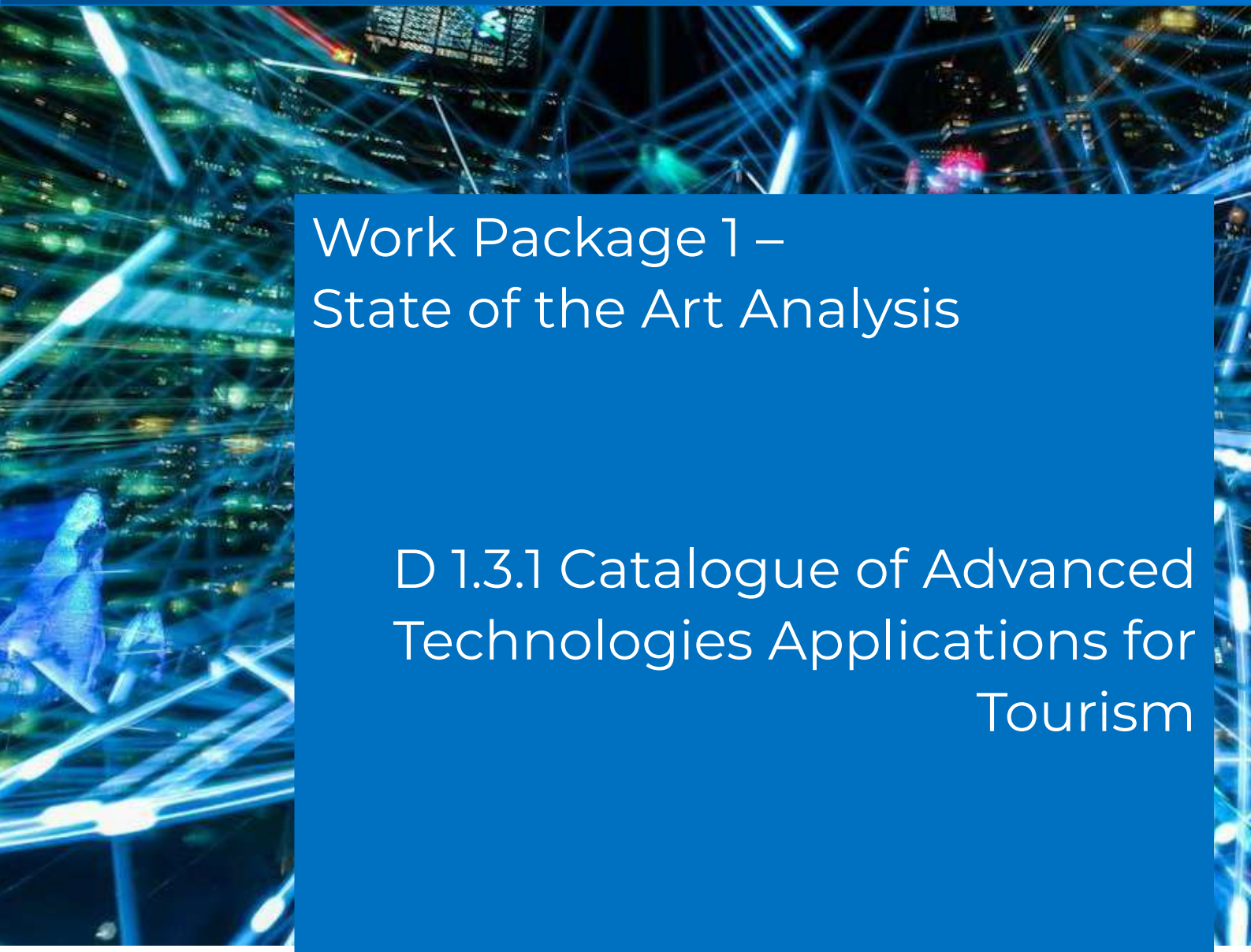
The SMITour Project

SMart Industrial Tourism in the Mediterranean



Work Package 1 – State of the Art Analysis

D 1.3.1 Catalogue of Advanced Technologies Applications for Tourism

SMITour | Interreg Euro-MED | Co-funded by the European Union

https://smitour.interreg-euro-med.eu/

Interreg Euro-MED Co-funded by the European Union

SMITour

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Executive Summary

In an era characterised by rapid technological progress, the tourism industry is undergoing a transformative development. This catalogue presents a comprehensive overview of the industrial tourism landscape, drawing on analysis of the usage of advanced technologies in industrial tourism in six European countries or regions: Italy, Portugal, Spain, Greece, Slovenia and Croatia. The study aimed to assess the current state of application of advanced technologies in industrial tourism, identify best practices, and highlight key challenges and opportunities for future development.

The process of creating the Catalogue of Advanced technology Applications for Tourism has produced a list of important prospects for using cutting-edge and immersive technology to improve the Mediterranean travel experience. The project demonstrates how technologies like augmented reality (AR), virtual reality (VR), and artificial intelligence (AI), among others, may enhance the traveller experience and make travel more dynamic, interesting, and customised by compiling 31 examples of best practices.

The collected examples show a clear trend: AR and VR are currently the most popular technologies in the area, indicating their adaptability and great impact on the user experience. By fostering a closer connection with local heritage and culture, these technologies not only enhance the travel experience but also create new opportunities for sustainable tourism growth. The compilation of these insights in this catalogue makes it an invaluable tool for academics, industry professionals and policy makers looking to leverage technology to increase competitiveness, drive innovation and promote a more sustainable tourism industry.

For researchers, policy makers and industry experts looking to harness the potential of technology to drive innovation, increase competitiveness and promote a more sustainable future for tourism, this catalogue is an invaluable resource.

Introduction to the SMITour project

The SMITour Project | SMart Industrial Tourism in the Mediterranean

The SMITour project identifies the need to develop new SMart Industrial Tourism (SMIT) activities as a common challenge for Mediterranean regions wishing to leverage their industrial and manufacturing sites to diversify the economy, stimulate social and economic growth, minimize environmental impact and boost research and technological innovation. The high rate of industry participation in industrial tourism clusters makes this sector ideal for experimenting with advanced and immersive technologies that are already being adopted by manufacturing industries and that have been greatly enhanced by the covid-19 pandemic, and that allow combining physical and virtual visits through the use of AR, VR or MR (Augmented, Virtual and Mixed Reality). The virtuous combination of industrial tourism with advanced technologies gives rise to Smart Industrial Tourism (SMIT).

SMITour aims at studying the social and economic potential of SMart Industrial Tourism in six Mediterranean regions, assessing the state of the art by analyzing existing good practices in industrial tourism and in the use of advanced technologies in the tourism sector, exploring pathways for the development of SMIT activities in the regions and cities involved.

The project addresses the partners' common challenges by pooling their experience and know-how and by creating transnational Focus Groups involving the regional stakeholders to implement a series of thematic Innovation Camps that will co-design roadmaps and figure out a common Strategy and Action Plan to develop SMart Industrial Tourism. The Strategy and Action Plan will help MED regions to diversify tourism to stimulate social and economic growth while enhancing technological innovation. The partners will eventually be able to mobilize the necessary resources (human, technical, financial) and structures (management and governance) to achieve the project's goals.

The following is the partnership of the project:

1. Municipality of Prato (IT) - Lead Partner
2. University Institute of Lisbon (PT)
3. Industrial Tourism Network of Catalonia - Barcelona (ES)
4. Prato Textile Museum Foundation (IT)
5. Hellenic Clothing Industry Association - Athens (EL)
6. E-institute, Institute for Comprehensive Development Solutions (SI)
7. Faculty of Economics and Business Rijeka (HR)

SMITour is funded by the Interreg Euro-MED programme through the European Regional Development Fund and co-financed by the National Revolving Fund for the implementation of EU policies.

Work Package1 – State of the Art Analysis

Activity 1.3: Application of advanced technologies in the tourism sector
Deliverable: D 1.3.1 Baseline study of tourism systems in the partner regions

Partner in charge: EFRI - Faculty of Economics and Business Rijeka
Partners involved: Prato, Iscte, XATIC, MDT, HCIA, eZAVOD, EFRI
Date of production: 31 January 2025

As a basis for its activities, SMITour pools and exploits the experience and know-how of its partners and regional stakeholders to create a shared knowledge-base that will be used by the transnational Focus and Working Groups (FWGs) to implement a series of thematic Innovation Camps. The Innovation Camps will in turn develop a number of thematic roadmaps to meet the several sub-challenges posed by the overall objective of developing Smart Industrial Tourism.

To create the shared knowledge-base, Work Package 1 of the project performs a "State of the Art Analysis", collecting information from its partners about the following three areas of interest:

A1.1 - Tourism systems in the partner regions

A1.2 - Industrial tourism practices in the Mediterranean

A1.3 - Application of advanced technologies in the tourism sector

The present document constitutes deliverable**: "D1.3.1 Catalogue of Advanced Technologies Applications for Tourism"** resulting from activity A1.3 above. D1.3.1 a**n organic catalogue of cutting edge applications of advanced and immersive technologies for Tourism, covering the entire Mediterranean area.**

I. Country: Italy

Partner: The Prato Textile Museum

1. **Evaluate the level of experience with innovative technology in the industrial tourism in your country (1 - very low, 5 - very high)**

   1 **2** 3 4 5

2. **Name five different innovative technologies used in the tourism sector in your country**
   - **i. Augmented Reality (AR)**
   - **ii. Virtual Reality (VR)**
   - **iii. Chatbots**
   - **iv. Artificial Intelligence (AI)**
   - **v. Internet of Things (IoT)**

3. **Examples of the used technology**

i. Augmented Reality (AR)

General information:

- Name/title: **AR Tour**
- Location: **Archaeological sites of Pompei, Ercolano and museums of Naples**
- Industry sector (NACE class. 2-digit):
- Date of implementation: **2023**
- Contact information: **+39 081 1822 1107 | info@ar-tour.it**

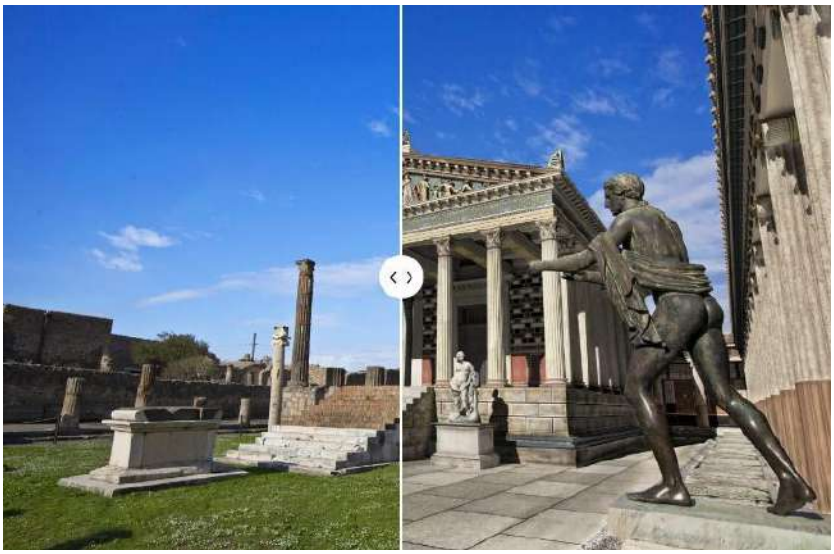
Description

a) **Technologies:** Augmented Reality, interactive experience based on the projection of digital elements superimposed on coexisting and always visible reality.

b) **Description of implementation:**

An innovative start-up from the Campania region, Ar-Tour, is successfully proposing an innovative solution that uses Augmented Reality to offer visitors to museums and places of art an interactive experience based on the projection of digital elements superimposed on the real view. It is an innovative cultural services company whose solution is already active at the archaeological parks of Pompeii and Herculaneum and in Naples to visit the historic centre and the Pio Monte della Misericordia with the works of Caravaggio.

https://www.ar-tour.it/



c) **Stakeholders involved:** technology developers and software engineers, museum curators and archaeologists, museum management and administration, funding bodies/grant agencies, national and local authorities, cultural heritage organisations /advisory boards, visitors/users (the Campania Region first and the Ministry of Culture/Invitalia)
d) **Target Audience:** tourists, students and educators, families, history enthusiasts, researchers and academics, technology users

Outcomes and Impact

a) **Key outcomes** (e.g. engagement). **Enhancing Visitor Experience, Improved Learning and Understanding, Enhanced Accessibility, Preservation and Conservation**
b) **Number of visitors** (yearly avg) **45.000+**
c) **User satisfaction ratings** (yearly avg) **4.7 out of 5 on Google**
d) **Comparison with before AT implementation** (if available) **N/A**
e) **Testimonials**, if applicable (best and worst) (example: google reviews etc.)

Best:

Excellent combination of live guided tour and the AR experience, user-friendly, excellent cultural content balanced with the AR technology

Worst: N/A

Visuals and Supporting Materials

a) **Visuals (e.g. screenshots, videos) YES**

https://youtu.be/VuzDfe9wvZc?si=kcUFZQLbgevNruxF

b) Supporting Documents (e.g. brochures) YES (on site)

ii. Virtual Reality (VR)

General information:

- Name/title: **BRIXIA Time Machine – ART GLASS Experience**
- Location: **UNESCO Site City of Brescia (Brescia Musei) – Lombardy, Italy**
- Industry sector (NACE class. 2-digit):
- Date of implementation: **2015**
- Contact information:

Fondazione Brescia Musei
+39 030 8174200 | segreteria@bresciamusei.com bresciamusei@pec.bresciamusei.com

Description

a) Technologies: Virtual Reality + Augmented Reality | The smartglasses used for the project are the ergonomic and durable Epson Moverio BT-350 smartglasses, designed to be worn by a large number of visitors, even with prescription glasses, whose 720p HD display and high brightness ensure sharp images and vivid colours.

b) Description of implementation:

At the Unesco site of Brescia, it is possible to experience time travel by wearing Epson Moverio augmented reality glasses. The application introduces for the first time spherical virtual reconstructions inside an AR visor, allowing the user to see the current reality superimposed on the reconstruction of the past. Three augmented reality paths that Fondazione Brescia Musei has been activating since 2015, together with Capitale Cultura Group, with a view to enhancing and researching new ways of narrating the heritage of which it is the custodian.

Augmented reality integrates what the visitor sees through the smartglasses with a virtual image, geo-referencing the location and superimposing on the architectural remains or monumental buildings being observed what they might have looked like originally. The virtual reconstruction thus becomes an aid for the visitor to improve his or her understanding of the site. The Museums of Brescia are therefore today the first museum system in Italy to use this technology in the cultural sphere, with no less than four augmented reality tours available to visitors.

https://www.bresciamusei.com/progetto/la-tecnologia-al-servizio-della-storia-tour-in-realta-aumentata/

c) **Stakeholders involved:** technology developers and software engineers, museum curators and archaeologists, museum management and administration, funding bodies/grant agencies, national and local authorities, cultural heritage organisations /advisory boards, visitors/users

d) **Target Audience:** tourists, students and educators, families, history enthusiasts, researchers and academics, technology users

Outcomes and Impact

a) **Key outcomes (e.g. engagement):** enhancing visitor experience, improved learning and understanding, enhanced accessibility, preservation and conservation

b) **Number of visitors (yearly avg)** not obtainable separately from the overall visitor numbers of the museum system or individual museum: approx 5.000+ monthly

c) **User satisfaction ratings** (yearly avg) 4.7 out of 5 (Facebook reviews)

d) **Comparison with before AT** implementation (if available) N/A

e) **Testimonials, if applicable** (best and worst) (example: google reviews etc.) N/A

Visuals and Supporting Materials

a) **Visuals (e.g. screenshots, videos) YES**

https://youtu.be/-165d7chLg0?si=m7HdafcNkRZuSb3x

https://fb.watch/uPLzfEYSch/

b) **Supporting Documents (e.g. brochures) YES (online and on site)**

https://www.assowebtv.com/wp-content/uploads/2022/08/Flyer-Fondazione-Brescia-Musei_no-crocini.pdf

iii. Chatbots

General information:

- Name/title: NOVITY Chatboots
- Location: Comune di Sirmione, Garda lake (BS) – Lombardy, Italy
- Industry sector (NACE class. 2-digit):
- Date of implementation: June 2024
- Contact information:

Novity -
+39 030 7870302 | info@novity.it
business@novity.it

Description

a) **Technologies:** Chatboot based on AI

b) **Description of implementation:**

Novity favours and simplifies the tourist experience in Sirmione by implementing the website with an AI chatbot, the first on Lake Garda and among the first in Italy. This virtual assistant, active on the visitsirmione.com portal, significantly improves interaction with the flow of tourists and the population of Sirmione, offering support in over 80 languages and consolidating the site as a fundamental reference point for visitors. The chatbot, named Maria in honour of Maria Callas, is operational 24 hours a day, and provides immediate answers and accurate logistical and cultural details, exploiting an extensive database of content verified by the municipality. The integration of AI into the site has enabled smoother and more attainable interaction, significantly improving the accessibility of information for a wide international audience.

https://novity.it/works/lintelligenza-artificiale-al-servizio-del-turismo/
https://novity.it/blog/vi-presentiamo-maria-la-chatbot-del-sito-di-sirmione-turismo/

c) **Stakeholders involved:** developers and engineers, tourism industry stakeholders, end users (tourists), content providers, regulatory bodies (government agencies or organisations), marketing teams, customer support teams

d) **Target Audience: travellers** and tourists, travel agencies and tour operator, families planning vacations, travel enthusiasts, business travellers , sustainable travellers

Outcomes and Impact

a) **Key outcomes** (e.g. engagement): enhanced user experience such as personalised recommendations, real-time information and multilingual support and increased inquires, booking and planning efficiency

b) **Number of visitors** (yearly avg) N/A

c) **User satisfaction ratings** (yearly avg) N/A

d) **Comparison with before AT implementation** (if available) N/A

e) **Testimonials, if applicable** (best and worst) (example: google reviews etc.) N/A

Difficulties in implementation of the technology, future Plans

a) **Difficulties in the introduction of technology .**

The introduction of AI chatbots in tourism faces several challenges, including technical limitations in understanding complex inquiries, data privacy concerns that deter users from sharing personal information, and integration difficulties with existing systems. User acceptance can be low, as individuals often prefer human interaction, compounded by cultural sensitivity issues leading to potential

misunderstandings. Additionally, ongoing maintenance and updates are necessary to keep chatbots effective, which can be both costly and time-consuming.

b) **Future development plans:** the success of this project has paved the way for future innovations, such as the integration of voice communication features or the connection with qualified external platforms offering services to the Municipality of Sirmione. Artificial intelligence is constantly improving through interactions with users, refining its ability to provide increasingly precise and comprehensive answers that effectively meet the real needs of visitors.

Visuals and Supporting Materials

a) **Visuals (e.g. screenshots, videos) N/A**

b) **Supporting Documents (e.g. brochures) YES**

https://novity.it/en/works/sirmione-turismo-portal-ui/

iv. Artificial Intelligence (AI)

General information:

- Name/title: **tabUi**
- Location: **National level (in expansion plan)**
- Industry sector (NACE class. 2-digit):
- Date of implementation: **2019**
- Contact information:

tabUi App-

+ 39 0173 216626 | info@tabui.app

https://tabuiapp.it/

Description

a) **Technologies:** Mobile App based on AI+AR

b) **Description of implementation:**

tabUi is one of the most widely used platforms in the tourism sector nationwide, and today it continues its run by evolving through a new look, the result of investments in studies and research. It is the tabUi App, born in the Langhe (Piedmont) with the aim of recommending routes, visits, monuments, museums, places, hotels and restaurants throughout Italy, now evolving with many innovative solutions such as, first and foremost, the use of artificial intelligence that will allow the user to personalise styles and preferences. Translation of texts into 32 languages and the development of the new augmented reality that will allow a more immersive experience. Finally, digital reconstructions of historical sites and conversational avatars. Through the app's camera it can recognise points of interest around, by looking at a castle on a hill and framing it with the app user can learn its name, history and the shortest way to reach it as well in a city, tabUi gives the users the direction to reach a monument or a characteristic corner. Recently, tabUi has also forged important partnerships with major organisations such as the Ministry of Tourism by publishing content on ITALIA.IT thanks to the Turism Digital Hub project, Slow Food, becoming the official app of events such as Terra Madre, Slow Wine, Slow Fish and Cheese. It also collaborates with Moby, Satispay, Salone del Camper di Parma.

https://tabuiapp.it/

c) **Stakeholders involved:** developers and engineers, tourism industry stakeholders, end users (tourists), content providers, regulatory bodies (government agencies or organisations), marketing teams, customer support teams

d) **Target Audience: travellers** and tourists, travel agencies and tour operator, destination marketing organisations , hospitality providers, local businesses, travel enthusiasts, business travellers , sustainable travellers

Outcomes and Impact

a) **Key outcomes** (e.g. engagement): enhanced visitor experience, efficient communication and support, improved safety and security measures (overtourism)

b) **Number of visitors** (yearly avg) 110.000+ users

c) **User satisfaction ratings** (yearly avg)

4.3 out of 5 on Apple store

3.9 out of 5 on Google Play

d) **Comparison with before AT implementation** (if available) N/A

e) **Testimonials,** if applicable (best and worst) (example: google reviews etc.) N/A

Best: very useful and well done but above all the technical support from the developers was very fast and impeccable.

Worst: some update problems, some functions becoming too complicated.

Difficulties in implementation of the technology, future Plans

a) **Difficulties in the introduction of technology** The launch of an AI app for city tourism encounters several obstacles, such as user scepticism towards technology, data privacy issues, and the need for smooth integration with current tourism systems. Moreover, it must navigate cultural sensitivities, maintain technical reliability across diverse settings, and manage substantial development and upkeep costs. Competing with established services, adhering to regulations, overcoming language barriers for international users, and providing an intuitive user experience are also critical for encouraging widespread adoption.

b) **Future development plans.** Future plans for the AI app include enhancing personalization of services through user data analysis, partnering with National authorities and local businesses for exclusive deals, expanding features to include augmented reality experiences, and improving user engagement via feedback loops. tabUi is also evolving with many innovative solutions such as the development of the new augmented reality that will allow a more immersive experience, translation of texts into 32 languages and the expansion of services to international areas.

Visuals and Supporting Materials

a) **Visuals (e.g. screenshots, videos) YES**

https://www.tabui.app/it/press

https://youtu.be/xacblE1Med8

https://youtu.be/9rWUinjiMHY

b) **Supporting Documents (e.g. brochures) N/A**

v. Internet of Things (IoT)

General information:

- **Name/title:** AVVENIA - WEACT3 Project – Smart Museum
- **Location:** Museum of Palazzo Barberini - Rome
- **Industry sector** (NACE class. 2-digit):
- **Date of implementation:** December 2018
- **Contact information:**
  gan-aar.comunicazione@cultura.gov.it
  https://www.weact3.it/ | info@weact3.it

Description

a) **Technologies:** Internet of things platform managed by Ericsonn

b) **Description of implementation:**

Thanks to Avvenia's technology, the Palazzo Barberini museum has become a 'smart museum': the innovative wi-fi micro-sensor system installed by Avvenia, in fact, allows accurate environmental monitoring of the museum building to reduce energy use, safeguard the delicate artistic heritage and improve visitor enjoyment. 'Through the installation of five wi-fi sensors that are non-invasive both visually and in terms of installation since there is no cabling in the halls of the Galleries, monitoring was carried out for six months to measure a number of environmental variables such as temperature, carbon dioxide emissions, lighting, humidity, heat and visitor attendance. The study and analysis of the data and parameters fed into an IoT, Internet of things, platform provided by Ericsson makes it possible, in real time, to intervene directly on the lighting and air conditioning systems to create ideal conditions inside the rooms that do not damage the works and improve the visitors' experience. With this intervention, Avvenia contributes to the creation of a true 'intelligent museum', able to change its set-up thanks to the best available technologies, reduce energy consumption by 20%, and create the conditions to host, from time to time, valuable works and collections coming from other structures, but which may need special care for their public display'. For the museum and its visitors, this is an added value: more environmental comfort, better lighting of the rooms and works, and the savings obtained to be allocated to resources for other museum activities.

https://youtu.be/Z0mukQ4wjCk

c) **Stakeholders** involved: technology developers and software engineers. museum management and administration, IT department, funding bodies/sponsors. regulatory authorities, European, national and local authorities,

d) **Target Audience:** Tourists and visitors, Students and Educators, Families, History Enthusiasts, Researchers and Academics, Technology Users

Outcomes and Impact

a) **Key outcomes** (e.g. engagement):

enhanced visitor experience, improved operational efficiency, enhanced security measures, sustainable practices, interactive learning opportunities,

b) **Number of visitors** (yearly avg) 85.000+ (annual museum visitors 2023)

c) **User satisfaction ratings** (yearly avg) 4.6 out of 5 - Google

d) **Comparison with before AT implementation** (if available) N/A

e) **Testimonials**, if applicable (best and worst) (example: google reviews etc.) N/A
not applicable to the IoT system

Difficulties in implementation of the technology, future Plans

a) **Difficulties in the introduction of technology:** Introducing IoT systems in art museums presents several challenges, including the need for advanced technical infrastructure, concerns over data security and privacy, significant financial costs for implementation and maintenance, resistance from staff towards new technologies, interoperability issues between different devices, and the ongoing requirement for reliable maintenance and support. These factors can complicate the integration of IoT into existing

museum operations, hindering potential advancements in visitor engagement and operational efficiency.

b) **Future development plans:** The future plans for applying Internet of Things (IoT) systems in an art museum include implementing smart exhibit management to monitor and preserve artworks, enhancing visitor experiences through personalised interactive mobile tours, and ensuring real-time asset tracking for improved security and logistics. Additionally, predictive maintenance will optimise infrastructure upkeep, data-driven insights will tailor future exhibitions by analysing visitor behaviour , and integrating augmented reality will create immersive experiences for enhanced interaction with art and history.

Visuals and Supporting Materials

a) **Visuals (e.g. screenshots, videos) YES**

https://youtu.be/Z0mukQ4wjCk

b) **Supporting Documents (e.g. brochures) YES**

II. Country: Portugal

Partner: ISCTE-IUL

1. **Evaluate the level of experience with innovative technology in the industrial tourism in your country (1 - very low, 5 - very high)**

   1 2 3 4 5

2. **Name five different innovative technologies used in the tourism sector in your country**
   i. Light experience
   ii. Virtual Reality (VR)
   iii. 4D Virtual Lab
   iv. Robots
   v. Robots

3. **For each of the mentioned innovative technologies, give one example in your country and explain it in detail according to the given parameters**

i. Light experience

General information:

- **Name/title:** Centro Ciência Viva do Lousal
- **Location:** Lousal, Portugal
- **Industry sector (NACE class. 2-digit):** 91
- **Date of implementation:** June 30th, 2010
- **Contact information:** Avenida Frédéric Velge, 7570-006, Lousal, Portugal, info@lousal.cienciaviva.pt

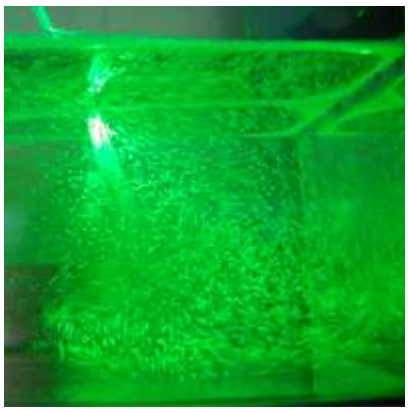
Description

a) **Technologies used:** Besides the use of interactive panels, the core technology is related to the use of light. They also have a space and a telescope to detect the muons.

b) **Description of implementation:** Several experiences are offered. The first is "Playing with light", white light, which comes from the Sun or other stars, is made up of many colours , which we can see in the rainbow. However, our eyes only detect a very small part of the Electromagnetic Radiation Spectrum, which we call “visible light”. There are therefore many other “lights” that we can't see. Light is made up of particles, photons. But it is also propagated by waves. These two characteristics of light never appear at the same time. They are like two sides of a coin. The second is "Detecting hidden ores", today we are able to locate ores located deep in the crust, due to the anomalies they cause in the physical properties of the Earth's crust. In the Pyrite Belt we are looking for large masses of very dense ores, which generate

anomalies in the local value of gravity. Geology shows us where the ore may be; gravimetry shows if there is a dense body hidden at depth. The third is "Guiding light", with optical fibres it is possible to bend, conduct and guide light through long and winding paths. The concept of optical fibres is so simple that it can be illustrated with a jet of liquid: reflections on the inner walls of the jet prevent light from escaping the liquid optical fibre, ensuring the guided propagation of light. The fourth is "Light hose", the development of science and technology has made laser light an essential tool of the 21st century. Using optical fibres, it is now possible to observe places that are very difficult to access. Through a small hole we can, for example, see inside a cavity or a piece of equipment, find something lost, or even look inside our bodies.

Picture 1: Experience with light



Source: https://lousal.cienciaviva.pt/centro-ciencia-viva-do-lousal/

Picture 2: Telescope to see muons

Source: https://pages.lip.pt/loumu/no-lousal-2/

c) **Stakeholders involved:** Municipality of Grândola, Ciência Viva - National Agency for Scientific and Technological Culture, the Faculty of Sciences of the University of Lisbon, SAPEC Parques Industriais and Costaterra, Lda.

d) **Target Audience:** Its mission is to promote active citizenship based on scientific knowledge. To this end, it targets an audience interested in science, focusing on schools, families and groups of companies.

Outcomes and Impact

a) **Key outcomes (e.g. engagement)**
b) **Number of visitors (yearly avg)**
195 000 since 2010
c) **User satisfaction ratings (yearly avg)** 4.5 (Trip Advisor)
d) **Comparison with before AT implementation (if available)** N/A
e) **Testimonials, if applicable (best and worst) (example: google reviews etc.)**

Best:

1. The Ciência Viva events in Lousal are always spectacular, as they are like practical lessons with a tutor. You learn a lot about the social and professional way of life of the former mine workers, as well as seeing the disastrous results for the environment of abandoning the mines without environmental or health concerns. (August, 2022)

Worst:

1. Well, it could have been funny but it was just ... strange, let's say... We went in and got a bit lost... Then a guy came up and gave us a hurried introduction and then disappeared in good Ninja style!!! We stood there testing things, some of which we didn't really know what they were... others didn't work or were damaged... . (September, 2019).
2. We enjoyed doing the visit, but we thought it could be adopted by the group, all the families had children between 6 and 10 years old and the visit was made for adults with knowledge of science. There is a lack of elasticity to adapt to the group's reality. (September, 2021).

Difficulties in implementation of the technology, future Plans

a) Difficulties in the introduction of technology

The funding was supported by several projects' funding and with the help of academic, so there were no difficulties.

b) Future development plans

The entity envisions promoting education and scientific culture as drivers of sustainable development. This initiative aims to foster a society empowered by knowledge and scientific literacy, enabling citizens to thrive in a rapidly evolving global landscape marked by climate, social, energy, and technological transformations.

Visuals and Supporting Materials

a) Visuals (e.g. screenshots, videos) YES

The website for the Centro Ciência Viva do Lousal has a clean and modern design with a predominantly white background and a straightforward layout. It features:

Large, high-quality images: Showcasing the museum's exhibits and the surrounding environment, creating a visually appealing experience.

Clear and concise text: Providing information about the museum, its offerings, and visiting details in a readable and accessible manner.

Easy navigation: With a menu bar at the top and clear links throughout the site, allowing visitors to easily find the information they need.

Social media integration: With links to the museum's Facebook and Instagram pages, encouraging visitors to connect and share their experiences.

(https://www.youtube.com/watch?v=6jZ4GXNc-R8)

b) Supporting Documents (e.g. brochures) YES

(https://lousal.cienciaviva.pt/centro-ciencia-viva-do-lousal/)

ii. Virtual Reality

General information:

- **Name/title:** Museu de Portimão
- **Location:** Portimão, Portugal
- **Industry sector (NACE class. 2-digit):** 91
- **Date of implementation:** May 17th, 2008
- **Contact information:** Rua D. Carlos I Zona Ribeirinha, 8500-607 Portimão, Portugal. museu@cm-portimao.pt

Description

a) **Technologies used:** Uses an APP that can be downloaded from the APP store. Offers experiences with 360º images and VR glasses

b) **Description of implementation:** The Portimão Museum offers a multi-faceted technological experience for visitors. A multimedia guide provides a tour in five languages (Portuguese, Spanish, English, French, and German) with audio descriptions, image galleries, video, and augmented reality features to highlight key exhibits. A virtual reality (VR) application using 360º images and VR glasses allows visitors to simulate a visit and access restricted areas like the cistern. Additionally, the museum offers unique drone tours providing aerial perspectives of the museum spaces.

Picture 1: VR visit

Source: https://www.museudeportimao.pt/museu-em-casa/visitas-virtuais

Picture 2: VR image with a virtual drone

Source: https://www.museudeportimao.pt/museu-em-casa/visitas-virtuais

c) **Stakeholders involved:** Municipality of Portimão, an informal group 'Friends of Portimão Museum', two local hotels and one restaurant as sponsors.

d) **Target Audience:** The Portimão Museum has contributed to the region's tourism offerings. Its year-round appeal helps to counterbalance seasonal tourism trends by providing a consistent and engaging experience for visitors. Besides tourists, it targets school groups, families and groups from companies.

Outcomes and Impact

a) **Key outcomes (e.g. engagement):** Strong community support. There is even a Friends of the Museum group, which promotes the site and organises events to make it more dynamic.

b) **Number of visitors (yearly avg)**

1.033.820 since 2008

c) **User satisfaction ratings (yearly avg)** 4.5 (Trip Advisor), 4.6 (Google)

d) **Comparison with before AT implementation (if available)** The creation of the Portimão Museum APP has made it possible to: (i) increase the quantity, quality and diversity of the dynamic and adaptable content offered to visitors, allowing it to be constantly updated with new scientific data; (ii) Make information available in different languages so that it can now be understood by the largest number of visitors, thus increasing visitor satisfaction; (iii) Ensuring accessibility and understanding of the different contents of the exhibitions through multimedia content and voice-overs in different languages; (iv) Ensuring that the content is tailored to the interests of visitors. The implementation of this project is considered an essential tool for the present and future qualification of this extremely important tourist asset, improving the visitor experience and reaffirming and cementing the quality of the tourist destination.

e) **Testimonials,** if applicable (best and worst) (example: google reviews etc.)

Best:

1. If you like to learn a bit about the history of the places you visit, this is the place for you in Portimão. The museum tells more than just the history of fishing and navigation; it tells the history of the city itself, as well as temporary exhibitions that are very well put together. (August, 2023)

2. Very interesting museum, briefly portraying the evolution of the region and its people. We especially liked the exhibition on the canned sardine factory - well worth a visit. A must when visiting Portimão. (September, 2023).

Worst: None

Difficulties in implementation of the technology, future Plans

a) **Difficulties in the introduction of technology**

Nothing to report.

b) **Future development plans**

The museum is expanding its offering by developing projects related to local culture. For example, "A Nossa Cultura sai à Rua" and the ‘Mostra de Artes e Sabores da Nossa Terra’ initiatives in Mexilhoeira Grande are annual events that celebrate and promote the knowledge, techniques, and traditions behind the parish's rural activities. They showcase local products, artistic expressions, and musical performances, serving as a bridge between the community and its cultural heritage. By highlighting

traditional production methods in agriculture, seafood, gastronomy, and handicrafts, these initiatives aim to prevent the extinction of these activities, ensuring their sustainability and promoting them as valuable cultural and heritage resources. In another example, Portimão Museum has scheduled open days at the Companheira Cave, aiming to show traces of Middle Paleolithic occupations collected as a result of ongoing archaeological excavations led by researchers from the University of the Algarve (UAlg).

Visuals and Supporting Materials

a) Visuals (e.g. screenshots, videos) YES

The Museu de Portimão website has a visually appealing and modern design. It features a predominantly white background with black text, creating a clean and easily readable layout. High-quality images are prominently displayed, showcasing the museum's exhibits and architecture. The website also incorporates subtle animations and transitions, adding a dynamic element to the user experience. The layout is well-organised with clear navigation menus, making it easy for visitors to find information. Overall, the website presents a professional and engaging aesthetic that effectively represents the museum's content and brand.

(https://www.facebook.com/museudeportimao/?locale=pt_PT)

b) Supporting Documents (e.g. brochures) YES

(https://lousal.cienciaviva.pt/centro-ciencia-viva-do-lousal/)

iii. 4D Virtual Lab

General information:

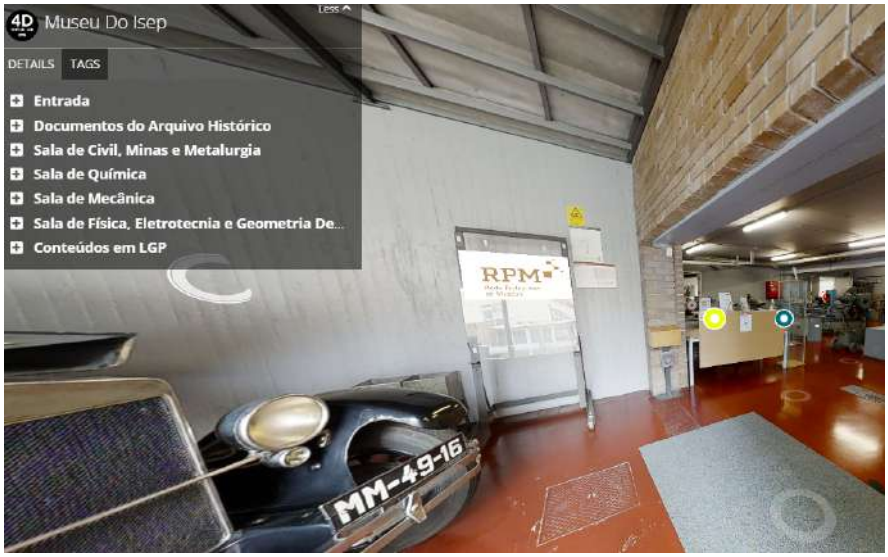
- **Name/title:** Museu do Instituto Superior de Engenharia do Porto
- **Location:** Porto, Portugal
- **Industry sector (NACE class. 2-digit):** 91
- **Date of implementation:** 1999
- **Contact information:** Rua Dr. António Bernardino de Almeida, nº 431, 4249-015 Porto, Portugal. museu@isep.ipp.pt

Description

a) **Technologies used:** Uses Matterport Immersive 4D Media technology

b) **Description of implementation:** Matterport's Immersive 4D Media technology offers a compelling way to experience spaces virtually. It goes beyond static 360° views by capturing the spatial data of a location with specialised cameras, creating a realistic and navigable digital twin. This "4D" experience allows users to virtually walk through a space, explore details, and even take measurements, making it a valuable tool for industries like real estate, construction, and hospitality. This immersive technology can be particularly useful for industrial tourism, offering virtual tours of factories, mines, or other industrial sites, enhancing accessibility and providing engaging experiences for those who may not be able to physically visit the locations.

Picture 1: 4D Virtual tool visualisation



Source: https://virtual-tours.4dvirtual-lab.com/show/?m=NMK6QS3RuDf&mpu=908

c) **Stakeholders involved:** Rede Portuguesa de Museus (Portuguese Museum Network), Porto Polytechnique Institute.
d) **Target Audience:** The main target are schools groups and science researchers.

Outcomes and Impact

a) **Key outcomes (e.g. engagement):** Its growing recognition allowed them to be part of the Portuguese Museum Network.
b) **Number of visitors (yearly avg): n**ot available
c) **User satisfaction ratings (yearly avg)** 4.5 (Google)
d) **Comparison with before AT implementation (if available)** Not available
e) **Testimonials,** if applicable (best and worst) (example: google reviews etc.): not available

Difficulties in implementation of the technology, future Plans

a) **Difficulties in the introduction of technology:** Nothing to report.
b) **Future development plans**

There's an effort to show a more dynamic museum. As such, several activities are being programmed. For example, to foster interest in engineering, the Physics Department has curated a series of interactive scientific experiments designed to demonstrate physical concepts in a playful and engaging manner.

Visuals and Supporting Materials

a) **Visuals (e.g. screenshots, videos) YES**

The Museu ISEP website (https://www2.isep.ipp.pt/museu/) has a somewhat dated design, reminiscent of early 2000s web aesthetics. It features:

- A busy layout: The homepage presents a dense block of text with limited visual breaks. This can make it challenging for visitors to quickly find the information they need.
- Low-resolution images: The images showcasing the museum's collection are small and low-resolution, which detracts from the visual appeal and makes it difficult to appreciate the details of the exhibits.
- Limited use of colour: The website primarily uses a blue and white colour scheme, which can appear somewhat bland and unengaging.
- Basic navigation: The navigation menu is functional but basic, lacking visual cues or interactive elements to guide visitors through the site.
- Outdated design elements: The website incorporates design elements that are now considered outdated, such as the use of frames and a lack of responsive design for mobile devices.

b) **Supporting Documents (e.g. brochures)** No

iv. Robots

General information:

- **Name/title:** Yotel Porto
- **Location:** Porto, Portugal
- **Industry sector (NACE class. 2-digit):** 55
- **Date of implementation:** 2021
- **Contact information:** Rua de Gonçalo Cristóvão 206, 4000-265 Porto, Portugal. por.reservations@yotel.com

Description

a) **Technologies used:** Room Service Robots: In some locations, such as Yotel Porto, robots like "Yolinda" and "Yogiro" provide room service, delivering snacks and drinks to guest rooms.

b) **Description of implementation:** Yotel Porto uses autonomous mobile robots for delivering room service items to guests. These robots are designed to navigate the hotel environment, including using elevators, to reach guest rooms and deliver items like towels, drinks, or snacks. Guests can order these items through the Yotel app, and the robot will bring them directly to their door. The robots used in Yotel Porto are likely similar to those used in other Yotel locations, such as the ones named "Yolanda" and "Yogiro" mentioned in an article about the hotel. These robots are described as having three shelves, a small screen, and the ability to speak, sing, and provide personalised room service. They are seen as mascots within the hotel and contribute to the unique, technology-driven experience Yotel offers.
Other technologies: 1. Self-Service Kiosks: For a quicker and more efficient check-in and check-out process, Yotel utilises self-service kiosks. 2. Mobile App: Yotel's mobile app offers a range of features, including: Mobile Check-in/Check-out; Room Key: The app can act as a digital key, allowing guests to unlock their rooms with their smartphones; Smart Room Controls: Guests can control various aspects of their room (lighting, temperature, etc.) directly from the app; Concierge Services: Guests can request services, book amenities, and communicate with hotel staff through the app. 3. Smart Room Technology: Yotel incorporates smart technology within the rooms themselves, such as: Mood lighting: Adjustable lighting to suit guests' preferences; Smart TVs: With streaming services and entertainment options; High-speed Wi-Fi.

Picture 1: Room Service Robot

Source: https://www.yotel.com/pt-pt/hotels/yotel-porto

c) **Stakeholders involved:** Guests, hotel staff and technology providers.

d) **Target Audience:** Yotel Porto primarily targets budget-conscious travellers seeking modern and efficient accommodation in a central location. They appeal to tech-savvy guests who appreciate innovative amenities like self-service kiosks and robot delivery. The hotel's focus on functional spaces and social areas also makes it attractive to business travellers and digital nomads.

Outcomes and Impact

a) **Key outcomes (e.g. engagement):** Yotel Porto has achieved several key outcomes since its opening. 50% more keys in the same square footage/meters than any traditional hotel: +40% stabilised NOI, +25% leveraged IRR. Furthermore, it has successfully positioned itself as a tech-forward and affordable hotel option in Porto's city centre, attracting a mix of leisure and business travellers . The implementation of service robots has enhanced operational efficiency and generated positive publicity, reinforcing the hotel's innovative image. Despite the challenges posed by the pandemic, Yotel Porto has managed to maintain high occupancy rates and receive positive guest reviews, particularly praising its cleanliness, comfortable cabins, and central location. This success can be attributed to its focus on providing a streamlined and modern guest experience with a strong emphasis on technology and value.

b) **Number of visitors (yearly avg)**

Estimated to be 50000

c) **User satisfaction ratings (yearly avg)** 4.4 (Google) 4,5 (Tripadvisor)

d) **Comparison with before AT implementation (if available)** Not available

e) **Testimonials, if applicable (best and worst) (example: google reviews etc.)**

Positive

Modern and comfortable room. Wonderful bed. 100% cleanliness. Spacious shower area. My daughter liked being able to choose the colours and intensity of the lighting in the room. We were a family, a

couple and 2 children, but there was no room to accommodate everyone, so we used 2 bedrooms. (Jul 2023)

Small room but very well decorated and comfortable, with all the necessary requirements. The bed was particularly comfortable. Complimentary mineral water available. Breakfast well served. (Nov 2022)

Negative

Our first impression of the hotel was completely positive, from the service to the friendliness, appearance and quality of the hotel itself. However, given that our stay was just one night and we couldn't rest, it fell short of our expectations. In the middle of the night, we encountered a very annoying noise that prevented us from falling asleep, and believe me, we tried. (We checked and found it to be a defect in the window, which was poorly sealed, causing it to whistle loudly in the wind. (Jan 2024)

Difficulties in implementation of the technology, future Plans

a) Difficulties in the introduction of technology

While Yotel Porto has successfully implemented various technologies, some challenges have been reported. Guests have occasionally experienced difficulties with the robot delivery service, such as robots getting lost or encountering obstacles. The reliance on self-service kiosks for check-in and other requests can also be frustrating for guests who prefer human interaction or require assistance. Additionally, ensuring seamless integration and maintenance of various technologies, including the mobile app, in-room controls, and robot functionalities, can be complex and require ongoing investment.

b) Future development plans

Over recent years, the hospitality industry has seen great change, with many operators switching from asset-heavy to asset-light business models and the emergence of players within the shared economy such as Airbnb. YOTEL's strategy has always been to be asset-light and to work with long-term third-party investors who value the YOTEL brand, culture and its unique product. YOTEL will continue to disrupt the market and focus not only on delivering smart design and experiences, but also smart investment and development opportunities for our partners.

Visuals and Supporting Materials

a) Visuals (e.g. screenshots, videos) YES

Yotel Porto's communication visuals are sleek, modern, and minimalist, reflecting the hotel's overall tech-forward aesthetic. They utilise a predominantly purple and white colour scheme in their branding, website, and app. Bold typography and clean lines create a contemporary feel. Visuals often feature images of their signature robot and stylish cabin interiors, emphasising their unique offerings. Their communication style is concise and informative, prioritising clarity and a user-friendly experience.

b) Supporting Documents (e.g. brochures) Yes

https://www.instagram.com/yotel/?hl=en

v. Robots

General information:

- **Name/title:** Hotel Evolution
- **Location:** Lisboa, Portugal
- **Industry sector (NACE class. 2-digit):** 55
- **Date of implementation:** Jan 2015
- **Contact information:** Praça Duque de Saldanha 4, 1050-094 Lisboa, Portugal. hello.lisboa@evolution-hotels.com

Description

a) **Technologies used:** Room Service Robots: In some locations, such as Yotel Porto, robots like "Yolinda" and "Yogiro" provide room service, delivering snacks and drinks to guest rooms.

b) **Description of implementation:** Evolution Hotel Saldanha in Lisbon is described as a "tech-savvy" and modern hotel, and this is reflected in the technologies they utilise : Self-check-in kiosks: Guests can use these to receive their E-Key card, providing access to their room and other hotel facilities. ; E-Key system: This keyless entry system uses a digital key card on the guest's smartphone or a provided E-Key card; iMac corner: A dedicated space in the lobby with iMac computers for guest use; Co-working space: Equipped with technology to support both work and leisure activities, including a laptop desk; In-room multimedia solutions; 24/7 Wellbeing by SAYANNA facilities.

Picture 1: E-Kiosk for check-in

Source: https://vieirasantos.com/evolution-lisboa-conheca-o-hotel-mais-tecnologico-de-portugal/

c) **Stakeholders involved:** Guests, investors, hotel staff and technology providers.
d) **Target Audience:** Evolution Hotel Saldanha primarily targets modern, tech-savvy travellers who value convenience, flexibility, and personalised experiences. This includes business travellers seeking efficient and connected spaces, as well as leisure travellers who appreciate 24/7 access to wellness facilities and digital amenities.

Outcomes and Impact

a) **Key outcomes (e.g. engagement):** Evolution Hotel Saldanha in Lisbon reports key outcomes focused on guest satisfaction, operational efficiency, and sustainability. They highlight high guest satisfaction scores, achieved through personalised service and innovative technology like their self-service Wellbeing area. They also emphasise operational efficiency, using technology to streamline processes like check-in and room access. Finally, they are committed to sustainability, implementing practices to reduce their environmental impact and promote responsible tourism.
b) **Number of visitors (yearly avg)** Estimated to be 35000
c) **User satisfaction ratings (yearly avg)** 4.4 (Google) 4,5 (Tripadvisor)
d) **Comparison with before AT implementation (if available)** Not available
e) **Testimonials, if applicable (best and worst) (example: google reviews etc.)**

Positive

This hotel is sensational! We loved staying there! Very modern, fun and super upbeat! As soon as we checked in, we felt a wonderful energy! Music, exotic, colourful lighting, and we were already in the mood!

Extremely modern, comfortable and unlike anything we've seen in Europe! I highly recommend this hotel. (Feb 2023)

The room overlooked Saldanha, which is fantastic at night. The king size bed is really big and super comfortable. Both at check-in and check-out, I was extremely well received, even despite the late check-in time. (Nov 2023)

Negative

We're not interested in pillows here or there, how we get from our room to the street and vice versa, what we are interested in is the comfort of our room, and comfort inside the rooms Evolution can't offer, it's as simple as that. (Dec 2023)

Difficulties in implementation of the technology, future Plans

a) Difficulties in the introduction of technology

While Evolution Hotel Saldanha embraces technology, they've publicly acknowledged the challenge of balancing innovation with human interaction. Specifically, they highlight the potential difficulty in ensuring their technologically-driven services, like the self-service Wellbeing area, don't overshadow the importance of personal connections with guests. They strive to find the right mix of technology and human touch to enhance the overall guest experience.

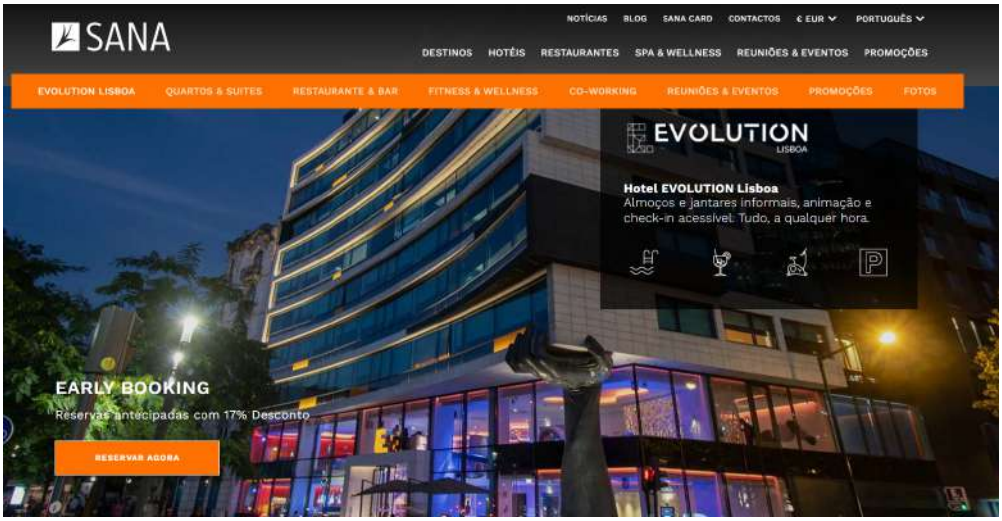
b) Future development plans

Unfortunately, specific future development plans for Evolution Hotel Saldanha in Lisbon are not publicly available. While SANA Hotels, the group that owns Evolution, is known for innovation and expansion (as seen with their new Evolution hotel in Estoril), no concrete information about renovations, expansions, or new technological implementations at the Saldanha location has been officially announced.

Visuals and Supporting Materials

a) Visuals (e.g. screenshots, videos) YES

Evolution Hotel Saldanha's website uses bold visuals with high-resolution photos showcasing its modern design and amenities. The colour scheme is vibrant, with splashes of yellow and blue against a predominantly white background. The layout is clean and uncluttered, emphasising large images and concise text. The website effectively conveys the hotel's trendy, tech-forward, and wellness-oriented atmosphere, targeting a younger, design-conscious traveller .



b) Supporting Documents (e.g. brochures) No

III. Country: Spain - Catalunya

Partner: Industrial Tourism Network of Catalonia, XATIC, Spain

1. Evaluate the level of experience with innovative technology in the industrial tourism in your country (1 - very low, 5 - very high)

1 2 3 **4** 5

3. Name five different innovative technologies used in the tourism sector in your country

i. Augmented Reality
ii. Virtual Reality
iii. Internet of things
iv. Gamification
v. Immersive experience

4. Examples of the used technology:

i. Augmented Reality - St. Joan

General information:

- **Name/title:** Estació de tractament d'aigua potable (ETAP) de Sant Joan Despí
- **Location:** Sant Joan Despí, Spain
- **Industry sector (NACE class. 2-digit):** 04
- **Date of implementation:** 2021
- **Contact information:** serveiseducatius@aiguesdebarcelona.cat

Description

a) Technologies used

Following the visit to the Sant Joan Despí Drinking Water Treatment Plant (ETAP), the largest in Catalonia, visitors are offered an educational tool focused on the urban water cycle, its environmental management, and the importance of water as a natural resource.

Students and teachers from upper primary, secondary education (ESO), high school (batxillerat), intermediate and advanced vocational training courses, as well as adults, can enjoy this experience.

This visit has the following features:

- Led by expert guides.
- Customized according to the students' grade level.
- Linked to the school curriculum.
- Includes interactive and experimental spaces.
- Free of charge and with gifts for all visitors.

b) Description of implementation:

Augmented Reality Experience to Learn About the Water We Drink

An augmented reality tour through the Sant Joan Despí plant.

Interactive displays at selected points of the facility allow visitors to see in three dimensions how each essential stage of the process works, access content about its operation, and engage in complementary educational activities to understand the challenges of sustainable water treatment.

c) Stakeholders involved:

Aigües de Barcelona (water company of Barcelona), academic institutions, tourism organisations, museum staff and curators, technology partners and VR providers, visitors and the general public, cultural heritage groups, etc.

d) Target Audience:

By integrating AR, the museum enhances the learning experience, making it more interactive and memorable and appealing to a wide audience, including tech-savvy visitors and those interested in history, industrial tourism and medicine.

Outcomes and Impact

a) **Key outcomes (e.g. engagement)**
b) **Number of visitors (yearly avg)** 100.000 Online in 2023
c) **User satisfaction ratings (yearly avg)** N/A
d) **Comparison with before AT implementation (if available)** N/A
e) **Testimonials, if applicable (best and worst) (example: google reviews etc.)** No

Difficulties in implementation of the technology, Future Plans

a) **Difficulties in the introduction of technology**

Technology, which quickly becomes obsolete and needs to be updated; staff training requirements etc.

b) **Future development plans**

Add more AR experiences.

Visuals and Supporting Materials

a) **Visuals (e.g. screenshots, videos)**

Picture 1: Implementation of AR in Estació de tractament d'aigua potable in Sant Joan Despí

Source: https://www.xatic.cat/ca/activitats/visita-virtual-lestacio-de-tractament-daigua-potable

b) **Supporting Documents (e.g. brochures) NO**

http://www.aiguesdebarcelona.cat/ca/web/web-aguas-de-barcelona/inicio

ii.	Virtual Reality - Igualada

General information:

- **Name/title:** Museu de la Pell d'Igualada
- **Location:** Igualada, Spain
- **Industry sector (NACE class. 2-digit):** 04
- **Date of implementation:** 2021

- **Contact information:** escalag@aj-igualada.net

Description

a) **Technologies used: 3d VR programs**
b) **Description of implementation:**

The digital experience is an adaptation of a physical exhibition that was originally displayed at the museum. It has been transformed into a digital format, allowing it to be viewed on the web and also downloaded for a more immersive experience using VR glasses.

c) **Stakeholders involved:** Academic institutions, tourism organisations, museum staff and curators, technology partners and VR providers, visitors and the general public, cultural heritage groups, etc.
d) **Target Audience:**

Technology enthusiasts: People interested in virtual reality and immersive digital experiences.
Museum lovers: Those who are passionate about cultural and educational content but may not have the opportunity to visit the physical exhibition.
Students and educators: Looking for innovative, interactive learning tools related to art, history, or the subject matter of the exhibition.
People with accessibility needs: Individuals who might not be able to attend in person but can engage with the exhibition online.
General public: Anyone interested in exploring art or museum content from the comfort of their home, without the need for specialised VR equipment.

Outcomes and Impact

a) **Key outcomes (e.g. engagement)**
b) **Number of visitors (yearly avg)** Online N/A
c) **User satisfaction ratings (yearly avg)** N/A
d) **Comparison with before AT implementation (if available)** N/A
e) **Testimonials, if applicable (best and worst) (example: google reviews etc.)**

Difficulties in implementation of the technology, future Plans

a) **Difficulties in the introduction of technology**

The digital experience is an adaptation of a physical exhibition that was originally displayed at the museum. Initially, it was designed as material to be viewed with VR glasses, but it was later adapted to

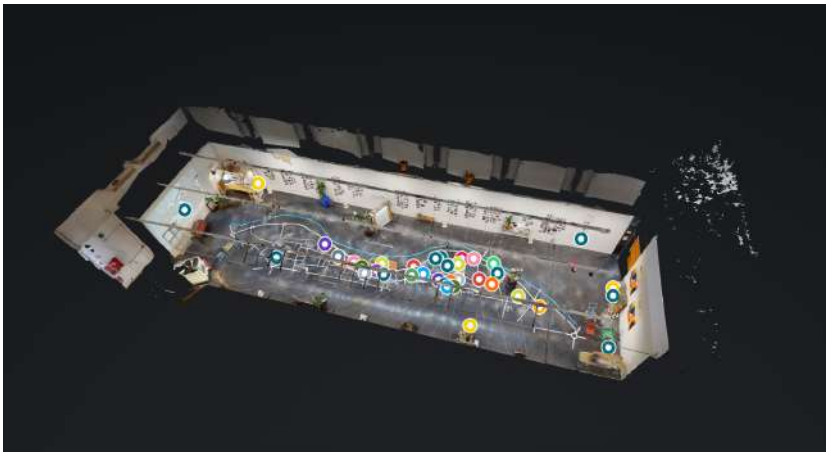
ensure it could be accessed more widely. Now, it can be explored both online via the web and downloaded for a more immersive experience using VR glasses.

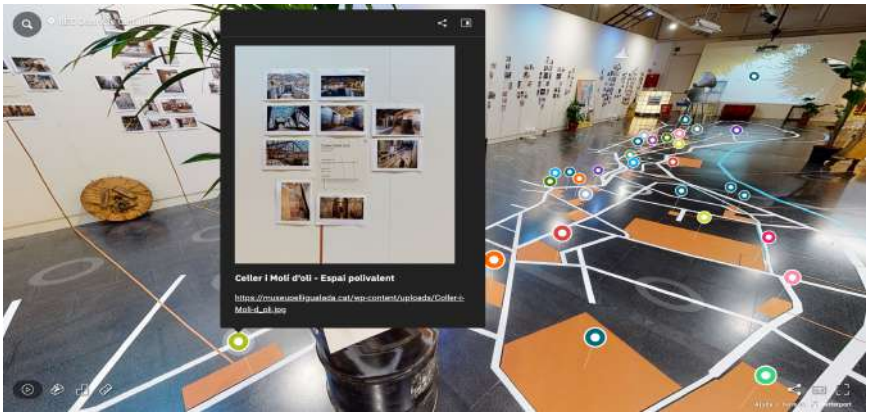
b) Future development plans

No future plans

Visuals and Supporting Materials

a) Visuals (e.g. screenshots, videos)





b) Supporting Documents (e.g. brochures)

https://museupelligualada.cat/

https://my.matterport.com/show/?m=55PcQZnhsVv

iii.	Internet of things - Cercs

General information

- **Name/title:** Webcams in Cercs
- **Location:** Cercs, Spain
- **Industry sector (NACE class. 2-digit):** 91-02
- **Date of implementation:** 2020
- **Contact information:** https://www.outdooractive.com/es/webcams/cercs/webcams-en-cercs/227980581/

Description

a) You can explore this beautiful region through the live webcams available here. Webcams are an invaluable tool for you, as they provide updated images 24 hours a day.

b) Description **of implementation:**

There are several webcams strategically located around Cercs that will allow you to follow the action in real time. From panoramic views to close-up shots, these live cameras capture the natural beauty and everyday life of this place.

c) Stakeholders **involved:**

Ajuntament de Cercs, museu de les mines de Cercs, academic institutions, tourism organisations , museum staff and curators, technology partners and VR providers, visitors and the general public, cultural heritage groups, etc.

d) Target Audience:

People Interested on real time weather conditions

Outcomes and Impact

a) **Key outcomes (e.g. engagement)**
b) **Number of visitors (yearly avg)** N/A
c) **User satisfaction ratings (yearly avg)** N/A
d) **Comparison with before AT implementation (if available)** N/A
e) **Testimonials, if applicable (best and worst) (example: google reviews etc.):** No

Difficulties in implementation of the technology, future Plans

a) **Difficulties in the introduction of technology**

Technology, which quickly becomes obsolete and needs to be updated; staff training requirements etc.

b) **Future development plans**

Add more webcams in different spots

Visuals and Supporting Materials

a) **Visuals (e.g. screenshots, videos)**

https://www.outdooractive.com/es/webcam/cercs-west/802540751/

b) Supporting Documents (e.g. brochures)

iv.	Gamification XATIC

General information:

- **Name/title:** El joc de la Bel. XATIC.
- **Location:** Capellades, Granollers, Igualada, Manresa, Montcada i Reixac, Palafrugell, Sant Joan de Vilatorrada, Terrassa
- **Industry sector (NACE class. 2-digit):** too much NACE inside the XATIC
- **Date of implementation:** 2022
- **Contact information:** pepi.martinez@terrassa.cat

Description

a) Technologies used:

Mobile application.

b) Description of implementation:

Bel and the Pieces of the Revolution is an ideal game for families with a curiosity about industrial heritage. Sometimes we think that things work because they do... and that's it. But we don't know that there are little things behind it that are essential for everything to work... Without the contribution of each piece, of each person, whether big or small, the great event of the 19th century in Catalonia would never have happened: the Industrial Revolution, which changed the social, economic and cultural landscape of our country.

c) Stakeholders involved: members of XATIC, museum staff, tourism staff, technology partners and VR providers, visitors and the general public, cultural heritage groups, etc.

d) Target Audience:

Families: Parents looking for educational games to play with their children.
Children and Teens: Young players interested in history and puzzles.
Educators: Teachers seeking interactive resources for lessons on industrial heritage.
History Enthusiasts: Individuals fascinated by the Industrial Revolution and its impact.
Tourists: Visitors to Catalonia interested in learning about local history.
Cultural Organisations : Museums or heritage sites looking for engaging materials for visitors.
Game Developers: Professionals in the gaming industry focused on educational content.
Community Groups: Local organisations promoting history and culture.

Outcomes and Impact

a) Key outcomes (e.g. engagement)

b) Number of visitors (yearly avg)

c) User satisfaction ratings (yearly avg) N/A

d) Comparison with before AT implementation (if available) N/A

e) Testimonials, if applicable (best and worst) (example: google reviews etc.)

Difficulties in implementation of the technology, future Plans

a) Difficulties in the introduction of technology

A member has left the network and somehow the app is out of date in that city.

b) Future development plans

If there are interested partners, the number of cities that are part of it can be expanded.

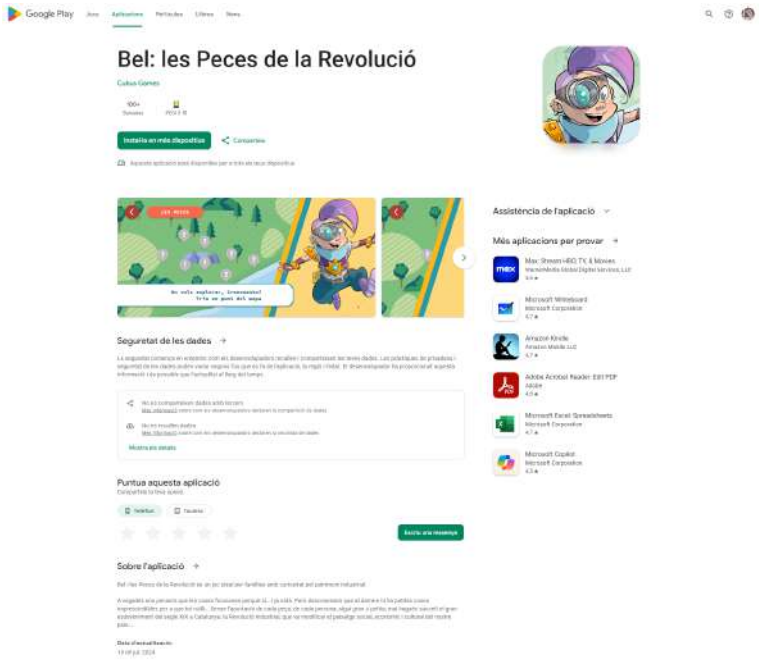
Visuals and Supporting Materials

a) Visuals (e.g. screenshots, videos)

b) Supporting Documents (e.g. brochures)

https://apps.apple.com/us/app/bel-les-peces-de-la-revoluci%C3%B3/id1660594657

https://play.google.com/store/apps/details?id=com.cubusgames.XATIC



v. Immersive experience

General information

- **Name/title:** La Tèrmica Roca Umbert de Granollers
- **Location:** Granollers, Catalonia, Spain
- **Industry sector (NACE class. 2-digit):** 132
- **Date of implementation:** 2023
- **Contact information:** latermica.cat, eprat@rocaumbert.cat

Description

a) Technologies used:

The entire audio-visual system is usually controlled via an iPad device.

This space also hosts artistic events, such as the work of Alba G. Corral, since the Central Térmica is part of an arts factory, establishing a direct connection with the created area and with the space of creation. of visual arts, the Arts Space.

Exterior of the Thermal Power Plant

The exterior facade of the Central offers a wide space for the realisation of mapping projections, taking into account the structural reliefs of the building. Despite the heritage value of the structure, the window was painted white to avoid visual interference, as its presence made it difficult to create content with a dark interruption in the middle of the projection. This projection system is also managed using an iPad device.

In short, the content is related to the content of the interior of the thermal, in order to encourage the view inside.

From November to March, the map is held every Saturday at 6.30 pm and 8 pm

This facade provides a square where various parties and activities specific to the Roca Umbert factory take place. One of the most popular is the Page Gregori camp, which gathers thousands of people over several days who come to see the floats of the pages and the kings, to see the bonfire that is made there and to walk around the space, full of stalls and activities for children. Approximately 2,000 people can pass through in an afternoon. This activity usually takes place on the 2nd, 3rd and 4th of January and is organised by the Culture Area of Granollers City Council.

Important: keep in mind that the map has a small projection window for the general public, since it is mainly from the time change and until mid-March that they can make projections.

Technical sheet: Audio-visual 3. Cathedral of energy (3 parents)

Technical description: Projection system: 6 Epson EB-PU2010B projectors placed on a platform to project to the three parents.

Technical resolution: Each projector has a resolution of 1920x1200 pixels. The theoretical maximum combined resolution would be 11,250x1200 pixels. However, due to overlaps between some projectors, the actual resolution is lower, approximately 9456x1200 pixels.

Overlap details: The difference between 11,250 and 9456 pixels corresponds to the pixels that are being lost in the areas where two projectors overlap. This means that instead of projecting single pixels, the same pixels are projected in duplicate in these areas, reducing the effective resolution.
Technical sheet: mapping on the facade
Technical description: Projection system: 2 Epson EB-PU2220B projectors placed on a platform inside prefabricated modules to project on the facade, one on the
Technical resolution: Each projector has a resolution of 1920x1200 pixels. The theoretical maximum combined resolution would be 11,250x1200 pixels. However, due to overlaps between some projectors, the actual resolution is lower, approximately 9456x1200 pixels.
Overlay details: The difference between 11,250 and 9456 pixels corresponds to the pixels lost in the overlay.
Available files:
Square insole for specific adjustments.
Adobe Illustrator template with the colours of each space to help in the design of the document.
After Effects document for final assembly.
Technical installation (2023):
Template development: Wasabi Produccions was the company in charge of template development. Any 2023.
Management software ImésD has been responsible for the management software, broadcast management status and the integration of iPads, among other systems. Any 2023

b) Description of implementation:

Roca Umbert can be visited through an immersive experience full of light and sound resources, culminating in a spectacular map on its facade. The visitor will be able to reflect on the history of energy and how to face the energy transformations of the future.

THE VISIT

After a deep renovation and improvement, La Tèrmica de Roca Umbert reopens its doors as a new energy interpretation centre, inviting visitors of all ages to immerse themselves in an immersive experience full of light resources, sound effects and audio-visual projections. This journey will take us beyond the past of the factory, revealing the evolution of the use of fuel and the different resources that were used to generate its own energy. In addition, this tour will allow us to reflect on the history of energy and how to illuminate our future in a creative, sustainable and efficient way.

In order to get to know in depth the past and present of La Tèrmica, the visit can be supplemented with new self-guided routes through the factory and the city. The reception will also be a welcoming space for different exhibitions that will explore the energy past of Roca Umbert and Granollers.

c) Stakeholders involved: academic institutions, tourism organisations, museum staff, technology partners and TIC providers, visitors and the general public, cultural heritage groups, etc.

d) Target Audience:

Families: Parents and children seeking educational and fun outings.

School Groups: Students and teachers looking for field trips focused on history and energy.
History Enthusiasts: Individuals interested in the industrial heritage and energy evolution.
Environmental Advocates: Visitors interested in sustainability and energy transformation.
Tourists: Travellers exploring cultural and historical attractions in Catalonia.
Local Residents: Community members curious about the history and revitalization of their area.
Cultural Organisations: Groups looking for collaboration or events related to energy and history.
Artists and Creatives: Individuals interested in light, sound, and multimedia art installations.
Professionals in Energy Sector: Experts looking for insights into historical energy practices and future innovations.
Event Organisers: Those seeking unique venues for exhibitions, workshops, or community events.

Outcomes and Impact

a) **Key outcomes (e.g. engagement)**
b) **Number of visitors (yearly avg)** 2.000
c) **User satisfaction ratings (yearly avg)** 4.8 in google maps
d) **Comparison with before AT implementation (if available)** N/A
e) **Testimonials, if applicable (best and worst)** (example: google reviews etc.)

Source:
https://www.google.com/maps/place/La+T%C3%A8rmica+Roca+Umbert+de+Granollers/@41.6015849,2.2837724,16z/data=!4m8!3m7!1s0x12a4c7c08d9e0b5f:0x379e80a880eae89b!8m2!3d41.6015849!4d2.2837724!9m1!1b1!16s%2Fg%2F11b6hxvzwq?entry=ttu&g_ep=EgoyMDI0MTAxMy4wIKXMDSoASAFQAw%3D%3D

Difficulties in implementation of the technology, future Plans

a) Difficulties in the introduction of technology

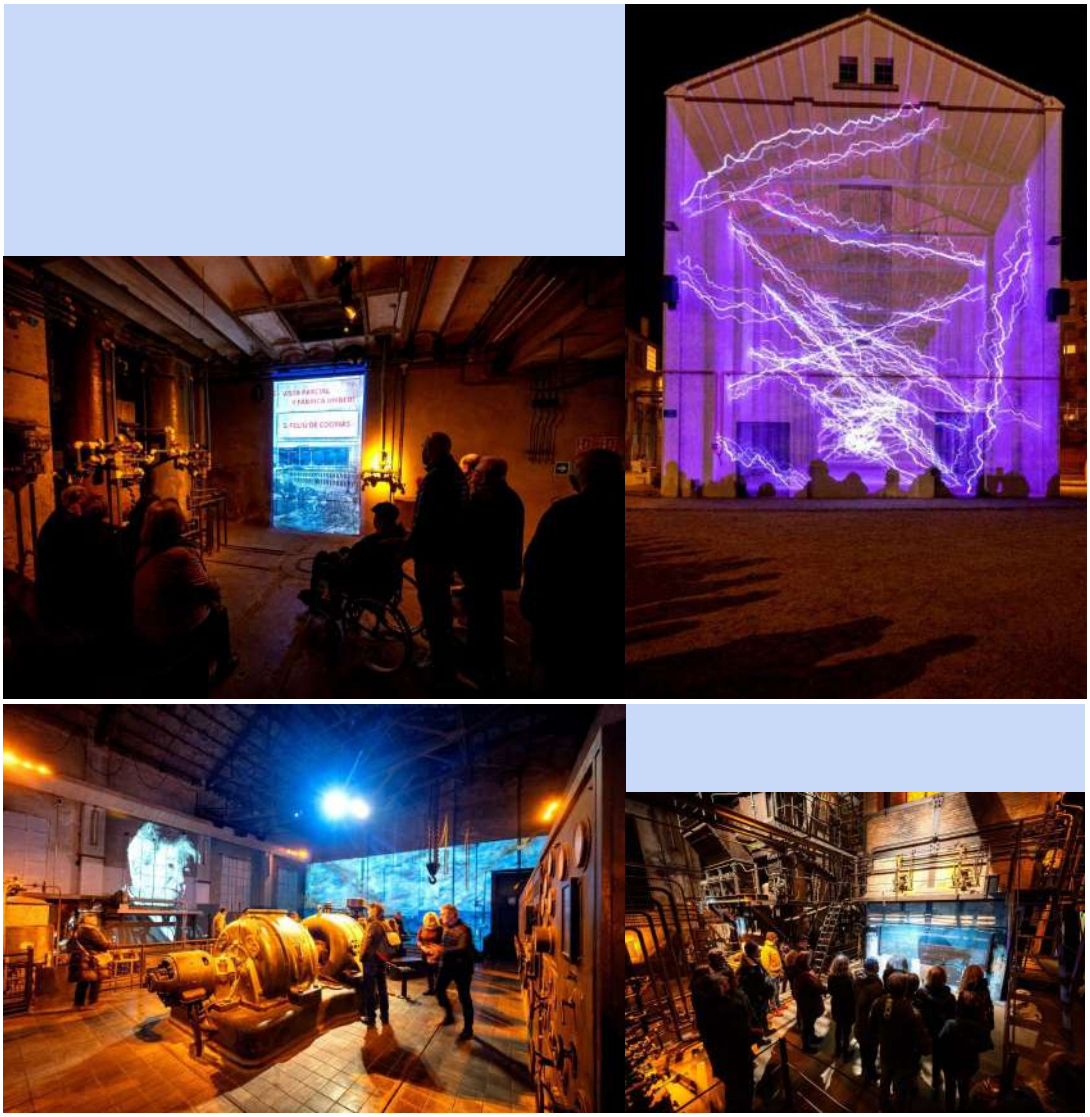
The technology is not stable. The space is also used for other purposes (concerts, filming, etc.) and adequate maintenance must be taken into account.

b) Future development plans No prevision

Visuals and Supporting Materials

a) Visuals (e.g. screenshots, videos)

VIDEO PROMOCIONAL 2023 - copia



b) Supporting Documents (e.g. brochures)

IV. Country: Greece

Partner: Hellenic Clothing Industry Association, HCIA

1. **Evaluate the level of experience with innovative technology in the industrial tourism in your country (1 - very low, 5 - very high)**

   1 **2** 3 4 5

2. **Name five different innovative technologies used in the tourism sector in your country**
   - i. **Artificial Intelligence**
   - ii. **Augmented Reality**
   - iii. **Virtual Reality**
   - iv. **Chatbots**
   - v. **Visionmaps/virtual tours**
   - vi. **Internet of Things**

3. **Examples of the used technology:**

i. Artificial Intelligence/Chatbot

General information:

- **Name/Title:** Pythia – AI Travel Assistant for Greece
- **Location:** Accessible globally via the DiscoverGreece.com platform and WhatsApp, covering destinations all across Greece.
- **Industry Sector (NACE class. 2-digit):** 79 - Travel agency, tour operator, reservation services and related activities.
- **Date of Implementation:** Officially launched in September 2023.
- **Contact Information:** Website: www.DiscoverGreece.com ; Phone: N/A; Email: https://www.discovergreece.com/contact/plan-my-trip (contact form)

Description:

a) Technologies Used:

Artificial Intelligence (AI): Built on the GuideGeek AI platform by Matador Network.

Natural Language Processing (NLP): Enables real-time, conversational interactions across multiple languages.

WhatsApp Integration: Allows users to access the assistant directly through WhatsApp for seamless communication.

API Integrations: Over 1,000 data sources feed into Pythia for personalised responses, including hotels, restaurants, activities, and other tourist information.

b) Description of Implementation:

The GuideGeek AI chatbot, branded as Pythia for Greece, is an advanced travel assistant developed by Marketing Greece in partnership with the U.S.-based Matador Network. Pythia was developed to provide tourists in Greece with instant, personalised travel assistance. Accessible via both the DiscoverGreece.com website and WhatsApp, the AI-powered chatbot can recommend itineraries, give tips on local attractions, and answer travel-related queries in over 50 languages.

The chatbot uses machine learning to continually refine its suggestions based on user interactions, improving accuracy and relevance over time. The platform also draws on data from the official DiscoverGreece database and third-party sources for real-time travel updates.

The AI's customization for Greece ensures that the information provided is highly relevant, emphasising local culture, hidden gems, and travel logistics, all while being fully compliant with EU data protection regulations

c) Stakeholders Involved:

Marketing Greece: The parent organisation that developed and launched Pythia.

Matador Network: Creator of the GuideGeek AI platform, which powers Pythia.

Greek Tourism Organisations : Provided localised content and travel data to train thAI on the nuances of Greek tourism.

d) Target Audience:

Tourists planning trips to Greece, including domestic and international travellers .
Primarily aimed at tech-savvy travellers looking for real-time, personalised travel recommendations.

Outcomes and Impact:

a) Key Outcomes:

Enhanced user engagement through real-time, personalised interactions.
Streamlined trip planning for tourists, reducing the need for extensive research.
Increased bookings and tourist satisfaction due to better-informed decisions facilitated by the AI.

b) Number of Users (Yearly Avg): N/A

c) User Satisfaction Ratings: N/A

d) Testimonials: N/A

e) Comparison with Before AI Implementation:

Before the launch of Pythia, DiscoverGreece offered static content and travel guides, requiring users to sift through extensive articles and reviews to find relevant information. With Pythia, users now receive instant, tailored recommendations, drastically improving the user experience.

Visuals and Supporting Materials

a) Visuals (e.g. screenshots, videos)

b) Supporting Documents (e.g. brochures)

- https://www.thinkdigital.travel/cases/tourism-innovation-in-greece

- https://greekcitytimes.com/2024/09/13/meet-pythia-greeces-new-ai-travel-assistant-ready-to-guide-your-journey/
- https://www.discovergreece.com/contact/plan-my-trip

ii. Internet of Things

- **Name/Title**: Costa Navarino Resort - IoT Initiatives
- **Location**: Messinia, Peloponnese, Greece
- **Industry Sector (NACE class. 2-digit)**: 55 - Accommodation and 79 - Travel agency, tour operator, and other reservation services.
- **Date of Implementation**: The major IoT systems for energy and water management were progressively implemented from **2016** onward as part of Costa Navarino's sustainability strategy.
- **Contact Information**:
  - Website: Costa Navarino
  - Phone: +30 211 0160 600 (marketing dpt)
  - Email: sales.navarino@costanavarino.com

Description:

a) Technologies Used:

IoT-based energy management: Smart sensors that monitor and optimise electricity consumption (HVAC, lighting).

Water management: IoT devices for real-time monitoring of water usage, irrigation systems, and leak detection.

Smart rooms: Guest-facing IoT controls for room temperature, lighting, and entertainment.

b) Description of Implementation:

The implementation of IoT technologies at Costa Navarino started with systems for **sustainable resource management**. These systems were designed to reduce electricity and water waste, driven by a network of interconnected sensors. Smart irrigation ensures that the vast golf courses and green areas are watered only when necessary, while guest rooms are equipped with IoT technologies for energy efficiency, automatically adjusting climate and lighting when guests are not in the room.

This technology is part of Costa Navarino's overall commitment to environmental sustainability, using real-time data analytics to optimise operations without compromising guest comfort. All systems are managed through a centralised platform that allows for quick adjustments, maximising both sustainability and operational efficiency.

c) Stakeholders Involved:

Costa Navarino Management: Oversees the implementation of sustainable practices.

IoT Technology Providers: These include suppliers of smart energy and water management systems.

Guests: Users of the smart room controls and beneficiaries of optimised services.

Local Authorities: Cooperate on environmental standards and water conservation efforts.

d) Target Audience:

High-end travellers , eco-conscious tourists, and international visitors seeking luxury experiences that are aligned with sustainability.

Outcomes and Impact:

a) Key Outcomes:

Significant reductions in energy and water usage, aligning with Costa Navarino's goal to lower its carbon footprint.

Enhanced guest satisfaction due to the personalised comfort and sustainability features.

b) Number of Visitors (Yearly Average):

N/A (246 rooms, 2-bedroom suites and 3-bedroom villas)

c) User Satisfaction Ratings (Yearly Average):

4.8/5 based on reviews from Google and Trip Advisor.

d) Comparison with Before IoT Implementation: N/A

Visuals and Supporting Materials

a) Visuals (e.g. screenshots, videos)



b) Supporting Documents (e.g. brochures)

https://www.costanavarino.com/wp-content/uploads/2024/02/sustainability-report-2021-22-1.pdf (Sustainability Report)

Internet of Things (IoT) a Trending Technology: Transforms the Hospitality Industry. Case Study: W Costa Navarino (Messinia, Greece) https://link.springer.com/chapter/10.1007/978-3-031-61589-4_1

iii. Augmented Reality / Virtual Tours

General Information:

- **Name/Title:** Acropolis Museum AR and VR Technologies
- **Location:** Acropolis Museum, Athens, Greece
- **Industry Sector (NACE class. 2-digit):** 91 - Libraries, archives, museums, and other cultural activities.
- **Date of Implementation:** The AR and VR technologies were progressively implemented from 2014 onwards.
- **Contact Information:**

Website: Acropolis Museum
Phone: +30 210 900 0900
Email: info@theacropolismuseum.gr

Description:

a) Technologies Used:

Augmented Reality (AR): Visitors use AR applications to see reconstructions of the exhibits as they once appeared, including details of monuments and sculptures in their original colours and form.
Virtual Reality (VR): The museum offers VR experiences in its Multimedia & Education rooms, which include a Virtual Reality Theatre , that allow visitors to explore the Acropolis site in ancient times, visualising how the Parthenon and other structures looked in their prime.
Interactive Digital Displays: These screens provide 3D reconstructions and multimedia content that enrich the narrative of ancient Athens.

b) Description of Implementation:

The Acropolis Museum introduced AR and VR technologies to deepen the visitor experience by offering immersive views of ancient Greece. Through AR applications, visitors can use tablets or smartphones to visualise how the Acropolis appeared thousands of years ago.

From February, 2011 to January, 2014, the Acropolis Museum was a central partner in the pilot research programme "Cultural Heritage Experiences Through Socio-Personal Interactions and Storytelling" (CHESS), funded by the European Union's Seventh Framework Programme. The aim of the project was to develop a conceptual technological framework that would allow museums and other cultural organisations to provide their visitors with interactive digital narrative experiences. The program was implemented by an international partnership of museums, universities and research and technology institutions. The Acropolis Museum and the Cité de l 'Espace of Toulouse (France) collaborated as cultural partners to provide the necessary content of personalised narrative for the development of custom-tailored stories and particular topics of interest intended for different types of visitors. The narratives, with rich visual material, augmented reality apps and games, were designed for mobile phones. More information is available online at www.chessexperience.eu

The Acropolis Museum effectively utilises multimedia technology in order to help the online visitor connect with the museum itself, the multiple aspects of the exhibits that comprise its collections but also the area from which they come, the Acropolis of Athens. 3D VR tour guides, digital applications and videos offer to the online public the possibility to acquire a vivid and active relation with the various folds of ancient Greek civilization. The Museum also created especially for his little friends, the website Acropolis Museum Kids with fun games, videos and creative activities.

These technologies were implemented to bridge the gap between historical artefacts and their original context, allowing visitors to engage with Greece's rich cultural heritage in a modern and interactive way. The AR and VR content is available in multiple languages, ensuring accessibility for international tourists.

c) Stakeholders Involved:

Acropolis Museum: Oversees and manages the AR/VR implementation.
Technology Providers: Collaborated with local and international tech firms specialising in AR/VR for cultural heritage projects.
Greek Ministry of Culture: Provides support and regulation for integrating technology into historical sites.

d) Target Audience:

Local and international tourists, including school groups, history enthusiasts, and tech-savvy visitors looking for a more interactive cultural experience.

Outcomes and Impact:

a) Key Outcomes:

Increased visitor engagement through interactive content.
A richer understanding of the historical significance of the Acropolis, with visual reconstructions allowing for a more complete interpretation of the artefacts.
Positive feedback from visitors, particularly international tourists who appreciate the multilingual accessibility and immersive experience.

b) Number of Visitors (Yearly Avg):

The Acropolis Museum attracts over 1.5 million visitors annually, and the AR/VR technologies have contributed to sustained high visitor numbers**.**

c) User Satisfaction Ratings (Yearly Avg):

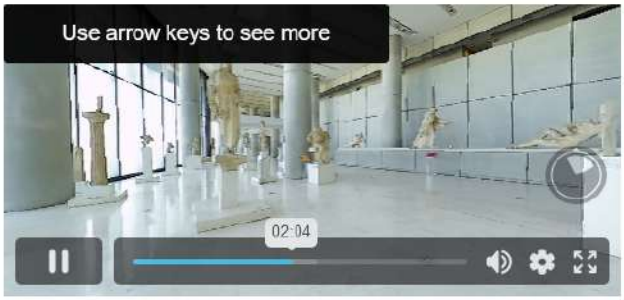
Visitor satisfaction has been consistently high, with average ratings around 4.7/5 on platforms like TripAdvisor and Google Reviews

d) Comparison with Before AR/VR Implementation:

Before AR/VR technology was implemented, the museum offered more traditional exhibits, and visitor engagement was mainly based on physical artifacts. The introduction of AR and VR has transformed the experience, allowing visitors to interact more deeply with the history and architecture of the Acropolis.

Visuals and Supporting Materials

a) Visuals (e.g. screenshots, videos)



b) Supporting Documents (e.g. brochures)

All the applications can be found here: https://www.theacropolismuseum.gr/en/digital-museum

iv. Augmented & Virtual Reality / Artificial Intelligence

- **Name/Title:** Cosmote Chronos App
- **Location:** Available for use across various cultural and historical sites in Greece, with a particular focus on major locations such as the Acropolis and The museum of Acropolis.
- **Industry Sector (NACE class. 2-digit):** N/A
- **Date of Implementation:** Launched in 2021.
- **Contact Information:**

Website: https://www.cosmote.gr/cs/cosmote/en/cosmote-chronos-akropoli-virtual-tour.html
Phone: N/A
Email: https://www.cosmote.gr/cs/cosmote/en/contact_us.html

Description:

a) Technologies Used:

Augmented Reality (AR): Allows users to view historical sites as they once appeared by overlaying reconstructions onto real-world views through their smartphone or tablet.
Virtual Reality: This technology enables the user to walk inside the monuments and enjoy their every detail.
AI: With the use of artificial intelligence, Clio - the application's digital assistant - understands every written or spoken question and gives the answer in real time.
Geolocation: Integrated with AR technology to trigger specific historical reconstructions based on the user's physical location at the site.
Interactive 3D Models: Detailed models of monuments and artefacts, allowing for a deeper understanding of their historical and cultural significance.

b) Description of Implementation:

The Cosmote Chronos AR App was developed to enhance cultural tourism in Greece by providing an interactive way to explore historical sites. Through VR and AR technology, visitors can see what the ancient monuments of Acropolis looked like in their prime and learn more about their history through multimedia content. The app uses geolocation to detect where users are and provides AR overlays accordingly, allowing visitors to immerse themselves in ancient Greece while standing in the modern-day ruins.
The app was implemented as part of a broader initiative by Cosmote to combine cultural heritage with digital innovation, making Greece's historical landmarks and the museum of Acropolis more accessible and engaging for both local and international visitors.

c) Stakeholders Involved:

Cosmote (OTE Group): The primary developer and sponsor of the app, driving the digital transformation of cultural experiences in Greece.
Greek Ministry of Culture: Collaborates to ensure accurate historical representation in the AR models.
Museum of Acropolis
Local Tourism Bodies: Help promote the app to visitors at key historical and archaeological sites.

d) Target Audience:

Tourists: Both international and domestic travellers visiting Greece's archaeological and historical sites.
Educational Institutions: Schools and universities use the app for educational purposes, offering students interactive learning experiences.
Tech-Savvy Travelers: Individuals who seek immersive and interactive ways to experience cultural tourism.

Outcomes and Impact:

a) Key Outcomes:

Enhanced Engagement: Tourists are more engaged with historical sites thanks to the immersive VR & AR experiences.
Increased Awareness: The app promotes Greek cultural heritage by making history accessible in a modern, tech-driven format.
Innovation in Tourism: Cosmote Chronos represents a step forward in the digital transformation of tourism, combining historical education with entertainment.

b) Number of Users (Yearly Avg):

100k (Google Play).

c) User Satisfaction Ratings (Yearly Avg):

3.8/5 (Google Play).

Visuals and Supporting Materials

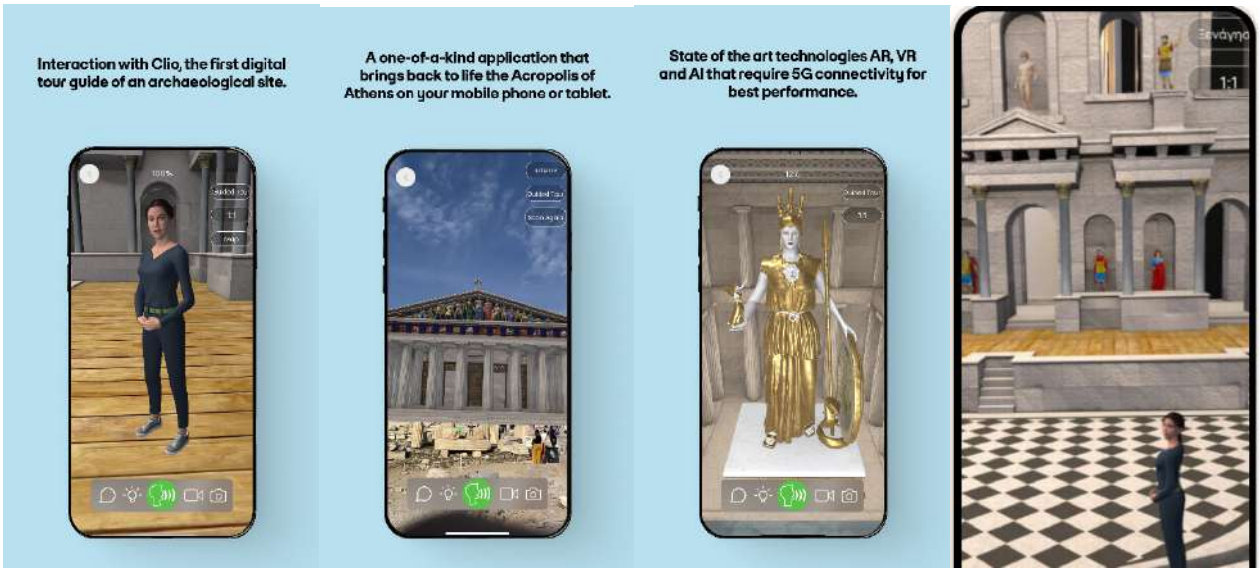
- Promotional Video

https://www.youtube.com/watch?time_continue=1&v=mT2EoNdfPvw&embeds_referring_euri=https%3A%2F%2Fwww.cosmote.gr%2F&source_ve_path=Mjg2NjY

Interreg Euro-MED

Co-funded by the European Union

SMITour



v. Virtual Tours (3D) & Augmented Reality

- **Name/Title**: Meteora History and Culture Digital Projection Centre
- **Location**: Kalambaka, Thessaly, Greece
- **Industry Sector (NACE class. 2-digit):** N/A
- **Date of Implementation:** Opened in 2017.
- **Contact Information:**

Website: https://www.kalabaka.org/meteora3d
https://visitmeteora.travel/meteora-history-and-culture-digital-projection-centre/
Phone: (+30) 24320 77997
Email: meteora3d@kalabaka.org

Description:

a) Technologies Used:

Digital Projection and 3D Mapping: The centre uses advanced projection mapping to showcase 3D reconstructions of the history and culture of Meteora.
Immersive Sound: A cutting-edge sound system is integrated to accompany the visual projections, enhancing the immersive experience.
Interactive Displays: Visitors can engage with interactive content that delves deeper into the cultural and religious significance of Meteora.

b) Description of Implementation:

The **Meteora History and Culture Digital Projection Centre** was developed to provide an immersive educational experience about Meteora's cultural and religious heritage. Using **3D mapping and projection technology**, the centre brings to life the history of the region, including its famous monasteries and unique geological formations.
The visual content is combined with **immersive soundscapes**, allowing visitors to experience Meteora's history in a dynamic and engaging way. This digital projection method was chosen to complement the existing physical tours of the monasteries, offering a more detailed narrative without the need for additional physical interventions in the natural environment. In parallel, VR tours are also available from private tour organisers .

c) Stakeholders Involved:

Municipality of Kalampaka: The main organisation managing the centre, focused on tourism and cultural preservation.
Local Cultural and Religious Institutions: Collaborated to ensure historical accuracy and cultural sensitivity.
Technology Providers: Specialists in digital projection and sound systems provided the technical expertise for the centre's development.

d) Target Audience:

Tourists: Both domestic and international visitors to the Meteora monasteries.
Educational Institutions: Schools, universities, and educational tour groups seeking to learn more about the history and culture of Meteora.
Cultural Enthusiasts: Individuals interested in religious history, cultural heritage, and innovative museum experiences.

Outcomes and Impact:

a) Key Outcomes:

Enhanced visitor engagement with Meteora's rich history, providing a deeper understanding of the region's religious and cultural significance.

Offers an educational and entertainment experience through digital storytelling.

b) Number of Visitors (Yearly Avg):

As Meteora is a UNESCO World Heritage site, the projection centre sees thousands of visitors annually, although specific numbers are not available.

c) User Satisfaction Ratings (Yearly Avg):

The centre has received high ratings, averaging around **4.5/5**, with visitors praising the immersive experience and informative content (Trip Advisor).

Visuals and Supporting Materials

a) Visuals (e.g. screenshots, videos)



*Other VR experiences are available in nearby Delphi and Ancient Olympia:
- https://www.youtube.com/watch?app=desktop&v=svrNj55ejWY


vi. Vision Maps

- **Name/Title:** Kri Kri Ice Cream Factory – Visionmaps and Interactive Technologies
- **Location:** 3rd km of the National Road, Serres 621 25, Greece
- **Industry Sector (NACE class. 2-digit):** 10 - Manufacture of food products (Ice Cream Production)
- **Date of Implementation:** The factory was originally established in 1954, with the modern visitor experience and interactive technologies implemented in 2023.
- **Contact Information:**

Website: https://icecreamfactory.gr/
Phone: +30 2321 600 580
Email: icecreamfactory@krikri.gr

Description:

a) Technologies Used:

Virtual Reality (VR): Provides immersive tours of the ice cream production process.
Interactive Touchscreens: Allow visitors to explore the history and production methods of Kri Kri Ice Cream.
Audio Guides: Multilingual audio guides help visitors learn more about the factory's operations.
Visionmaps: These assist with navigating the factory and its interactive exhibits, enhancing the visitor's experience through visual guides and maps.
Screens: For educational purposes, displaying information about ice cream production, Kri Kri's history, and sustainability practices.

b) Description of Implementation:

The Kri Kri Ice Cream Factory uses Visionmaps and interactive technology to enhance the visitor experience. Visitors are guided through the factory by using **Visionmaps**, which allow for real-time navigation and interactive displays. These displays give information about each part of the production process, from the sourcing of raw materials to the final ice cream packaging.
Interactive screens show detailed content about the history of Kri Kri, while **VR stations** allow users to experience the production line virtually. **Audio guides** provide insights in multiple languages, catering to international tourists. The factory also integrates these technologies into its **Instagram room** and **Ice Cream Pastry Workshop**, where visitors can engage with both virtual and hands-on experiences.

c) Stakeholders Involved:

Kri Kri Management: Oversees the implementation of the interactive technologies.
Dreamworkers Creative Team: Developed the Visionmaps and other interactive content.
Local Development Company: Assisted in constructing the interactive experience and overall design of the visitor park.
Visitors: General tourists, families, school groups, and stakeholders.

d) Target Audience:

General Tourists, **Families**, **School Groups**, and **Stakeholders** visiting the factory for educational and entertainment purposes.

Outcomes and Impact:

a) Key Outcomes:

The interactive technologies have led to increased engagement and a deeper understanding of the ice cream production process.

Sustainability awareness: Educating visitors about how food waste is turned into energy through the factory's bioaerio department.

Boost to local economy: The park's implementation has had a significant positive impact on the local economy of Serres, drawing both national and international visitors.

b) Number of Visitors (Yearly Avg):

40,000-50,000 visitors in the first 4 months after the interactive park was launched in 2024.

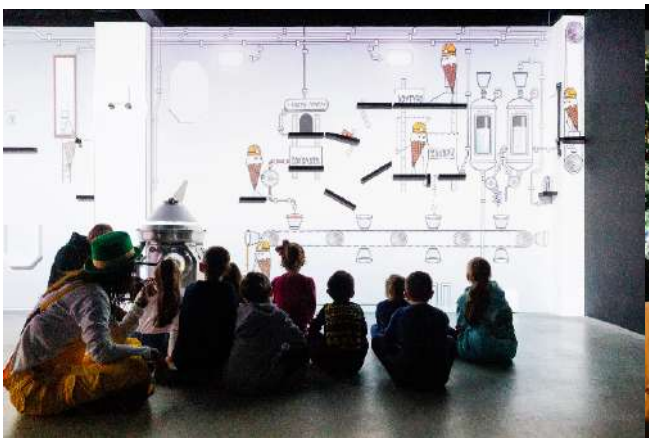
c) User Satisfaction Ratings:

Initial feedback indicates a high level of satisfaction, with over **40,000 visitors** enjoying the interactive experience in the first few months. Ratings are not available.

d) Comparison with Before Implementation: N/A

Visuals and Supporting Materials

a) Visuals (e.g. screenshots, videos)



V. Country: Slovenia

Partner: eZavod, E-Institute, Institute for Comprehensive Development Solutions

1. Evaluate the level of experience with innovative technology in industrial tourism in your country (1 - very low, 5 - very high)

1 2 **3** 4 5

The experience level with innovative technology in industrial tourism in Slovenia can be evaluated as 3. While there are some prominent examples of technology integration, such as the use of Virtual Reality (VR) at the **Submerged Villages VR Experience** at **Velenje Lake**, overall adoption of innovative technologies like Augmented Reality (AR), Artificial Intelligence (AI), and the Internet of Things (IoT) is still emerging and expanding. Key sites are experimenting with these technologies to enhance visitor engagement, but broader implementation across the industrial tourism sector is still in development.

Conclusion of the Five Case Studies on Innovative Technologies in Industrial Tourism in Slovenia

The level of experience with innovative technology in industrial tourism in Slovenia is evaluated as **3**, indicating a growing, but still emerging integration of advanced digital solutions. The five case studies — **Mysteries of Submerged Villages in Velenje**, **Podzemlje Pece Underground Mining Museum**, **Virtual Museum of Mining 4th Dritl in Trbovlje**, **Idrija Mercury Mine**, and the **Industrial Heritage of Ajdovščina — demonstrate a promising approach to using technologies such as Virtual Reality (VR), Augmented Reality (AR), 3D visualizations, Interactive storytelling, and Digital applications.**

Each case highlights the unique historical, industrial, and cultural significance of the site while leveraging innovative tools to enhance visitor engagement and education. Key impacts include increased visitor numbers, improved user satisfaction ratings, and strengthened connections between communities and their industrial heritage. However, challenges such as high implementation costs, technical complexities, and the need for continuous updates remain common across these projects.

Future plans across the cases focus on expanding content, improving interactivity, incorporating multilingual options, and enhancing the immersive experience through further adoption of technologies like Artificial Intelligence (AI) and advanced AR. Slovenia is making strides in industrial tourism by embracing modern technologies while preserving and showcasing its rich heritage.

2. Name five different innovative technologies used in the tourism sector in your country.

i. **Virtual Reality (VR)**
ii. **Augmented Reality (AR)**
iii. **3D visualisations**
iv. **Digital applications**
v. **Audio guides, Interactive storytelling, Interactive touchscreens**

3. Examples of the used technology:

Virtual Reality (VR), Augmented Reality (AR), 3D visualization (i., ii., iii.)

General information:

- **Name/Title: Mysteries of Submerged Villages, Submerged villages of Velenje lake**
- **Location:** Velenje, Slovenia
- **Industry sector (NACE class. 2-digit):** R91 Code R (Arts, Entertainment, and Recreation) – R - R - Arts, entertainment and recreation R90 - Creative, arts and entertainment activities. This sector is relevant as the VR experience offers an immersive and interactive way for visitors to engage with historical storytelling, making it part of the recreational and cultural offerings at Velenje Lake.
- **Code B (Mining and Quarrying)** - B - Mining and quarrying, B5 - Mining of coal and lignite
- **Date of implementation:** 2021
- **Contact information:** Zavod za turizem Šaleške doline (Šalek Valley Tourist Board), Stari trg 3, 3320 Velenje, Slovenia, T: +386 (0)3 896 17 15, E: turizem@velenje.si.

Description

a) Technologies used:

- **Virtual Reality (VR):** The Submerged Villages VR experience focuses on showcasing the history of the submerged villages due to mining activities in Velenje. This immersive experience takes visitors back in time to explore the villages' daily life and cultural heritage before they were flooded.
- **Augmented Reality (AR):** AR is used in specific locations around Velenje Lake, allowing visitors to visualise what the submerged villages looked like, combining real-world views of the lake with digital overlays of houses, streets, and community life.
- **3D Visualisation:** 3D models of the original buildings and infrastructure have been reconstructed using archival photos and maps, providing an authentic visual experience.

b) Description of implementation:

Visitors use VR headsets to immerse themselves in the historical landscape of Velenje's submerged villages. They can explore reconstructed homes, community centres, and streets, experiencing the way of life before the villages were submerged due to coal mining activities. The experience includes a historical narration and interactive elements, where users can "walk" through the town and interact with the environment.

c) Stakeholders involved: Šalek Valley Tourism Board, Local cultural and historical organisations (Muzej Velenje), VR technology partners and developers, The local government, The Velenje coal mining company (for historical and archival data), water sports club Velenje, local tourist guides.

Together, these stakeholders aim to preserve and present the submerged heritage of Velenje through modern technology while promoting tourism and educational outreach.

d) Target Audience:

Small groups, high-quality guests.

Tourists interested in industrial heritage and history, residents and descendants of people from the submerged villages, schools, universities, and researchers, as well as tech-savvy visitors and families looking for interactive experiences.

Outcomes and Impact

Key outcomes (e.g. engagement):

- Increased visitor engagement with local history

- Higher visitation rates to Velenje Lake, particularly for those interested in mining heritage and virtual reality experiences
- Strengthened connection between the local population and their submerged heritage

Number of visitors (yearly avg)

- Approx. 3,000 VR users (within broader Velenje Lake tourist numbers)

User satisfaction ratings (yearly avg) 4.8 (Trip Advisor), 4.6 (Google Reviews)
Comparison with before AT implementation (if available): N/A (new implementation)
Testimonials, if applicable (best and worst) (for example, Google reviews, etc.):
Best: "The VR experience was amazing. It's an emotional and vivid way to bring back to life the history that was submerged beneath the lake." (August 2023)
Worst: "The VR technology was a bit glitchy at times, but the content was fascinating." (July 2023)

Difficulties in implementation of the technology, Plans
Difficulties in the introduction of technology

- High costs associated with VR system implementation and ongoing maintenance
- Limited staff with the technical know-how to troubleshoot VR systems and guide users through the experience
- Difficulty in gathering accurate historical data to reconstruct the submerged villages faithfully

Future development plans

- Expanding the VR experience to cover more areas and adding more interactive elements, such as allowing visitors to perform virtual tasks that residents would have done in the submerged villages Introducing multilingual support to cater to international visitors.
- Enhancing the AR experience with more detailed reconstructions of the submerged buildings and potentially linking the app with historical photos and documents for deeper exploration.

Visuals and Supporting Materials
Visuals (e.g. screenshots, videos) YES
Screenshots and videos are available on the Velenje tourism website, www.visitsaleska.si.

Picture 1 and 2: Implementation of VR Submerged Villages VR Experience at Velenje Lake Source: page Visit Saleska Šaleška Valley

Supporting Documents (e.g. brochures) YES
Brochures detailing the history of the submerged villages are available at the Velenje tourist centre and online. This case study outlines how Velenje has embraced VR and AR technology to preserve and present its unique submerged heritage while engaging tourists and locals.

Virtual Reality Experience at the Underground Mining Museum, Podzemlje Pece (i.)

General information:

- **Name/Title: Virtual Reality Experience at the Underground Mining Museum, Podzemlje Pece**
- **Location:** Mežica, Slovenia
- **Industry sector (NACE class. 2-digit): R 91** B (Mining and Quarrying), R (Arts, Entertainment, and Recreation)**.** For the **Virtual Reality Experience at the Underground Mining Museum, Podzemlje Pece**, the relevant **NACE code (2-digit)** classifications are: **NACE Code B (Mining and Quarrying):** This code applies as the museum is located in a former mining site and focuses on the history and heritage of mining activities, offering insights into the historical mining industry in the region.
  NACE Code R (Arts, Entertainment, and Recreation): This code is relevant as the museum uses virtual reality to create an immersive and engaging experience, providing recreational and educational activities for visitors.These codes reflect the dual focus of preserving the mining heritage while providing a modern, interactive visitor experience.
- **Date of implementation:** 2019
- **Contact information:** e-mail: info@podzemljepece.com

Description

a) Technologies used:
Interactive touchscreens, Audio guides, Interactive Storytelling, VR Experience in progress

b) Description of implementation: Podzemlje Pece, located in an old lead and zinc mine, offers a unique experience combining history, culture, and technology.
Interactive touchscreens and audio guides allow visitors to explore the mining tunnels and learn about the region's mining history.
Visitors can immerse themselves in the daily lives of miners, understanding the techniques they use and the working conditions deep underground. Interactive touchscreens and audio guides also present geological formations, enhancing the understanding of the mining environment.

Picture 1: Experience from the Podzemlje Pece Mining Museum

Source: www.podzemljepece.com

c) Stakeholders involved:

Podzemlje Pece Underground Mining Museum:
The museum is the primary stakeholder responsible for developing and implementing the interactive experience, focusing on promoting the region's mining heritage.
Local Government and Municipal Authorities:
Provide funding, support, and regulatory approval for the use of technology in a historically significant site. They also play a role in tourism promotion and heritage preservation.
Regional Tourism Organisations:
These organisations collaborate with the museum to promote the interactive experience as part of broader efforts to boost regional tourism.
Educational Institutions:
Universities and schools are involved in promoting industrial heritage and using modern technologies in education. They participate in field trips and use the Interactive experience as an educational tool for students.
Visitors and the General Public:
Visitors provide valuable feedback and reviews that help improve the Interactive experience. The public, especially those with ties to the mining industry, contributes to the heritage and preservation of local history.
RRA KOROŠKA, **Regional Development Agency for Koroška,** supports promotional activities.
The museum is a partner of Karawanken-Karavanke UNESCO Global Geopark: Karavanke UNESCO Global Geopark extends over more than 1,000 square kilometres of the cross-border area between Slovenia and Austria, inhabited by around 53,000 inhabitants. It includes fourteen border municipalities: Črna na Koroškem, Mežica, Prevalje, Ravne na Koroškem, Dravograd, Bistrica nad Pliberkom (Feistritz ob Bleiburg), Pliberk (Bleiburg), Suha (Neuhaus), Globasnica (Globasnitz), Galicija (Gallizien), Žitara vas (Sittersdorf), Železna Kapla (Bad Eisenkappel), Sele (Zell) and Labot (Lavamünd). It has been a member of the European and Global Network of Geoparks since 2013 and has held the Karavanke UNESCO Global Geopark title since November 2015.
Main goals:

- ➢ Preserving the geological and natural resources and the culture and cultural heritage of its members' territories;
- ➢ Raising awareness, informing and educating about the Geopark Karawanken-Karavanke and promoting the Geopark;
- ➢ The economic development of the Geopark, among others, through sustainable tourism;
- ➢ General cross-border cooperation, development and local political coordination and representation of the interests of the whole region in the context of a sustainable

These stakeholders work together to bring the rich history of the Mežica mine to life, ensuring that the Interactive experience is educational, accurate, and engaging for a broad audience

d) Target Audience:
Tourists interested in industrial heritage and history, residents and descendants of people from the submerged villages, Schools, universities, and researchers, Tech-savvy visitors and families looking for interactive experiences

Outcomes and Impact:

- **Key outcomes (e.g. engagement)**

Increased visitor engagement, extended tour duration, enhanced understanding of the mining process

- **Number of visitors (yearly avg):** Approx. 17.000 visitors annually
- **User satisfaction ratings (yearly avg)** 4.8 (Trip Advisor); 4.7 (Google Reviews)
- **Comparison with before AT implementation (if available): N/A**

Testimonials, if applicable (best and worst) (for example, Google reviews, etc.)
Best: "The VR gave us a glimpse into what life must have been like for the miners. It's an amazing way to experience history up close." (August 2023)
Worst: "Good experience, but the headset was slightly uncomfortable after a while." (July 2022)

Difficulties in implementation of the technology, Plans:
Difficulties in the introduction of technology
Challenges included training staff to manage the VR technology, high costs for maintaining and updating the software and hardware, and occasional technical issues related to the VR setup.

Future development plans:
Plans include integrating VR experience and more interactive elements into the VR experience, allowing visitors to perform virtual mining tasks, and incorporating augmented reality (AR) for a more engaging experience in the natural mining tunnels.

Visuals and Supporting Materials
Visuals (e.g. screenshots, videos) YES
Available on the museum's website and in promotional brochures

Supporting Documents (e.g. brochures) YES
Brochures detailing the history of the mine, along with guidelines for visitors.

Virtual Museum of Mining the 4th Dritl Trbovlje - Trbovlje – 4th DRITL (i., ii., iv.)

General Information:

- **Name/title**: **Virtual Museum of Mining the 4th Dritl Trbovlje**
- **Location**: Trbovlje, Slovenia
- **Industry sector (NACE classification 2-digit)**: Mining (Code 05)
- **Date of implementation**: **2017**
- **Contact information**: info@4dritl.si, Virtualni muzej rudarstva 4. DRITL, Trg svobode 11a, 1420 Trbovlje, mobile: 051 626 296

Description:

a) Technologies used:

4. DRITL – Escape mine
Interactive escape game
Rescue trapped miners
New media technology: VR, AR, hologram
Virtual Reality (VR) for immersive underground mining experiences.
3D Visualisation of mining tools and historic equipment.
Augmented Reality (AR) will guide visitors through an interactive journey of Trbovlje's mining heritage.
Audio and visual guides to enrich historical narratives.

b) Description of implementation:

The Virtual Museum of Mining 4th Dritl is located in the basement of the historical building of Delavski dom Cultural Center Trbovlje, which was built with volunteer work and contributions of Trbovlje's inhabitants, mostly miners. The exhibition combines actual mining heritage artefacts with digital content (3D video, VR, holographic projections, mapping) to tell the story of our community. The mining industry formed this local community, which allowed the city to grow to more than 20,000 inhabitants at the time of mining. Besides the tour through exhibitions and guided tours around the industrial landscape in and around the town, the museum also offers the game »Escape from the mine«, the fun and educational experience that presents visitors with the challenge of rescuing miners trapped in a cave. Players must undergo a series of challenges supported by using new media tools (VR, holograms, touch screens, projections). At the same time, they will discover the mining environment and the skills and knowledge required by the miners. The game is suitable for teams of 3 to 6 players who strive to complete the task as quickly as possible and sign the wall of the legendary miners.

Tours around the industrial landscape of Trbovlje include visiting Trbovlje Power Central, where visitors can see the interior of the highest chimney in Europe, which is a unique experience. It's 360 meters high, the highest building in Slovenia, the highest chimney in Europe and the 7th highest worldwide. A mighty building that can withstand an earthquake of magnitude 10 charms every visitor close to its foothills. Despite the ban, it's a magnet for adrenaline enthusiasts who wish to climb it. While climbing is strictly forbidden physically, it's possible to see it from the inside and virtually climb to the top with the help of 360-videos.

Visitors are provided with VR headsets to experience life as a miner, with an immersive exploration of the 4th Dritl mine. Interactive 3D models help visitors understand mining tools, and AR applications offer virtual tours through historical scenes guided by narrations of actual miners. Technology helps simulate the underground conditions, bringing the visitor closer to the challenging life of miners in Trbovlje.

Source: Virtualni muzej rudarstva 4. DRITL, Trg svobode 11a, 1420 Trbovlje

Stakeholders involved:

- Municipality of Trbovlje
- Local mining heritage associations
- Technology companies specialising in VR and AR development

Target audience:
General tourists, School groups and educators, History and mining enthusiasts, Industrial and cultural tourism professionals, Special interest groups focused on heritage preservation, Families
Outcomes and Impact:
Key outcomes: Enhanced visitor engagement through interactive and immersive digital experiences. Increased understanding and appreciation of mining history, particularly for younger audiences.

Number of visitors (yearly avg): **1800**
User satisfaction ratings (yearly avg): **5**
Comparison with before AT implementation: N/A
Testimonials:
Best: "Incredible experience! Walking through the virtual mine gave me chills and a newfound respect for the miners."
Worst: N/A

Difficulties in Implementation of the Technology, Future Plans:
Difficulties in the introduction of technology:

- High financial costs for purchasing and maintaining VR and AR equipment.
- Challenges in regularly updating software to keep the experience modern and relevant.
- Staff training requirements to ensure proper guidance for visitors using new technologies.

Future development plans:

- Expanding VR experiences to include more mines and historical periods.
- Incorporating Artificial Intelligence (AI) to create real-time interactive guides that respond to visitor questions.
- Developing additional AR features to enhance visitor engagement further.

Visuals and Supporting Materials:
Visuals: Screenshots of the VR mining experience and promotional videos showcasing the museum's digital offerings.
Supporting documents: Brochures, maps, and historical background on the Trbovlje mining industry, available on the museum's website or at visitor centres.

Idrija - IDRIJA MERCURY MINE

Idrija Mercury Heritage Management Centre:
- Anthony's Main Road
- VR experience of the rotary furnace
- Hg Smelting Plant
- Idrija Claves in 3D Digital Space

General information:
Name/Title: Idrija Mercury Mine
Location: Idrija, Slovenia
Industry sector (NACE class. 2-digit): R 91, 05 – mercury mining**,** Industry Sector: mercury mining and mercury production
Date of implementation: VR has been gradually implemented in the last decade, with significant updates post - 2018.
Contact information: Idrija Mercury Heritage Management Centre, email: infohg@cudhg-idrija.si, topilnicahg@cudhg-idrija.si

Description
Technologies used:
Idrija Mercury Heritage Management Centre

- **Technologies Used**:
  - **Interactive Exhibits**: The Idrija Mercury Heritage Management Centre uses multimedia exhibits to display the history of mercury mining in Idrija. These exhibits include digital screens with interactive content such as timelines, videos, and maps to engage visitors with the mine's history and mercury production.
  - **3D Visualisation**: The Centre offers 3D models of the mining areas and tools, providing an in-depth look at the mine's infrastructure and historical artefacts.
- **Description**: The Centre serves as an educational hub where visitors can learn about the mine's impact on global trade and industrial history, with a focus on the technological advancements in mining and mercury production.

Anthony's Main Road

- **Technologies Used**:
  - Visitors to Anthony's Main Road, one of the oldest and longest mine shafts, can enhance their experience with audio guides in different languages and with experienced guides. The technology overlays historical facts and visual elements on real-world views, providing insights into the workings of the mine at various points in history.
- **Description**: Technology creates an experience as visitors walk through the mine shaft, learning about the working conditions and engineering techniques used centuries ago.

VR Experience of the Rotary Furnace
Technologies Used:
Virtual Reality (VR):

- **VR experience of the rotary furnace**
  You are invited to the Hg Smelting plant for a virtual experience. Put on your VR goggles, enter the world of the Idrija smelters, learn about the process of burning cinnabarite ore in the rotary furnace

and fill your first mercury cylinder through five stations.
Due to limited places, the VR rotary furnace must be booked in advance. Reservations are accepted at infohg@cudhg-idrija.si and topilnicahg@cudhg-idrija.si or by 031/810-194.
A highly immersive VR experience that allows visitors to witness how the rotary furnace, which played a crucial role in mercury extraction, operated during its peak. Visitors wear VR headsets that place them in a fully reconstructed historical setting, where they can observe and understand the mechanics of mercury smelting.

- **Description**: The VR experience simulates a day in the smelting process, with detailed visual and auditory elements that convey the intensity of working in such an environment. It showcases how mercury was separated from ore, offering a detailed view of the machinery.

Hg Smelting Plant

- **Technologies Used**:
  - With the help of experiments, animations, video films and devices operating based on Hg, you will learn about and experience the significance of this unique liquid metal that has changed the world, as well as its universal applicability in science, engineering, industry, medicine, culture and daily life, from prehistoric times to the present day.
    In addition to a modern interactive exhibition, the Hg Smelting Plant boasts a giant rotary furnace for smelting cinnabar ore worldwide.
- **Description**: Technologies allow visitors to explore the intricate smelting processes used at the Idrija plant, highlighting the importance of this plant in mercury production and the evolution of metallurgical techniques.

Idrija Claves in 3D Digital Space

- **Technologies Used**:
  - **3D Digital Modelling**:
    The Idrija Mercury Heritage Management Centre has again taken new steps towards digitising our rich cultural heritage.
    After the digital capture and 3D model of the Idrija Klavže Water Barriers and the production of a short video in 2020 in cooperation with the high-tech company Arctur, this year, we carried out the digital capture and 3D model of the rotary furnace within the framework of the project of the Ministry of Regional Development of the Republic of Slovenia, Increasing Competences and Development of the Tourist Offer in the Leading Tourist Destinations of Škofja Loka (Poljanska and Selska Valley) and Idrija in 2020 and 2021, in coordination with the Institute of Tourism Idrija, under the project of the Ministry of Regional Development of the Republic of Slovenia. The high-quality and accurate 3D model, made by laser scanning, represents a new step in the digital preservation of cultural heritage, as it allows exact measurements of the object and is the basis for possible reconstructions and is the basis for applications in augmented and virtual reality and new ways of Visualisation. We have decided to use our resources to develop a VR application that will allow visitors to the Hg Smelter, to transform themselves into a smelter using modern technology and learn about the workings of the world's largest surviving rotary kiln for the calcination of mercury ore.
    We worked with Arctur from Nova Gorica to find technological solutions.
  - The Idrija Claves have been reconstructed in a 3D digital environment, allowing visitors to virtually explore these crucial areas of the mine. This technology provides a precise model of the

subterranean spaces, either unsafe or inaccessible to the public.

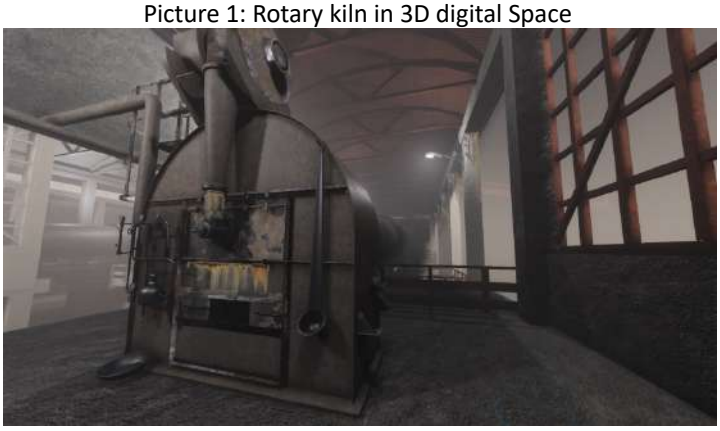
- **Virtual Tours**: Visitors can take virtual tours of the Claves, seeing detailed visualisations of the Space as it was during the mine's active years.

Description of implementation:

Description: The 3D digital Space offers a unique view into the Idrija Klavže, showcasing the engineering marvels of wood transport.

These technologies significantly enhance the visitor experience by providing immersive, interactive, and detailed ways to explore and understand the historical and technical aspects of the Idrija Mercury Mine and its related heritage sites.

Picture 1: Rotary kiln in 3D digital Space



Source: https://www.cudhg-idrija.si/en/news/rotacijska-pec-v-digitalnem-3d-prostoru

Stakeholders involved:

Idrija Mercury Heritage Management Center: Provides historical data and manages the mine tours.
Ministries of Culture and Tourism: Funding and support for digital preservation and innovation.
ID20

Target Audience:

Tourists, especially those interested in industrial history and heritage.
School groups and educational tours.
Researchers and industrial tourism professionals.

Outcomes and Impact

Key outcomes (e.g. engagement)

- Enhanced visitor engagement and interactivity, making the history more accessible and engaging.
- Visitors report deeper emotional and intellectual connections with the historical material.

Number of visitors (yearly avg): Around 25.000 visitors per year on average.
User satisfaction ratings (yearly avg): Average rating: 4.6/5 (based on Google reviews and visitor surveys).
Comparison with before AT implementation (if available):

- Before implementing VR technologies, visitors had a more passive experience, relying on traditional guided tours.
- Visitor numbers have increased by 25% since VR/3D digitals were introduced, and there has been a noticeable improvement in overall satisfaction.

Testimonials, if applicable (best and worst) (for example, Google reviews, etc.)

Best: "An incredible way to experience history! The VR transport to the mines feels real. It's educational and thrilling."
Worst: "The VR headset was a bit uncomfortable after wearing it for a while, but the experience was still amazing."

Difficulties in implementation of the technology, Plans
Difficulties in the introduction of technology

- High upfront costs for the VR systems.
- Technical difficulties in accurately modelling the mine's complex structures.
- Ensuring the VR equipment works smoothly for different age groups and physical abilities.

Future development plans:
VR and AR content are expanded to include more languages and detailed historical narratives.
Collaboration with international industrial tourism networks to promote the Idrija experience globally.
Further improvements to the 3D models for higher levels of immersion.

Visuals and Supporting Materials:
Visuals (e.g. screenshots, videos) YES

- Screenshots of the VR experience, showing visitors in the simulated mine.
- AR app demonstrations showing how it overlays data on mine tools.

Supporting Documents (e.g. brochures) YES

- Brochures detailing the VR/AR experience and the history of the mine.
- Technical documentation on the development of the digital reconstructions.

Scattered open-air exhibition with digital components, Industrial Heritage of Ajdovščina (v.)

General information:
Name/Title: Industrial heritage of Ajdovščina
13 stops on the sides where industrial activities operated in the past or are still operating
Location: Ajdovščina, Slovenia
Industry sector (NACE class. 2-digit): Industrial tourism, cultural heritage, water power, hydropower, food industry, metalworking industry, electricity generation, clothing industry, wood industry, paper industry, construction industry, textile industry, NACE classification **R 91**

Date of implementation: 2021
Contact information: ines.begus@goriskimuzej.si, goriski.muzej@siol.net and https://ida-ajdovscina.si/ Industrial Heritage of Ajdovščina – exhibition project - Regional Museum Goriški Muzej

Description
Technologies used:
Audio guides, Interactive Storytelling, VR Experience in progress
Users can view the exhibition via QR codes on boards around the city (which link to the website) or the website. They can choose an audio guide, watch film testimonies or listen to stories there. Allows visitors to experience the historical development of industrial sites in Ajdovščina through immersive 3D environments. Visitors can explore historical buildings, such as the old mills and ironworks, as they existed during different periods.

Description of implementation:
Users can view the exhibition via QR codes on boards around the city (which link to the website) or the website. They can choose an audio guide, watch film testimonies or listen to stories there. Using a smartphone, they scan QR codes located at different points of interest, transporting them into a virtual world replicating the industrial heritage of Ajdovščina.

Picture 1: Jochman's Mill, Regional Museum Goriški Muzej, Source: https://ida-ajdovscina.si/.

Stakeholders involved:
- Municipality of Ajdovščina,
- Cultural and historical organisations (Regional Museum Goriški muzej and Lavričeva knjižnica),
- Regional museum Goriški muzej
- Nova Gorica and Vipava Valley Tourist Board
- Technology developers and historical experts

Target Audience: General tourists, families, school groups, industrial history enthusiasts, and technology-

savvy visitors.

Outcomes and Impact:
Key outcomes (e.g. engagement)
Increased engagement, improved educational value, and enhanced visitor experience through immersive historical reconstructions.
Number of visitors (yearly avg): Approximately 1,000 visitors per year
User satisfaction ratings (yearly avg): 4.7/5, with visitors praising the interactive and engaging elements.
Comparison with before AT implementation (if available): N/A
Visitor numbers have increased by 30% since introducing digital technologies, and feedback highlights the added value for educational and entertainment purposes.
Testimonials, if applicable (best and worst) (for example, Google reviews, etc.)
Best Review: "Seeing the old factories as if I were walking through them was fascinating!"
Worst Review: "The digital content was good, but the navigation within the app was a bit confusing at first."

Difficulties in implementation of the technology, Plans
Difficulties in the introduction of technology
High initial costs of VR equipment, developing content, and technical challenges in ensuring seamless user experience.

Future development plans:
Plans include expanding the VR content to cover more historical periods and adding multilingual options to cater to international visitors.
Visuals and Supporting Materials
Visuals (e.g. screenshots, videos) NO
Supporting Documents (e.g. brochures) YES
Brochures and guides are available in both physical and digital formats.

VI. Country: Croatia

Partner: Faculty of Economics and Business (EFRI)

4. **Evaluate the level of experience with innovative technology in the industrial tourism in your country (1 - very low, 5 - very high)**

1 2 3 4 5

5. **Name five different innovative technologies used in the tourism sector in your country**
   i. Chatbots
   ii. Virtual Reality (VR)
   iii. Augmented Reality (AR)
   iv. Artificial Intelligence (AI)
   v. Internet of Things (IoT)

6. **Examples of the used technology:**

i. Chatbots

General information:

- **Name/title:** Total Croatia Travel INFO bot
- **Location:** Croatia
- **Industry sector (NACE class. 2-digit):** J62
- **Date of implementation:** June, 2020
- **Contact information:** https://chats.viber.com/tctibotcro

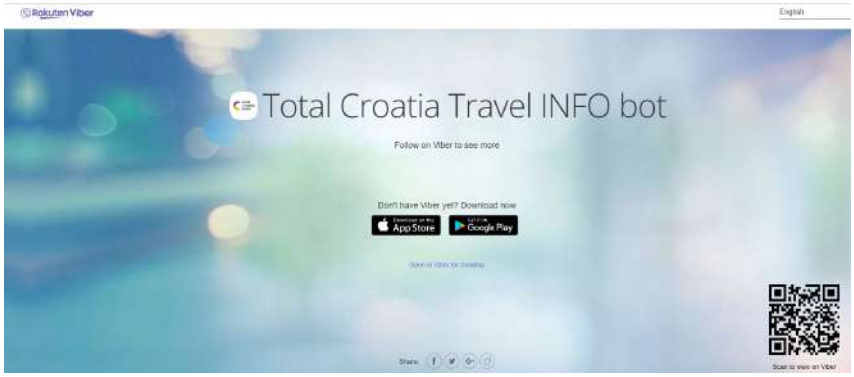
Description

a) **Technologies used:** The **Total Croatia Travel INFO bot** is a conversational tool designed to provide travellers with useful information about visiting Croatia. It operates as part of the Total Croatia News platform, helping tourists plan their trips by offering detailed insights about various destinations, travel tips, logistics, and real-time information.

b) **Description of implementation:** The main functions and features of the Total Croatia Travel INFO bot can be divided into five categories, namely destination guidance, traffic information, event information, tips on accommodation and restaurants, and weather and real-time alerts. Some of the examples are that the bot provides recommendations on the best places to visit such as cities or national parks, offers schedules and practical advice on using public transportation (buses, ferries or trains) and renting cars or bicycles, highlights local events, festivals and exhibitions throughout Croatia, recommends hotels, hostels and private accommodation, makes restaurant suggestions based on location and preferences and provides up-to-date information on current weather and possible disruptions (e.g. ferry delays, road closures).

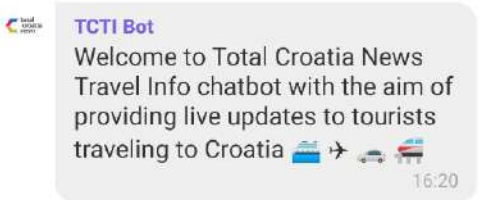
The interaction process works on the basis of user queries, i.e. users can ask questions on specific topics, such as “What to do in Rijeka?” or “How to travel from the island of Krk to the island of Lošinj?”. The bot can work via various platforms such as websites, messaging apps (e.g. WhatsApp, Facebook Messenger) or mobile apps. For urgent questions, such as ferry cancellations or travel restrictions, the bot provides timely updates by retrieving data from relevant sources. Travellers can also receive tips on the region they are currently in or would like to visit. The bot uses Natural Language Processing (NLP) to understand user input in various formats, including casual questions. The bot pulls data from a well-maintained repository created by Total Croatia News (https://total-croatia-news.com/news/travel/total-croatia-travel-info-chatbot/), which contains up-to-date travel guides and tips. If the bot cannot answer a question, it connects users with human customer service agents or directs them to relevant websites.

Picture 1: Interface of Total Croatia Travel INFO bot



Source: https://chats.viber.com/tctibotcro

Picture 2: Welcome message in Viber TCTI chatbot



Source: https://total-croatia-news.com/news/travel/total-croatia-travel-info-chatbot/

c) **Stakeholders involved:** The Total Croatia Travel INFO Bot involves several stakeholders, each of whom plays a crucial role in the development, operation and success of the platform, such as the platform owners and developers, the technical developers and the NLP providers, as the bot requires a development team specialised in AI, NLP (Natural Language Processing) and chatbot platforms. They maintain the bot's architecture, fix bugs and improve functionality over time. This could involve working with AI service providers or external agencies that specialise in chatbots (e.g. providers of WhatsApp, Messenger or website chat tools). State and public institutions such as the Croatian National Tourist Board (CNTB), transportation companies (public and private), local municipalities and authorities are also stakeholders of the bot, because as a national institution promoting tourism, the CNTB could, for example, share tourism data and cooperate with the bot to promote events and campaigns, ferry companies (Jadrolinija), bus companies and railroad companies can provide schedules, route changes and train cancelations, which the bot will share with users. City administrations and tourist offices in major destinations can provide information on events, regulations or emergency warnings. Travellers and users are the main stakeholders. In addition, there are customer support and content teams, data providers and emergency services as well as marketing and advertising partners.

d) **Target Audience:** The Total Croatia Travel INFO bot is aimed at a wide range of users who are interested in travelling to and in Croatia. The target group is primarily travellers /tourists coming to Croatia for the first time or repeatedly, digital nomads and expats, festival and event enthusiasts, cruise passengers, etc.

Outcomes and Impact

a) **Key outcomes (e.g. engagement)** The Total Croatia Travel Info Bot delivers several key outcomes that benefit both travellers and stakeholders in the Croatian tourism industry, such as an enhanced travel experience for tourists, convenience and quick access to information, personalised recommendations, real-time problem solving, improved efficiency in travel planning, tourism industry insights and data-driven improvements, cost savings and resource optimization for stakeholders, as well as a positive reputation of the Croatia Tourism brand and much more.

b) **Number of users (yearly avg)** 18 549 subscribers up till 2024

c) **User satisfaction ratings (yearly avg)** Currently, there are no formal user reviews for the Total Croatia Travel INFO bot on major platforms like Google Reviews or TripAdvisor.

d) **Comparison with before AT implementation (if available)** N/A

e) **Testimonials, if applicable (best and worst) (example: google reviews etc.)** N/A

Difficulties in implementation of the technology, future Plans

a) **Difficulties in the introduction of technology**

The implementation of the Total Croatia Travel INFO bot is associated with various technical, operational and strategic challenges, such as ensuring real-time and accurate information, the complexity of cross-platform deployment, i.e. the bot is deployed across Viber, social media platforms and websites, which

requires seamless integration and maintenance across all platforms, and maintaining a smooth user experience across different messaging apps is complex, especially as user expectations and behaviour differ across platforms, from real-time data updates to ensuring multilingual and cross-platform capabilities. Furthermore, maintaining high user satisfaction while navigating the fragmented tourism ecosystem and privacy regulations requires a well-coordinated effort.

b) Future development plans

The future development of the Total Croatia Travel INFO Bot will focus on improving digital tourism by integrating new technologies, improving usability and supporting tourism in Croatia through innovations such as virtual tours and advanced tools. An important goal is the continuous addition of new resources and multilingual content to appeal to the various travellers and tourism service providers. Further improvements are also expected in the area of customization tools, such as the "Travel Insights" platform that Google is promoting in the region to support the recovery and growth of tourism (https://total-croatia-news.com/news/travel/croatia-s-tourism-sector/). These tools will help small and medium-sized tourism businesses adapt to changing travel trends and better engage with international audiences.

Visuals and Supporting Materials

a) Visuals (e.g. screenshots, videos)

The Total Croatia Travel INFO bot primarily uses text-based communication, but is supplemented by some visual content to enhance the user experience. Within the Viber community where the bot is active, visual content such as maps, schedules and information graphics are sometimes shared to highlight travel-related updates, including ferry routes and schedules. In addition, articles and guides linked to by the bot often include visual aids such as images and infographics to support the information provided.

b) Supporting Documents (e.g. brochures)

Brochures are not explicitly integrated into the bot's functionality. Brochures and other tourist materials are accessible via related tourism platforms, such as the Travel Croatia websites, which offer downloadable brochures with travel tips, attractions and experiences in various languages.

e) Virtual Reality (VR)

General information:

- **Name/title:** JGL Pharmacy Museum
- **Location:** Rijeka, Croatia
- **Industry sector (NACE class. 2-digit):** 91
- **Date of implementation:** July 3, 2024
- **Contact information:** JGL Pharmacy Museum, Užarska 11, Rijeka Tel.: 051/257-103, e-mail: muzej-farmacije@jgl.hr

Description

a) **Technologies used:** The JGL Pharmacy Museum is a unique museum dedicated to the history and development of pharmacy, medicine and healthcare. The museum was founded by JGL (Jadran-Galenski Laboratorij), a Croatian pharmaceutical company. The museum is located in Rijeka, Croatia, and started to operate in October 2020. It offers a comprehensive insight into the fascinating world of pharmacy through various exhibits, artefacts and multimedia presentations. From July 2024, the museum offers virtual reality (VR) to enhance the visitor experience by providing an immersive and interactive way to explore the history of pharmacy and medicine. The museum, which focuses on the evolution of the pharmaceutical profession, is using VR to create a more engaging and educational environment (https://muzej-farmacije.jgl.hr/?lang=en)

b) **Description of implementation:** Visitors can even have fun with two VR glasses. Through one, visitors walk through the human body and see how the antibiotic fights against certain infections, and in the second application, the user plays the active role of a virtual pharmacist who tries to find suitable medication for the patients who come to the pharmacy (https://muzej-farmacije.jgl.hr/virtual-reality-in-the-jgl-pharmacy-museum/?lang=en).

Picture 1: Implementation of VR in JGL Pharmacy Museum in Rijeka

Source: https://muzej-farmacije.jgl.hr/virtual-reality-in-the-jgl-pharmacy-museum/?lang=en

c) **Stakeholders involved:** JGL d.d. (Jadran-Galenski Laboratorij), the local government and the City of Rijeka, cultural and historical institutions, academic institutions, tourism organisations , museum staff and curators, technology partners and VR providers, visitors and the general public, non-governmental organisations (NGOs) and cultural heritage groups, etc. Together, these stakeholders contribute to the JGL Pharmacy Museum's mission of preserving pharmaceutical heritage, providing education and promoting cultural and industrial tourism in Rijeka.

d) **Target Audience:** By integrating VR, the JGL Pharmacy Museum enhances the learning experience, making it more interactive and memorable and appealing to a wide audience, including tech-savvy visitors and those interested in history, industrial tourism and medicine.

Outcomes and Impact

a) **Key outcomes (e.g. engagement)**

b) **Number of visitors (yearly avg)**

4000 in JGl, 220 JGL museum in 2024

User satisfaction ratings (yearly avg) 5.0 (Trip Advisor); 4.7 (Google Review)

c) **Comparison with before AT implementation (if available)** N/A

d) **Testimonials, if applicable (best and worst) (example: google reviews etc.)**

Best:

Really informative. An interactive experience with the use of VR and video recordings. I particularly enjoyed seeing the old pharmacy. Great value for money - I spent 2 hours there (July, 2024)

A specialised museum about pharmacy. Attractive displays with the use of modern technology e.a. augmented reality. Our teen found it interesting. We were here for about 1,5 hours because there is many info, unless the museum is not that big. Also authentic interiors of an old pharmacy, a desk (July, 2023).

Worst: N/A

Difficulties in implementation of the technology, future Plans

a) Difficulties in the introduction of technology

Problems with the introduction of technology arise from the high financial costs of technology implementation (hardware and software); maintenance of the technology, which quickly becomes obsolete and needs to be updated; staff training requirements etc.

b) Future development plans

The aim of the museum is to interest young people in the pharmaceutical profession through the use of modern digital tools. The museum will continue to incorporate new presentation technologies such as artificial intelligence, virtual reality and 3D visualisation .

Visuals and Supporting Materials

a) Visuals (e.g. screenshots, videos) YES

Among its special attractions are multimedia installations that include a talking 3D snake as a symbol of pharmacy, a 3D pharmacist named Pablo, and 2D figures of notable scientists such as Galen, Paracelsus, Vladimir Prelog, etc.

(https://visitrijeka.hr/en/jgl-pharmacy-museum/)

b) Supporting Documents (e.g. brochures) YES

(https://visitrijeka.hr/en/jgl-pharmacy-museum/)

iii. Augmented Reality (VR)

General information:

- **Name/title:** Grimani Castle, House of the witch Mare
- **Location:** Svetvinčenat, Croatia
- **Industry sector (NACE class. 2-digit):** 47
- **Date of implementation:** July 1, 2020
- **Contact information:** Savičenta d.o.o., Svetvinčenat 47, 52342 Svetvinčenat, tel: +38552384318, e-mail: info@grimanicastle.com

Description

a) **Technologies used:** House of the witch Mare is a visitor center dedicated to the various material and non-material cultural heritage in Svetvinčenat. It is conveyed through modern technologies: 3D mapping, virtual and augmented reality. Mare the Witch will greet you and throw you back into the distant past. The visitors are welcome to try virtual archery and test their knight skills. You will experience Svetvinčenat in a unique manner with an augmented reality headset, partake in the quest for the unknown horseman's armour and you will be able to peek into the past . The house was enhanced in 2020 with major new content adding the interactive book of mythical creatures of Istria and enhancing the virtual archery battle – in which you must uphold the Morosini-Grimani Castle – with virtual sword fighting. Apart from Mare's portraits, there are also those of new people (and perhaps new creatures). (https://grimanicastle.com/en/house-of-the-witch-mare).

b) **Description of implementation:** Mare, the witch will greet you and throw you back into the distant past with 3D mapping projection. The visitors are welcome to try virtual archery and test their knight skills. You will experience Svetvincenat in a unique manner with an augmented reality headset, partake in the quest for the unknown horseman's armour and you will be able to peek into the past .

Picture 1: Implementation of augmented reality in the House of the witch Mare, Svetvinčenat

Source: https://www.istra.hr/en/experience/sun-and-sea/entertainment-theme-parks/witch-mares-house

c) **Stakeholders involved: Savičenta d.o.o.**, the local government and the municipality of Svetvinčenat, cultural and historical institutions, academic institutions, tourism organisations , museum staff and curators, technology partners and VR providers, visitors and the general public, non-governmental organisations (NGOs) and cultural heritage groups, etc. Together, these stakeholders contribute to the House of the witch Mare in linking folk legends as intangible heritage and cultural and historical monuments.

d) **Target Audience:** By integrating augmented reality, House of the witch Mare they improved the visitor experience, created a more attractive product for the younger population and created a realistic experience.

Outcomes and Impact

a) **Key outcomes (e.g. engagement)**

b) **Number of visitors (yearly est.)**
Up to 35.000 in 2023

c) **User satisfaction ratings (yearly avg)** 4,5 (Trip Advisor), 4,7 (Google Review)

d) **Comparison with before AT implementation (if available)** an increase of almost five times in terms of number of visitors (year 2020 vs. year 2023)

e) **Testimonials, if applicable (best and worst) (example: google reviews etc.)**

Best:

Interactive/multimedia centre is also very nice way of presenting the information to the younger generations and the moment you start thinking that it's a little bit too short, there are several VR and interactive games that kids have enjoyed a lot but I won't spoil with the details.
Finally, House of the witch Mare is incredible interactive experience and a step forward in modern approach to storytelling of local/pagan stories of mythological creatures.
Now especially with this kind of locations it is important that the staff and the main curator is up to the task -- and they really delivered. Every member of the staff was polite, helpful, engaging and ready to make the experience the best they could; especially with the House of the witch Mare it was important that the curator

is able to drive the story forward. We simply don't have enough positive words to describe how well they did all of this. Please, come visit -- it is worth your time. (August, 2024)

Super fun escape / puzzle solving game that you can play with your friends and family out in the open. I was also impressed with the quality of the museum: interactivity, VR, animations, taking photos, playing games... Really high tech and well thought out. (May, 2021).

Worst: N/A

Difficulties in implementation of the technology, future Plans

a) Difficulties in the introduction of technology

The implementation of new technology is expensive. In addition, new technology requires constant training of employees. Visitors also expect constant implementation of new technology.

b) Future development plans

The aim of the museum is to bring local legends closer to a primarily younger audience using available technology. The museum will continue to implement various new technologies to create a unique experience for visitors

Before the implementation of augmented reality (until 2020), revenues were at the level of up to EUR 50,000, and after those revenues grow to EUR 242,000 in 2023 with a ticket price of EUR 10 for adults and 7 EUR for kids in high season

Visuals and Supporting Materials

a) Visuals (e.g. screenshots, videos) YES

The history of Grimani Castle can be experienced through nine different multimedia contents: 3D mapping of the castle, Live portraits, Pillar of Shame, Coronation, Fire, Blacksmith, Knights Tournament and Uskok Wars. Using the smart bracelet, mixed reality photos can be created and delivered to an e-mail of your choice.

(https://www.tripadvisor.com/Attraction_Review-g303836-d10783677-Reviews-Morosini_Grimani_Castle-Svetvincenat_Istria.html)

b) Supporting Documents (e.g. brochures) YES

(https://grimanicastle.com/en/online-guide-1)

iv.	Internet of Things (IoT)

General information:

- **Name/title:** Muzej Apoksiomena
- **Location:** Mali Lošinj, Croatia
- **Industry sector (NACE class. 2-digit):** 91
- **Date of implementation:** 2016
- **Contact information:** Muzej Apoksiomena, Riva Lošinjskih kapetana 13, Mali Lošinj, Tel.: 051/734 260, e-mail: info@muzejapoksiomena.hr

Description

a) **Technologies used:** The Museum of Apoksiomenos is a unique museum dedicated to one statue, dived from Lošinj´s underwater after almost 2000 years. The museum is located in Mali Lošinj, Croatia, and started to operate in 2017. It uses IoT to adjust the light, sound and ambience in different part of the museum based on visitor's movements. The reason is to provide visitor's deep dive into the exhibition.

b) **Description of implementation:** This museum is dedicated to one artefact, a bronze statue of the Greek athlete Apoxyomenes, found in the Adriatic Sea in 1996. Through the use of IoT technology, the museum provided visitors with an interactive experience, including the adjustment of light, sound and ambience in different part of the museum based on visitor's movements. This technology improves visitors interaction and creates a dynamic space that changes depending on the activity in the space.

c) **Stakeholders involved:** MA (Muzej Apoksiomena), the the City of Mali Lošinj, Ministry of Culture of RH, cultural and historical institutions, academic institutions, tourism organisations , museum staff and curators, technology partners and providers, visitors and the general public, non-governmental organisations (NGOs) and cultural heritage groups, etc. Together, these stakeholders contribute to the Museum's mission of preserving heritage, providing education and promoting cultural tourism in Croatia.

d) **Target Audience:** By integrating IoT, the MA enhances the learning experience, making it more interactive and memorable and appealing to a wide audience, including tech-savvy visitors and those interested in history. While telling a story of Lošinj, from Greek times till today, using IoT it can pull in a visitor in the imaginary world of Apoxyomenos. Schools, tourists and general public, together with art and history professionals are targeted audience of MA.

Outcomes and Impact

a) **Key outcomes (e.g. engagement)**

b) **Number of visitors (yearly avg)**

2018. – over 25.000

2020. – over 13.600 (covid)

2021. – over 19.000 (covid)

2022. – over 24.000
2023. – over 25.000
Average – over 25.000

c) User satisfaction ratings (yearly avg) 4,5 (Trip Advisor); 4,8 (Google Review)
d) Comparison with before AT implementation (if available) N/A
e) Testimonials, if applicable (best and worst) (example: google reviews etc.)

Best:

1. An amazing small museum about one exceptional statue. It is hard to imagine that someone can create such an interesting story for a single statue. The museum atmosphere is exceptional and the feeling you get once you enter the room with Apoxyomenos is hard to describe. There is a thrill to be standing so near to something older than 2000 years especially knowing it spent 2 centuries under the sea to be revealed in such a glory. There is also a humility and insignificance I felt by closely observing something to which my world is just a fraction in its long existence. (August 2024)
2. We were pleasantly surprised with original presentation and enjoyed the possibility to visit such an ancient founding. (August 2024).

Worst: N/A

Difficulties in implementation of the technology, future Plans

a) Difficulties in the introduction of technology

Financial limitations for future development plans.

b) Future development plans

AR / VR presentation of materials and exhibits, development of digital and social media presentations as expected new communication channel, development of interactivity in museum exhibitions and exhibitions.

Visuals and Supporting Materials

a) Visuals (e.g. screenshots, videos)

Picture 1: Implementation of IoT in MA

Source: https://vizkultura.hr/muzej-apoksiomena/

b) Supporting Documents (e.g. brochures) YES

v. Artificial Intelligence (AI)

General information:

- **Name/title:** Valamar hotels
- **Location:** Poreč, Croatia
- **Industry sector (NACE class. 2-digit):** 55
- **Date of implementation:** 2019
- **Contact information:** Valamar riviera

Description

a) **Technologies used:** Valamar Riviera, hotel chain in Croatia and Austria dedicated to use AI as business enhancement tool. It applies advanced technologies in various areas of business such as sales, marketing and hotel operations, enables employees to communicate and learn on digital platforms, improves business processes and fosters an organisational culture that constantly innovates with the help of new technologies.

b) **Description of implementation:**
Valamar Riviera is in a process of implementation more than 50 AI technologies in different business processes, mainly to predict visitor behaviour and manage capacity and costs. Division of Valamar focused on development and digitalisation, called VALDI, is developing and implementing digital solutions for processes like self-check-inn, automatisation of processes using robots, developing digital platforms for online services like Valfresco.

c) **Stakeholders involved:** Valamar riviera group staff, technology partners and providers, visitors, consumers... Together, these stakeholders contribute to implementation of digital and AI solutions in business process.

d) **Target Audience:** By integrating AI, the Valamar riviera enhances the hotel experience, making it more personal directed for an individual customer, depending on its habits and expected wishes. Also, by integrating AI in business process, Valamar is trying to make it easier for employees and speed up repetitive or predictable processes.

Outcomes and Impact

a) **Key outcomes (e.g. engagement)** N/A
b) **Number of visitors (yearly avg) N/A**
c) **User satisfaction ratings (yearly avg) N/A**
d) **Comparison with before AT implementation (if available) N/A**
e) **Testimonials, if applicable (best and worst) (example: google reviews etc.)**

Difficulties in implementation of the technology, future Plans

a) Difficulties in the introduction of technology

b) Future development plans

Visuals and Supporting Materials

a) Visuals (e.g. screenshots, videos)

b) Supporting Documents (e.g. brochures)

CONCLUSION

The result of the process of compiling Catalogue of Advanced Technologies Applications for Tourism has revealed significant opportunities for enhancing the tourism experience in the Mediterranean through the use of advanced and immersive technologies. By cataloguing 31 examples of good practices, the project highlights how tools like augmented reality (AR), virtual reality (VR), and artificial intelligence (AI), among others, can enrich the visitor journey, making tourism more interactive, engaging, and personalised .

From the collected examples, a clear trend emerges: AR and VR are currently the most widely adopted technologies in the region, reflecting their versatility and high impact on user experience. These technologies not only add value to the tourism experience but also open new avenues for sustainable tourism growth, fostering deeper connections with local heritage and culture.

All countries included in the Project show diverse use of advanced technologies in tourism, each with a distinct focus. Based on the examples collected Croatia has an integrated approach, utilising chatbots, AI, VR, and AR to provide comprehensive tourist support. Greece emphasises cultural and historical experiences with AR and VR, particularly enhancing museum visits. Italy leverages AR and VR to bring historical storytelling to life, coupled with AI for personalised visitor interactions. Portugal focuses on AR and VR for cultural tourism, collaborating with research institutions for enhanced educational content as well as Spain. Slovenia is emerging with VR and AR, primarily in mining heritage, with broader implementation of innovative technologies being in development.

Moving forward, the SMITour project aims to build on this foundation by designing new initiatives that will further promote the adoption of these technologies across the Mediterranean region. By embracing innovation, regional stakeholders can ensure that industrial tourism becomes a pivotal part of the economic and cultural landscape, providing meaningful experiences for visitors while supporting local communities and economies.