

A Manifesto of Future Product Development 2013+

This is my vision on how to educate world class product developers and study the creation of innovative products.

Challenges

When it comes to product development, future is already here. Digitalization and networking have transformed all products and related value chains for good. Developing products without considering their relation to internet is just not possible. Still 50 years ago, the schools of mechanical engineering, electrical engineering and just blooming computer engineering could grow alone. But now, the business of product development (PD) is inter-disciplinary. To succeed, products must be feasible in engineering, viable in economics, and valuable for the user as shown in Fig. 1. As in case of the world's biggest technology company Apple, design can vital in creating value and explaining why their products became profitable. The question is, what are the requirements for any student hoping to receive an education that enables them to join the innovation industry of the 21st century?

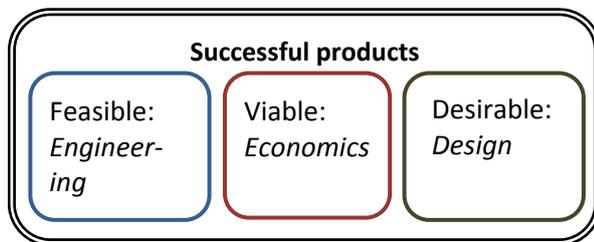


Figure 1: Three factors of successful products.

By teaching PD in a university we express belief that theoretical and practical knowledge can help students on the way to the professional world. There are text books on PD around, but they are somewhere between realistic and idealistic, useful and bleak respectively. The educators need to see the difference. This is only guaranteed if the academia maintains a constant dialogue with industry and observes the developments of the outside world. We must embrace the change, understand the drivers and new practices of industry, for instance regarding lean or agile development models. Our solutions for education and research must reflect the changes in the world at large – and acknowledge our chances in changing it through innovation. But how do we learn about the “the real world”, in the absence of the best practice of PD?

Solution space

Developing a new product is a demanding job of integrating existing knowledge to create novel output. As shown in Fig. 1, this requires a mix of ingredients from several disciplines. Therefore, cross-disciplinary collaboration between scholars and educators, industry and academia, is one solution for the presented challenges. The engineering *education* needs to remember its core competences, the unique skills of construction that differentiate this school. To those, we

can add up skills for creative collaboration across disciplines with other schools of engineering, design and business. As an outcome of this difficult task, we can get the support for multi-disciplinary education and research.

The PD education and research in academia should be *relevant for industry*. It should not cater for industry, but it should offer through education a combination of proven basic ingredients with seasonal toppings. Right now these could be *user experience, design thinking, 3D printing, open and user innovation, entrepreneurship, and lean product development*. Some of these trends will turn out as the trademarks of 21st century PD. For instance, *human-centered design, agile development and rapid prototyping*, awareness of *global trends and interdisciplinary collaboration* are already topics too important to neglect in PD education. Vital thing is that Academia is both open and critical towards these ongoing trends. The same applies to students. They need to get comfortable with talking to and working with companies during their studies to learn about the constraints of PD.

The research of PD is special. It adopts a multi-disciplinary perspective because it has no unique methodology. I believe PD has room for analytical methods and exact *empirical science*. Although when it comes to early phases of PD, the so called fuzzy front-end, holistic, intuitive designerly thinking will be appreciated. But creative thought should not be engulfed in a mythical mist of creation, it can and should be explicated as has been done in the field of psychology of creativity and the better parts of the innovation literature. The research on PD should be *user-inspired*. Users be the professional product developers in companies Academia should see to the actual problems of PD professionals, identify fruitful and tangible research questions and apply rigorous methodology to solve them. This means going beyond pragmatic “as long as it works” approach and systematically aiming at *evidence-based* design development of PD practice.

Finally, as the society changes, it is crucial for the university to prepare the graduates to new types of careers. New companies built upon excellent products are needed in everywhere. This calls for entrepreneurial skills and mindsets uncommon in Academia. My overall list for *Main challenges for university PD* is:

- Stay relevant to industry, but independent
- Stay up to date
- Grow multicultural and cross-disciplinary
- See local needs in a global perspective