completion, assesses the achievement of the goals. Since the revision of ISO 9001:2015, the principle "output matters" has been applied in many areas. As long as the objectives are reliably achieved over a longer period of time and the results meet the requirements of all relevant stakeholders, even unusual regulations can be certified. Thus, for ISO 9001, self-organised, agile teams are definitely not a fundamental problem.

Based on the feedback obtained in the interviews, agile teams are well able to take over these classical management functions. Several interviewees stated that the obligatory reviews of their development projects based on the Scrum methodology (sprint review as well es sprint retrospective) are performed far more rigorously than those in classical development processes. Some traced this back to a very sincere and trustful working atmosphere. In their experience, all team members honestly identified problems of cooperation and focused on improving the team's internal work processes. Therefore, review processes of agile teams might even be superior to the usual review processes.

4. Controlling Agile Processes

4.1 Defining Agile Processes

As already explained, agility is not a counter-model to process organisation. In fact, in today's organisations agile practices are often used on a sub-process or activity level without challenging the overall process-system as such. Nonetheless it would be possible for an organisation to use agile practices to such an extent that the process becomes an agile process. As this constitutes a special challenge for the management system it was necessary to provide a differentiated definition. Derived from the basic process definition of ISO 9000 agile processes were defined as follows:

*"**Agile processes are processes that use agile practices to a relevant extent in order to determine and achieve intended results.***

***Note 1:** The **extent of agile practices** is relevant if it changes the nature of the process in such a way that dealing with uncertainty and constant change in a self-controlled manner takes precedence over fixing controlled conditions. This does not necessarily mean that activities using agile practices actually predominate in terms of time, resources or value added.*
***Note 2:** The **determination of intended results** during the process does not mean that there are no requirements from interested parties at the start of the process. However, at the beginning these are not defined in such a manner that the process can be aligned with them. This is often the case in innovation and development processes. Processes with a high extent of agile practices for determining anticipated results are typically iterative."*

4.2 Universal Process Control Mechanisms – the BIG 5

(Highly) standardised processes, as typically used in industrial production, are usually based on explicitely defined activities and controlled conditions, which are created and maintained for the production environment. Agile processes are naturally far from this. However, there have long been service areas, e.g. rescue services, where the employees on site have to decide as a team on the basis of an individual assessment of the situation. Nevertheless, also organisations in these environments are evidently able to control processes within a framework of general requirements in such a way that certification according to ISO 9001 is possible. Accordingly, it was obvious to assume that the multitude of different process regulations hide uniform, abstract control mechanisms, which ensure the quality of the process results - and which are basically classified as permissible by QM auditors. Within the research project, a Master thesis (written in German by Tonio Japing[1]) was dedicated to investigating whether and how these generally accepted, abstract mechanisms of process control could be transferred to agile processes. For this endeavour, process control was defined as follows:

[1] Japing, T. A. (2018). *Steuerungsmechanismen agiler Prozesse*. Master thesis. Hannover University of Applied Sciences, Hannover. Available at https://doi.org/10.25968/opus-1269

"***Process control is a system in which certain mechanisms are applied to a process in a control loop in order to ensure that the process result corresponds to the intended result.***"

The researched examples of process control covered the entire range of different processes of a typical company – especially finance (e.g. internal control system), risk (e.g. FMEA and Three Lines of Defense), project and quality management (e.g. Statistical Process Control). The analysis showed that all operate with mechanisms using uniform characteristics. Therefore, they all could be combined on an abstract level with regard to their commonalities. The resulting – and afterwards further consolidated – process control mechanisms are called the "Big Five" and cover the following:

1. **Requirements/specifications**
2. **Resource allocation**
3. **Rules**
4. **Coordination**
5. **Reviews**

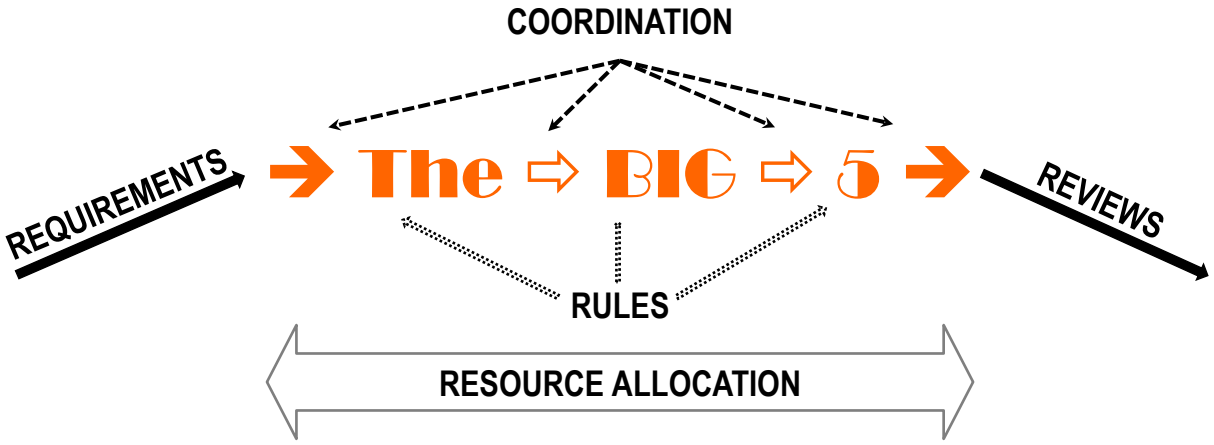

Figure 2: The BIG FIVE of Process Control

All these mechanisms were tested for their compatibility with agile processes. The outcome further underpinned the permissibility of agile practices in QM systems, as all control mecanisms can also be used in agile processes, without exception. Yet, the respective design of the mechanisms is very different, which is not only due to the different framework conditions but also to divergent objectives.

1. Requirements/specifications fundamentally comply with the definition of requirement of ISO 9000:2015, 3.6.4. Coming from interested parties or the organisation itself, the fixed requirements/specifications are usually stated or are mandatory, but do not necessarily have to be documented. Typically, agile practices also make use of requirements, even if they are kept very general at first and become more detailed and refined over time.

2. As an essential control mechanism, the allocation of resources has a direct influence on the quality of the process and the process result. There are no differences between agile and "normal" processes concerning the necessity of the availability of human resources (in the right quality = competences and quantity = working time) as well as the provision of

financial assets, the essential infrastructure and support by the leaders. ISO 9001 clearly demands in 7.1 to determine and provide the necessary resources and in 5.1 also obliges top management to do so.

3. Rules include guidelines and instructions or Standard Operating Procedures (SOP) that define at different levels of commitment what activities have to be carried out and, if applicable, how these activities should be carried out. A detailed instruction on agile practices is generally not suitable, since one of its defining characteristics is to generate solutions for uncertain and unplanned situations in a self-directed way. Nevertheless, it is still possible and useful to set certain rules. These rules can e.g. include the requirement that for ad hoc requests the person receiving the request always assembles the team or that all departments involved have to be represented. They can also state that an experienced facilitator needs to be present and that he chooses the working techniques in consultation with his team. Interestingly, very popular agile methods are often precisely defined, as for example in the internationally used Scrum Guide.

4. Coordination implies that an optimal process flow requires coordinative activities that control the process activities at a certain point in time in order to take current events and interdependencies into account. In classical processes, certain roles are typically in charge of coordinating activities. In the shipping trade, for example, orders are scheduled by a dispatcher. In most organisations tasks are allocated by managers. Work packages in projects are coordinated step by step via the project management or via steering committee meetings. In agile processes, a typical coordinating role is for example the Scrum Master. He ensures that teamwork is optimised and that the goals as well as product domains are understood by every member of the Scrum team. Self- directed teams are often used for coordinating very complex processes in order to shift this task towards the working level. In VUCA cases the working level is the only place where all necessary information and competencies for an effective reconcilement converge.

5. Finally, reviews are follow-up tests or assessments that evaluate the process flows and/or the results of the processes. They can either correspond to a formal approval or generate the essential input for the improvement of the process. In principle, a review is a natural part of the work process, especially in self-directed teams. Creative processes, such as design thinking, are primarily based on the fact that phases of divergence and convergence constantly alternate. In a divergence phase varied ideas are generated. This is followed by a convergence phase, where the results are reviewed and evaluated and one of the presented solutions is selected for further actions. In analogy to the development requirements of ISO 9001, 8.3.4, reviews and assessments are carried out to determine whether the results meet the requirements. These verification and validation activities are conducted using various kinds of prototypes. Reviews are usually carried out by the agile teams themselves. As already mentioned above, reviews are also a basic requirement in every Scrum process.

5. Conclusion: Agile Practices and Processes Fit to ISO 9001

It can be concluded from the research project that agile teams, practices and processes fit astonishingly well in QM systems based on ISO 9001.[2] There is not need to shy from establishing agility in order to protect QM certificates or hide agile procedures from quality auditors.

However, certain conditions must be met: Generally, agile processes can only be certified if they are subject to process control mechanisms. Given that ISO 9001 does not specify the design of responsibilities and control mechanisms, a diverse array of individually designed process control activities can basically be compliant to ISO 9001. This is true as long as the (agile) process achieves its intended process results in a traceable manner or does not achieve them worse than alternative standard processes. With regard to generally accepted agile methods, the existence of control mechanisms can in principle be taken for granted.

Concerning agile practices, as well as standard processes, an organisation has to make a conscious decision about which responsibilities it assigns and which range of activities and controls it permits, taking into account risk and opportunity considerations. For achieving a basic conformity with ISO 9001 it is completely irrelevant how broadly or narrowly defined responsibilities and regulations are and how detailed or general they are documented. However, the conscious handling of agile processes requires managers, employees and auditors to have a very good and deep understanding of the organisation and its context. This is the only way to create a well-founded discussion about whether the opportunities offered by agile practices (especially faster and better reaction to changes, more autonomy of employees and, in many cases, higher motivation as a result) outweigh the associated risks. In case of a well-founded and balanced decision in favour of agile elements, agility and ISO 9001 can become practically best friends, indeed.

2 More details are explained in the resulting German whitepaper which is freely available online: Adam, P. (2018). System(at)isch agil - Wie agile Prozesse in ein Managementsystem nach ISO 9001:2015 integriert werden können. Hannover University of Applied Sciences, Hannover. Available at https://doi.org/10.25968/opus-1268