

<https://erasmus-plus.ec.europa.eu/2022-1-HR01-KA220-VET-000086983>

Smart Home Models in VET Newsletter

The Project Meeting in Hungary

On 3-5 April 2023, project teams of the Electrical Engineering and Traffic School Osijek (Croatia) and the Higher Education Technical School of Professional Studies in Novi Sad (Serbia) met in Pécs, Hungary, with colleagues from the Zipernowsky Károly Technical School, a member of the Baranya County Vocational Education Centre, in order to discuss the project progress. The hosting institution (pictured below) has a long tradition in VET since it was founded way back in 1912. The guests visited their well-equipped workshops and saw students who won first places in VET competitions.



Co-funded by
the European Union

Disclaimer

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Education and Culture Executive Agency (EACEA). Neither the European Union nor EACEA can be held responsible for them.

May 2023

Volume 1, Issue 2

Editorial Board

Branka Petrović, Božo Ilić, Branko Savić - VTSNS

Alen Hmelina, Mato Filaković - ELPROS

Justina Čivilytė - PMC

Marina Hämäläinen - IVVEC

Tamás Pap, Péter Szabó - BMSC

Editor and Prepress

Branka Petrović

From the Content

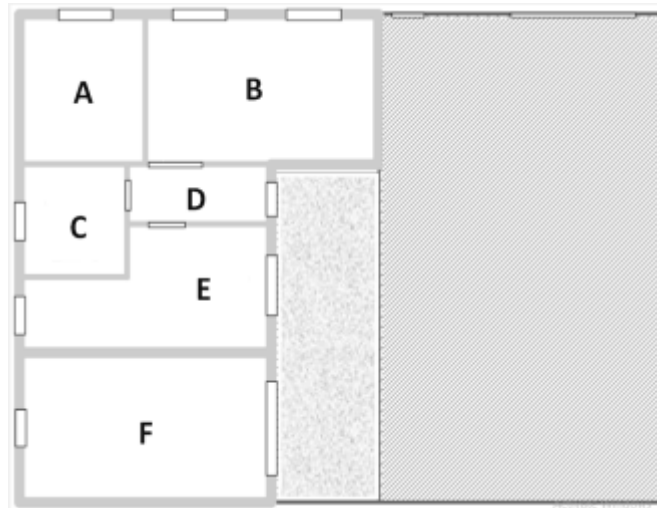
- Different smart home models development
- Electrical equipment in the models
- ELPROS students in a Spanish smart home company
- Project results presented to VET school teachers and students
- Smart technology short-term programme announced in VTSNS
- Key topics of the Transnational Meeting 3 Agenda

Zipernowsky Team

This project offers an opportunity for teamwork within the institution, so the teachers cooperating on the planning and building of the model are specialist in different fields like electrical engineering, IT and wood-work engineering. The core team consists of Péter Szabó, Attila Gál, Tamás Pap and László Naszári.



The Floor Plan of the Smart Home Model



The model represents a house with a porch and a yard. Inside the building, there are six rooms. They are the bedroom (A), the living room (B), the bathroom (C), the entrance hall (D), the kitchen with the dining room (E) and the garage (F).

For each of them a board is made with smart electrical equipment.

The project deadline for completing smart home models is November 2023, but the model of the Zipernowsky Károly Technical School is practically ready for use.

Concept of the Model

The selected smart home model suits the teaching methods used in the institution. Since an average practice group has 12 students, the classroom where the model is located must be large enough to provide room for six student pairs working at the same time. Students should clearly see their workspace, as well as the whole smart home model and the link to other workstations.

Widely available commercial grade smart relays are used for easier access. To control the model, Home Assistant as an open-source software solution is applied because it is brand independent and with over 1,700 potential integrations. Also, there are options for more advanced programming. To make the model eco-friendly and more cost efficient, the local server runs on a recycled computer.

Creating Six Sceneries

To create painted backgrounds visually representing six rooms of the house, corresponding software has been used - Roomstyler 3D home planner. It is easy to use and available free of charge upon subscription. The created sceneries show characteristic electrical equipment in each room. Then, large-scale copies have been made on high quality vinyl canvas used for billboard prints.

More about the designing platform can be found at <https://roomstyler.com/3dplanner>



The sceneries designed for the smart home model

Steps in Making a Single Board



Above: Each scenery is paired with corresponding electrical equipment. When put on its board, the scenery canvas is drilled at places where the equipment is planned. Next, the holes are made in the board for the back boxes of switches, sockets, etc. that are fitted into the board. Finally, the board is mounted on its wooden frame.

Right: The garage scenery with holes in which front plates of switches and sockets or outer parts of other equipment will be placed and attached to the back boxes already installed.



Two views of the classroom with the boards

Electrical Equipment Used in the Smart Home Model

A

Bedroom (3.5 x 4 m) — normal and intelligent plugs, lighting with normal single-pole and intelligent switching options, shutter movement;

B

Living room (6.5 x 4 m) — chandelier switch, room thermostat, hidden RGB LED lighting, lighting with smart bulbs, music player;

C

Bathroom, toilet (3 x 3 m) — lighting with two-pole switch, IP protected plug, intelligent moisture control;

D

Entrance hall (4 x 1.5 m) — 3-switch crossover with normal and smart operation, doorbell and/or intercom;

E

Kitchen (3 x 2 m), dining room (4 x 3.5 m) — outlets for low- and high-consumption household appliances, worktop lighting with smart LED strip, smoke detector, smart plug for mobile device chargers with remote access, energy management;

F

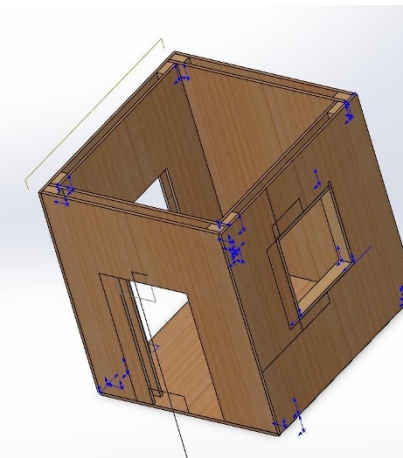
Garage (7 x 4 m), yard — gas boiler operation, light-sensing smart lighting in the garage, remote-controlled garage door, motion-sensing light in the yard.



Equipment positioning in Room E



IVVEC Team Smart Home Model Design



Based on their experience from the project Workshop in Novi Sad in December 2022, Ida-Virumaa Vocational Education Center team have recently completed the design phase of their smart home model. Currently, the team members are focused on the initial assembly, setup, and configuration of hardware and software that will be used in the model. The model uses various communication systems such as ZigBee, BLE, Wi-Fi, RF433, and wired communication channels.

This project activity aiming to create a functional smart home model has also involved students in the fields of Automation and Mechatronics. The participation in the design and modeling process has certainly provided valuable educational opportunities for them with regard to the application of modern technology.

The look of the future smart home model



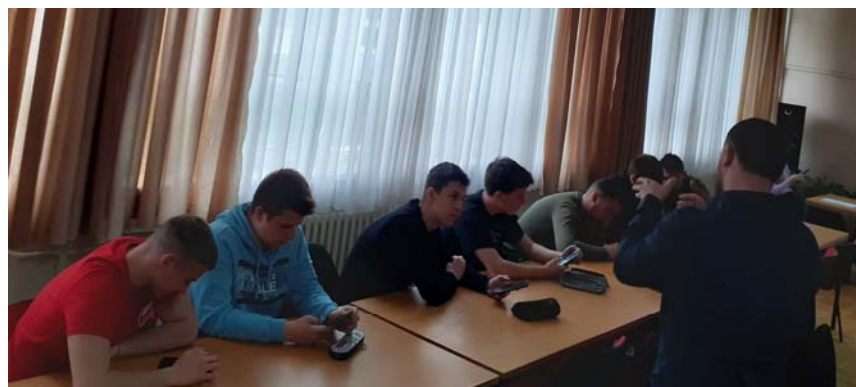
Cooperation with Smart Home Companies and Erasmus+ KA1 Mobilites Combined

Another student workshop was organised in March 2023 with the representatives of the Smart Touch company from Osijek, Croatia. The students used Engineering Tool Software (ETS), a manufacturer independent configuration software tool, to design and configure smart home control installations with the KNX system. They created scenes and different scenarios to manage lights, blinds, airconditioning and heating in an automated home.

There were 12 students and teachers participating in the workshop as part of continuous education in the smart home technology. They are working together on the development of the smart home model design in their school.



Electrical parts used in making the model in the IVVEC



Students practiced controlling features of the smart home

Two of the students, Tomislav Viduman and Leon Glogoški, prepared thus for their Erasmus+ KA1 mobility in Cordoba, Spain, where they will be doing their three-month vocational placement in IKN Ingeneria, developing their final exam project. Naimly, earlier in March, ELPROS signed an agreement with this company that has won multiple awards for KNX implementation and education. More information on its free learning materials on KNX technology is available at <https://www.youtube.com/@IKNXSchool>

VTSNS Model Display

The project goal is to present the possibility of smart home technology use in class and to inspire and help VET teachers create their smart home models. So, on 25 April 2023, three teachers and nine students of the "Mihajlo Pupin" Secondary School of Electrical Engineering from Novi Sad attended a demonstration of the smart home model operation in the VTSNS. The model was then discussed by both teachers and students.

They also showed interest in the short-term programme being developed in the VTSNS for those willing to specialize in the practical application of smart home technology. The guests gave suggestions on its length and content. The programme is aimed at candidates having completed secondary school.



More photos are available at <https://vtsns.edu.rs/galerija-desavanja/>

Dissemination of project results and cooperation with smart home companies play an important role in project development and its final evaluation.

News about the project disseminated

The purpose of the Smart home model in VET project and its current development stage have been presented to the two important target groups – VET students and the participating companies, within the activities related to the career choice and labour market introduction project day. There were 76 participants in several sessions held in the smart home model classroom on 31 March 2023. (Photo bottom right)

Earlier this year, at the meeting following the completion of the first term of the school year, 58 fellow teachers were informed about the status of the project, its goals and expected results. The activity was conducted within the regular half-year evaluation in the institution.

The dissemination events were prepared, organised and hosted by the members of the Ziperowsky Károly Technical School, Tamás Pap and László Naszári.

Company Connection

During the April transnational meeting, a special session was devoted to the cooperation with smart home industry and it included the online participation of the manager of Okosotthonlabor, Mr Kalman Ger-gely, who talked about technologies used in company projects (<https://okosotthonlabor.hu/>).



Employees and students at meetings in Ziperowsky Károly Technical School

Project TM3 Agenda

The Transnational Meeting (TM) number 3 is a hybrid meeting, which is organised in two parts. The first part was held in Hungary in April, and it gathered three partners, while the remaining joined online. The second part of TM3 is in Estonia in May, where the teams of IVVEC and PMC meet in person with other partners participating via video link.

The Agenda covers topics of interest for the project development encompassing the period from December 2022, when the previous TM was held, to May 2023 and beyond, as it also deals with activities planned for the months to come.

The Project Coordinator, ELPROS, has prepared information on the activities carried out so far. All partners give a presentation of their smart home model design and report on the advancement of model building. Examples of cooperation with companies whose activity is related to smart technologies are communicated. Also, targeted dissemination is stressed as a crucial factor for spreading the narrative about project results among VET organisations not in the partnership.

Meeting in Pécs in Pictures



Smart Home Models in VET Newsletter

Contact person:

Branka Petrović
petrovic.b@vtsns.edu.rs

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

<https://smarthomemodels.eu/>



Smart home models in VET



Erasmus+

Enriching lives, opening minds.