



What is the LEAP project?

Project Context

Higher education prepares learners for their future role as professionals and active citizens in multiple ways: it builds field specific knowledge, it builds learning-to-learn capacity and it prepares students to effectively transition into the professional world. According to the Modernization Agenda for Higher Education, the sector faces multiple challenges in its quest to build critically thinking, creative, and adaptable adults (Vassiliou, A.); these include the economic crisis, youth unemployment, integration of new technologies and modes of working, and more. On the other hand, the Communication on Opening-up Education highlights the need to stimulate innovative ways of teaching and learning through new technologies and digital content, to alleviate the “new digital divide” which has led to 50-80% of students never using digital content, and to exploit the opportunities of the digital revolution in educational contexts.

In engineering principles, the knowledge students build while enrolled in higher education may become to a large degree irrelevant a few years after graduation as a result of the fast evolution of technology in innovation related sectors. In this context, the capacity to think critically and to learn-to-learn are as important, if not more, as the base knowledge developed through formal curricula. In addition, to facilitate an effective transition to the professional world, higher education must expose students to industry practices and processes rather than being limited to the development of core knowledge. This exposure may be achieved to a certain degree through specific courses; more effectively, it may be achieved through the integration of industry processes into curricula thus enabling students to use new skills and competencies in a learning environment that simulates the way industry deploys knowledge.

What is LEAP about?

Lean and Agile Practices Linking Engineering Higher Education to Industry is a collaborative project between the University of Thessaly (UTH), the Instituto Superior de Engenharia do Porto (ISEP), the Centre for Research and Technology Thessaly (CERETETH), the Tallinn University (TLU), the University of Vigo (UVigo) and the University of Central Lancashire (UCLAN).

The LEAP project aims at promoting emerging learning design linked to industry practices in engineering higher education. It aims at preparing **students** to effectively transition into the professional world by building experience on emerging lean and agile industrial design. Lean practices will encourage students to design solutions that meet needs while minimizing the deployment of resources. Agile practices will expose students to industry cycles in which design is integrated throughout production processes, as opposed to only in the early stages of production, ensuring that the final product effectively addresses consumer needs. The project further aims at closing the new digital divide by promoting the development of high quality digital content for higher education linked to both academic and industry needs.

LEAP will pursue these objectives through the design and development of serious games that immerse students in play-learn scenarios inspired from real-world professional practices. These serious games offer significant benefits for students: knowledge retention through active learning, knowledge transferability through simulation and role play, entrepreneurial and critical thinking inherent in agile design, linking learning to objectives through targeted feedback and long-term engagement in learning by attracting and retaining interest through stories.

Benefits for students

- Knowledge retention through active learning.
- Knowledge transferability through simulation and role play.
- Entrepreneurial and critical thinking inherent in agile design.
- Linking learning to objectives through targeted feedback.
- Long-term engagement in learning by attracting and retaining interest through stories.

Support for educators

- Learning activities for immediate deployment.
- Educator support material on good practices.



Ι Δ Ρ Υ Μ Α
Κ Ρ Α Τ Ι Κ Ω Ν
Υ Π Ο Τ Ρ Ο Φ Ι Ω Ν
IKY



Erasmus+

KA2 Higher Education project
2016-1-EL01-KA203-023624

Project expected outcomes

- A lean and agile learning design framework that encourages students to think critically for building engineering solutions that effectively address user needs while taking into account environmental issues.
- Proof-of-concept serious games based on scenarios that challenge learners to introduce solutions to real-world issues through engineering innovation.
- Educators support content for facilitating the integration of proposed methods and tools into existing instructional practices.
- Good practice recommendations for promoting uptake and adoption of project results based on evaluation findings.
- These outcomes will be validated in real-life contexts in classrooms in Greece, Portugal, Spain, Estonia, and the UK.

What about educators and organizations?

LEAP also supports **educators** on integrating the proposed innovative learning methods and tools into their teaching practices, providing good practice guidelines, instructor support material and learning activities for immediate deployment.

LEAP will also benefit **industrial stakeholders**, namely SMEs and larger organizations, which are enabled to effectively pursue emerging business opportunities as a result of effectively trained staff.



LEAP Games

More info at <http://leaproject.eu>



5S Transformation

5S is a lean technique that proposes that efficiency starts with organization. 5S stands for (in Japanese) sort, set in order, shine, standardize and sustain. In the original version of this game, the player has to operate a forklift which doesn't have easy commands, in an environment cluttered with material and people, to charge crates in a freighter. Hitting something or someone costs points, delivering a crate nets points and there is a timer deadline. When the timer runs out the game progresses one step by introducing one new 5S principle. Each step of the game sorts the warehouse further and hence makes the game easier for the player.

The proposed scenario for this game is to sort out a cabinet of medicines for a family with children, parents and grandparents, taking into account expiration dates and daily doses.

Dice of Debt

Technical debt is a concept in programming that reflects the extra development work that arises when code that is easy to implement in the short run is used instead of applying the best overall solution. The game simulates 10 rounds of code sprint. At each round, the player produces some code (amount decided by a certain amount of dices) but also technical debt (amount decided by a smaller amount of dices). The player also decides to invest some of the production dices to help alleviate the burden of technical debt or not.

The proposed scenario for this game is the development of a website to support the tourism in a city.

Scrum Game

This game was created to illustrate a complete SCRUM cycle using an example. It requires all the elements of a complete SCRUM team (Product Owner, team, SCRUM Master). The goal of the game is to simulate every aspect of the SCRUM process learned in theory. In this case, it involves the use of a digital SCRUM management tool.

There are three proposed scenarios for this game: the development of an app for smartphones that reminds the user when to take medicines, the development of automation mechanisms for a house and the development of solutions for a smart city.

Partners



ΠΑΝΕΠΙΣΤΗΜΙΟ
ΘΕΣΣΑΛΙΑΣ

P.PORTO



CERTH
CENTRE FOR RESEARCH & TECHNOLOGY HELLAS



TALLINN UNIVERSITY

Universida de Vigo