FAST IDEA GENERATION

During hackathons engineering teams develop many design ideas in a time span of several hours. Design tools and materials that can assist this process will be identified in the project.

OPEN INNOVATION

Through product hackathons companies can acquire out-of-the-box ideas proposed by students, who in return have the chance to work on real industrial task, acquire practical skills and experience working envirnment.

DIGITAL SKILLS

With the proposed approach, students will become familiar with a variety of digital tools, ranging from communication and management to conceptual design and virtual prototyping.

INCREASED MOTIVATION

First project results indicate that students find hackathons more engaging and fun compared to conventional engineering design courses. Increased focus allows them to work more efficiently.

Product Hackathons for Innovative Development

Pro Hackin' is an Erasmus+ sponsored project led by four European engineering universities: University of Ljubljana, Vienna University of Technology, Polytechnic University of Milan and University of Zagreb. It encompasses two main objectives: improving teaching and learning methods in engineering education, and enhancing the collaboration between industry and universities. This will be achieved by introducing **product hackathons** in engineering design courses. The concept of product hackathons is adopted from software engineering, however, unlike the programming hackathons, it focuses on the design of physical, tangible technical products. Even though hackathons are widespread in software development, this method is still insufficiently explored for use in other engineering domains.

This project was set out to investigate the potential of product hackathons for design, and to encourage their wider implementation. Main result will be the developed **methodology for product hackathons**, which will include their key elements, implementation guidelines for university courses, reccomendations on the appropriate tools and design techniques, and supporting materials.

PROJECT HIGHLIGHTS

Students collaborate in international teams through a virtual environment to deliver new product ideas and solutions

Real-life design challenge proposed by industrial partner

Intensive fast-paced idea development through design sprints -hackathons

Design process supported by university tutors

Direction and feedback by company experts

PRO HACKIN'

Product Hackathons

Hackathon with Siemens Mobility

HANDS-ON LEARNING

During hackathons students get to try out different design methods and tools on the given task and discover which tools they find useful and most efficient to use. Academic tutors can assist them with method understanding.

TASKS FROM INDUSTRY

Collaboration between universities and companies through product hackathons creates connections between potential employees and future engineers. Students get valuable feedback from industrial experts and an opportunity to develop careerwise and network.

REMOTE WORK

Product hackathons conducted in virtual settings teach students to communicate and present the ideas to physically allocated team members. They will learn which tools can enable them to collaborate and design remotely.

IMPLEMENTATION During 3 consecutive project years, a series of product hackathons will be implemented and tested in a joint product development course.

PARTICIPANTS Each year 40 engineering design students compete in mixed teams in the product innovation challenge.

CHALLENGE should be formulated as an open design task that is assigned by an industrial company. The company representatives are involved in the hackathons by setting the task, requirements and providing feedback.

SETTING During this project, hackathons are tested in both virtual and live environments. Students get introduced to a variety of tools for virtual communication and collaborative design, which they can use for remote teamwork. The most appropriate duration of the hackathons is being defined according to the participants' availability, as well as the desired complexity and the amount of solutions.

SUPPORT Coaches (academic tutors) are assigned to each team to support their working process and advise them about the design tools and methods. Different instructions and templates will be developedand used through the project.

Design process

To explore various aspects of product hackathons, in each design challenge 3 product hackathons will be set up and tested, for distinct phases of the design process:

- 1st hackathon: **Ideation**
    - Includes: User and market research
    - Output: 3 product visions per team

- 2nd hackathon: **Conceptual design**
    - Includes: product requirements, concept generation
    - Output: 3 product concepts per team

- 3rd hackathon: **Embodiment design**
    - Includes: building virtual product prototype
    - Output: detailed 3D models of design solutions

Virtual Prototype
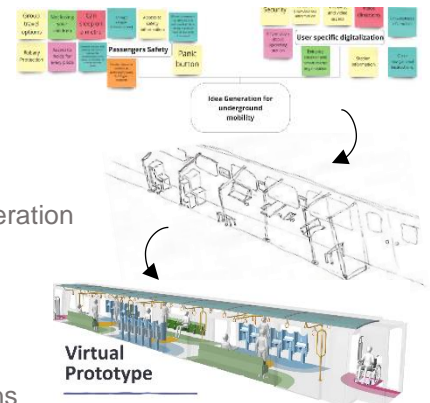
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