ProVIL – Product development in a Virtual Idea Laboratory

A co-creation project to develop highly innovative product concepts through excellent master students

CO-CREATION

Contact

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Main actors

- IPEK – Institute of Product Engineering at Karlsruhe Institute of Technology (KIT)
- Karlsruhe University of Applied Sciences
- Master students from mechanical engineering
- Master students from industrial engineering
- Porsche AG

ProVIL – product development in a Virtual Idea Laboratory (2016) was a product development project with 32 Mechanical Engineering students and 10 Industrial Engineering students held at the IPEK – Institute of Product Engineering. The project was conducted in cooperation with Porsche over a period of 4 month, during the summer of 2016.

In ProVIL, the students worked in 8 teams on a product development challenge from Porsche in the field of "digital services for the customer of tomorrow". The main objective was to generate viable product concepts for Porsche.

During the whole project all participants (students, IPEK, Porsche) mainly worked together using an online innovation platform form SAP (SAP innovation Management). The innovation platform included a visualisation of the whole process of ProVIL and provided activity-specific descriptions, templates, and supportive video tutorials. Additionally, the platform provided functionalities like ideas for campaigns, ideas for evaluation modes, and a personal inbox for every participant. That allowed an intense collaboration between the students groups and co-creation between the students, the project partner and IPEK.

As an innovation project, ProVIL supported a master course of mechanical engineering. Additionally, IPEK and its partners use ProVIL as a yearly research platform, which is used for the investigation of new methods and process with virtual teams in the field of new product development.

Process Main Stages

STAGE 1 – RESEARCH
In the research stage the students acquired market and technology knowledge in so-called research fields. The research fields were predefined by IPEK and Porsche to ensure relevance for the project.

STAGE 2 – DEFINITION
In this stage the students conducted customer interviews and defined a desirable customer and producer value by defining product profiles. A commonly conducted online survey with international participants helped to evaluate these product profiles.

STAGE 3 – IDEATION
Based on this, the students created product ideas, which presented technical solutions meeting the aspects from the product profiles.

STAGE 4 – SOLUTIONS
In the last stage, all teams generated product concepts. They used virtual mock-ups on mobile tablets to allow for experiencing the later products (digital services) from a customer's perspective. After every phase, all participants met for a milestone. The students presented their results and all partners discussed together the development focus, the timeline and the next steps for each team.

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Touchpoints & Bottlenecks

TOUCHPOINT 1 – PROVIL INNOVATION PLATFORM

The main touchpoint in ProVIL is the innovation platform, which is used for collaboration and co-creation. Possible bottlenecks can occur here if the project process is not visualized in a detailed but still simple way.

TOUCHPOINT 2 – FACE-TO-FACE MEETINGS

Further touchpoints are the project kickoff and milestones where all project actors regularly meet as well as customer contact during the interviews in phase 2.

TOUCHPOINT 3 – EXTERNAL PRESENTATIONS

The most visible touchpoint to external parties is the project closeout where students pitch their concepts and present it at booths. For the project closeout, IPEK invites usually between 150 – 250 people from different enterprises.

Success Factors / Barriers

The main success factors of ProVIL are the motivation of the students and a trustful relationship between all parties. To motivate students it is essential that the project partner coming from the industry presents itself in an attractive way and brings in a challenging task assignment as well as regular support and appreciation for the performance of the students. For example, it helps a lot if the project partner defines a colleague per team to function as a contact person, supporter and motivator.

As the majority of the activities within ProVIL are conducted online within virtual team, it is of great importance that people have the chance to get to know each other better (face-to-face) at the project kickoff and in the milestone meetings.

Additionally, all task descriptions should be very clear and transparent, as people do not have the chance to clarify problems of understanding as in the case of collocated teams.

To improve the development process itself the students from industrial engineering functioned as innovation coaches. In this role they accompanied the students teams from a methodical and process oriented point of view and provided early feedback about the quality of deliverables before the milestones.

Conclusion

To ensure project success it is helpful to acquire highly motivated and excellent students. As virtual student teams cannot solve any product development challenge, it is helpful to arrange for early workshops between the institute and the project partner to define the product development challenge precisely and to harmonize the expected outcome with the student's competence. From the institute's side it is necessary to find a good balance between guiding the students and allowing them for free thinking which often turns out to be a consideration between systematic approaches and creative development. The most important aspect is to avoid anything, which could undermine the student's motivation.

Due to the great project success and very positive feedback from the students as well as from Porsche IPEK will include ProVIL as practical course into the regular curriculum that it can be offered on a yearly basis with changing project partner. The ProVIL concept is defined broad enough to allow for adaption to other fields of engineering as well as to other universities.

DO

- Acquire highly motivated students
- Organize workshops between the institute and the project partner early on.
- From the institute side, find a good balanced approach between guidance and creativity.

DON'T

- Do anything that could undermine students' motivation

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