

OT3.4 - Joint concept on digital innovation of natural and cultural heritage in AoE

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1. EXECUTIVE SUMMARY

The Joint concept on digital innovation of natural and cultural heritage is the key document for the digitalisation and interpretation of heritage in the Amazing Amazon of Europe area as it presents what it means to digitalise natural and cultural heritage as well as provides key insights into technological and non-technological building blocks for creating a digital heritage tourism experience.

The first chapter (Aims of digital innovation of heritage) presents the concept of digitalisation of heritage along with the advantages digitalisation brings.

The second chapter (Necessary competencies to develop new innovative digital heritage products / services) presents key non-technological building blocks for the creation of digital heritage tourism experience, including how it connects with the whole Amazing AoE story.

The third chapter (IT tools and technological solutions to develop new innovative digital heritage products / services) follows with the presentation of technological elements for the creation of digital heritage tourism experience. The practical use of some of these technologies is then presented in two case studies in the chapter “Examples of digitalisation - digital opportunities in practical and understandable cases from Arctur”.

The final chapter (New business models in the heritage field through practical examples - cases from project partners) presents ten cases from project partners in which they used technological and non-technological building blocks to design their own digital heritage tourism experiences.

2. AIMS OF DIGITAL INNOVATION OF HERITAGE

The Joint concept on digital innovation of natural and cultural heritage can be seen as the basis for further digitalisation and interpretation of heritage in the Amazing Amazon of Europe area.

The **digital innovation of heritage can be understood as the intentional development of new, user-oriented products and services which take advantage of the potential of advanced technologies** (3D digital capture, digital interpretation, new media, e.g. Augmented Reality, Virtual Reality, holograms, web apps ...). This innovation happens in conjunction with the respectful treatment and preservation of heritage (by using non-invasive technologies) and the development of appropriate knowledge and skills that connect heritage studies with storytelling, marketing and business approaches and skills (art & design thinking, business models, user experience, digital marketing).

As such, digital innovation of heritage contributes to:

- Raising awareness on the importance of protecting natural and cultural heritage;
- Better understanding of the protected values of heritage;
- Developing of insights and lessons for the future;
- Wider acceptance of protection regimes and limitations;
- Building of heritage communities;
- Development of new sustainable business models.

Digitally enhanced heritage experiences:

- imply an engaging and user-friendly conveyance of the values connected to natural and cultural heritage; make use of advanced technologies for greater interactivity, memorability, storytelling and the global recognition of tourist and heritage experiences;
- develop new business models and demonstrate positive effects on the local economy;
- develop hybrid competencies of heritage and storytelling, marketing and business approaches and skills;
- meaningfully include the offers of local businesses (accommodation facilities, food vendors, tour guides...) and connect with other tourist products.

2.1. 5 advantages for the digitisation of heritage

1 Attracting new audiences

New technologies can attract new audiences that had not shown any previous interest in heritage, who had overlooked it or considered it boring. Digital technologies present new methods for presenting content — for example in a visually more attractive way — and offer better explanations or breakdowns of information that include the visitor.

These kinds of solutions are also attractive for groups that don't consider themselves drawn to cultural or natural heritage. New interactive technologies and new methods of digital storytelling are not meant only for those already interested in heritage but can also **widen the circle of potential visitors.**

2. Preserving heritage in the digital world

Technological development has created an increasingly large and complex environment of digital information, objects and relations. We are slowly shifting to digital copies of our real world: we started with paper documents and letters, many of us now have more digital than printed photographs. Maps, blueprints and many other services are now also primarily digital.

On the other hand, heritage remains mostly un-digitised. Even though the physical preservation of heritage is the primary measure of stewardship, **we must ensure the presence of heritage wherever its potential audience might be, including the digital world; the internet, “metaverse”, mobile applications, video games, digital registers, online libraries etc.**

3. Greater interactivity and involvement

Digital technologies enable communication and interactive experiences that classic methods of presentation do not allow for (texts, articles, information boards, photographs, videos...). Through the use of technology, the process of learning about heritage can become **interactive, simultaneously making it more educational, memorable, individualised and experiential**. Heritage can be introduced to people through (serious) play and practical experience.

Additionally, the physical limits of heritage sites (accessibility barriers, remote locations...) can be decreased with the use of the right technology – yet still achieve interpretation goals.

4. Creating opportunities for creative industries

Heritage institutions — museums, archives, galleries, libraries, natural parks — have always been keepers of the information who share it with the wider community. Digitisation and digitalisation make this sort of exchange of information even easier — without any concern that the original might be damaged, digital copies of heritage from scanned photos and documents to 3D models of buildings and objects can be **shared with the public, with creatives, developers, researchers, schools and faculties or anyone who wishes to create new value**.

5. Redirecting visitors to new destinations

European (especially cultural) heritage is one of the most evenly distributed goods — it is present in the east and west, north and south, and it is everywhere unique, but still part of a common story. It is a local resource and an **opportunity for either creating new destinations or for developing existing ones, as well as shaping new flows of tourists**, thus ensuring a more even distribution of both the benefits and burdens of tourism.

3. NECESSARY COMPETENCIES TO DEVELOP NEW INNOVATIVE DIGITAL HERITAGE PRODUCTS / SERVICES (AN IMMERSIVE DIGITAL HERITAGE EXPERIENCE)

3.1. Immersive Digital Heritage Experience Design

Developing an immersive digital heritage experience, one needs to consider:

Consider the needs of your heritage organisation - “Experience Design”, offers you a strategic approach that allows you to improve the competitiveness of the tourist offer of your destination.

Consider the ever-changing needs of travellers: The fundamental demand of good Experience Design is that it is "user centred", that it always puts the final user at the centre of the entire design process.

Problems: The starting point is an analysis of one or more problems or needs your visitor experiences. Once you have a clear idea of the needs/problems you are going to design for, then go on to the next step in your analysis.

Travel motivation: Understand what drives travellers' choices to deliver an experience that aligns with their expectations by conducting surveys and analysing travel data, both online and offline. Ask yourself why do visitors choose your site and why do they prefer your destination over all the others available.

Fears: Understand what possible fears or obstacles the visitor has that may be holding him back. Are there reasons why our immersive experience might not be suitable for some travellers? Is there anything we can do to address this problem?

Solutions: Once possible obstacles have been identified, you can start to look for possible solutions. These depend very much on the type of heritage you want to promote and the assets or opportunities you have in your organisation.

Alternatives and competitive advantages: It's very important to understand why a traveller would choose us over others and to target the experience design in a way that enhances your strengths. Are there similar experiences around you? Is there anyone already offering the same experience, and if so, what competitive advantages can you offer to the traveller?

Unique value proposition: With an analysis of your strengths, you can identify your unique value proposition (UVP). Find the essence of your experience, that

thing that only you have and that, from a market perspective, really makes the difference to your traveller.

3.2. Unique selling proposition

It is important to start by defining the unique selling proposition of the experience we want to design and the heritage we manage.

The USP refers to the unique benefit that enables you to stand out from competitors. It's the distinctive element that only you have, and that the visitor can't find from your direct competitors.

These are the first questions to ask yourself to identify your superpower!

- What makes your experience unique?
- Why should the visitor choose your experience specifically?

3.3. Knowing your target

Your experience is not for just anyone. **Understanding what your target audience is critical to design a tailored experience:**

- Does the experience appeal to an adult audience or is it for children?
- Does it require being active?
- Can people with disabilities participate?

Once we understand the USP, we need to identify the exact audience we want to target and then design an experience based on the needs, desires, and interests of this audience.

There are many ways of learning about (existing and desired) audiences and choosing a specific method depends on the intentions, expertise and preferences of the people implementing the project.

3.4. Wow moments

An experience is made up of a series of moments.

So-called "wow moments" are those that the visitor will carry in their heart for a lifetime, and they are the ones they will tell their friends and family about. It can be a sunset aperitif, a hands-on experience, a chat with a local ...

For getting to wow it is important that:

- you know the moments in which your visitor's heart will leap,
- stitch the rest of the experience around those moments.

3.5. Experience storytelling

There is no real experience without a story to tell and/or listen to.

What is the storytelling, the common thread that ties all the scenes and moments of your experience together?

All key ingredients for storytelling are:

- structure
- emotion
- empathy
- facts

Unforgettable storytelling has to inspire and keep the visitor engaged before, during and even after the experience.

Is storytelling possible only through spoken or written words? Storytelling should engage all our senses!

Storytellers have always tried to use different approaches to stimulate imagination and have been for this purpose evolving and adapting various technologies of their time.

Now, in the world of digital technologies, storytelling can take many different forms, but the best examples still engage people on a personal and emotional level.

There are some storytelling tips to be followed for the heritage sector:

- be personal,
- be informal but expert,
- tell hidden stories,
- illustrate your points,
- signpost your journey,
- be specific,
- be evocative.

Also, heritage should be communicated in a way that makes it:

- Engaging/Inclusive: Visitors should be drawn in and included in the experience — either with interactive elements or by seeking parallels with the visitor's life experience, ideally both.
- Readable at two speeds: The experience should allow for two "readings" — a fast experience with a few key points of information and an extended one with

additional information for those that want to learn about individual elements in more detail.

- **Thought-provoking:** The experience should be thought-provoking and ask questions beyond the answers it provides — it should encourage the visitor to research further.
- **Instagrammable:** We should keep in mind the visual effect of the experience — can the users take a good photo or video of the experience?
- **Friction-less:** If the experience includes several constitutive elements (for example on different locations) we should make sure the connections are reasonable and intuitive.

3.6. Identifying heritage objects and stories

The values, stories, information and legends that are connected to this asset play an important role — perhaps more important than the physical traits of the immobile heritage asset itself. Whereas the latter will be the base onto which we shall add information through the use of technology, the former elements are the source material for the digitally enhanced experience itself.

Thus, when choosing, we should consider:

- Which values do the given asset express?
- What is unusual, invisible or unexpected about it, that could fascinate the visitor?
- What sets it apart from other similar assets from the same time period?
- What message and what values does it communicate?
- How has this heritage asset affected or still affects the life of the modern person, perhaps a visitor?

3.7. Cooperation with stakeholders and local businesses

A project of digital innovation of heritage combines many different sectors and demands the inclusion of various fields of expertise, institutions, knowledge, skills and perspectives. This makes it interesting, but for many people, it may also present a new kind of (co)operation that requires more preparation, argumentation and consensus-seeking.

Potential stakeholders:

- Experts at the heritage protection institutes
- Experts at the concerned museums and parks
- Museum associations, folklore associations & other formal / informal groups which concern themselves with heritage

- Environmental organisations
- Natural scientists and their associations
- Artists and other creatives
- Experts on a given cultural heritage (for example architects, machinists, historians, ethnologists...)
- Universities and schools
- Youth organisations and other cultural NGOs
- Technology companies
- Tourist companies and supporting organisations

Studies confirm that investments in cultural heritage have a strong effect on the local economy — tourists who visit cultural heritage destinations perform 90-96% of their spending in the vicinity of the landmark (for sleeping accommodations, food, related services, transport...). To strengthen this bond between cultural – as well as natural heritage -heritage and the adjacent businesses, the solutions must be designed accordingly and simplify the visitors' choices regarding quality products and services in the surrounding area (for example by presenting them with digital information...).

3.8. Enriching the Amazing AoE story

An additional requirement for the digital heritage experiences is that the experience enriches the whole Amazing AoE story, meaning that it represents a unique feature of the Amazing AoE area which is special at the global level but is connected with the flagship tourism products (Bike Trail, River Journey, Amazing Moments) complementary with other digital heritage experiences.

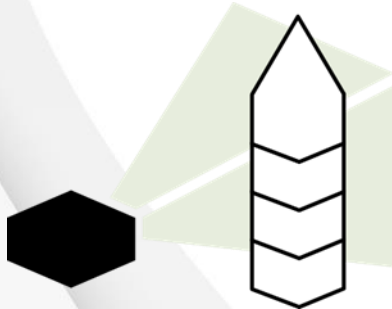
4. IT TOOLS AND TECHNOLOGICAL SOLUTIONS TO DEVELOP NEW INNOVATIVE DIGITAL HERITAGE PRODUCTS / SERVICES

4.1. Digital capture

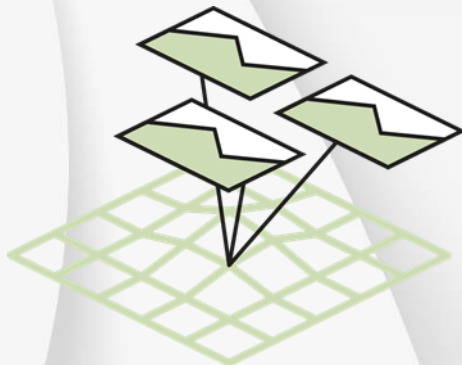
The purpose of digital capture is the creation of a digital copy of an object of immovable or movable heritage. In the process of digital capture, the object is prepared (cleaned) and captured in 3D.

The following sections present the key technologies of digital capture:

- a) **Laser scanning** (occasionally “lidar”, short for “Light Detection And Ranging”) is a catch-all term for a range of approaches that use laser technology for determining the locations of points in 3D space. The greater the number of lasers emitted, the denser the point cloud.

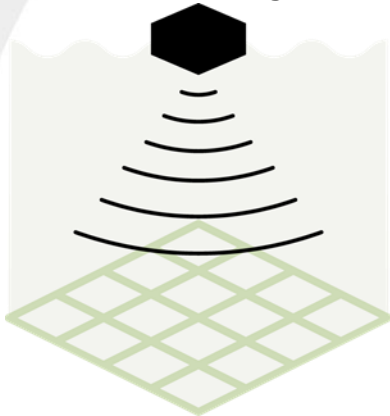


- b) **Photogrammetry** determines distances with the use of several photographs. With the advances in software, algorithms and increases in computing power, it is possible to process a large amount of data and compute point clouds from captured photographs. The software automatically identifies similar scenes in a large number of photos and arranges them in a 3D shape — either a point cloud or a wireframe.

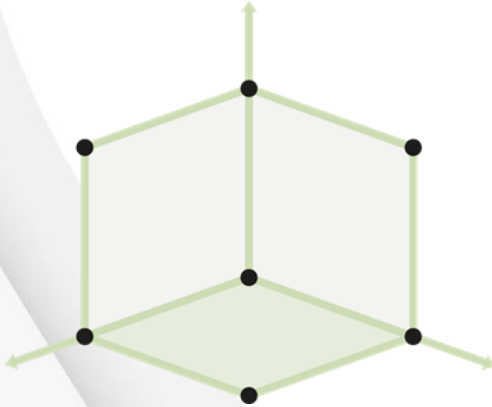


- c) **Sonar** - using soundwaves to determine an object’s location and distance can be applied in three dimensions. A sonar uses one or several pulses of sound (“pings”)

to determine the location of points in a three-dimensional space, which forms the basis of 3D scanning.



d) **The modelling of a 3D model** using the software. Based on blueprints, sketches, measurements or imagination.



Data Processing - An unprocessed point cloud can offer useful information as it visualises the object, but typically additional processing of data is required to create more generally useful files — for example, a photorealistic 3D model with colours and materials.

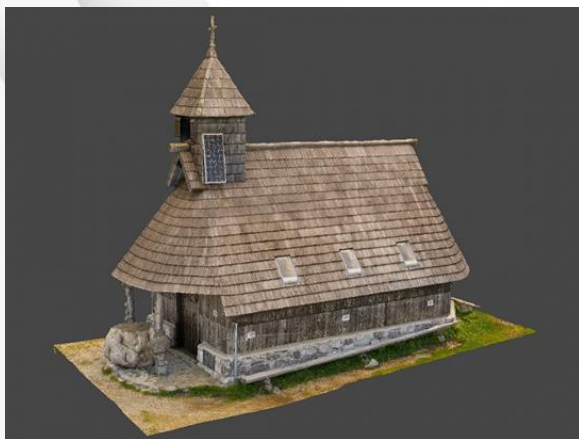


Figure 2: 3D model of the Mary of the Snow chapel at Velika planina (Commissioned by: Zavod za turizem, šport in kulturo Kamnik)



Figure 1: 3D model of Old Mine Shaft in Velenje (Commissioned by: Zavod za turizem Šaleške doline)



Figure 3: 3D model of Railway Bridge in Solkan (Commissioned by: Javni zavod za turizem Nova Gorica in Vipavska dolina)

4.2. Simulated reconstruction

Using the process of a 3D simulated reconstruction we supplement a mesh by adding in 3D elements which were not captured by scanning – because they don't exist. In this way, we can add ruined, damaged or removed structures or present different development phases through different time periods. The 3D model of these elements is treated in the same way as the scanned ones but we usually give them a different texture, so the viewer can discern between the real and the supplemental elements.



Figure 4: An attempt of 3D reconstruction of Rihemberk Castle (Commissioned by: the City Municipality of Nova Gorica)



Figure 5: 3D model and simulated reconstruction of Ravbar Keep (Commissioned by: RRA Zeleni kras)

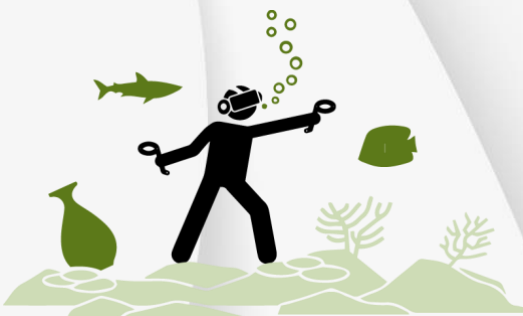
4.3. Other technological solutions



AR Web & mobile apps (mobile or web) is a software application that integrates digital visual content (and sometimes audio and other types) into the user's real-world environment. It achieves this by adding layers of digital information (digital layers) on top of a screen showing the physical world. Augmented reality is most applicable when in order to tell a story of heritage, material remnants should be augmented with a digital layer.



Virtual tours offer a panoramic view or video simulation of a place. They can be viewed, through a browser, an app or through a set of VR glasses. They may also use models in place of real-life videos and images and are able to offer some level of interactivity. Online virtual tours are usually a collection of panoramic images of an existing place that are played in sequence to view like a moving video with added sound and text effects. VR Virtual tour is a simulation of an existing location, usually composed of a sequence of videos or still images. It may also use other multimedia elements such as sound effects, music, narration, and text.



VR game is a video game played on virtual reality (VR) hardware. Most VR games are based on player immersion, typically through head-mounted display unit or headset and one or more controllers. The headset typically provides two stereoscopic displays in front of the user's eyes to simulate a 3D space. VR games are appropriate for involving visitors in heritage stories, especially when material remnants are scarce, hard to reach or otherwise inaccessible in person.



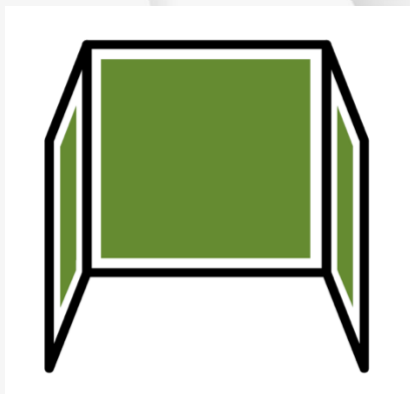
Holographic projectors create an image that has three-dimensional qualities but is still flat. Many “holograms” currently on the market are still technically 3D images shown on a 2D surface. Holograms are best used in applications where wish to tell a story of an object, building, animal, character, old technology working principles.



Interactive object recognition (OR) table is a touchscreen table, with which can users interact by putting objects directly onto it. The touchscreen recognizes the objects and responds by showing information associated with them. Interactive object recognition (OR) tables are appropriate for structuring complex information of diverse formats and showcasing it in easy-to-interact way.



Interactive screens & walls are physical wall surfaces that are mapped with a digital display, by using digital screens or (cheaper) using a projector and can be interacted with - to manipulate content displayed on it. With the integration of different sensors (cameras and face recognition IA), the interaction with screens is not limited only to the touch.



Immersion room is a virtual reality room that is a self-contained space, customized with embedded or portable technology that delivers or enhances a highly immersive multimedia experience. Immersive environments are simulations that fill the user's visual field, giving the sensation of physical presence. Virtual reality delivers immersion from the individual's point of view, while immersive rooms bring many viewers into the same simulation.

5. EXAMPLES OF DIGITALISATION - DIGITAL OPPORTUNITIES IN PRACTICAL AND UNDERSTANDABLE CASES FROM ARCTUR

5.1. Digital room e-Castles of Posavje

The region of Posavje is well-known for many castles that have through centuries been established along the Sava river and its confluences. Castles are one of the main tourist attractions, present in all municipalities and due to its architecture a visible and remarkable element of cultural landscape. The main wish of the RRA Posavje as the regional development agency was to develop digital content and digital experiences, involving 7 locations (all castles) spread across the region of Posavje.

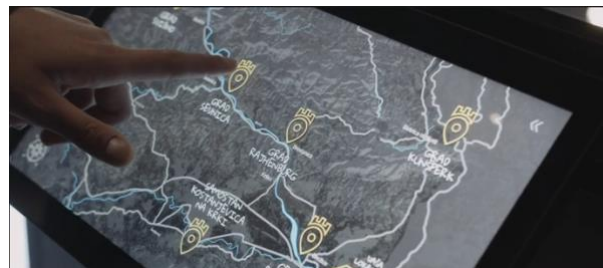
The idea

The main idea behind the solution was thus to reach target group in their environment – we decided to work in the Čatež Spa resort, the largest tourist attraction in the region with the most overnight stays. The aim was first to attract visitors to the digital room for a short visit, there present them the magnificent castles through interpretation technologies, and only then motivate them to plan a half day trip to any of the castles.



Inspiration

Inspired by the dark cellars of castles, interpreted in a modern way, we designed the dark room with hand-drawn pictures of castles, spot lightning and wooden stools. Special attention was given to background music, a modern interpretation of Medieval music. The intended emotion was a surprise as one steps from the world of pools and hotels into a dark, medieval world of castles.



The app



In addition to the room, we have developed a web-app “Magnificent 7” that accompanies the visitor on their trip to castles and guides them using gamification (collecting legendary artefacts, putting the user in the role of alchemist).

5.2. Submerged villages of Velenje lake

Deep in the lakes of Šaleška dolina near Velenje are hidden and almost forgotten villages – Slovenian Atlantida. A tourist product, incorporating digital technologies, takes one on an exploration. Šaleška Dolina Tourism Board wished to create a new tourist product that involves all the main attractions (a tourist mine and a museum, lake with a new viewing platform, gastronomy ...), yet in a new and attractive way.

The background

The product builds on a history of lakes that have been created as a consequence of coal mining in the area. These artificial lakes grew to a current size in only 100 years and thus several villages needed to make space for this rapid growth. People needed to evacuate, leave their homesteads and move to either the city or other villages.



The experience

Within the tourist experience we take the visitor to the mine where she gets to know the history of mining and especially its effects on the surface. Through an animated video she learns about the quick growth of lakes and stories of the people above-ground.

Following that red-thread, we take the visitor to the lake. With an electric boat we travel to the centre of the lake, observing the locations of former villages. There, using VR glasses, she virtually descends to the bottom of the lake and observes 3D digitally reconstructed village of Škale. The hyper-reality of 3D reconstruction connects the visitor with the stories of the former inhabitants – and the price some needed to pay for the progress of the local community.

The experience ends at the shores of a lake, on a viewing platform. There one observes the impact of coal mining in the region – and the new future that lies ahead with the coming closure of the mine and coal power plant.




6. NEW BUSINESS MODELS IN THE HERITAGE FIELD THROUGH PRACTICAL EXAMPLES - CASES FROM PROJECT PARTNERS

In this chapter, we present the realised, planned or “ideal” projects for the digitalisation of natural and cultural heritage from project partners. The project partners presented these projects as part of the 3rd training on digital innovation of heritage.


These projects are a first step in developing new business models in the heritage field at the partner’s location which follows guidelines on digital innovation of heritage presented in chapters 3 and 4.

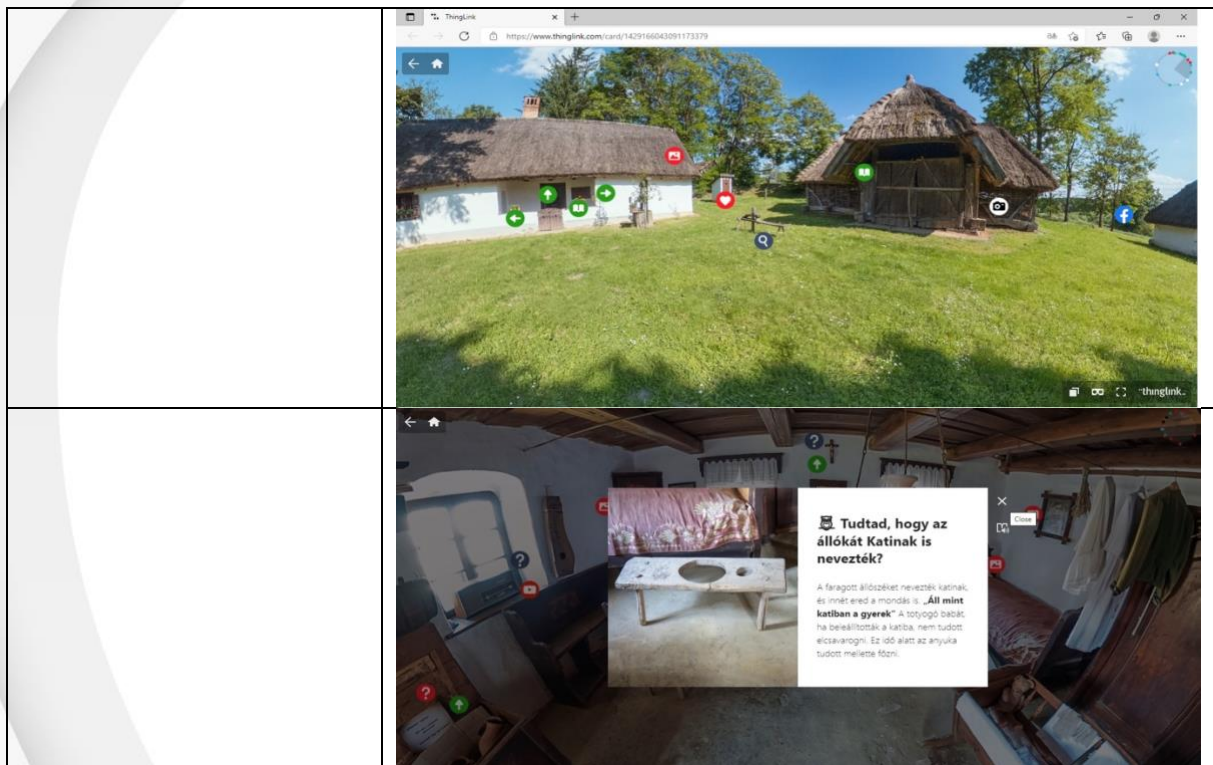
6.1. Municipality of Velika Polana (Slovenia)

Project	<p>Digitalisation of the homestead of the writer Miško Kranjec</p> 
Problem	<p>It is interesting for tourists, but...</p> <ul style="list-style-type: none"> • we would like to modernize it • diversify its contents • interesting to a wider circle of tourists (especially to young people).
Heritage object	<p>Kranjec homestead - memorial room:</p> <ul style="list-style-type: none"> • the writer’s study with a library • a gallery with the writer’s lay oil paintings and his own photographs • rooms where you will learn all about the writer’s birthplace.
Unique selling proposition	<ul style="list-style-type: none"> • still a lack of attractions in the region • interesting and unique story
Target	<p>Day visitors and those who stay and spend a couple of nights and want to see something during the day</p>

Technology	VR: visitor could simultaneously listen to the writer's stories, and at the same time set out on a journey through his stories with virtual glasses
	A large screen with films made after his literary proposals
	Nn interactive screen - table (a modern reconstruction of a writer's desk) where you can recognize the writer's works
	Holograms of the most famous literary heroes
	Non-digital info panels with excerpts from his life

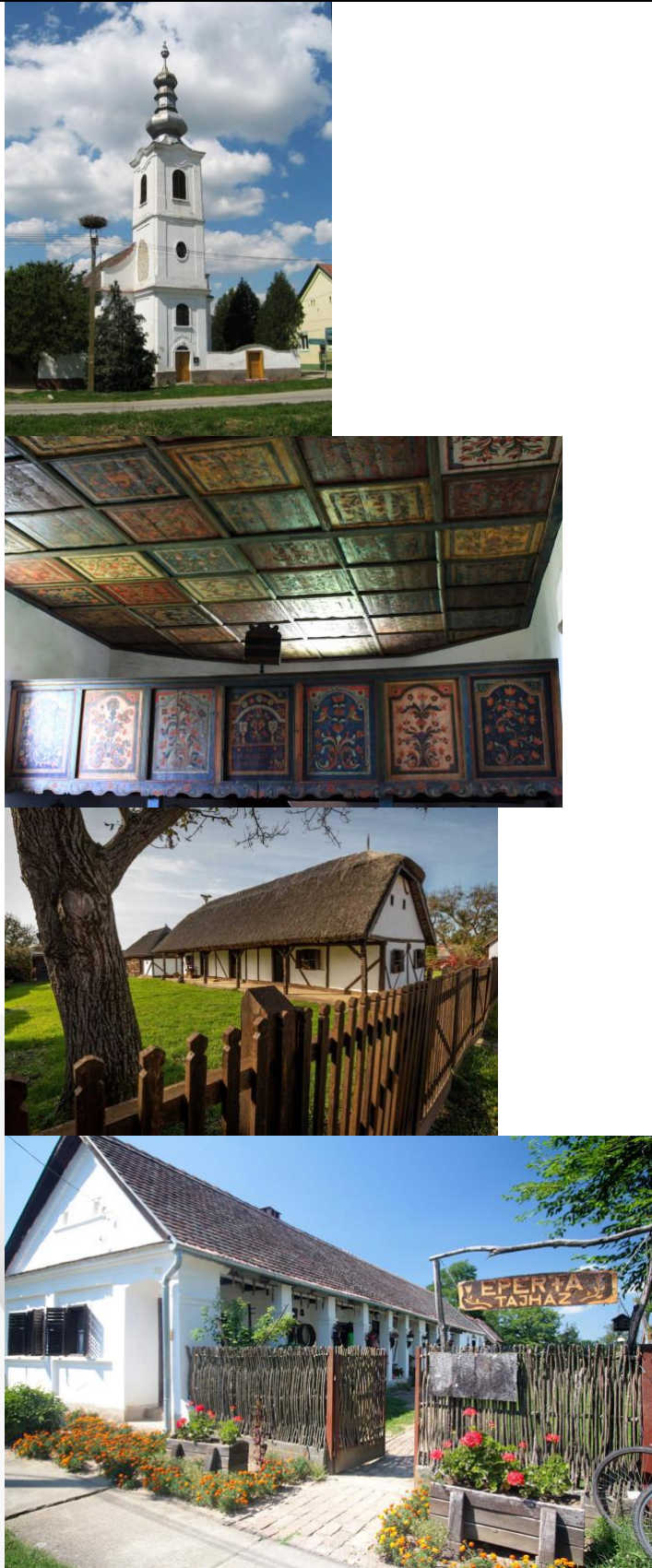
6.2. West Pannon Regional and Economic Development Public Nonprofit Ltd. (Hungary)

Project	Digitalisation of traditional houses and rural way of life 
Problem	Protection of built heritage is not ensured <ul style="list-style-type: none"> • Poor physical condition • Lack of financial resources Many of them are without any function <ul style="list-style-type: none"> • Presentation of them is not ensured • Lack of capacity
Heritage object	Integration of traditional houses into tourist offer by digitalisation of the heritage
Unique selling proposition	Presentation of tangible (buildings, items) and intangible heritage (customs, habits) at the same time
Cooperation	A local coordinator, field trip
Technology	Virtual guided tours (360 degrees)
	Access through Thinglink (webportal)
	Written descriptions
	Images, audio, video content can be added (disabled people can access information as well)



6.3. CROST Regional Development Nonprofit Ltd. (Hungary)

Project	Ormánság - Cultural Heritage along the AoE bike trail
Problem	<ul style="list-style-type: none"> • Depopulation tendencies lead to the deterioration of cultural heritage. How to improve population retention power of the area? • In spite of some occasional ad hoc renovation funding there is a lack of systematic valorisation of the heritage in the Ormánság area (stage N7 of the Bike Trail). How to create an identifiable brand based on local heritage for the Ormánság area? • How to link it with cycling tourism as the most ideal modality to discover the area?
Heritage object	Churches, townhouses and country-houses





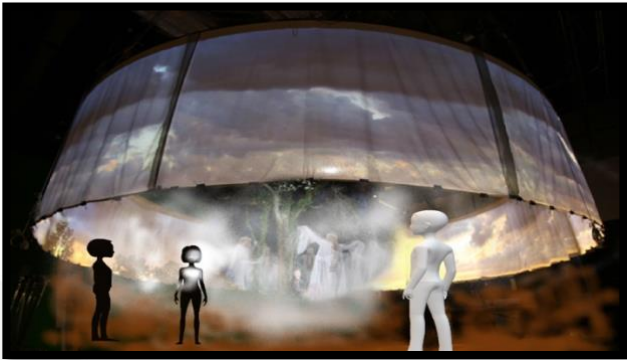
Unique selling proposition

- Create a distinguishable and attractive image for the area, by means of digitalisation.

	<ul style="list-style-type: none"> Enhance the promotional tools for stage N7 of the Amazon AoE route - USP based on cultural heritage.
Target	The region is gradually enhancing its value, it is upgrading but it needs a thoroughly developed and properly implemented marketing strategy and lobbying to the decision makers
Cooperation	As local units are poorly funded and lack knowledge, coordination should be done from outside, with EU and national funding.
Technology	Idea phase only identification of the relevant partners: municipalities, church, civil organisations, state authorities and organizations (like Aktív Magyarország , MTÜ

6.4. Tourism Board Međimurje (Croatia)

Project	<p>Hiža međimurske popevke (Interpretation center of Međimurje folk song)</p> 
Problem	<p>Preserve the Popevka. Popevka as a traditional form of singing in Međimurje was included in 2018 on the UNESCO Representative List of Intangible Cultural Heritage of Humanity.</p> <p>Elizabeta Toplek (born and worked in Donja Dubrava), better known as Aunt Liza, stands out as the most beautiful voice and the protective face of the Međimurje song.</p>
Heritage object	<p>The goal of the interpretive exhibition of the House of Međimurje Songs is to present all the phenomena of Međimurje Songs in an attractive and interesting way, in one place (Hirschler Palace in Donja Dubrava).</p>

	
<p>Unique selling proposition</p>	<ul style="list-style-type: none"> • The story of Popevka will be presented through seven units: roots, songs, singers, dancers, clothes, instruments and aunt Liza in Donja Dubrava. • Technological interpretation takes place with a holographic touch screen that displays sequences from Aunt Lisa's performance and an application that contains texts, photos, videos, infographics.
<p>Technology</p>	<p><u>Immersion room:</u> The interior is completely darkened; the audience stands at the inner edge of the metaphorical rhythm of the drum and follows the story that "travels" in circular cycles (in pentatonic rhythm) through the pages of the "drum / drum".</p> 
	<p><u>Immersion (sound) room:</u> The focus of the interpretation is on listening to an exceptional collection (sound library) of over 20,000 recorded songs in various performance techniques. The interior of the "auditorium" is attractive but purposefully designed to achieve a superior audio experience (sound membrane) and equipped with comfortable seats for relaxed sitting.</p>



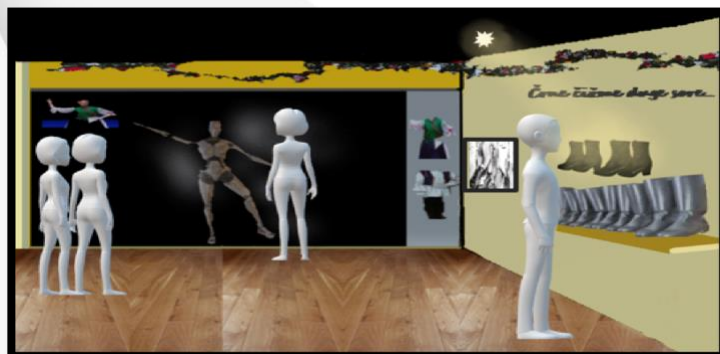
Ilustracija dizajna slušaonice s *cyrtails* i *holographic* vizualizacijom skladbi.

Interactive screens: Singers - Technological interpretation takes place on three "wall mosaics" consisting of frames with backlight photographs and an interactive touch screen invisibly integrated into the center of the mosaic.





Ilustracija interaktivnog mozaika sa „*shower*“ audio sustavom!

Interactive screens: Dancers - interpretation technology includes a *mash.me* system that allows visitors to interact / play with their virtual avatar, which is their dance partner, and mimics the movements / steps of visitors. The visitor receives instructions about the dance on the screen, imitates the movements of the dance and at the same time sees himself as an avatar who accompanies him. Depending on the gender, the avatar dresses in m/f folk costume.





Interactive screens: Clothes - This topic interprets the


	<p>folk costume of Međimurje and its connection with the area of Central Europe, from where they took some influences. Technological interpretation is realized through "magic mirror" technology by which visitors dress and change into folk costumes while standing in front of a "magic mirror."</p> 
	<p><u>Interactive screens:</u> Instruments - The types of instruments, their origin and connection with Popevka through historical periods are interpreted. The animation is performed through a virtual playing teacher who teaches visitors how to play on an interactive video. The lesson is to master a few technically simple tones.</p> 

6.5. Osijek-Baranja County (Croatia)

Project	New view of Memorial complex Batina
Problem	<ul style="list-style-type: none"> • In the memorial room, which is part of the complex, there is an exhibition that is minimalistic • Pieces of non-functional weapons, some military equipment and personal belongings of some soldiers, and some photographs and documents • Lack of interest for visit!


Heritage object	<ul style="list-style-type: none"> • The Batina memorial complex represents one of the greatest battles in World War II in the former Yugoslavia. • It is located in the far east of Croatia, above the village of Batina. • The "Victory" monument is imposing and dominates the landscape. 
Unique selling proposition	To renew and modernize the existing space and exhibitions in the Memorial Room of Batina
Target	Modern equipped tourist facilities will attract more tourists, such as school children, who visit national monuments within school excursions, newer generations are accustomed to audio-visual content through modern computer or smart-technology,
Cooperation	Funds and stakeholders in the Interreg V-A Hungary-Croatia Co-operation Programme
Technology	<u>Holograms, Interactive screens etc.:</u> The multimedia content will display the existing valuable remains from the Second World War 
	Reconstruct the existing two gutters/bunkers near the Memorial Complex.

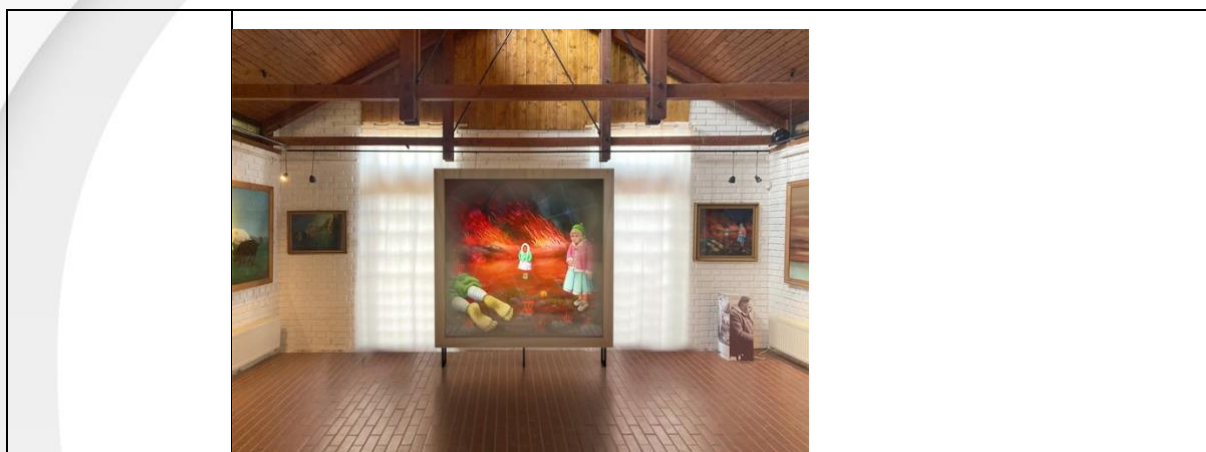
6.6. Association for nature and environment protection Green Osijek - Osijek (Croatia)

Project	Drava and Danube Visitor Centre
Problem	<ul style="list-style-type: none"> Enhance local ecotourism and adventure products and programs with the <ul style="list-style-type: none"> The digitalisation of treasure hunt games The digitalisation of educational workshops for students
Heritage object	<ul style="list-style-type: none"> A floating raft as a starting point for other activities. It will include multimedia content to present key heritage in the area. Two big rivers, surrounding forests, wetlands, city of Osijek will then be the background for most ecotourism activities Participants walking, cycling, canoeing, excursions with motorboats 
Unique selling proposition	<ul style="list-style-type: none"> Digitalisation of educational workshops for students (topics of river restoration, climate changes, renewable energy and energy efficiency, cultural and natural values) Possibility of digitalised treasure hunt activities within the city or along the rivers, forests
Target	Students, pupils
Cooperation	<ul style="list-style-type: none"> New national funds for sustainable, innovative and resistant tourism – announced for 2022 New Interreg Croatia-Serbia and Croatia-Hungary programs New Interreg Danube or Interreg Central Europe programs Other available funds and grants
Technology	<u>AR sandbox for landscape and riverbed modelling</u>

		
Smart board, e-learning tools, didactical tool		

6.7. Koprivnica Križevci County (Croatia)

Project	Digitalisation of cultural & natural heritage in KKC
Problem	<p>Digital innovation in KKC will focus on cultural and natural heritage with special focus on world famous naive art:</p> <ul style="list-style-type: none"> • Presentation of naive paintings and technique of painting on glass which originated in Hlebine • Biology species - typical animals and plants near Drava
Heritage object	<p>Equipping of complex of Gallery of naive art in Hlebine - Presentation of naive paintings and technique of painting on glass</p> 
Unique selling proposition	<p><u>Holographic presentation</u> - unique experience for visitors</p> <ul style="list-style-type: none"> • Big wall will represent - Hlebine naive art school and technique of painting on glass → <u>cultural heritage</u> • Small wall will represent - Amazing AoE area in Podravina as nature preserved breath-taking area - typical biology species near Drava → <u>natural heritage</u>
Technology	<p>Purchasing of multiple holographic device (holographic wall) - composed of 12 holographic devices (with associated construction for video wall, audio box, loudspeaker and protective box)</p> <ul style="list-style-type: none"> • Part 1 - big holographic wall (9 devices/ventilators) • Part 2 - small holographic wall (3 devices/ventilators)





6.8. Varaždin County (Croatia)

Project	Digital Heritage
Heritage object	Multimedia info-point in Varaždin: through multimedia presentations, visitors will be able to learn about protected areas around the Drava, Mura and Danube rivers and will present all project partners and their activities
Unique selling proposition	<p>Info point will present:</p> <ul style="list-style-type: none"> • About the project • video of our public institution that is in charge of protecting of nature along the Drava River: the video nicely shows everything from birds, trees, fish etc. • cycling-related videos • cycling routes <p>and about all partner countries:</p> <ul style="list-style-type: none"> • Accommodations • leisure and tourist activities • history, culture and traditions
Technology	Projectors and screens

6.9. Municipality of Apatin (Serbia)

Project	Digital tools for interpretation of the Amazon of Europe natural heritage in the Municipality of Apatin
Problem	The main questions are how to use nature attractions of the Danube region in Apatin as digital tools, and which marketing methods to use in the promotion of natural and cultural experiences.

	<p>The availability of information on cultural and natural heritage in the digital environment needs to be increased. We believe that it is an important space and an important way in the exchange and earning of new knowledge, values and experiences.</p>
Heritage object	<p>Purchase of digital tools for interpretation of the Amazon of Europe natural heritage for digital storytelling about natural and cultural sights.</p> <p>We need the equipment for interactive video projection of the living world of the “Upper Danube” Special Reserve of nature.</p>
Unique selling proposition	<p>Through a virtual tour, we can introduce potential tourists to the authentic localities, nature and gastronomy of Apatin. After virtually visiting museums and beautiful nature, walking through the woods and getting to know the flora and fauna, they can do it live, when they actually come to our area.</p>
Technology	<p>Interactive self standing info panel with a touch screen. The equipment will be installed in the Tourist Organization of Apatin and will contain:</p> <ul style="list-style-type: none"> • multimedia materials for video projection of protected plants and animal species of the “Upper Danube” - Special Reserve of nature. • the Interactive maps, with a lot of details and the possibility for the visitor to choose a certain plant or animal species, and learn something about those species in a creative way <div style="display: flex; justify-content: space-around; align-items: center;">   </div>

6.10. City of Sombor (Serbia)

Project	Digital innovation of AoE heritage in Sombor
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Problem	<p>Sombor is a city of rich cultural heritage. Sombor is widely known for its nature beauties. It can also present rural tourism – ethno houses, old crafts, cycling, fishing and hunting.</p> <p>but...</p> <p>Tourists are not informed enough about attractions</p> <ul style="list-style-type: none"> • Where to go / What to visit <p>They are usually on a transit route</p> <ul style="list-style-type: none"> • one-day visitors • tours limited to the cultural heritage in the city centre • unfavourable spending profile of visitors <p>Poor promotion of tourism</p>
Heritage object	<p>Visualisation of touristic offer</p> <ul style="list-style-type: none"> • digitized and visible info board in city centre • systematic and attractive preview of main tourist sights • digitized Tourism register with all necessary information for tourists
Unique selling proposition	<ul style="list-style-type: none"> • Increasing tourist stays and overnights by marking “must visit” attractions • Digitalisation, promotion and marketing boosting of all tourist entities performing activities in the field of tourism in City of Sombor area
Technology	<p>Two digital info boards and ten virtual reality (VR) headsets.</p>