Rozwiązania EcoSmart z zakresu zarządzania miastem

Prezenter:
Paweł Nowak, WIL PW
Opiekun KN Smart City

Projekt “Sierpc 2.0 – Rozwiązania EcoSmart z zakresu zarządzania miastem” współfinansowany jest ze środków Programu Operacyjnego Pomoc Techniczna 2014-2020 oraz budżetu państwa, w ramach konkursu pt. “HUMAN SMART CITIES. Inteligentne miasta współtworzone przez mieszkańców”. Priorytet 3 Potencjał beneficjentów funduszy europejskich, działanie 3.1 Skuteczni beneficjenci. Kategoria interwencji funduszy strukturalnych – 121.

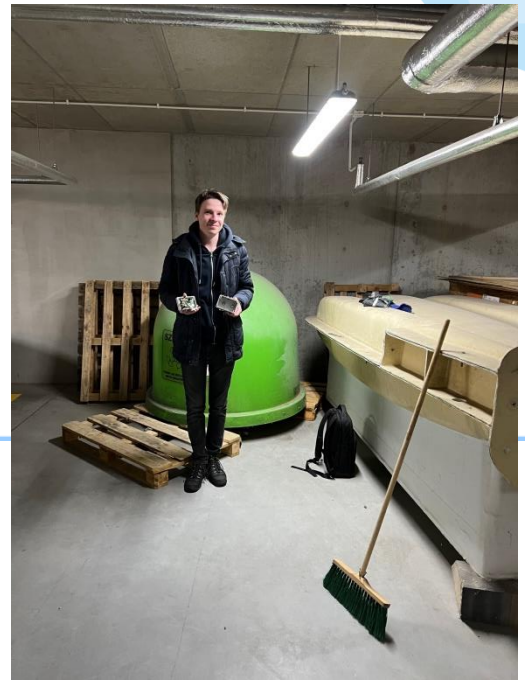
Politechnika Warszawska

Politechnika Warszawska oparta jest na dwóch filarach: dydaktyce i badaniach.
Możemy śmiało powiedzieć, że kształcimy przez całe życie. Mamy własne przedszkole – Bobotechnikę i współpracujemy z wieloma szkołami. Oferujemy kilkadziesiąt kierunków studiów I stopnia i jednolitych oraz II stopnia (także w języku angielskim) i rozwój naukowej kariery w Szkołach Doktorskich. Na spragnionych wiedzy czeka także bogata oferta studiów podyplomowych. Po okresie intensywnej działalności zawodowej zapraszamy natomiast do naszego Uniwersytetu Trzeciego Wieku.

Politechnika Warszawska

Procesy badawcze toczą się głównie w laboratoriach, warsztatach i pracowniach. Do dyspozycji naukowców jest również Centrum Zaawansowanych Materiałów i Technologii CEZAMAT.
Nauka często lubi spokój i ciszę, ale jeszcze bardziej lubi, kiedy stworzone rozwiązania służą ludziom. Za to, by tak się stało, czyli za wdrażanie projektów i kontakt ze światem biznesu odpowiada Centrum Zarządzania Innowacjami i Transferem Technologii.

Politechnika Warszawska to 25 tysięcy studentów i ponad 5 tysięcy pracowników.



Wydział Inżynierii Lądowej PW

Wydział Inżynierii Lądowej powstał w 1915 roku jako jeden z czterech wydziałów Politechniki Warszawskiej, ale jego tradycje sięgają 1826 roku, kiedy została otwarta Szkoła Przygotowawcza do studiów technicznych. Inicjatorem powstania szkoły był Stanisław Staszic.

Wydział Inżynierii Lądowej jest wiodącą jednostką naukową i dydaktyczną w dziedzinie budownictwa. Na Wydziale prowadzone są studia inżynierskie (I stopnia) i magisterskie (II stopnia) na kierunku Budownictwo (akredytacja Polskiej Komisji Akredytacyjnej) w zakresie specjalności:
Budownictwo Zrównoważone, Drogi Szynowe, Inżynieria Komunikacyjna, Inżynieria Produkcji Budowlanej oraz Konstrukcje Budowlane i Inżynierskie ze specjalizacjami: Konstrukcje Budowlane, Mosty i Budowle Podziemne oraz Teoria Konstrukcji.

Wydział Inżynierii Lądowej PW

Wydział umożliwia również kształcenie na studiach doktoranckich. Posiada uprawnienia do nadawania stopni i tytułów naukowych w dyscyplinie Budownictwo.
Pracownicy jednostki zaangażowani są w prowadzenie wielokierunkowych prac badawczych z takich dziedzin jak: mechanika materiałów i konstrukcji, badania elementów i konstrukcji oraz tworzenie nowych rozwiązań w zakresie konstrukcji budowlanych i inżynierskich, inżynieria materiałów budowlanych, geotechnika, fizyka budowli i problematyka energooszczędności w budownictwie, inżynieria komunikacyjna, organizacja i zarządzanie w budownictwie.

Wydział Inżynierii Lądowej PW

Wiele projektów realizowanych jest we współpracy z partnerami przemysłowymi oraz krajowymi i międzynarodowymi stowarzyszeniami zawodowymi.
Wydział Inżynierii Lądowej prowadzi aktywną współpracę ze wszystkimi uczelniami technicznymi w Polsce. Ma również podpisane umowy o współpracy z ośrodkami z większości krajów Unii Europejskiej, a spoza niej z takich jak: Stany Zjednoczone, Japonia, Wielka Brytania, Australia, Republika Południowej Afryki, Chiny. Ponadto jednostka ma podpisaną umowę z Ecole Nationale des Ponts et Chaussees, ParisTech, umożliwiającą uzyskanie podwójnego dyplomu studiów II stopnia. Wydział bierze też aktywny udział w wymianie studentów w ramach programu Erasmus+ i ma podpisane na stałe umowy umożliwiające wielu polskim studentom wyjazdy za granicę oraz przyjazd zagranicznych studentów w celu odbycia studiów na WIL.

Wydział Transportu PW

W roku 1948 powołano w Politechnice Warszawskiej Wydział Ruchu Kolejowego przemianowany w rok później na Wydział Komunikacji. Na Wydziale tym kształcono inżynierów na specjalności eksploatacja kolei i zabezpieczenie ruchu pociągów.
W grudniu 1992 roku uchwałą Senatu Politechniki Warszawskiej, dotychczasowy Instytut przekształcony został w pełnoprawny Wydział Transportu.
Wydział prowadzi badania z zakresu organizacji i technologii w transporcie, logistyki, sterowania ruchem, środków transportu oraz infrastruktury transportowej.

Wydział Elektroniki i Technik Informacyjnych PW

Przekazywanie wiedzy, badania i pasja tworzenia technologicznych rozwiązań to motto, które przyświeca codziennej pracy Wydziału od 1951 roku.

Na Wydziale, oprócz zajęć dydaktycznych, prowadzone sa prace naukowo-badawcze i międzynarodowe projekty. Wydział współpracuje nie tylko ze światowej klasy ośrodkami naukowymi, dużymi koncernami, ale również nieustannie realizujemy prestiżowe projekty w kluczowych obszarach dla sprawnego funkcjonowania państwa, w tym np. obronności.

Codziennie z usług Wydziału korzysta ponad 3200 studentów i około 200 doktorantów. Zajęcia prowadzone są w nowoczesnych salach dydaktycznych oraz 50-ciu specjalistycznych i bogato wyposażonych laboratoriach. W

Wydział Geodezji i Kartografii PW

Najstarsza geodezyjna akademicka placówka naukowo-dydaktyczna w Polsce - Wydział Mierniczy rozpoczął samodzielną działalność w Politechnice Warszawskiej z dniem 1 września 1921 roku. (Od roku 1954 Wydział nosi nazwę Wydziału Geodezji i Kartografii). Program studiów przewidywał studia trzy i pół letnie, z czterema grupami przedmiotów: przedmioty podstawowe, zawodowe, prawno-ekonomiczne i inżynieryjno-przyrodnicze.
Zakres badań prowadzonych na wydziale obejmuje całość zakresu geodezji i kartografii.
Prace badawcze obejmują pomiary geodezyjne, grawimetrię, metrologię geodezyjną, astronomię geodezyjną, fotogrametrię, teledetekcję, kartografię, systemy informacji przestrzennej, geoinformatykę, kataster i inne. Prowadzone są również prace badawcze z zakresu gospodarki przestrzennej.

Międzywydziałowe Koło Naukowe Smart City

W grudniu 2021 odbył się Open Data Addathon organizowany przez Abu Dhabi Digital Authorities. Zespoły z całego świata miały opracować rozwiązania poprawiające jakość życia mieszkańców Abu Dhabi. W wydarzeniu wziął udział zespół złożony z członków koła Data Science oraz reprezentantka koła SmartCity PW - Ola Jamróz. Połączenie sił zaowocowało stworzeniem aplikacji optymalizującej rozkład przystanków komunikacji miejskiej, której celem jest zwiększenie wygody mieszkańców oraz redukcja emisji CO2.

Rozwiązanie zyskało aprobatę organizatorów i ostatecznie zajęło II miejsce spośród kilkudziesięciu propozycji.

Odpady – PROJEKT SIERPC 2.0.

W ramach realizacji PROJEKTU Gmina Miasto Sierpc planowała:

- wdrożenie inteligentnych rozwiązań polegających na wymianie oświetlenia ulicznego na LED, pozwalających znacząco ograniczyć koszty energii elektrycznej;
- **wykonanie innowacyjnych w skali ogólnokrajowej rozwiązań, w postaci ultradźwiękowych czujników wypełnienia kontenerów na śmieci, urządzenia docelowo są montowane do istniejących kontenerów;**
- przeprowadzenie działań edukacyjnych dla mieszkańców, dzieci i młodzieży, pracowników JST, podległych jednostek oraz zarządców osiedli, mających na celu zwiększenie świadomości ekologicznej.

Odpady

Działania PW przewidywały:

- wykonanie pierwszej, prototypowej sztuki czujnika;
- miniaturyzacja oraz koncepcje montażu w pojemnikach;
- wykonanie i testowanie „produkcji małoseryjnej” – 10 zminiaturyzowanych czujników;

Odpady

Działania PW przewidywały, cd.:

- zakup i montaż tabletów do pojazdów zbierających odpady w celu optymalizacji dróg transportowych;
- przygotowanie interfejsu do obsługi systemu w samochodach zbierających odpady oraz w centrali – wysypisku;
- przygotowanie panelu mieszkańca, który otworzyłby rozwiązanie na społeczność lokalną, potencjalne rozszerzenie zawiera informacje o zbiórkach/miejscach odbioru odpadów (np. gabarytów) z warstwą interakcyjną;
- Geoserwer (funkcjonalność dla obiektów przestrzeni miejskiej);

Odpady

Działania przewidywały, cd.:

- Produkcja i montaż 175 sztuk czujników w sierpeckich pojemnikach na odpady (szkło, papier, plastik);
- Upowszechnienie projektu w ramach SMART CITY EXPO w Barcelonie, listopad 2021.

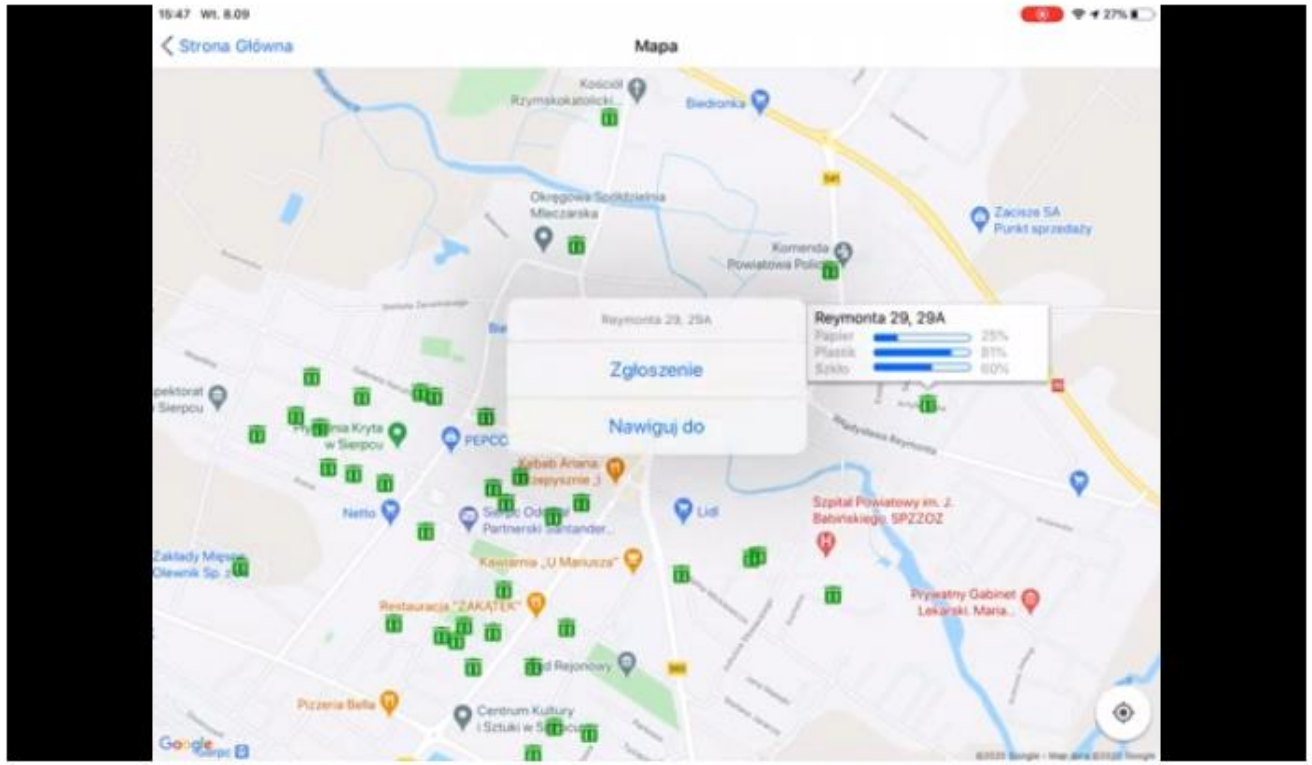
SMARTCITY
EXPO WORLD CONGRESS

Odpady


WasteManage
Jak to działa?
1
Instalacja czujników w istniejących pojemnikach na odpady
2
Czujniki się budzą kilkakrotnie w ciągu dnia i dokonują pomiarów
3
Pomiary z czujników są przesyłane na serwery w chmurze
IoT
4
Dane trafiają do panelu sterowania w Miejskim Zakładzie Oczyszczania
5
Gdy niektóre pojemniki będą bliskie wypełnienia, to wyznaczana jest optymalna trasa
6
Zespół oczyszczania jedzie po wyznaczonej trasie i opróżnia wyznaczone pojemniki

Odpady

Odpady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27%
Strona Główna
Mapa
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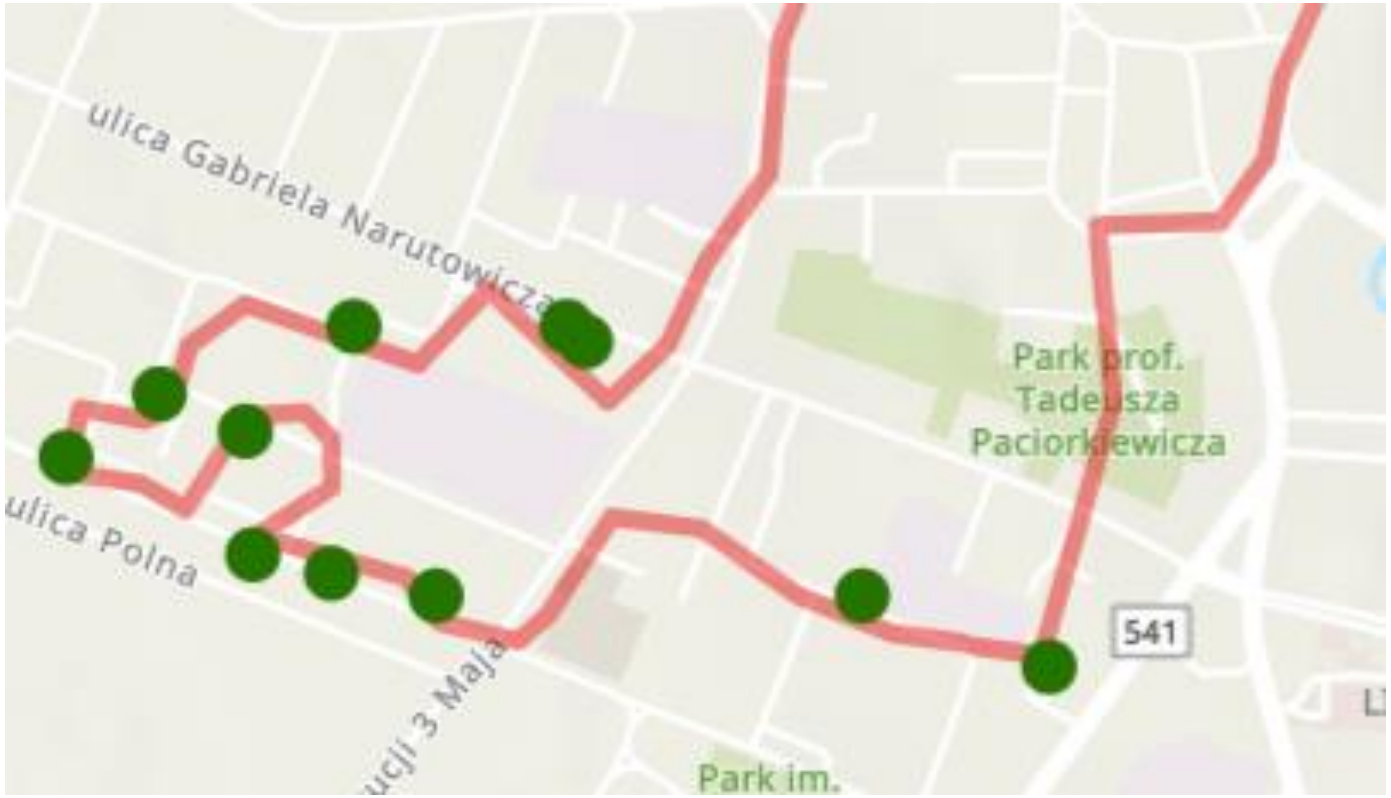
Plastik 81%
Szkło 60%
PEPCO
Netto
Lidl
Pizzeria Bella

Odpady


ulica Gabriela Narutowicza
Park prof.
Tadeusza
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ulica Polna
541
Park im.

Odpady

Czujniki docelowo będą zamontowane we wszystkich pojemnikach na odpady znajdujących się na terenie miasta Sierpc.
Urządzenie to będzie monitorować stopień zapełnienia kontenerów, a dane z pomiarów zapisywane będą na serwerach, skąd trafią do panelu sterowania w Miejskim Zakładzie Oczyszczania.
Pozwoli to na zdalne kontrolowanie poziomu odpadów w kontenerach oraz wyznaczanie optymalnych tras śmieciarek. Taki proces pozwoli nie tylko na wyeliminowanie zbędnych kilometrów, dzięki omijaniu miejsc, w których znajdują się pojemniki puste lub wypełnione do połowy.
Rozwiązanie to ma również charakter proekologiczny, gdyż redukując liczbę przejechanych kilometrów, zmniejszone zostanie zużycie paliwa, a co za tym idzie mniej zanieczyszczeń trafi do sierpeckiego powietrza.

Odpady - co dalej?

PRZYKŁAD 1: Ciechanowski magistrat podkreśla, że na osiedlu „Płońska” na stałe wdrożono System Indywidualnej Segregacji Odpadów (SISO). Po rocznym pilotażu zamontowane zostały 24 nowe, udoskonalone, bezdotykowe pojemniki na odpady. Według UM, to pierwsze takie rozwiązanie w Polsce, czyli inteligentne i bezdotykowe pojemniki, które umożliwiają skuteczną weryfikację segregacji odpadów w zabudowie wielorodzinnej.
Systemem zostało objętych ponad 300 gospodarstw domowych. Każde z nich otrzymuje indywidualne kody, które umożliwiają otwarcie pojemnika i pozostawienie w higieniczny, bezdotykowy sposób posegregowanych odpadów.

Odpady - co dalej?

PRZYKŁAD 1 cd.: Inteligentne pojemniki na odpady – wdrożenie poprzedzał roczny pilotaż

Montaż systemu na stałe został poprzedzony rocznym pilotażem, który przyniósł pozytywne efekty – zaznacza UM i dodaje, że dla miasta był on bezkosztowy. Po pierwszym półroczu z systemu korzystało już 98% mieszkańców osiedla, a liczba segregujących odpady gospodarstw domowych wzrosła z niespełna 10% do 90%. W anonimowej ankiecie mieszkańcy wskazali też, że dzięki monitoringowi zainstalowanemu w celach zabezpieczenia nowych pojemników czują się bezpieczniej w obrębie osiedla.

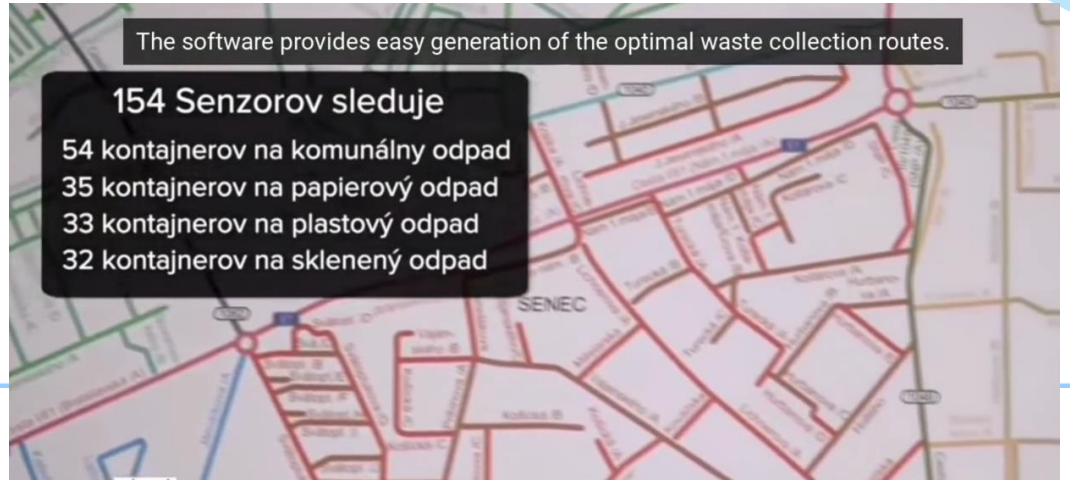
Odpady - co dalej?

PRZYKŁAD 2:

Bratysława i Senec

Stolica Słowacji ogłosiła 10 lutego 2022 rozpoczęcie projektu cyfryzacji składowania i wywózki odpadów. W mieście pojawią się nowoczesne systemy Internetu Rzeczy (ang. Internet of Things), które pozwolą na monitorowanie całego procesu.

Współpraca w firmą Sensoneo.



Odpady - co dalej?

PRZYKŁAD 3:

Poznańska firma BIN-e

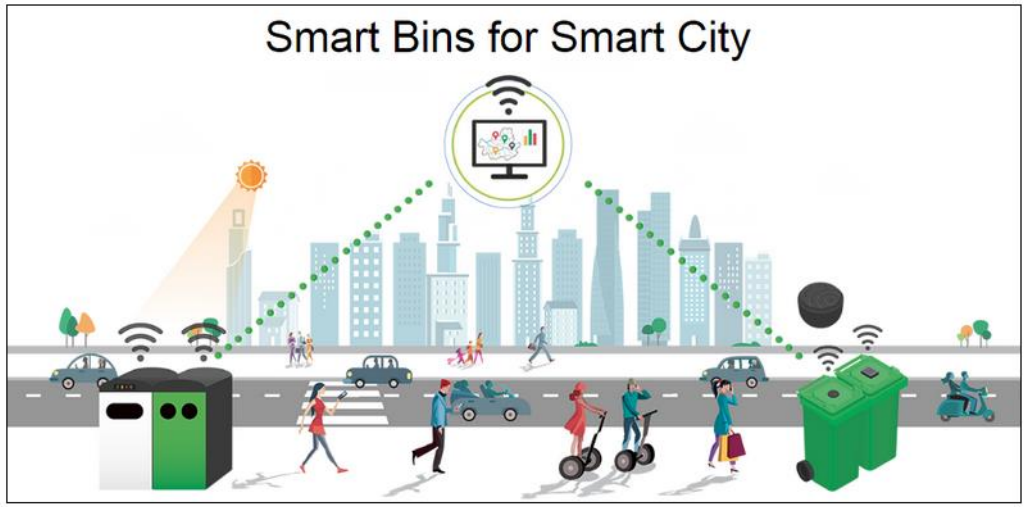
Firma oferuje „mądre pojemniki”, które są bezdotykowe, sortują odpady (papier, plastik, szkło, metal), kompresują objętość odpadów w pojemniku, kontrolują poziom zapełnienia, zawiadamiają centralę o potrzebie odbioru. Pierwsze lokalizacje – UK, Szwecja.

Odpady - co dalej?

PRZYKŁAD 4:

Melbourne, Australia

„Mądre pojemniki", które bezdotykowe, praca czujnika podtrzymywana systemem solarnym, w prywatnych lokalizacjach – odpady ważone przy odbiorze i obciążana karta płatnicza właściciela.



Seul, Singapur….

EARTHWORKS TRAINING WITH THE USE OF AUGMENTED REALITY

Number: 2020-1-PL01-KA202-081555 (01.12.2020-30.11.2022)

AUGMENTED REALITY

AR is the term to define a direct or indirect view of the psychical environment in the real world, which elements combine with virtual elements in order to create a mixed reality in real time. AR enable precise conduction of activities performed by workers in an efficient manner, ensuring the safety of work at the same time.

Developed training systems, based on modern IT technology - Augmented Reality (AR), are being constantly improved by most influential companies all over the world. Being used, among others, in trainings for pilots, F1 drivers and military personnel, it is safe to say, that AR is the future of high-quality work-based VET.

Never before was AR used for earthwork training. Use of mobile devices and AR technology will make the training innovative and interesting to the participants. Foreseen manual, training system and augmented reality software will contain best practices from different European countries in the field of earthworks, and series of exercises for users.

Virtual earthworks (source: TUDA).

For more information about the project, please visit our website:
www.setar.il.pw.edu.pl

The setAR project deals with health and safety rules as one of its goals is to reduce accidents at construction sites.

Earthworks are, unfortunately, one of the most dangerous works carried out on a construction site. Work in the company of heavy machinery, large elevations, or the possibility of landslides are the causes of many fatal accidents. As human life is the most important value, there is a great need of elevating H&S level. This problem has been raised in European Directive 2001/45/EC, which obliges to take appropriate measures to improve safety and health at work.

To achieve that goal, training system will be prepared. It will contain knowledge on earthworks, with particular emphasis on efficiency of work and H&S regulations. Project will also help to improve mobility of construction personnel, due to its international content (presentation of practices from participating countries) and Multilanguage form (this will help users to learn vocabulary specific for earthworks).

Earthworks are one of the most dangerous among construction works. One of the main reasons is: because current training methods are insufficient. As research shows, employees are not interested in classic training methods. The use of mobile devices (smartphones, tablets), modern AR technology, and supporting multimedia files makes setAR training interesting and memorable. Use of mobile devices (smartphones, tablets), modern AR technology and supporting media files will make setAR training much more interesting and unforgettable. The need for the projects was also confirmed by the questionnaires and previous project (ARCW – Health and safety procedures for curtain walls with the use of Augmented Reality Technology) and (ARFAT - Augmented Reality Formwork Assembly Training). Both construction employees and employers stated that there is a great need for construction trainings with the use of AR.

As a result of the project, training system will be created together with paper manual, application for mobile devices and supporting media files. Training will be open for all interested parties, it will use innovative methods that suit in the best way modern, digital era.

OUTPUTS OF THE PROJECT:

- O1: Evidence based learning outcomes. This output comprises learning outcomes on earthworks namely statements of what learners should know, understand and be able to do upon completion of the setAR training, in the form of definitions of specific knowledge, skills and competences.
- O2: setAR training system.
- O3: setAR manual.
- O4: setAR T application (software). It is foreseen to prepare two versions of application for two most common systems for mobile devices in EU: android OS and iOS.
- O5: setAR AR markers.
- O6: setAR instructional movies.

The objective of these outputs is to develop up-to-date, tailor-suited to sectoral needs, modern earthworks training, appropriate to be integrated into existing VET offerings or to serve European community as a stand-alone training. These outputs will address modern skills needs of construction engineers, construction workers, stakeholders and associations in the construction sector, SMEs and companies (construction sector), VET providers, and technical universities, delivering a European solid, reliable and comprehensive pedagogical tool.

Partnership:
Politechnika Warszawska
TECHNISCHE UNIVERSITÄT DARMSTADT
Polskie Stowarzyszenie Menedżerów Budownictwa
FUNDACION LABORAL DE LA CONSTRUCCION

Sierpc, 28 marca 2022

COMMON LEARNING OUTCOMES FOR EUROPEAN MANAGERS IN CONSTRUCTION, PART V

CLOEMC V - 2019-1-PL01-KA202-064996 (01.12.2019 - 31.03.2022)

Co-funded by the Erasmus+ Programme of the European Union

This Project is related to the EU Dir 89/48/EWG on regulated professions in respect of recognition, promotion and certification of qualifications by international association and organization – from construction. The main task of the project is to improve Directive's ideas, which will lead to creation of proper EU system of comparison, certification and mutual recognition of managerial qualifications in construction. Profile of construction managers' education, responsible for cooperation in the field of construction in the EU, developed differently in different countries. Project is the continuation of LdV.

Construction Managers' Library (CML) appearance on the European market, containing extended compendium of innovative managerial knowledge in construction will promote a social dialogue, concerning adjustment of education profile for the needs of labour market. In order to decrease unemployment and increase level of managerial knowledge in construction, there is a need to educate people having qualifications and competence to run a business, which will result in employment increase.

Therefore, after project's completion it is planned to improve postgraduate complementary courses in management, which will allow certification and assure recognition of competence according to agreed European policy concerning promotion of transparency of qualification (EuroPass), in the form of title EurBE (European Building Expert). So far the manuals were used for establishing didactic content of courses accredited by such esteemed organisations like: RICS (Royal Institution of Chartered Surveyors) or IPMA (International Project Management Association).

M26: MENTORING AND COACHING IN CONSTRUCTION

This manual will cover the following aspects of Project and Construction Management, for example: mentoring and coaching techniques, soft aspects of management, case studies, etc.

M27: ARCHAEOLOGICAL AND HERITAGE PROTECTION ASPECTS IN CONSTRUCTION

This manual will cover the following aspects of Project and Construction Management, for example: legal regulations related to national heritage protection, archaeologists on site, archaeology for site managers, conservatory works, smart materials, innovative approaches etc.

M28: DISRUPTIVE INNOVATION IN CONSTRUCTION MANAGEMENT

This manual will cover the following aspects of Project and Construction Management, for example: Disruptive innovation, Innovative IT applications in construction, Data Protection, Big Data, Augmented Reality, etc.

M31: SOCIAL SUSTAINABILITY IN CONSTRUCTION

This manual will cover the following aspects of Project and Construction Management, for example: Frameworks to assess the social performance of construction projects, Social criteria to be considered in construction projects, Indicators to assess the social performance of construction projects, Weighting methods to assess the overall social performance of the project., etc.

M30: AFFORDABLE HOUSING

This manual will cover the following aspects of Project and Construction Management, for example: comparison of different concepts of housing projects concerning technologies and methods, cost, time and achievable standards, renovation strategies of existing buildings, habitability, comfortability, accessibility , especially for elder and handicapped people with special needs, etc.

M29: MODERN CIRCULAR ECONOMY IN CONSTRUCTION

This manual will cover the following aspects of Project and Construction Management, as implementation of the Circular Economy Action Plan 2018 advised by the European Commission for example: waste management, urban mining, demolitions legal procedures and technologies etc.

PROMOTER:

Warsaw University of Technology

PARTNERS:

TECHNISCHE UNIVERSITÄT DARMSTADT

UNIVERSIDAD POLITÉCNICA VALENCIA

AEEBC

KORPORACJA RADEX

Sierpc, 28 marca 2022

POLITECHNIKA WARSZAWSKA

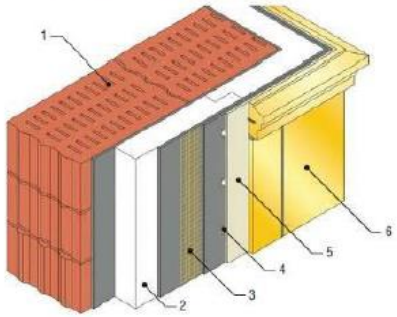
This project has been funded with support from the European Commission. This publication [communication] reflects the views only of the author, and the Commission cannot be held responsible for any use which may be made of the information contained therein.

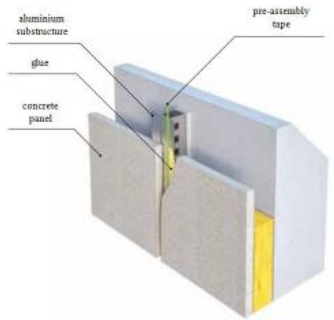
AUGMENTED REALITY FOR STONE CLADDING SAFE ASSEMBLING OPERATION

ARSC - Nº 2019-1-PL01-KA202-065001 (01.11.2019 - 31.03.2022)

Co-funded by the Erasmus+ Programme of the European Union

The ARSC - Augmented Reality for Stone Cladding Safe Assembling Operation stems from the need of prevention of accidents on construction sites. Falls from height are the most common causes of serious accidents, often fatal, not only in Poland but throughout Europe. There is a great need of increasing Health & Safety level. The objective of the project is to decrease accident rate during construction of tall buildings, especially during stone cladding works. To achieve that goal training system containing manual and Augmented Reality (AR) software will be prepared. It will help fitters and engineers to access all needed information on H&S and gain knowledge on stone cladding technology. Modern training system will use Augmented Reality, which is being constantly improved by most influential companies all over the world. Being used, among others, in trainings for pilots, F1 drivers and military personnel, it is safe to say, that AR is the future of high-quality work-based VET. Project will satisfy the assumptions of European Directive 2001/45/EC and Directive 89/391/EEC.The target group and potential beneficiaries of the project are: construction engineers, students and construction workers, SMEs, and technical universities. Project is expected to enhance modernization and reinforce education and training systems in response to the main challenges of today's world (employment, economic stability and growth, as well as active participation in democratic life and free labour market). Foreseen manual, training system and augmented reality software will contain best practices from different European countries in the field of stone cladding assembly and series of exercises for users. Results of the ARSC Project, prepared on the basis of experience of international Partnership will strengthen possibility of construction staff mobility across EU.

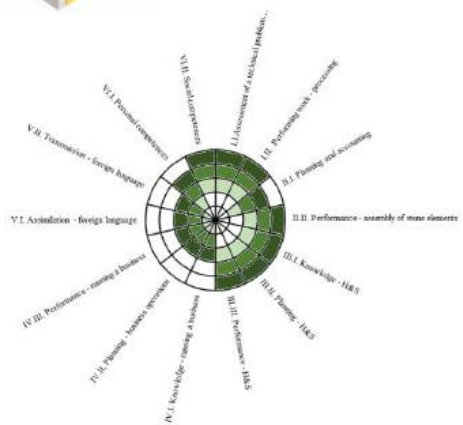




It will also help them to act in the multicultural environment - relevant to the construction site and multicultural global construction companies. Project will strengthen cooperation between industry and education sector. ARSC will promote access to and learning through Open Educational Resources (OER), as the results of the project will be available for all interested parties on the internet and online libraries. Expected project duration is 2 years, but its results will be available for beneficiaries after the end of the project. Partnership consists of:

- Valencia University (UV), whose team has extensive experience in the field of AR technology,
- RADEX company, which has broad knowledge and experience in construction, especially in cladding works.
- Three universities: Darmstadt University (DARM), Warsaw University of Technology (WUT) and University Granada (UGR) will provide theoretical and didactical support.
- Polish Association of Building Managers (PABM), through its contacts with other associations and foundations will be responsible for dissemination and evaluation at the highest European level.

Dissemination strategy will assure free access to project information and results for all beneficiaries by: publications in construction papers and magazines in Poland, Germany, Spain and other EU countries, conferences showing results of the project, meetings with industry representatives, participation of Partners in construction and managerial conferences, leaflets and brochures, project website, EPALE and Erasmus+ projects results platform based profiles, contact with other EU countries for potential use of the project results.



PROMOTER:

KORPORACJA RADEX

PARTNERS:

TECHNISCHE UNIVERSITÄT DARMSTADT

Warsaw University of Technology

Polskie Stowarzyszenie Menedżerów Budownictwa

Sierpc, 28 marca 2022

ADAPTED SENIOR TRAINING PROGRAM ON BIM METHODOLOGIES FOR THE INTEGRATION OF EPD IN SUSTAINABLE CONSTRUCTION STRATEGIES

BIMEPD

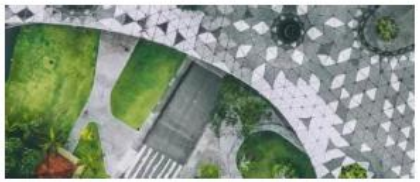
2020-1-ES01-KA204-083128 (01.11.2020 - 31.10.2022)

Co-funded by the Erasmus+ Programme of the European Union

PROJECT

The construction sector is a sector in continuous updating due to the integration of new technologies for the design of projects and the incorporation of environmental considerations of construction materials. This incessant and rapid modernisation of the labour system requires constant and continuous training of the professionals in the sector, most of whom have professional careers of more than 20 years' experience. In Europe there are 600,000 architects, 64% of whom are over 40 years old.

In recent years there has been a large decline in the number of architects working independently, in favour of an increase in work in companies and firms. The percentage of architects practising individually has fallen by up to 50% in the last decade. These tendencies suggest that architects are returning to a paid employment in the practice, instead of free exercise, assuming that they will have to adapt to the design systems established in the companies, much more prone to modernization and integration of innovative methodologies, complicating the incorporation of professionals with extensive experience whose training does not fit the current design tools.



The environmental profile is an increasingly important criterion for public and private procurement and for consumer choice. Companies and professionals have various mechanisms for accrediting and communicating the environmental excellence of their products and services, including Environmental Product Declarations (EPDs). These EPDs provide a reliable, relevant, transparent, comparable and verifiable environmental profile that allows an environmentally friendly product to stand out, based on LCA according to international standards and quantified environmental data.

Learning objectives

1. Adequate knowledge of new technologies and their link to the construction industry
2. Training of professionals in the construction sector in order to increase the quality of the final work, ensuring environmental sustainability.
3. Knowledge of the mechanisms that favour the recovery, reuse and recycling of construction materials
4. Knowledge and ability to design solutions that minimises the waste generated in the placing processes
5. Train the student to acquire a critical and scientific way of thinking, to be able to apply the offered technologies to their constructive solution, to respond to the demands of citizens regarding sustainability and to protect the environment during the placing process
6. Teach the basic operation of the BIMEPD Application, as a professional instrument to evaluate the environmental impacts of products, processes and services
7. Acquire the necessary basic knowledge of LCA and analyse the databases and impact assessment methodologies available to perform an LCA
8. Make practical cases that support learning
9. Present the foundations and the environmental regulations that pertain to construction sector development
10. Teach the operation of the OER platform, as an open educational resource for self-learning in placing methodologies for sustainable development in construction industry

The BIMEPD project addresses, given its nature, the production and development of BIM-based multimedia material by considering the challenges associated with Life Cycle Analysis (LCA) and Environmental Product Declaration (EPD) of building materials, to be used as training material for both adult education as well as for professionals in the architecture sector, in order to meet a number of main aims.

Learning outcomes

1. Know the different tools of management, differentiating those of a mandatory nature from those of a voluntary nature
2. Identify and assess the best techniques in a constructive process.
3. Know the different concepts of the field of sustainability.
4. Know the sustainable construction and the life cycle assessment
5. Understand sustainability as a new culture in the construction sector
6. Be able to develop an efficient project, taking into account the design, new technologies, and its functionality
7. Develop the capacity for environmental evaluation of construction projects, and the capacity for self-criticism
8. Know the different European environmental specific regulations in the field of construction
9. Know the different available methodologies for construction to be able to develop an optimized project

PROMOTER:

COAMU
COLEGIO OFICIAL DE ARQUITECTOS REGIÓN DE MURCIA

PARTNERS:

CTm Centro Tecnológico del mármol, piedra y materiales

BBC

cype Software para Arquitectura, Ingeniería y Construcción

Warsaw University of Technology

iED institute of Entrepreneurship Development

Sierpc, 28 marca 2022

IMMERSIVE DESIGN AND NEW DIGITAL COMPETENCES FOR THE REHABILITATION AND VALORIZATION OF THE BUILT HERITAGE

ID4EX - 2021-1-PL01-KA220-HED-000032239 (01.11.2021 - 31.12.2023)

Co-funded by the Erasmus+ Programme of the European Union

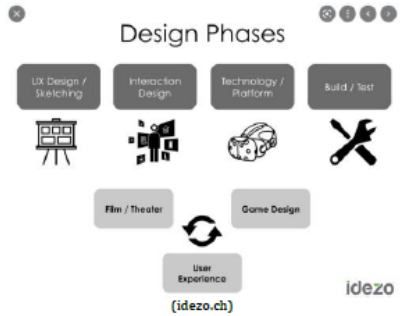
ID4EXCELLENCE project intends to meet Europe 2030 growth strategy priorities on employment and education. The project also considers the EU Roadmap Opening up Education (04/2013) enhancing education and skills development through new technologies and underlining the "insufficient supply of quality digital contents across languages, subjects and needs". The construction sector is facing great challenges, not least the current health emergency that force s to rethink the places and spaces of both supply chain and value-chain, from training to design phase, from construction site to use and maintenance. In this context, the digitization of the sector represents an important driver to face not only the challenges of effectiveness and efficiency to foster, projects innovation, but also the excellence and specialization of the skills, which is of main importance for the industrialization of the sector itself. Moreover, an immersive design approach to the project innovation could lead to inclusive products and services in order to engage all the actors and stakeholders involved in the process. Supporting the updating of skills and competences through an inclusive approach to the built heritage intervention, making with the use of new technologies and the combination of Key Enabling Technologies, (KETs), Virtual Reality (VR), Immersive Interactive Experience (IIE) and advanced 3D modelling is the general aim of the project.

IMMERSIVE DESIGN (EXPERIMENTAL DESIGN)

ID describes design work which ranges in levels of interaction and leads users to be fully absorbed in an experience. This form of design involves the use of VR (Virtual Reality), AR (Augmented reality), and MR (Mixed Reality) that creates the illusion that the user is physically interacting with a realistic digital atmosphere.

(wikipedia)

(sheltorforce.org)



(idezo.ch)

The expected project results in the long term are:
- supporting employment opportunities for professionals of building design and architecture and increased European mobility,
- supporting the wide adoption of Immersive Design methods, tools and technologies in the construction sector, with specific reference to built heritage intervention.

The following results are expected:
- Comparative research on VR technologies applications for the rehabilitation and valorisation of the built heritage,
- Training modules for immersive design experts,
- Immersive design digital training toolkit,
- Report on pilot training actions for experts in immersive design.

PROMOTER:

Warsaw University of Technology

PARTNERS:

Cent1ofOrm

Polskie Stowarzyszenie Menedżerów Budownictwa

Sierpc, 28 marca 2022

BIMHEALTHY - HOUSING AS A STRATEGY FOR THE PROMOTION OF HEALTH FROM AN INTERSECTORAL AND MULTIDISCIPLINARY APPROACH

2019-1-ES01-KA203-065060 (01.10.2019 - 31.12.2021)

Co-funded by the Erasmus+ Programme of the European Union

BIMhealthy project will deepen the transversality of the healthy housing concept both in an educational level as well as for professional taking advantage of the knowledge flow of sanitary and building disciplines and will develop interoperability between metadata generated by the emerging technologies of BIM (Building Information Modelling), so that all information related to health and housing, can be flow into these systems and reinterpreted to exhaustive knowledge of urban developments and rehabilitation, so that the architect is trained to design a health promoter housing model.

Source: https://www.velux.com

In particular, and to contribute to the solution of the above described, the objectives of this project are the following:

- Sensitize the professional sectors by promoting active participation to include and maintain measures that favour health, considering the physical context of the constructive elements of the house.
- Use primary care as a working strength to promote a healthy housing environment through training on the environment and health, taking into account the intersectionality and multidisciplinarity
- Integrate BIM tools in all areas of the construction sector, such as methodologies that allow exhaustive control of the final energy efficiency of the housing project from the beginning of its design.
- Increase awareness of the relationship between housing and health in the most influential sectors of the construction sector.
- Provide information and training to professionals in the field of construction to acquire the ability to project housing as a health context.
- Create a computer tool open to the service of researchers, as well as architects, engineers and civil servants of the construction sector, which can allow its improvement and improvement beyond the project purpose to facilitate its adaptability of new metadata capable of being generated by BIM in the future.

Annex I. DATA QUALITY OBJECTIVES

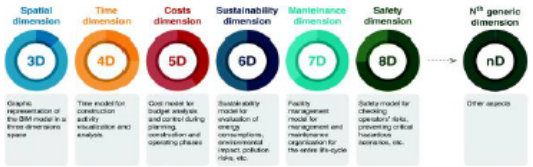
A. Data quality objectives for assessing ambient air quality

	Sulphur dioxide, nitrogen dioxide and oxides of nitrogen and carbon monoxide	Benzene	Particulate matter (PM_{10},$PM_{2.5}$) and lead	Ozone and related NO and NO_2
Fixed measurements (a)				
Uncertainty	15 %	25 %	25 %	15 %
Minimum data capture	90 %	90 %	90 %	90 % during summer 75 % during winter
Minimum time coverage:				
— urban background and traffic	—	35 % (b)	—	—
— industrial sites	—	90 %	—	—
Indicative measurements				
Uncertainty	25 %	100 %	50 %	30 %
Minimum data capture	90 %	90 %	90 %	90 %
Minimum time coverage	14 % (b)	14 % (b)	14 % (b)	> 10 % during summer
Modelling uncertainty:				
Hourly	50 %	—	—	50 %
Eight-hour averages	50 %	—	—	50 %
Daily averages	50 %	—	not yet defined	—
Annual averages	30 %	50 %	50 %	—
Objective estimation Uncertainty	75 %	100 %	100 %	75 %

ENERGY EFFICIENCY

Environmental awareness and culture of citizens are increasing while at the same time the regulations are stricter, and this will be noted in the recent European Directives which come together reduce to the carbon footprint and to increase energy efficiency.

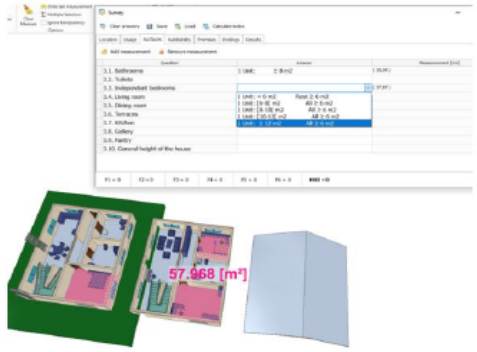
But although there is an increase in awareness, energy efficiency is undoubtedly one of the major pending issues in the housing market. The 20-20-20 objective for 2020 (reduce the energy consumption of buildings by 20%, minimize 20% of CO_2 emissions and boost renewable energy to 20% of energy), and where they should fulfil energy efficiency criteria A for public and private buildings.



HEALTHY HOUSING

We spend upwards of90% of our lives within buildings, yet we know much more about the effects of environmental conditions on human health than how buildings affect our health.

One of the usual environments where human being lives in the cyclic course of his life is housing. The World Health Organization (WHO) states that housing the entity that facilitates the fulfillment of a set of specific functions for the individual, which includes protection against communicable diseases, traumatisms, poisonings and chronic diseases, and that contributes to, in turn, a suitable living space to be able to minimize psychological and social tensions.



BIM 360

The use of Building Information Modelling (BIM)improves information management reliability and consequently productivity, the quality of construction, the structural engineering and the energy efficiency of the building. In the major construction projects, the building information models have become an important engineering and information management standard tool.

It has been notable that in recent years, the knowledge level of BIM between designers and engineer has improved, and the transfer of data between models has become more reliable.

PROMOTER:

PARTNERS:

Centro Tecnológico del mármol, piedra y materiales

ISABIAL Instituto de Investigación Sanitaria y Biomédica de Alicante

Warsaw University of Technology

datacomp

Universitatea Transilvania din Braşov

Sierpc, 28 marca 2022

HEROES OF SMES: DEVELOPING UNIQUE MENTORING SKILLS AND TECHNIQUES

HE-MEN 2019-1-LV01-KA202-060420 (01.11.2019 - 30.04.2022)

Co-funded by the Erasmus+ Programme of the European Union

REVERSE MENTORING

The concept of mentoring originated in Homer's Odyssey. When Odysseus set off to fight in the Trojan War, he entrusted his son's education to a friend named Mentor. Thus, the term "mentor" is now used to describe friends and teachers with positive influences. According to the traditional definition, mentoring is a developmental relationship between two people: a mentor, an elderly person with more experience and usually occupying a higher position in the organizational hierarchy and mentee, a younger, less experienced person. So the purpose of mentoring is learning. It can take various forms, e.g. passing on acquired knowledge, giving advice and tips, analyzing specific situations, working on case studies, etc.

In reverse mentoring, as the name implies, the roles are reversed. In this case, the role of mentor is played by a younger person, and the elderly becomes the mentee. In the era of rapidly changing technology, this is a very common practice - its goal is primarily to help the elderly find their place in the modern world, full of technology incomprehensible from their point of view, which they themselves are not able to master. In such a situation, a younger person who is either familiar with the technology needed to learn or is able to quickly master it enough to be able to teach it, through the mentoring process discussed above, familiarizes the elderly, less experienced or familiar with a given technology person in an accessible way.

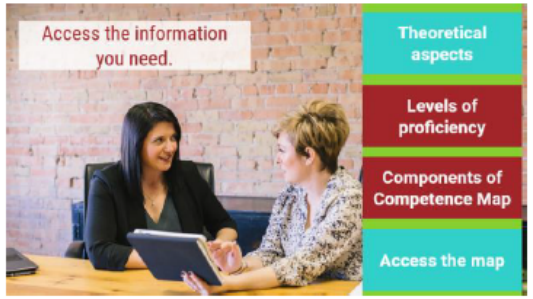
Most of us could find an example of reverse mentoring in our own lives - it is to help parents, grandparents or other elderly people to learn how to use a computer. As a textbook example of reverse mentoring, one can give a situation in which a newly-trained construction engineer who has undergone training in the use of all currently used design programs is asked to teach how to use them long-term engineers who are used to traditional presentation of their projects in the form of drawings.

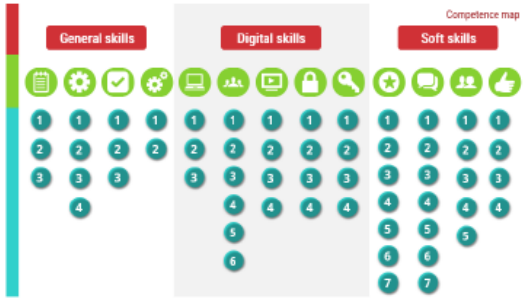
THE HE-MEN PROJECT

The project aims to develop the digital mentoring skills of SME mentors by spreading a reverse mentoring approach. On the one hand, the He-Men project will bridge generational gaps between older and younger employees in SMEs, on the other hand, it will spur innovation and new product and service ideas by more actively soliciting input and advice from younger workers in the digital transformation era.

The He-Men project partnership will develop such intellectual outputs

1. Competence map,
2. Mentoring Community e-solution,
3. Training materials,
4. E-learning platform and a Methodology for group peer mentoring activities.





TARGET GROUPS

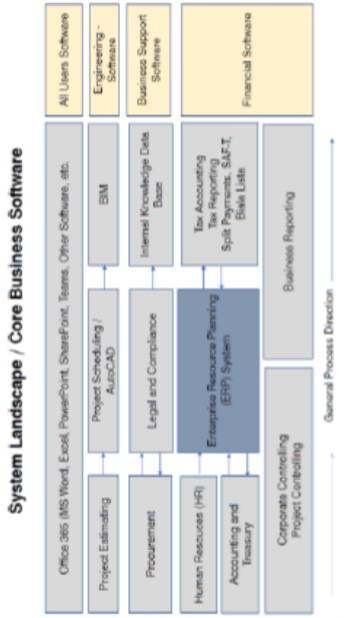
The He-Men project primary target groups can be defined under two categories:

The first group are the potential mentors who are either young employees of the SMEs or owners of the SMEs and mentees who are either senior workers of the SMEs or owners of the SMEs.

The second group is the potential mentors, who are the young people that wish to further their employability and contribute to building their futures via a reverse mentoring approach.

The Secondary Target Group of He-Men includes universities, VET institutions, professional organizations, Chambers, research centers, policymakers, public authorities, and other stakeholders.

Areas for Reverse Mentoring in Construction Company



PROMOTER:

BDA

PARTNERS:

Warsaw University of Technology

eLearning software

MUĞLA SITKI KOÇMAN ÜNİVERSİTESİ

ADINVEST International

Sierpc, 28 marca 2022

CONTEMPORARY APPROACH TO THE DEVELOPMENT OF SPATIAL COMPREHENSION THROUGH AUGMENTED REALITY CONTENT

SPACAR - N° 2019-1-LT01-KA202-060471 (01.11.2019 - 31.05.2022)

Co-funded by the Erasmus+ Programme of the European Union

The quality of modern engineering education is directly linked with the students' ability to create and read the drawings of engineering structures. The development of spatial skills for engineering students is closely related with the success in their future professional career.

Visualization of geometric problems helps students to understand and to solve the given geometric tasks. Augmented Reality (AR) is one of the many challenges of modern IT technologies which recently became available also for education purposes. Augmented Reality (AR) application enables faster comprehension of complex spatial problems and relationships which will benefit the students greatly during their learning processes. Augmented Reality is a new technology that lets you interact with the real world and virtual objects at the same time. It is supposed that AR will provide new possibilities to teach the contemporary generation of students in an attractive and more entertaining way.

The use of AR technology facilitates the students to acquire better practical skills in much shorter time during their academic studies and improves the quality of graphic education.

The objective of the project is to develop the didactic toolkit which include set of practical exercises with 3D objects prepared for the use into AR environment. The didactic toolkit is specified for vocational schools, colleges and universities where the graphical engineering subjects are compulsory.

The didactic toolkit will allow to develop spatial skills of students of vocational schools and higher schools, to obtain practical experience in solving graphic exercises and will give an opportunity to enhance the quality of graphic education.

Applying AR technology to support learning activities may become a trend for graphical engineering subjects. AR application was used to entertain the students during the studies. The AR didactic toolkit allows to create the attractive teaching methodology and increases motivation of students to study graphical engineering subjects.

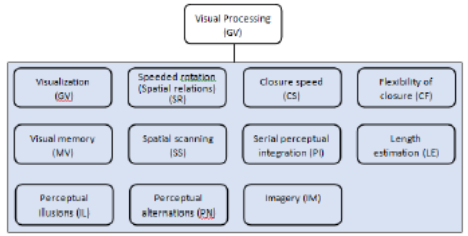
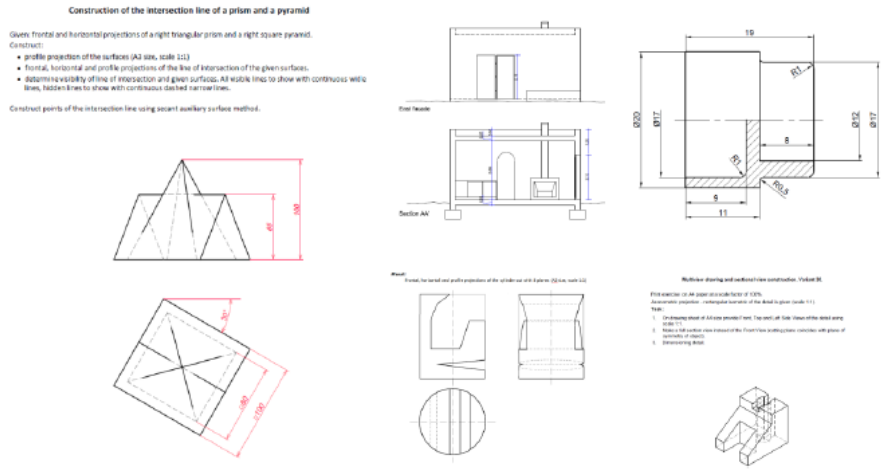


Figure 1. Factor structure for Visual Processing in the CHC theory (Buckley et al., 2019)

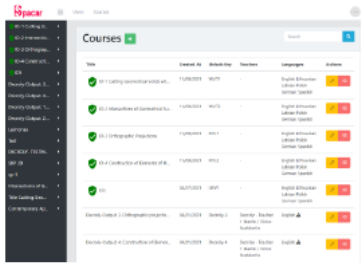
EXERCISES EXAMPLES

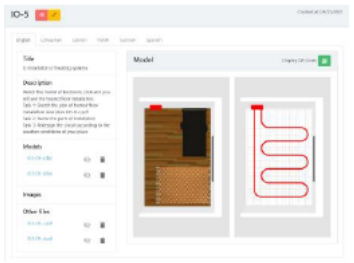


During the project the didactic toolkit which include set of practical exercises with 3D objects prepared for the use into AR environment will be created. The didactic toolkit will be tested in vocational schools and higher schools.

Taking into account, the project partners need to improve technical and didactical competences of drawing (computer graphics) vocational teachers, lecturers, instructors of vocational schools, colleges and universities; it is planned to do the following in the project: 1. Investigate the methodology of teaching, the subject of drawing, application of symbols, relevant points of the chapters of drawing taught and the applicable standards in the partner countries; 2. Prepare the material; 3. Prepare the website project in all partners' languages; 4. After preparing the project methodological material and started testing; 5. Perform testing of the interactive remote project; 6. Perform spread/ valorization activities; 7. Develop a system for quality assurance of the project activities.

AR SOFTWARE





PROMOTER:

VILNIAUS STATYBININKŲ RENGIMO CENTRAS

PARTNERS:

RĪGAS TEHNISKĀ UNIVERSITĀTE

Warsaw University of Technology

SNEAKYBOX

JUGENDFÖRDERVEREIN

Decroly

Sierpc, 28 marca 2022

Dziękuję na uwagę!

Kontakt:
wastemanagepw@gmail.com

p.nowak@il.pw.edu.pl

Projekt “Sierpc 2.0 – Rozwiązania EcoSmart z zakresu zarządzania miastem” współfinansowany jest ze środków Programu Operacyjnego Pomoc Techniczna 2014-2020 oraz budżetu państwa, w ramach konkursu pt. “HUMAN SMART CITIES. Inteligentne miasta współtworzone przez mieszkańców”. Priorytet 3 Potencjał beneficjentów funduszy europejskich, działanie 3.1 Skuteczni beneficjenci. Kategoria interwencji funduszy strukturalnych – 121.