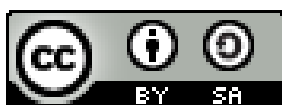


Tarea 03/A4

MEJORAS TÉCNICAS DEL REA Y LA HERRAMIENTA BASADA EN TIC



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1. INTRODUCCIÓN

Este informe se incluye en la tarea "O3-A4. *Mejoras técnicas de REA y herramienta basada en las TIC*", correspondiente al Producto Intelectual 3 "REA para la formación y sensibilización" del proyecto SafeCRobot.

A partir de las actividades A2 y A3 de este Resultado Intelectual 3, se han mejorado los REA y la herramienta basada en las TIC y la versión beta del REA ha sufrido varias modificaciones con las mejoras identificadas en la evaluación realizada por los evaluadores externos del proyecto, así como las identificadas en los cursos piloto por los asistentes.

Este informe y toda la información sobre el proyecto están disponibles en la siguiente url: <https://safecrobot.pwr.edu.pl/en/>

2. SITIO WEB DE SAFECROBOT

2.1. DESARROLLO DEL SITIO WEB DE SafeCRobot

Este sitio web del proyecto SafeCRobot fue creado por PWR durante el primer período del proyecto y se utiliza como un lugar común para compartir los productos del proyecto y base de las actividades de difusión.



Una vez decididos, diseñados e implementados todos los detalles gráficos de la web, el menú y los logotipos, se empezó a incluir información básica sobre el proyecto, como el resumen, los objetivos, la lista de informes elaborados durante el proyecto, etc. Posteriormente, se han cargado los documentos finalizados resultantes de la investigación y los estudios realizados por los socios del proyecto.

El sitio web de SafeCRobot incluye los principales resultados intelectuales del proyecto. Cabe señalar que todo el sitio web está disponible en todos los idiomas de los socios del proyecto. Para la traducción de los contenidos disponibles, todos los socios del proyecto participaron proporcionando traducciones a sus lenguas maternas.

Enlace a la web del proyecto SafeCRobot : <https://safecrobot.pwr.edu.pl/en/>

2.2. PRESENTACIÓN DEL SITIO WEB DE SafeCROBOT

En la siguiente imagen, se pueden ver las diferentes secciones en las que se divide la web del proyecto SafeCROBOT y los enlaces a cada una de estas secciones.

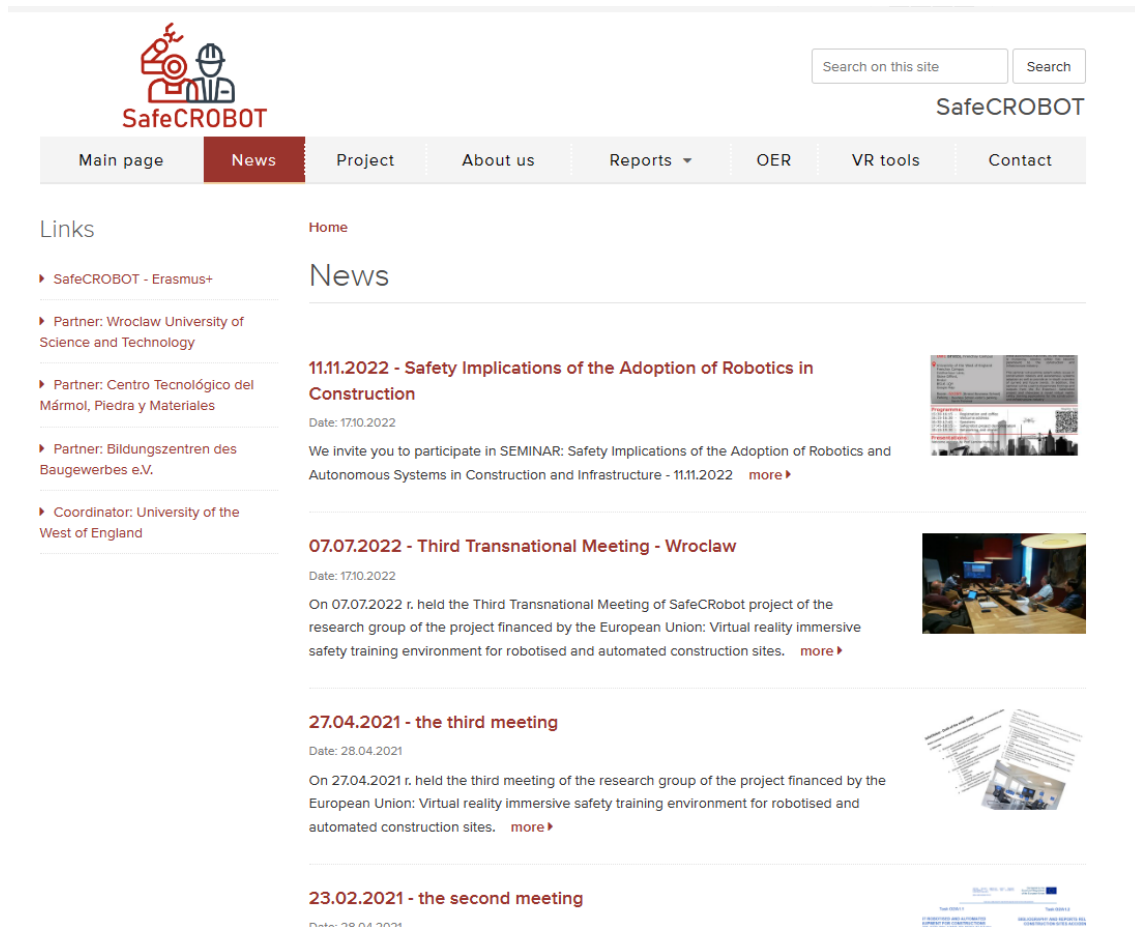
2.2.1. PORTADA

Enlace: <https://safecrobot.pwr.edu.pl/en/>



2.2.2. NOTICIA

Enlace: <https://safecrobot.pwr.edu.pl/en/news>

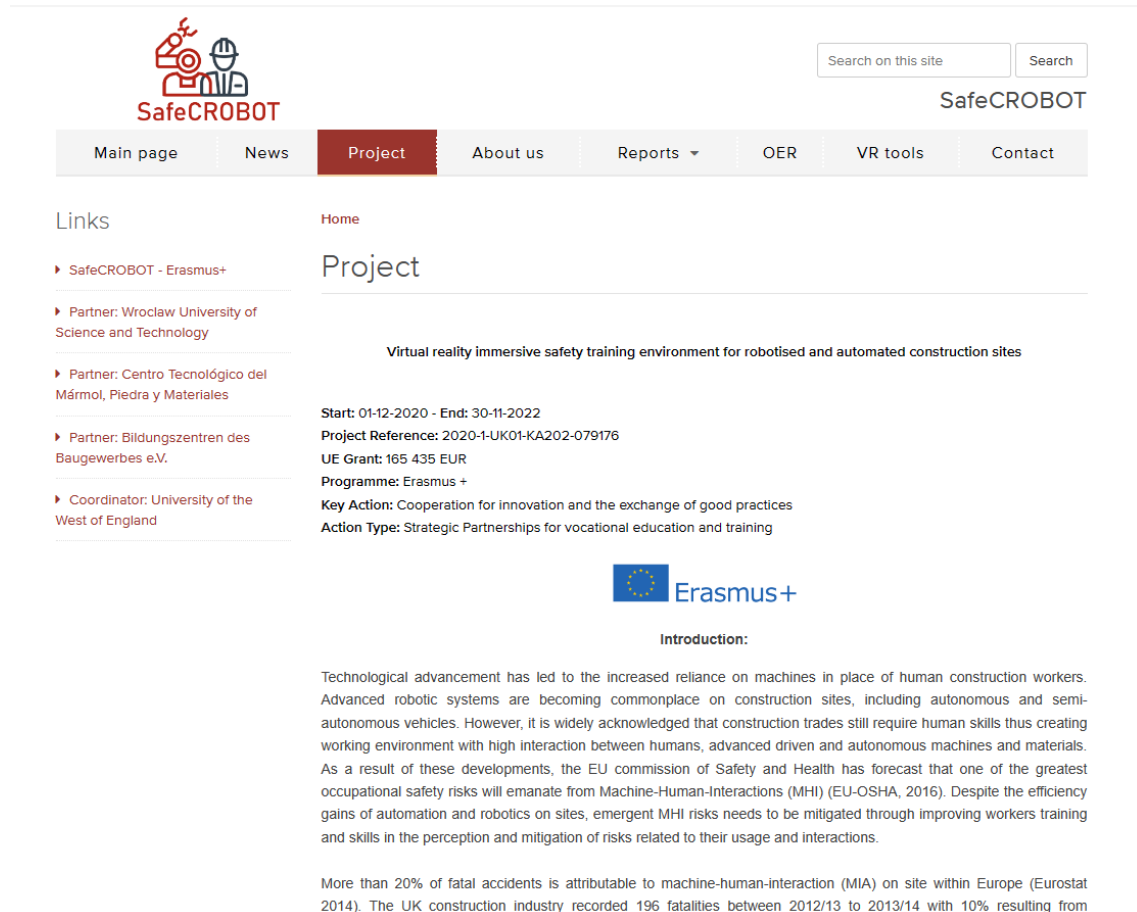


The screenshot shows the SafeCROBOT website's news section. At the top, there is a navigation bar with links: Main page, News (active), Project, About us, Reports, OER, VR tools, and Contact. A search bar is also present. Below the navigation bar, there is a 'Links' section on the left with links to SafeCROBOT - Erasmus+, Partner: Wroclaw University of Science and Technology, Partner: Centro Tecnológico del Mármol, Piedra y Materiales, Partner: Bildungszentren des Baugewerbes e.V., and Coordinator: University of the West of England. The main content area is titled 'News' and lists four news items:

- 11.11.2022 - Safety Implications of the Adoption of Robotics in Construction**
Date: 17.10.2022
We invite you to participate in SEMINAR: Safety Implications of the Adoption of Robotics and Autonomous Systems in Construction and Infrastructure - 11.11.2022 [more](#)
- 07.07.2022 - Third Transnational Meeting - Wroclaw**
Date: 17.10.2022
On 07.07.2022 r. held the Third Transnational Meeting of SafeCROBOT project of the research group of the project financed by the European Union: Virtual reality immersive safety training environment for robotised and automated construction sites. [more](#)
- 27.04.2021 - the third meeting**
Date: 28.04.2021
On 27.04.2021 r. held the third meeting of the research group of the project financed by the European Union: Virtual reality immersive safety training environment for robotised and automated construction sites. [more](#)
- 23.02.2021 - the second meeting**
Date: 28.04.2021

2.2.3. PROYECTO

Enlace: <https://safecrobot.pwr.edu.pl/en/project>



The screenshot shows the 'Project' page of the SafeCROBOT website. The header includes the SafeCROBOT logo, a search bar, and a navigation menu with links to Main page, News, Project (active), About us, Reports, OER, VR tools, and Contact. The 'Links' section on the left lists partners and the coordinator. The main content area features the project title, a description, start/end dates, project reference, grant amount, and key actions. An introduction paragraph discusses the challenges of machine-human interaction in construction and the need for improved training. A Eurostat statistic is also provided.

SafeCROBOT

Search on this site Search

Main page News **Project** About us Reports ▼ OER VR tools Contact

Links


- ▶ SafeCROBOT - Erasmus+
- ▶ Partner: Wrocław University of Science and Technology
- ▶ Partner: Centro Tecnológico del Mármol, Piedra y Materiales
- ▶ Partner: Bildungszentren des Baugewerbes e.V.
- ▶ Coordinator: University of the West of England

Home

Project

Virtual reality immersive safety training environment for robotised and automated construction sites

Start: 01-12-2020 - **End:** 30-11-2022
Project Reference: 2020-1-UK01-KA202-079176
UE Grant: 165 435 EUR
Programme: Erasmus +
Key Action: Cooperation for innovation and the exchange of good practices
Action Type: Strategic Partnerships for vocational education and training

 **Erasmus+**

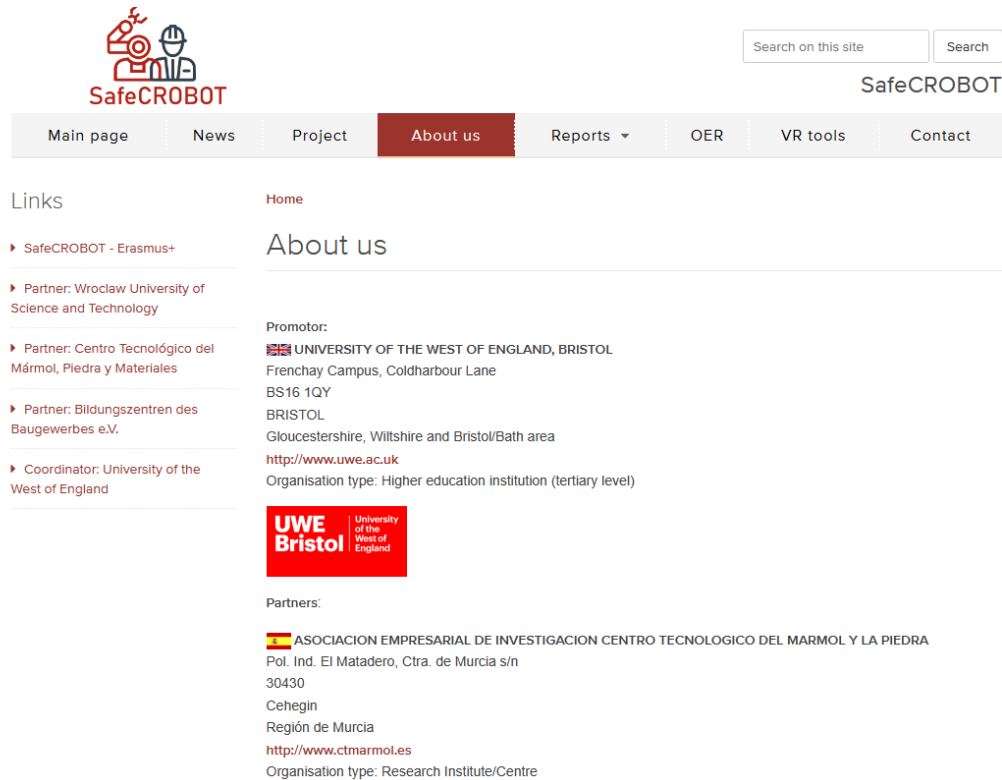
Introduction:

Technological advancement has led to the increased reliance on machines in place of human construction workers. Advanced robotic systems are becoming commonplace on construction sites, including autonomous and semi-autonomous vehicles. However, it is widely acknowledged that construction trades still require human skills thus creating working environment with high interaction between humans, advanced driven and autonomous machines and materials. As a result of these developments, the EU commission of Safety and Health has forecast that one of the greatest occupational safety risks will emanate from Machine-Human-Interactions (MHI) (EU-OSHA, 2016). Despite the efficiency gains of automation and robotics on sites, emergent MHI risks needs to be mitigated through improving workers training and skills in the perception and mitigation of risks related to their usage and interactions.

More than 20% of fatal accidents is attributable to machine-human-interaction (MIA) on site within Europe (Eurostat 2014). The UK construction industry recorded 196 fatalities between 2012/13 to 2013/14 with 10% resulting from

2.2.4. SOBRE NOSOTROS

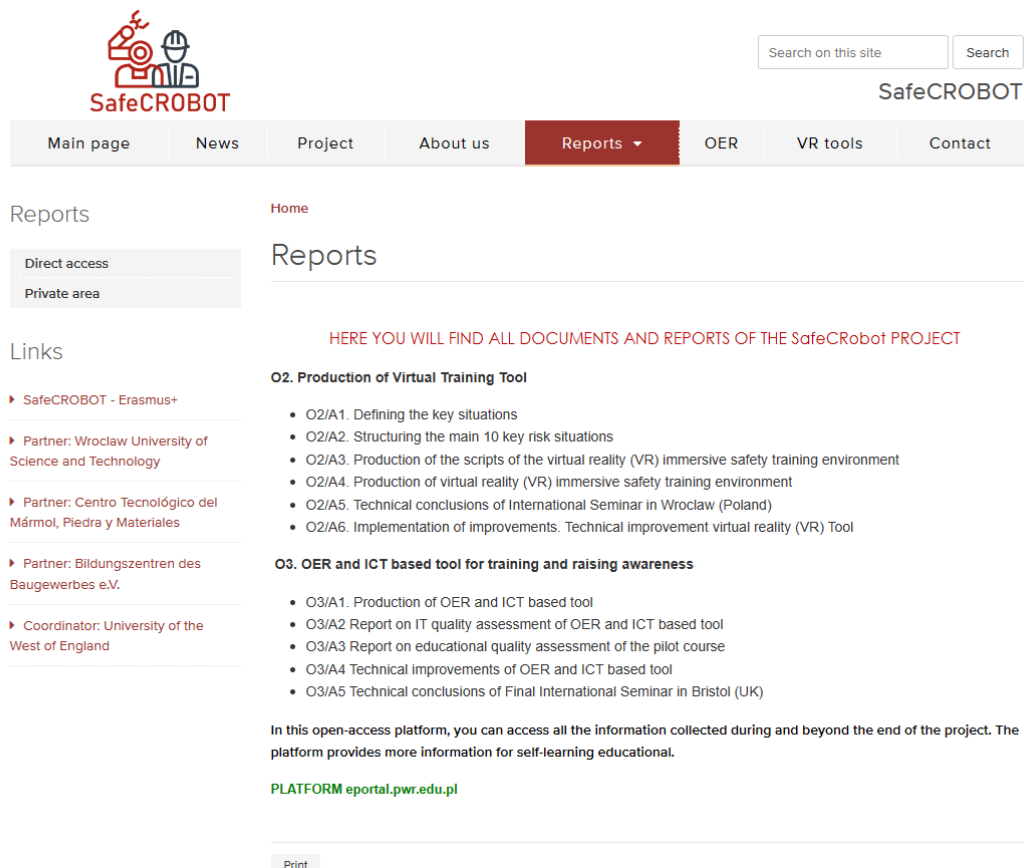
Enlace: https://safecrobot.pwr.edu.pl/en/about_as



The screenshot shows the 'About us' page of the SafeCROBOT website. The header includes the SafeCROBOT logo, a search bar, and a navigation menu with links to Main page, News, Project, About us (active), Reports, OER, VR tools, and Contact. The 'About us' section is titled 'About us' and lists the Promotor as the University of the West of England, Bristol, with its address and website. It also lists Partners, including the Asociación Empresarial de Investigación Centro Tecnológico del Mármol y la Piedra (CTM) in Murcia. The footer of the website lists Consortium members: University of the West of England (UWE), Asociación Empresarial de Investigación Centro Tecnológico del Mármol, Piedra y Materiales (CTM), Politechnika Wroclawska (PWR), Bildungszentren des Baugewerbes e.V. (BZB).

2.2.5. INFORMES

Enlace: <https://safecrobot.pwr.edu.pl/en/reports>



SafeCROBOT

Main page	News	Project	About us	Reports ▾	OER	VR tools	Contact
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Reports

Direct access

Private area

Links

- ▶ SafeCROBOT - Erasmus+
- ▶ Partner: Wrocław University of Science and Technology
- ▶ Partner: Centro Tecnológico del Mármol, Piedra y Materiales
- ▶ Partner: Bildungszentren des Baugewerbes e.V.
- ▶ Coordinator: University of the West of England

Reports

HERE YOU WILL FIND ALL DOCUMENTS AND REPORTS OF THE SafeCROBOT PROJECT

O2. Production of Virtual Training Tool

- O2/A1. Defining the key situations
- O2/A2. Structuring the main 10 key risk situations
- O2/A3. Production of the scripts of the virtual reality (VR) immersive safety training environment
- O2/A4. Production of virtual reality (VR) immersive safety training environment
- O2/A5. Technical conclusions of International Seminar in Wrocław (Poland)
- O2/A6. Implementation of improvements. Technical improvement virtual reality (VR) Tool

O3. OER and ICT based tool for training and raising awareness


- O3/A1. Production of OER and ICT based tool
- O3/A2 Report on IT quality assessment of OER and ICT based tool
- O3/A3 Report on educational quality assessment of the pilot course
- O3/A4 Technical improvements of OER and ICT based tool
- O3/A5 Technical conclusions of Final International Seminar in Bristol (UK)

In this open-access platform, you can access all the information collected during and beyond the end of the project. The platform provides more information for self-learning educational.

PLATFORM portal.pwr.edu.pl

2.2.6. OER

Enlace: <https://safecrobot.pwr.edu.pl/en/oer>



SafeCROBOT

Main page	News	Project	About us	Reports ▾	OER	VR tools	Contact
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Links

- ▶ SafeCROBOT - Erasmus+
- ▶ Partner: Wrocław University of Science and Technology
- ▶ Partner: Centro Tecnológico del Mármol, Piedra y Materiales
- ▶ Partner: Bildungszentren des Baugewerbes e.V.
- ▶ Coordinator: University of the West of England

Home

OER

in this open-access platform, you can access all the information collected during and beyond the end of the project. The platform provides more information for self-learning educational.

DIRECT ACCESS		PRIVATE AREA
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Acceso directo:

Direct access

Private area

Direct access

Links

- ▶ SafeCROBOT - Erasmus+
- ▶ Partner: Wrocław University of Science and Technology
- ▶ Partner: Centro Tecnológico del Mármol, Piedra y Materiales
- ▶ Partner: Bildungszentren des Baugewerbes e.V.
- ▶ Coordinator: University of the West of England

LIST OF AVAILABLE DOCUMENTS

Task O2/A1.1 UK [.pdf]	
Task O2/A1.1 NATIONAL STATICAL DATA RELATED TO ACCIDENTS IN THE CONSTRUCTION AND FACTORIES SECTOR FOR EACH PARTICIPATING COUNTRY - UK (in English)	
Task O2/A1.1 SPAIN [.pdf]	
Task O2/A1.1 NATIONAL STATICAL DATA RELATED TO ACCIDENTS IN THE CONSTRUCTION AND FACTORIES SECTOR FOR EACH PARTICIPATING COUNTRY - SPAIN (in English)	
Task O2/A1.1 GERMANY [.pdf]	
Task O2/A1.1 NATIONAL STATICAL DATA RELATED TO ACCIDENTS IN THE CONSTRUCTION AND FACTORIES SECTOR FOR EACH PARTICIPATING COUNTRY - GERMANY (in English)	
Task O2/A1.1 POLAND [.pdf]	
Task O2/A1.1 NATIONAL STATICAL DATA RELATED TO ACCIDENTS IN THE CONSTRUCTION AND FACTORIES SECTOR FOR EACH PARTICIPATING COUNTRY - POLAND (in English)	
Task O2/A1.2 BIBLIOGRAPHY AND REPORTS RELATED CONSTRUCTION SITES ACCIDENTS [.pdf]	
Task O2/A1.2 BIBLIOGRAPHY AND REPORTS RELATED CONSTRUCTION SITES ACCIDENTS (in English)	

Área Privada:

Direct access
Private area

Private area

The platform for self-learning educational

PLATFORM eportal.pwr.edu.pl

Register. Create account


First name *

Last name *

E-mail *

University / Company / Organization *

☐ I'm not a robot

 reCAPTCHA
Privacy - Terms

Send

Print

Links

- ▶ SafeCROBOT - Erasmus+
- ▶ Partner: Wrocław University of Science and Technology
- ▶ Partner: Centro Tecnológico del Mármol, Piedra y Materiales
- ▶ Partner: Bildungszentren des Baugewerbes e.V.
- ▶ Coordinator: University of the West of England

ePortal PWR

My Courses
Category
Educational resources
News

SafeCROBOT
Dashboard / My courses / SafeCROBOT

Project SafeCROBOT

HERE YOU WILL FIND ALL DOCUMENTS AND REPORTS OF THE SafeCrobot PROJECT




The platform provides more information for self-learning educational.


O2. Production of Virtual Training Tool

- O2/A1. Defining the key situations - (available)
- O2/A2. Structuring the main 10 key risk situations - (unavailable)
- O2/A3. Production of the scripts of the virtual reality (VR) immersive safety training environment - (unavailable)
- O2/A4. Production of virtual reality (VR) immersive safety training environment - (unavailable)
- O2/A5. Technical conclusions of International Seminar in Wrocław (Poland) - (unavailable)
- O2/A6. Implementation of improvements. Technical improvement virtual reality (VR) Tool - (unavailable)


O3. OER and ICT based tool for training and raising awareness

- O3/A1. Production of OER and ICT based tool - (unavailable)
- O3/A2 Report on IT quality assessment of OER and ICT based tool - (unavailable)
- O3/A3 Report on educational quality assessment of the pilot course - (unavailable)
- O3/A4 Technical improvements of OER and ICT based tool - (unavailable)
- O3/A5 Technical conclusions of Final International Seminar in Bristol (UK) - (unavailable)


 ePortal PWR   My Courses ▾ Category ▾ Educational resources ▾ News

 Task 02/A1.1 UK


Mark as done

 Task 02/A1.1 SPAIN


Mark as done

 Task 02/A1.1 GERMANY


Mark as done

 Task 02/A1.1 POLAND

Mark as done

 Task 02/A1.2 BIBLIOGRAPHY AND REPORTS RELATED CONSTRUCTION SITES ACCIDENTS

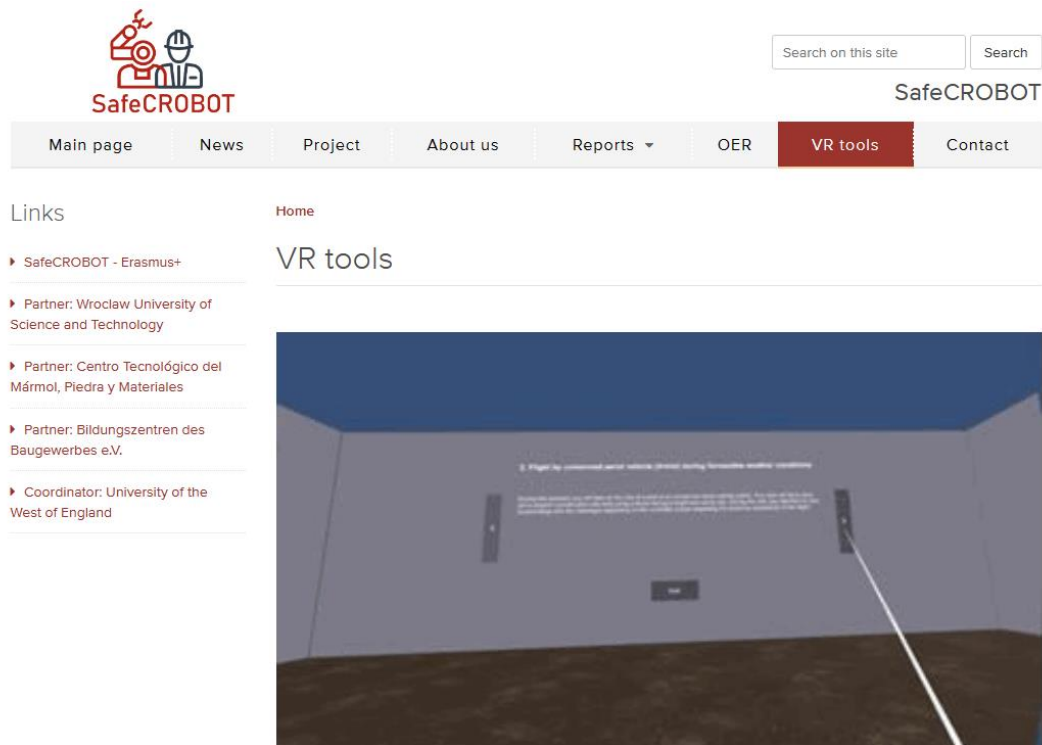
Mark as done

 Task 02/A1.3 LIST ROBOTISED AND AUTOMATED EQUIPMENT FOR CONSTRUCTIONS SECTOR AND RELATED TO RISK

Mark as done

2.2.7. HERRAMIENTAS DE REALIDAD VIRTUAL

Enlace: https://safecrobot.pwr.edu.pl/en/vt_tools



The screenshot shows the SafeCROBOT website interface. At the top, there is a search bar and the SafeCROBOT logo. Below the logo is a navigation menu with links: Main page, News, Project, About us, Reports, OER, VR tools (highlighted), and Contact. On the left side, there is a 'Links' section listing partners and the coordinator. The main content area is titled 'VR tools' and features a large image of a virtual reality environment with a blue sky and a dark ground, showing a construction site simulation.

SafeCROBOT

Search on this site Search


Main page News Project About us Reports OER **VR tools** Contact

Links

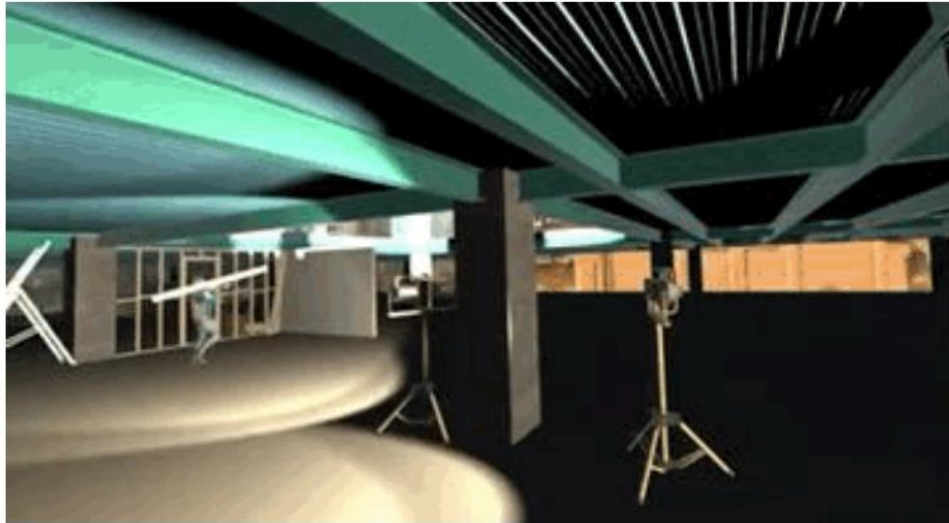
- ▶ SafeCROBOT - Erasmus+
- ▶ Partner: Wrocław University of Science and Technology
- ▶ Partner: Centro Tecnológico del Mármol, Piedra y Materiales
- ▶ Partner: Bildungszentren des Baugewerbes e.V.
- ▶ Coordinator: University of the West of England

Home

VR tools







Print

2.2.8. CONTACTO

Enlace: <https://safecrobot.pwr.edu.pl/en/contact>

<https://safecrobot.pwr.edu.pl/en/contact>

SafeCROBOT

Search on this site Search

SafeCROBOT


Main page News Project About us Reports VR tools **Contact**

Links

- SafeCROBOT - Erasmus+
- Partner: Wrocław University of Science and Technology
- Partner: Centro Tecnológico del Mármol, Piedra y Materiales
- Partner: Bildungszentren des Baugewerbes e.V.
- Coordinator: University of the West of England

Home

Contact

 **Contact us**


Name*

Surname*

Email*

Topic*

Content*
Characters remaining: 1000

Captcha* ☐ I'm not a robot 

* - required field

3. Mejoras técnicas

Teniendo en cuenta todas las evaluaciones de calidad de los participantes en los cursos piloto a través de sus comentarios en los cuestionarios y comentarios durante la implementación de los cursos, así como los resultados obtenidos en los cuestionarios de evaluación de la calidad enviados a los expertos relacionados con los principales elementos del proyecto y la opinión de los miembros del consorcio al mostrar tanto el REA como la herramienta, Estos resultados se han mejorado con respecto a sus versiones beta iniciales.

Las mejoras han sido las siguientes:

3.1.1. MEJORAS TÉCNICAS EN LOS REA

En lo que respecta a los REA, se han realizado varias mejoras:

- Se ha facilitado el acceso al REA al usuario para que pueda encontrarlo más fácilmente dentro del sitio web.
- Las tareas del proyecto se han ordenado por Outputs, para que sean más fáciles de encontrar.

3.1.2. MEJORAS TÉCNICAS EN LA HERRAMIENTA VR

También se han realizado mejoras técnicas en la herramienta:

- Se puede acceder a los diferentes escenarios desde un menú fácilmente visible.
- Se han mejorado algunos aspectos técnicos de los escenarios. Algunos de los aspectos mejorados se pueden ver a continuación:
 - Se han añadido barandillas protectoras en escenarios con alturas.
 - Se han añadido arneses a los personajes cuando es necesario.

3.1.3. PRODUCTOS MEJORADOS

Ambos productos ahora cuentan con todas estas mejoras. Se puede acceder a ellos en el sitio web de SafeCROBOT: <https://safecrobot.pwr.edu.pl/en/>