How to design an agile R&D organization

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In our infographic “Organizational structures and building blocks for agile product development”, we illustrate six key elements of an agile organization: the navigators, the value maximizers, the solution deliverers, the system integrators, the supporters, and the innovators. The future success of a company depends on these agile org elements to cope with the industry-specific and operational challenges of the VUCA world. These org elements should be designed to align with each company’s environment, culture, and evolution.

The challenges that are specific to the industry include increasing product complexity, advancing digitalization, and more and more connected products. Key operational challenges are usually defined by accelerated software delivery times, enhanced abilities to manage changing priorities, and higher productivity. As a consequence of these challenges, the traditional R&D process will transition into agile R&D. The traditional R&D process is characterized by long-term stable strategies, product centricity, monolithic product architectures, and long-term planned R&D processes. This is changing toward midterm adaptive strategies, customer centricity, modular product architectures, and iterative R&D processes. Agile organizational structures avoid the loss of efficiency and build a foundation for the successful future of your company.

Figure 1: Organizational structures and building blocks for agile product development
Eight design principles: The foundation for a successful agile organization

Based on our experience with agile transformations across various industries, we have defined eight organizational design principles that are key to a successful agile organization.

**Focus on customer value**
Separate the WHAT and HOW of the product to focus more on customer needs.

**Prioritize business impact**
Support value delivery over plan fulfillment and impact over speed.

**Enable reuse**
Implement an organization that enables the development of modular products and standards.

**Think lean**
Do what fits best, eliminate waste, and do not be afraid to break the norm.

**Be flexible**
Establish flexible structures. An organization is a dynamic and living system.

**Establish trust**
Implement a culture free of politics and fear, one that promotes respect and courage.

**Incentivize your organization**
Foster commitment and motivation. Both are key enablers for a successful organization.

**Be transparent**
Work on openness, strong communication, and a continual flow of information to build a sustainable foundation.
These principles form a foundation for the entire organization and help set up a healthy agile environment. Of course, they should be perceived as guidelines and not as strict rules.

Within a healthy and successful agile organization, each person in their individual role will have internalized the principles and will have an understanding of the importance of each principle as it applies their day-to-day work and their team. Certain principles may be more applicable to specific roles than to others.

The figures above provide an introduction to the organizational areas and describe the interaction between them. The following graphics offer a more detailed description and establish a reference to the organizational principles. Our experience with agile organizations indicates that the organizational principles should be prioritized by the area of application; however, this does not exclude the relevance of other principles for this area.

The NAVIGATORS
...define the strategic WHAT and WHY

Focus principles:

- Focus on customer value
- Establish trust
- Incentivize your organization
- Be transparent

The NAVIGATORS define the WHAT of the product portfolio on a strategical level and the business purpose (the WHY). They set also the development budget and ensure the strategic integration of customer and market perspectives in product development. The NAVIGATORS are accountable for the portfolio backlog, including prioritization by the use of “light” business cases with commercial aspects and investment appraisal. The synchronization between the portfolio backlog and the specific product backlogs is also under the purview of the NAVIGATORS. The NAVIGATORS are top management and strategy and market experts and therefore do not focus on the operational level.
The VALUE MAXIMIZERS
...define the tactical WHAT.

Focus principles:

- Focus on customer value
- Prioritize business impact
- Enable reuse
- Be flexible

Core roles for the VALUE MAXIMIZERS are architect and product owner. VALUE MAXIMIZERS are responsible for the technical translation and implementation of the portfolio strategy, and they define the tactical WHAT of product development on an operational level. In addition to the modularity and functional scope of the product, the VALUE MAXIMIZERS provide stable and future-proof product architectures including interfaces, systems, and module cuts. Furthermore, they pay attention to technical dependencies and the integration strategy. They are also responsible for the allocation and synchronization of the development teams and ensure the integration of customer perspectives into the development process.

The SOLUTION DELIVERERS
...provide the operative HOW

Focus principles:

- Prioritize business impact
- Enable reuse
- Think lean
- Be transparent

The SOLUTION DELIVERERS are cross-functional development teams that define the HOW of product development on an operational level. They are in charge of the development of functions and features and have end-to-end responsibility, facilitating the technical interfaces for other development scopes and ensuring integrative ability. For an efficient and effective development execution, SOLUTION DELIVERERS have to be organized, responsible, and self-directed.
Furthermore, SOLUTION DELIVERERS ensure the quality of the development scope during the entire development process. They support the SYSTEM INTEGRATORS throughout the continuous integration into the overall system. In addition to the development teams, other functions, like marketing and purchasing are also under the purview of the SOLUTION DELIVERERS.

The SYSTEM INTEGRATORS

...integrate, validate, and release.

Focus principles:

- Focus on customer value
- Prioritize business impact
- Think lean
- Be transparent

The main task of the SYSTEM INTEGRATORS is the execution of integration services and the assurance of integration tests at the overall system level. They validate the overarching release plan and typically partner with the development teams to leverage their technical expertise. Furthermore, in partnership with the support and enabling team, the SYSTEM INTEGRATORS improve automated testing, continuous integration, methods for testing and deployment.

The INNOVATORS

...provide new technologies.

Focus principles:

- Focus on customer value
- Prioritize business impact
- Enable reuse
- Think lean

The INNOVATORS identify and drive innovation outside of day-to-day business operations, e.g., through continuous monitoring of technological trends and market changes. Innovation topics, forwarded by portfolio and strategy boards, are also driven by them. They have a strong mandate
to act autonomously, make decisions, and quickly develop solutions for strategic areas of innovation. The INNOVATORS consist of a dedicated team of cross-functional members who are closely linked to all levels and areas of the organization. Approved business models and minimum viable products are handed over to the organization. In combination with communities, the INNOVATORS create an organic network, an “innovation space”. The development teams are supported by the INNOVATORS.

How to implement an agile organization

The journey to a successful agile organization consists of four steps:

- **Step 1: Start & Prepare**: Design and plan the next big thing!
- **Step 2: Experiment**: Inspect and adapt it!
- **Step 3: Transform**: Make it really big!
- **Step 4: Improve Continuously**: Tweak it!

Based on 3DSE’s experience, the overall development and implementation period lasts one-and-a-half to four years. This naturally depends on the size and maturity of the organization and the corporate culture.

**Step 1** includes an analysis of the company’s vision, current situation, KPIs, and, with the help of an empowered team, a subsequent initial solution shaping. For this phase, 3DSE recommends using an open and creative innovation approach. In addition to a tailor-made transformation solution, an implementation roadmap will be developed and prepared using this methodology.

The core of **Step 2** is testing the developed solution in a stable environment with pilot projects. The frequent execution of retrospectives helps identify improvement potentials and derive the required measures to ensure a proof of concept. A successful transformation must always be accompanied by targeted and specific change measures, communication, and training, all of which must also be designed in this step.

In **Step 3**, the developed solution is initiated and anchored in the organization according to a defined roll-out plan. Therefore, it is essential that training for these new processes is role specific and has continuous leadership-level involvement. Step 3 is completed by the handover, which includes recommendations for a sustainable anchoring.

**Step 4** aims to continuously optimize the designed organizational structure. Within the framework of a comprehensive health check, it is examined to determine whether and to what extent the new organizational form is accepted and facilitated by the employees. Health checks are typically conducted one or one-and-a-half years after the handover. The subsequent optimization is an ongoing process.
The characteristics of an agile organization are company specific and heavily dependent on industry, product portfolio, corporate culture, existing structures, strategic goals and alignment, as well as the availability and skill level of employees.

This four-step approach has proven itself in past transformation projects and has been successfully applied across various industries. As there is no one-size-fits-all solution, these principles are for orientation purposes only. 3DSE will work with you to co-design an approach that is tailored to your organization’s needs.

**Interested? Get in touch!**

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