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Management of Product Development Projects in Engineering Industries

One of the important keys for success of engineering companies are successful products. There are three drivers for successful companies within the product development projects: First, they are using a set of methods during their projects. Second, the processes in engineering design are based on structured and standardized procedures. Third, they avoid radical innovation because of risk. These are findings of recent research by analyzing some hundred product development projects.

Many efforts have been undertaken to improve effectiveness and efficiency. Lean development helped to reduce waste of time and concentrate on the important elements of their activities in engineering design projects. DSM oriented analysis helped to get a better understanding of the networks of dependencies to support the optimization of relevant processes. Clearly defined targets and regular reporting systems have improved the efficiency of controlling measures.

And nowadays we see that well-known mainly larger companies have started to think about some of the success-stories of (former) start-up's; they try to imitate the typical start-up behavior and to follow agile development methods like SCRUM.

Is this some kind of a revolution in our project work in established industries? My answer is yes and no!

“No” means that we have to keep the well-organized world of structured and standardized procedures. When developing a new lathe for standard applications a process is required that strictly follows the requirements regarding quality, cost and time. The cooperation of involved disciplines has to follow proven experiences. The steps towards innovation are usually small and the technical, financial and market risks are controllable. Of course, these procedures have to be improved over time based on changing requirements, available tools/methods and experience.

“Yes” means that we have to differentiate between the given situations within our enterprise! Based on that we have to have different procedures! Thinking of break-through innovation may follow ideas of Design Thinking or of an adapted version of SCRUM, at least for a certain period. Industry has to manage the need for increasing flexibility and adaptability of processes, staff and products or even product families. The increasing importance of digital technologies and products leads to change business-models and markets.

Thinking of the example of an aircraft gas turbine: the development of the technical core of the system has to follow proven procedures; however, some of the components may require an agile pre-development project based on 3D-printing possibilities. Shifting the business-model from sales of the gas turbine to selling flight hours may effect further measures in monitoring devices.

This differentiation requires further development of competences of the whole staff and management capabilities of the responsible staff. Responsible leadership instead of administration has to be improved!

A number of universities support students to learn and experience responsible leadership, build up their own business and successful collaborate with other people and institutions. This will help to build up for future leaders in industry.



Prof. Dr.-Ing. Udo Lindemann

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