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## „ERASMUS+ INSMER robotics curricula project successfully ended“

INSMER (Smart Integrated Education in Robotics) project targets are driven by the rapid pace of development of the information society and the needs for the implementation of the new Industry 4.0 revolution. Modern production systems and production technologies are very complex, especially for higher value-added production. There is an increasing level of automation in the industry: mechatronic systems and robots are gaining importance in all industries. The project developed integrated training programs in the field of robotics based on the needs of Industry 4.0. The aim was to introduce and develop new smart teaching opportunities, methodologies and tools, with the aim of making the learning process more interactive and closer to real industrial needs. The main activities of the INSMER project were divided into three groups:

1. Development of different level robotics curricula (2 curricula),
2. Development of adult training programs in robotics (15 programs),
3. Creation of methodological study materials – INSMER Casebook (11 topics).

International project team consisted of members from Estonia, Finland and Latvia:

1. Innovative Manufacturing Engineering Systems Competence Centre – IMECC (EST),
2. TTK University of Applied Sciences (EST),
3. Riga Vocational Education Competence Centre (LAT),
4. Machine Technology Center Turku (FIN),
5. Lahti University of Applied Sciences (FIN).

In the progress of first activity “Development of Robotics curricula”, the international INSMER team developed three different level robotics curricula:

- Robot Operator (level 4) – 120 ECTS
- Robot Technician (level 5) – 60 ECTS
- Robot System Technician (level 6) – 180 ECTS

All the targets have been fulfilled, even surpassed because initial target was to develop two curricula. INSMER project team developed three curricula, which all have been implemented in different schools and universities (THK, 2018; TTK 2019) in Estonia. Project partners are



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planning to implement some of the robotics modules into their current curricula. Entrepreneurs and specialists of the robotics field have analyzed all the curricula and curricula have the approval. In addition, the students tested parts of new robotics curricula modules. Estonian educational institutions piloted two programs in which 15 students participated. Finnish educational institutions piloted five programs with 24 students and Latvia piloted two programs with 36 students. Final approval for the robotics curricula were given by the entrepreneurs, specialists and students.



*Pic 1 Piloting on module basis (Estonia and Latvia)*

Second activity focused on adult training programs in the field of robotics, which also have been analyzed by entrepreneurs and specialist and has positive feedback. During this activity, the project members developed 17 adult training programs (initially 15 programs).



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## INTEGRATED SMART EDUCATION IN ROBOTICS CASEBOOK



*Pic 2 Cover page of INSMER Casebook*

The final activity of INSMER project was to develop study-material casebook. Project members from Estonia, Finland and Latvia developed an 11 topics consisting casebook to support freshly developed robotics curricula, also adult training programs. Each topic consists of preparatory theoretical material, which is followed by practical assignments. Practical assignments include examples how to solve problems

INSMER project was extremely fertile and project has fulfilled all its initial plans. In addition to fulfilled targets, it is great to view the practical implementation in Estonian educational institution and strong cooperation between INSMER project partners.