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Smart Home Models in VET Newsletter

Briefly on the Project

Smart home models in VET is a project that belongs to the action type Cooperation partnerships in vocational education and training (VET) within the Erasmus+ programme. It is based on two Erasmus+ priorities *Environment and fight against climate change* and *Contributing to innovation in vocational education and training*. It should be noted that its project proposal was selected as the best in its category in Croatia, the country of application.

Our project keeps raising the awareness of environmental issues and draws attention to smart home technology that can mitigate such problems. It enhances the competencies of VET staff and supports STEM (science, technology, engineering, and mathematics) education, blended learning and virtual collaboration.

The duration of the project is two years and there are 30 activities grouped in five work packages. The most important expected results encompass the following:

- Five smart home models developed;
- A toolkit for creating the models;
- Guidelines on instruction methods;
- Short programme with 60 ECTS on smart home technologies;
- Smart Home Club programme;
- Innovated existing courses with new smart home content;
- A variety of VET resources on smart home technologies; and
- The Smart Home VET Net connecting VET providers with relevant stakeholders.



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The Project Partnership

Since our Erasmus+ project is from the field of vocational education and training, all five organisations in the partnership are VET providers. The initiative to make a joint project came from Visoka tehnička škola strukovnih studija u Novom Sadu (VTSNS), Serbia, and is based on the idea of prof. Božo Ilić to create teaching models of smart homes in several secondary schools that have study programmes in electrical engineering.

Then, Elektrotehnička i prometna škola Osijek (ELPROS), a renowned school from the neighbouring Croatia was contacted and offered to be a coordinator, which was gladly accepted. After communicating the idea to some of their partners in earlier projects, a positive response was received from three more institu-

tions. Among them is Panevėžio mokymo centras (PMC) from Lithuania, situated in the city of Panevėžys. Also, there is Ida-Virumaa Kutsehariduskeskus (IV), a large Estonian VET centre with schools in three towns in the province of Ida-Viru. Finally, the partnership was completed with Baranya Megyei Szakképzési Centrum (BM) from the city of Pécs in Hungary.

<http://elpros.net/>

<https://vtsns.edu.rs/>

<https://www.paneveziomc.lt/>

<https://kutsehariduskeskus.ee/>

<https://szakkepzesbaranya.hu/>

The project officially started on 15 October 2022, and the kick-off meeting was held online on 20 October. All teams met in Novi Sad in mid-December for the project Workshop and Transnational Meeting 2.

Workshop Agenda

There were 15 sessions at the Workshop held on 12-15 December 2022. They covered all important aspects of project activities, such as finances, reporting, management, dissemination, as well as its core segment - the modalities of instruction with regard to smart home models to be introduced in teaching, types of instruction materials, and, of course, the making of the very models.

One entire day was devoted to the experiences of the VTSNS with the building of its smart home model and to the demonstration of its operation in class. Different functionalities of the model were shown and discussed. Partner teams presented their visions of future smart home models suitable for their schools.



The VTSNS smart home model was presented at the Workshop

Blended Learning as a Must

Blended learning (b-learning) has been suggested for the learning method on the project. It is also called a hybrid learning method as it mixes traditional, face-to-face teaching, when both teachers and students are in the same classroom, and online education carried out over the Internet or other digital formats.

The key of its successful implementation is to find the right proportion of the classroom work and the computer work, which depends on actual circumstances in practice.

This learning method helps improve digital literacy, which is frequently a precondition for getting a job. Consequently, educational institutions include b-learning in their educational systems, and its use in primary and

secondary schools is constantly spreading. Besides, young people are usually very comfortable with technology, computers and mobile devices at an early age and consider them to be an integral part of their lives.



Colleagues from Ida-Virumaa presented a new course and advantages of b-learning

The Next TM is Scheduled for 3-5 April 2023

The first in-person transnational meeting (TM), and the second in a row of the six envisaged during the entire project lifetime, took place in Novi Sad, Serbia, immediately after the project Workshop. One of its main outcomes is a complete list of expert groups formed to accomplish all foreseen activities, which sets responsibilities upon individuals and enables cooperation among group members coming from different partner schools.

Also, coordinators of partner institutions agreed on the modalities of financial reporting and scheduled the next TM for the beginning of April this year. It is a hybrid meeting as two partners (PMC and IV) meet in Sillamäe, Estonia, whereas the remaining three (ELPROS, VTSNS and BM) meet in Pécs, Hungary. There will be online sessions between the two groups. Key topics are activity progress, cooperation with smart home industry, hub development and mobile application technologies.



The Workshop was followed by TM2

On the Host Institution

Visoka tehnička škola strukovnih studija u Novom Sadu (VTSNS) is a state-owned higher education institution of professional studies founded in 1959, which offers professional knowledge and training from the fields of mechanical, traffic, electrical, IT, graphic and protection engineering.

Its bachelor and master study programmes are created according to the needs of the labour market. It has an extensive two-way collaboration with industry, offering a wide range of services to businesses, and providing internship in high profile companies for its students. Currently, there are about 1.800 students in VTSNS. As part of them comes from the neighbouring countries, the school gives a significant contribution to the educational, social and economic development of the entire region.

The VTSNS is a member of the Conference of Academies of Applied Studies Serbia (CAASS), and the European Association of Institutions in Higher Education (EURASHE).



Director, Branko Savić, at the Workshop in Novi Sad

Smart Home Industry

Nowadays, both residential and commercial buildings are frequently designed as smart structures or converted from traditional into smart ones by using smart home technologies.

Automated smart systems create optimal ambient conditions through temperature, humidity, ventilation and lighting control in the selected area. Then, there is also detection of fire, smoke and burglary. Open spaces can also be controlled, which includes irrigation, for instance. The result is always an increased safety on one side, and reduced expenses for maintenance and energy and water consumption on the other.

The number of companies working in the smart home industry is permanently growing. A list of the biggest including Google, Amazon, Apple and alike can be found at <https://techedged.com/best-smart-home-companies/>

Smart Touch, Osijek, Croatia

Within the project activity 1.7. *Collaboration with smart home industry*, representatives of the Smart Touch visited Elektrotehnička i prometna škola Osijek. The company team offered support and know-how in the implementation of the project. Their automation engineer Zvonko Pejaković gave a lecture to students and teachers on smart home technologies.

The attendees had an opportunity to see how their living or working environment can be improved by using KNX and Control4, open standards in the field. This means the standards support different components and manufacturers, which makes smart homes systems based on them sustainable.

Smart home technologies offer numerous personalization options such as voice control that can immensely help people with disabilities, then, there are optimization of heating or cooling to keep home more energy efficient, several surveillance and security options to

make the building safe from various risks and many more. Details about the company are available at <https://www.smart-touch.hr/work/>



From the lecture in ELPROS on 12 January

ION Solutions, Novi Sad, Serbia

During the project Workshop in Novi Sad in December 2022, one of its participants was Igor Tarbuk, a member of the student team who had taken part in building the VTSNS smart home model earlier that year. He now works with ION Solutions, an engineering company based in Serbia but operating regionally. His presentation included a description of a business project regarding a sports facility with a football field.

The company has also developed its own software to gather data and control automation, which supports all the most significant smart home protocols and provides functionalities requested by clients. Read more at <https://www.ionsolutions.net/en/>



Igor Tarbuk from ION Solutions at Novi Sad Workshop

Initial Plans for Model Making

With smart home models as teaching aids, students follow modern trends in science and technology, and acquire advanced and functional knowledge and skills they will apply in a workplace and in everyday life. In Baranya Megyei Szakképzési Centrum the project team are preparing their design of the Smart Home Classroom.

It is planned to produce boards that can be rotated and mounted on the wall. The MÜDN56 fitting boxes can be placed in the boards, and the electrical wiring can be designed as in a real house. There will be six scenarios on the boards. In addition, a central apartment distribution board will be made.

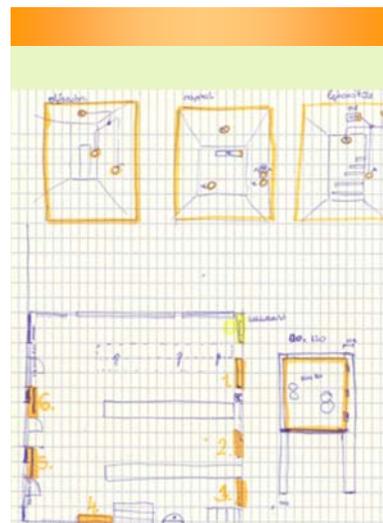
Perspective pictures will be printed on the boards, each representing one segment of the

smart home. e.g., 1. hall, 2. staircase, 3. living room-kitchen, 4. yard, 5. garage, and 6. bathroom-toilet.

Based on the plan, a classroom in the school has been selected that meets certain requirements, as follows:

- Suitable electrical grid;
- Large floor area;
- Large free wall surfaces;
- Established local computer network; and
- A storage room nearby.

The team are currently working on the technical design of the boards and scenarios, determining the necessary building materials and searching for procurement sources.



Arrangement of boards in the future smart home classroom in Baranya Megyei Szakképzési Centrum, Hungary

On completing the planned activities in Novi Sad, teams from Lithuania and Estonia visited their long-term partner school in Croatia.

Osijek Visit Inspires New Mobilities

Our colleagues from Panevėžio Mokymo Centras and Ida-Virumaa Kutsehariduskeskus had the opportunity to visit the coordinating organisation ELPROS in Osijek, Croatia, in December 2022. They got acquainted with the school infrastructure, talked with teachers and with director Antun Kovačić.

As ELPROS offers excellent conditions for training and internship of both students and teachers, the guests immediately became interested in the opportunity to organise such mobilities, for it is a very well equipped and highly ranked VET school focused on IT, automation, robotics, electronic communication and electrical installation.



Director of ELPROS with project partners in a state-of-the-art workshop

On the Project Coordinator

In 2018 ELPROS was named the Regional Center of Competence in Electrical Engineering and IT. The aim is to encourage cooperation with local employers, higher education institutions, unions and associations and enable quality education and training combined with work-based learning.

With its building completely renovated and with newly equipped labs and workshops, as a result of two projects worth together almost 10 million euros financed from the European Fund for Regional Development and the European Social Fund, ELPROS is a modern VET institution preparing its students for the European labour market by providing them with up-to-date knowledge and skills, as well as supporting its staff members to develop their professional competencies and innovative approaches to teaching.

Erasmus+ programme

The Erasmus programme was launched in 1987 and for years it was focused only on higher education student mobility. Actually, its name is an abbreviation standing for the **European Action Scheme for the Mobility of University Students**.

Later, the programme becomes Erasmus+ as it widens its activities to other categories of users from the fields of education, training, youth and sport. Today, it consists of three types of key actions. Key Action 1 provides funding for mobility. Key Action 2 enables organisations from different countries to form partnerships and work together exchanging best practices, while Key Action 3 supports projects dealing with policy dialogue, development and reform in the framework of education, training and youth.

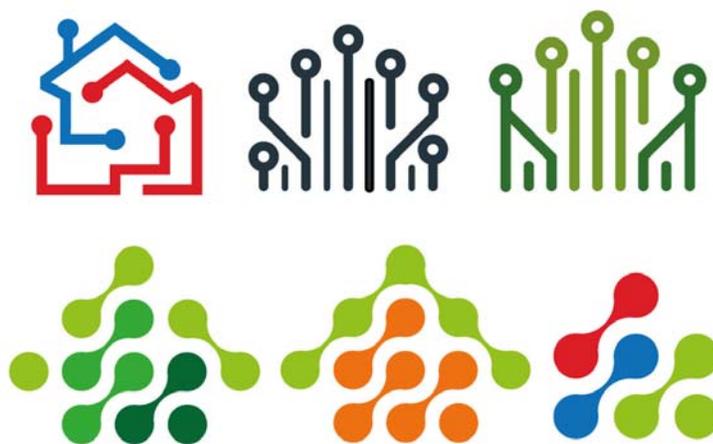
Although it is an EU programme, Erasmus+ is open to individuals and organisations from around the world.

All you need to know on Erasmus+ and opportunities it offers can be found at <https://erasmus-plus.ec.europa.eu/>

Project Visual Identity and How to Create It

To make the project and its products noticeable and different from other projects, it is necessary to create an appropriate visual identity. It applies to all project results and its complete documentation. The creation of the logo and the choice of project colours, as well as the font for written communication, are the basis of the visual identity. Since VTSNS has study programmes in the field of graphics, this partner took on the task of creating the visual identity of *Smart home models in VET*.

A house was proposed as the main motif of the logo, so several solutions were made, each in a number of variants. At the first meeting with the project coordinator, even before the project officially started, team members discussed proposals that ranged from realistic to very abstract. Finally, a logo that resembles electrical wiring diagrams was selected, and if you look closely, it contains more than one house inside. The basic version of the sign is two-colour. The green colour was suggested because of the environmental aspect of the project, and the orange has high visibility and attracts attention.



Some of the proposed logo solutions for the project

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To learn more about the project,
visit its website at:

<https://smarthomemodels.eu/>



Smart home models in VET



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Enriching lives, opening minds.