

Digital Innovation of Cultural Heritage: Reflection on Slovenian Story of Success

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The paper aims to look back at the ‘digital innovation of cultural heritage’ processes happening in Slovenia in 2020, 2021, and 2022 after a public call by the Ministry of Economic Development and Technology. The article summarises the activities and results of a set of projects that present a novel approach to developing new tourist offers in Slovenia. In the article, the authors – all involved in the training for tourist destinations and the execution of some projects – look at both the results of the projects, their quality and relation to existing tourist offers, as well as at the processes at leading tourist destinations, know-how and skill-set to conduct such projects. In the final chapter, the authors envision the needed next steps to reach the mission to become the leading European country in digitally enriched tourism experiences.

Keywords: tourism 4.0, heritage+, digital innovation of cultural heritage, digitisation, digitalisation, cultural heritage



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Introduction

‘Our competition is Netflix and Candy Crush, not other museums’ (Sree Sreenivasan, former Chief Digital Officer of the Metropolitan Museum of Art, New York).

On several occasions, investments in cultural heritage have shown both direct and indirect positive impacts. From a tourism development point of view, cultural heritage presents an opportunity and a potential source of new digitally enriched interpretation and (tourism) experiences. Each registered object of immovable cultural heritage conveys a value and learning that could be interpreted digitally – and thus presented to new audiences in new, engaging ways.

However, tourism management organisations are typically not engaged in creating new complex tour-

ism products on cultural heritage and are even less engaged in incorporating new digital interpretation technologies. The tourism sectors (tourism providers, tourism destination management organisations) and cultural heritage (GLAM and regional offices of the Institute for Heritage Protection) have – despite having many touchpoints and common aims – very seldom cooperated in co-creative processes, which changed in 2019 with the Slovenian Ministry of Economic Development and Technology’s mission to become the leading European country in digitally enriched tourism experiences and thus combine tourism development with cultural heritage protection and interpretation. The goal was to develop new tourism products that take inspiration from cultural heritage, engage new audiences and stakeholders through digital and hybrid interpretation, and, like this, contribute to the

interpretation, awareness-raising, and documentation of (immovable) cultural heritage.

The Ministry aimed to support leading tourism development organisations conducting complex development, documentation, and interpretation projects at the cultural heritage and tourism crossroads. Such projects were envisioned to directly result in tourism development and indirectly support creative and cultural industries, advance technology in cultural tourism and cultural heritage, and contribute to local 3D digitisation goals and cross-sectorial cooperation.

The proposed paper examines Slovenia's 'digital innovation of cultural heritage' processes. As part of the team that led training and workshops for leading tourist destinations at the beginning of the processes in 2019 and 2020 and implemented several projects as the main contractor, the authors have insights and experiences worth sharing with the broader public.

The article looks at the projects' results, quality, and relation to existing tourist offers, as well as the processes, know-how, and skill sets at leading tourist destinations to conduct such projects.

In the final chapter, we envision the actions/ programmes/ projects necessary to achieve the mission.

Heritage as a Developmental Field

Cultural heritage is widely understood as a powerful economic, educational, and social resource, a 'development asset' (Loulanski, 2006), a 'value-adding industry' (Cernea, 2001), and 'the most significant product of the 21st century' (Ogino, 2002). Heritage and culture, in general, are especially valued for their contributions to social innovation (Napolitano, 2018) – for their creative and innovative capacity, identity and capacity to generate attractiveness and as a catalyst for urban transformation, as discussed in several UNESCO publications (UNESCO, 2013; 2016; 2018); This is where local culture and cultural heritage are often seen as 'unpolished diamonds' that can be transformed into assets by 'polishing diamonds', a process of 'turning underused or unused resources, situations, facilities or features into socio-economic assets' (Schwedler, 2012), as the URBACT OP-ACT Thematic Network (Schlappa & Neil, 2013) suggests.

Investments in cultural heritage have already shown both direct and indirect positive impacts. In 2003, Nypan (2006) identified a ratio of 1:27 between direct job creation by heritage institutions and indirect job creation (creative and cultural industries, tourism, etc.). The exact ratio of direct to indirect job creation for the automotive industry is 1:6.3. Moreover, a study found that 1 million USD invested in the rehabilitation of cultural heritage generates 31.3 jobs, making the impact more significant than manufacturing (21.3) (Rypkema, 1998).

In addition, only 16% of the jobs created from investing in cultural heritage are located at the heritage sites (Grefe, 2002), which means that the positive impacts are felt mainly in the vicinity and for neighbouring communities. For example, Nypan (2006) attributes only 6–10% of all heritage tourism spending to the objects of cultural heritage. The largest share of spending happens in the broader community (accommodation, food, related cultural offers, and other local businesses ...). Although the impact of culture is increasingly analysed by (cultural) economists (Doyle, 2010; Navrud & Ready, 2002; Srakar, 2010; Seaman, 2003) and conceptualised as a part of macroeconomics, cultural heritage within development lacks a real working formula that can be used in the practice of 'polishing diamonds'. Consequently, despite the broad agreement on the need to (socially) innovate at the intersection of heritage and economy, many of the challenges remain.

Recent Developments in the Heritage Sector

Heritage institutions, GLAMS (galleries, libraries, archives, museums) and others involved in research, preservation and promotion – public, private or non-governmental – have a long tradition: from the first private collections of rare and curious objects and artefacts (cabinets of curiosities) to the gradual opening to the public of collections starting in the late 18th century, to the development of a contemporary modern public and private institutions. In the 21st century, heritage institutions balance their debt to tradition and history with their commitment to contemporary communities (Anderson, 2005).

Since the 1970s, these institutions have experienced new challenges that demand changes in their functioning. They are operating in a highly competitive leisure market, trying to meet the expectations of increasingly discerning visitors (Komarac, 2014; Conway & Leighton, 2012). Although these changes do not only affect heritage institutions, this sector was also – and continues to be – less able to adapt and consequently most affected, due in part to their long tradition of object-oriented *modus operandi*. The shift from object-based (dealing with objects and collections) to people-based approaches (UNESCO, 2015; Chhabra, 2009) has become more and more accepted (Mencarelli & Pulh, 2012) as in people-based approaches, the intangible benefits for the visitor are favoured (Alcaraz et al., 2009) over more custodial approaches based on conservation and objects.

This shift has a significant effect on the organisation of work, programming, professional skills (e.g., ‘hybrid profiles’ (Burning Glass and General Assembly, 2015)), marketing (Kotler, 2005) and budgeting, which also changes the role and positioning of heritage institutions in their wider communities – locally, nationally, or internationally. Heritage institutions are expected to collect, preserve, and conduct research and drive economic growth. The ‘eco-museum’ presents heritage institutions as ‘agent(s) for managing change that links education, culture, and power. It extends the mission of a museum to include responsibility for human dignity’ (Fuller, 1992). Furthermore, the challenge of atomisation of customers, the so-called segment of one’ (Rogers & Peppers, 1993; Peppers & Rogers, 1999), requires heritage institutions to customise activities based on individual requirements and expectations, resulting in the need to collect, analyse and operationalise data using advanced technology.

Heritage and/in Tourism

Cultural heritage and tourism seem to be natural companions – several of the main tourist attractions are also cultural heritage sites (nationally, in Slovenia – Bled, Postojna Cave, Piran, Ljubljana Castle ... – and globally – Eiffel Tower, Louvre, Great Wall of China, Colosseum, Machu Pichu ...), or otherwise places of significant cultural heritage values. Scraping heritage

out of tourism would leave tourism of theme parks, casinos, spas and sss (sea, sand, sun).

Despite this natural connection, a Eurobarometer survey reports that almost half of Europeans (48%) say they are not involved with cultural heritage in any way. Moreover, cultural heritage is not often seen as a source of new tourist products and the development of new tourist destinations. Contemporary trends in tourism (outdoor activities, focus on experiences, gastronomy and wellbeing, personalisation, business-leisure blur) are often driving tourist destination developers even further away from cultural heritage, which is primarily due to the image of cultural heritage as rather an inhibitor of development than a resource, and understanding of cultural heritage as static, rigid and non-attractive. However, from a tourism development point of view, cultural heritage presents an opportunity and a potential source of tested and pivoting stories, universal values, and emotions that can be translated into new products. As a starting point of sustainable tourism development, cultural heritage is characterised by deep roots in local culture and the life of local communities. It reflects local, regional, national, and cross-border identity and symbolic DNA – the ‘authenticity’ and ‘uniqueness’ a modern tourist seeks. Moreover, in Slovenia, cultural heritage is relatively evenly dispersed. Cultural heritage has been identified in all regions, both in rural and urban areas, the only exception being larger forested areas, such as Trnovo Forest and Kočevje Forest, that humans have not inhabited. Due to even dispersion, developing tourism around local cultural heritage can avoid the agglomeration effects of mass tourism, where tourism providers tend to cluster around existing tourism destinations, often leading to over-tourism, iconisation and over-commercialisation/Disneyfication and at the same time harming the life of the local community (Juvan et al., 2021; Urbančič et al., 2020).

Digital Technologies for Tourism and Cultural Heritage

The tourism and heritage sector face new challenges due to the quick adoption of information technology tools and advanced technologies in the science industry (Industry 4.0.) and daily use. The true essence of this paradigm shift is not only to use technology to

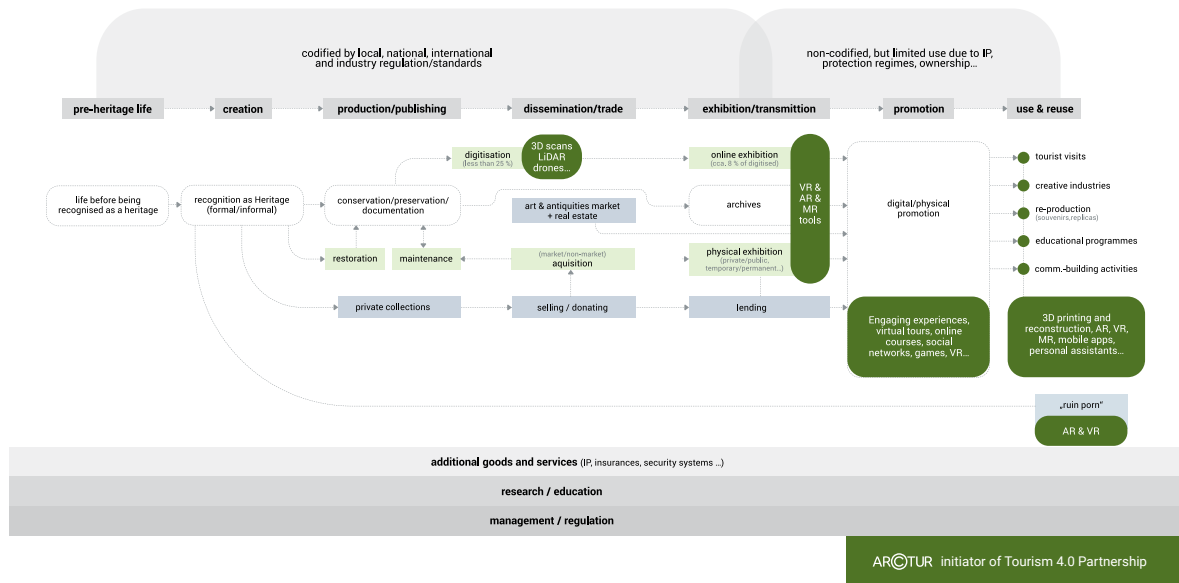


Figure 1 Potential for Technological Innovation in the Value Chain of Cultural Heritage (adapted from De Voldere et al., 2017).

unlock the innovation potential in the tourism sector but to affect every field around it by creating an ecosystem in which physical and digital space, infrastructure, people and technology behind it merge into one seamless experience of many personalised outputs (Peceny, 2019). The knowledge, expectations, and experiences of tourists, defined as Tourist 4.0, are utilised to build new services and products to raise the satisfaction of all stakeholders' experiences in the tourism ecosystem, which is done with the help of the key enabling technologies from Industry 4.0, such as the Internet of Things, Big Data, Blockchain, Artificial Intelligence, Virtual Reality and Augmented Reality. Within the value chain of cultural heritage (De Voldere et al., 2017), several fields of disruption that digital technologies are potentially creating can be identified:

in the process of research: using technologies for detailed inspection (e.g., LIDAR, laser scanning, photogrammetry) and analyses of digitised material (e.g., digital archives and digital copy collections, such as Europe-wide Europeana and 3D-Stock.eu for 3D models of cultural heritage),

- in the process of the exhibition: using presentation technologies (e.g., VR, AR, holograms, 3D models and prints...),
- in the process of promotion: presentation technologies often have more significant promotional potential due to the attractiveness of technologies and digital storytelling,
- in the processes of re-use (tourist attractions, creative industries, re-pro-ductions (e.g., souvenirs), educational programmes, community building activities...): using presentation and interaction technologies (e.g. 3D printing and reconstruction, AR, VR, MR, mobile apps, personal assistants...).

Thus, the use of intelligent technology applications presents an opportunity for the heritage sector and cultural tourism – not only concerning digitalisation for archiving, documentation, analysis, and presentation, but primarily for the development of new points of interest, heritage-inspired digital branding and marketing, and post-tourism creative narratives, as well as for management, monitoring, and citizen participation. Although heritage institutions have always

been a source of data and information, digitisation (transforming cultural heritage in digital formats) and digitalisation (using new business processes for managing and presenting digitised heritage) enable new presentation experiences, such as virtual museums, virtual tours, augmented reality and virtual reality experiences, holograms, and interactive chatbots. They also present new collections management methods and, most importantly, open these processes to external collaborators. (Open) access to digital collections provides an opportunity for new outreach, research and innovation programmes that allow for play, alteration, and speculation without compromising the physical artefacts, enabling simultaneous, collaborative, co-creative and remote processes. (Digitised) cultural heritage could become a (digital) resource that allows for the experimentation, testing and pivoting that have become the mainstream approaches in (social) business development, art and design. Digitising and digitalising cultural heritage open opportunities for new co-creative and participative processes. It offers opportunities for developing new narratives within cultural heritage tourism, gives an impetus to creative and cultural industries, and can be a source of new city/region marketing and branding.

About the intersection of tourism and cultural heritage, new technologies can attract fresh audiences who have not shown any previous interest in cultural heritage, have 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 solutions are also attractive for groups not considered drawn to cultural heritage. New interactive technologies and digital storytelling methods are not meant only for those interested in cultural heritage but can also widen the circle of potential visitors. Moreover, digital technologies enable communication and interactive experiences that classic presentation methods (texts, articles, information boards, photographs, videos...) do not allow. Through technology, learning about cultural heritage can become interactive, simultaneously making it more educational, memorable, individualised, and experiential. Cultural heritage can

be introduced to people through (serious) play and practical experience.

Despite several advantages, tourism management organisations are typically not engaged in creating new complex tourism products on cultural heritage and are even less engaged in incorporating new digital interpretation technologies. The tourism sectors (tourism providers, tourism destination management organisations) and cultural heritage (GLAM and regional offices of the Institute for Heritage Protection) have – despite having many touchpoints and common aims – very seldom cooperated in co-creative processes. Moreover, digital interpretation technologies – such as Virtual Reality, Augmented Reality, holographic projections, video mapping, and mobile and web apps – have not been joined at leading tourist destinations, primarily due to a lack of knowledge, skills, and dedicated funding.

The main obstacles can be identified in:

- Understanding of DMOs' role: DMOs in Slovenia have traditionally been engaged in promotional and advertisement activities (offline and online promotional presence, destination marketing and branding, promotional materials, organisation of traditional festivals, informing visitors ...) and much less in development activities (co-creating and operating tourist products).
- Understanding of GLAM sector as non-tourist: Among DMO, we have noticed a common misunderstanding that museums, libraries, galleries, and archives are not (also) tourist providers. Consequently, GLAMs are often excluded from normal co-creation processes and promotional activities.
- Understanding cultural heritage as a barrier, not an opportunity: Cultural heritage is often seen as something to preserve, not to develop or build upon.
- Absence of technical standards and widely accepted agreement on what is technically sufficient digitisation project.

Technical Standards for 3D Digitisation

Pending the establishment of standard European guidelines for the unification of digitisation activities under Tourism 4.0, particularly its Heritage+ sub-programme, the Tourism 4.0 Partnership produced the Technical Guidelines T4.0: Digital Innovation of Cultural Heritage in 2019. These guidelines represent essential technical standards in the process of digitising cultural heritage. The guidelines offer a technical framework to all actors involved in digitisation processes - heritage institutions, local and national governments, public services, technology companies and other stakeholders. Guidelines are updated by the expert team of the Tourism 4.0 Partnership at least once a year, according to the technology development, accessibility of technological solutions, broader practice, and other criteria for the digital material. The document's purpose is not to give precise and comprehensive instructions for digitising the material but to define fundamental guidelines and minimum requirements necessary to ensure the use of materials for enriching the experience of cultural heritage.

Technical guidelines complement the Guidelines for capture, long-term preservation, and access to cultural heritage in digital form (Issue: 6202-1 / 2013-MIZKS / 17 Version 1.0) prepared by a Ministry of Culture working group in 2013 for the long-term preservation of cultural material in digital format (from now on referred to as e-material) within the agenda of the European Digital Si EU Ti. The guidelines' first edition covers the digitisation processes of audio materials, video materials, 3D models, image materials and 360° photos and videos. This document's most significant contribution is digitising three-dimensional objects and structures (in 3D models) and video materials. This area has changed and developed the most since the last update of the Guidelines for the capture, long-term preservation, and access to cultural heritage in digital form in 2013. Although clear standards are not yet in place, we can define vital technical guidelines based on industry practice. The T4.0 technical guidelines also set the bar higher for minimum standards for digitising image, video, and audio materials - mainly due to better and more easily accessible equipment. Technical guidelines are accessible

here (in Slovenian and English): <https://tourism4-0.org/heritage/toolkit/>. Digital innovation of cultural heritage projects changed in 2019 when the Slovenian Ministry of Economic Development and Technology set out to become the leading European country to systematically develop unique tourist experiences by applying digital innovation to cultural heritage. With that as a goal, the Ministry published a public call for leading tourist destinations (35) that also involved co-financing 'digital innovation of cultural heritage' activities. The 'Public Call for Building Competencies of Leading Tourist Destinations and Development of Tourist Offer at Leading Tourist Destinations in 2020 and 2021' was published in October 2019. Training in catering and tourism provided co-funding for digital innovation of cultural heritage. Each applicant was required to implement digital innovation of immovable cultural heritage in its area and develop tourist products and services that build upon digitised units of cultural heritage (e.g., virtual tours and virtual museums, 3D printing of souvenirs, augmented reality applications in tourism, mobile and stationary gamification, digitally enriched storytelling and digital animation, digital reconstructions of ruins or archaeological sites ...).

In this case, this required applicants to 3D digitise at least three units of immovable cultural heritage from the Registry of Immovable Cultural Heritage, out of which at least one should be further developed into a tourist experience, following the Slovenia Unique Experiences guidelines (green, boutique, authentic, sustainable, local, experiential, personal ...). The focus was on immovable cultural heritage, although exceptions for intangible and natural heritage were allowed after confirmation by the special commission comprised of representatives of the Ministry of Economic Development and Technology, the Ministry of Culture, and the Slovenia Tourist Board. For the call, 5,480.00 EUR were allocated, and the projects were to be completed by June 2022 (the deadline was postponed from October 2021).

The call obliged applicants to work closely with regional offices of the Institute for the Protection of Cultural Heritage of Slovenia, local, regional, or national museums, the national library and other national in-

stitutes and, upon completion, deliver all 3D digitised units to the Ministry of Economic Development and Technology, Ministry of Culture and Slovenia Tourist Board. The Ministry aimed to support leading tourism development organisations conducting complex development, documentation and interpretation projects at the cultural heritage and tourism crossroads. Such projects were envisioned to have direct results in tourism development and indirectly support creative and cultural industries, advance technology in cultural tourism and cultural heritage, and contribute to 3D digitisation goals and cross-sectorial cooperation at local levels. To summarise, the goal was to develop new tourism products that take inspiration from the cultural heritage, engage new audiences and stakeholders through digital and hybrid interpretation, and thus contribute to the interpretation, awareness-raising, and documentation of (immovable) cultural heritage.

Defining Digitally Enhanced Experiences of Cultural Heritage

Digitally enhanced cultural heritage experiences could be described as ‘engaging experiences, both digital and hybrid, that employ digital technologies to interpret cultural heritage values to pre-defined target (tourist) groups’. Like this, they:

- Imply an engaging and user-friendly conveyance of the values connected to natural and cultural heritage.
- Focus on what is truly unique, memorable, and engaging in the area.
- Make use of advanced technologies for greater interactivity, memorability, storytelling, and the global recognition of tourist experiences.
- Develop new business models and demonstrate positive effects on the local economy.
- Develop hybrid competencies of heritage and business approaches and skills (art & design thinking, business models, user experiences, digital marketing).
- Local business offers (accommodation facilities, food establishments...) should be meaningfully included and connected to other tourist products.

Therefore, digitally enhanced cultural heritage experiences adhere to some underlying interdisciplinary principles, covering four elements: preservation of cultural heritage, storytelling and interpretation, technology, and sustainability.

The project is based on scientific evidence and verifiable historical facts, which are unequivocally stated when they draw inspiration from myths and legends or contradict expert opinions. The project considers the chosen cultural heritage in the context of its historical period — in addition to the assets themselves and their traits, it presents the conditions in which they existed and draws attention to both the achievements and injustices of the past and the deviations from commonly accepted values of today. Thus, the project not only entertains but also raises awareness and educates users about cultural heritage — in each case, adapted to a given desired audience. Moreover, the project adheres to the recommendations for safeguarding cultural heritage, and the project’s intervention may not negatively impact the asset in question or its natural or cultural surroundings. In the digital world, the project follows directives for long-term storage of cultural heritage materials in a digital format — regarding the quality, formats, and metadata.

The project communicates a clear and memorable message about storytelling and interpretation, with values relevant to the cultural heritage. The project includes well-rounded content focused on the cultural heritage in question. The cultural heritage assets are chosen prudently to avoid negative impact on the heritage, ensure safe visits, and disperse tourist flows onto new locations. To achieve this, planning and execution involve artists, creatives, and creative industries. It aims for a solution that derives from the needs and wishes of the visitors, considering both the existing and desired audience (general/professional, children/adults, shorter/longer visits).

The project is particularly attentive to the user experience in the technology field. It uses different methodologies to anticipate, evaluate and improve the interaction between the user and the solution. At the same time, it avoids excessive generalisation, loose assessments, and misleading facts about the cultural heritage asset. The project relies on quality digital

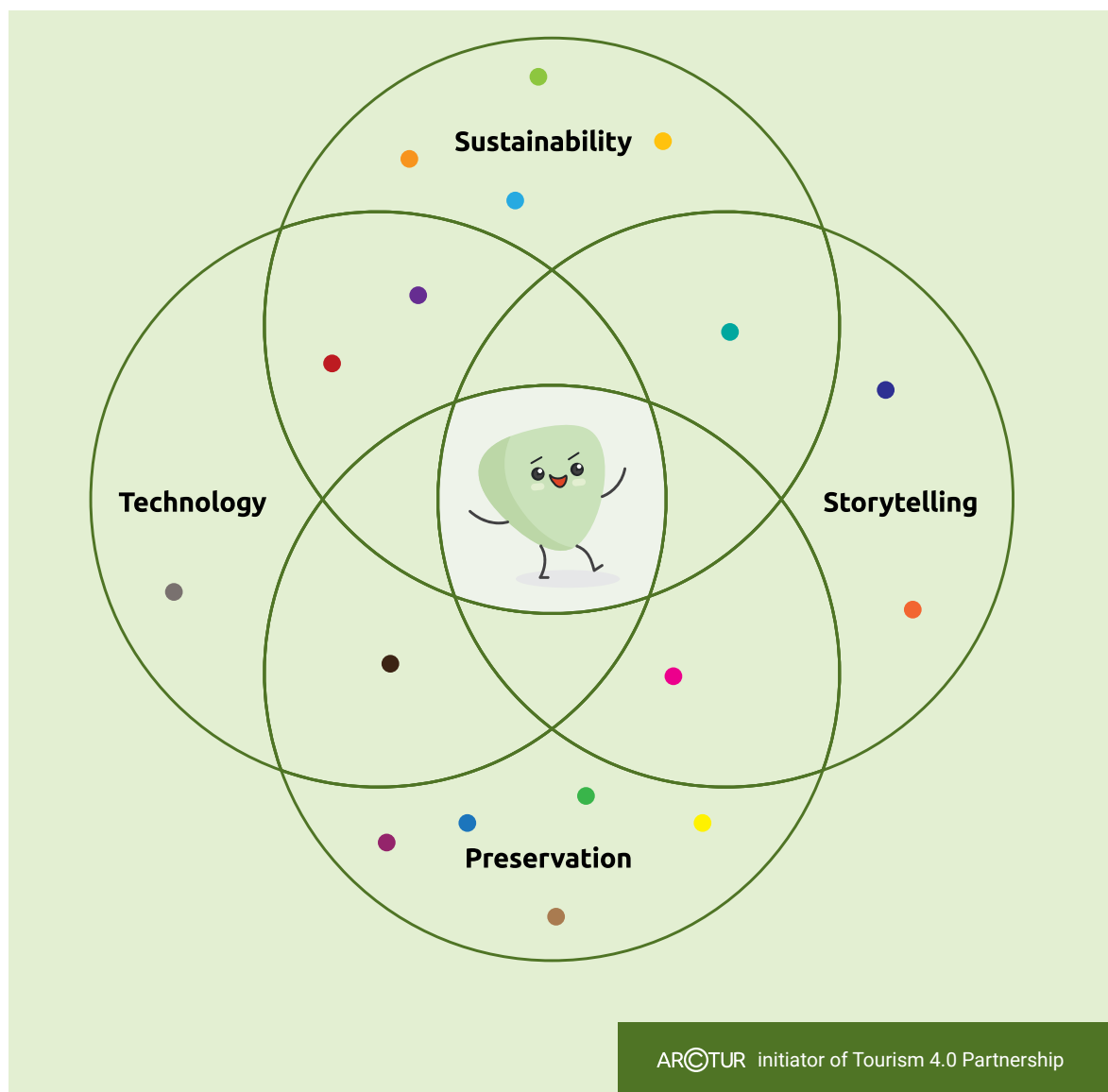


Figure 2 The Overlapping Nature of Technology, Storytelling, Preservation, and Sustainability in Digital Innovation of Cultural Heritage

materials. Digital scanning of cultural heritage assets complies with the standards and recommended minimum criteria, allowing further use in other (tourist and non-tourist) applications. Here, it considers not only the accessibility of physical spaces but also the accessibility of information and services.

For sustainable reasons, the project is based on a widely accepted consensus of the key stakeholders

(local community, experts, tourist industry and other consenting parties...). It includes diverse social groups and achieves wider acceptance and higher creativity through a participatory process. Financially, it effectively uses available resources – producing the best result in the given timeframe.

Training Before the Start

Before the projects started, the Ministry and external contractor Arctur d.o.o. organised workshops and training to clarify and deepen tourist destinations' understanding of 'digital innovation of cultural heritage.'

Within three workshops, organised twice – in West and East Slovenia –, the whole process of digital innovation has been covered from the technological, content and organisational points of view:

First Workshop

- Tourism of the future: Discuss current trends and the main challenges in tourism (overtourism, need for personalisation, data management, unforeseen events) and consider technology as a potential solution. Heritage at the Challenge raises awareness of the heritage sector's challenges (e.g., banalisation, fictional digital 'meta' worlds) and proposes using digital technologies to find solutions. Digital technologies for cultural heritage: why digitally interpret and what societal benefits digitisation of cultural heritage has.
- Processes of digital innovation: Elements of a good project: Discussing elements of a good project and stressing the importance of a balanced and interdisciplinary approach – covering storytelling and interpretation, technology, sustainability, and protection of cultural heritage.
- Identification of heritage stories: This covers identifying a target group, the subject (cultural heritage), the main message, and the idea of an experience.
- 3D digitisation and digital interpretation: This covers preparing for and implementing 3D digitisation (using various technologies), familiarising yourself with different digital media, developing the user experience, and digitally interpreting the unit through selected media.
- Launch and promotion: promotional activities (online and offline) and re-use of digital content.
- Target groups and personas: define the target group, get familiar with national tourist personas, and develop your story-specific persona.

- Identifying and selecting units of cultural heritage: things to consider while selecting heritage units and stories while simultaneously identifying (physical, technological and ethical) obstacles and limitations.
- Digital experience: introduction to principles of heritage interpretation (ICOMOS) and user/customer journey.

Second Workshop

- Digitisation (3D digital capture): basic understanding of technologies for 3D digital capture (advantages, disadvantages, environmental factors, necessary preparation and technical requirements, standards) and comparison to other digital assets (e.g., 360-degree photos and videos).
- Digitalisation (VR, AR, holograms, video mapping, mobile and web apps ...) technologies: basic understanding of digital media (advantages, disadvantages, environmental factors, technical requirements, possible applications).
- Interpretation plan and user journey: principles of heritage interpretation (ICOMOS), elements of successful digital experiences, developing tourism experiences.

Third Workshop

- The new COVID-19 reality: the importance of non-textual contents, datafication of culture, algorithmicity, phantomisation.
- Promotion: introduction to digital content marketing, bridging the divide between education, entertainment, and art. In addition to the two in-person and one online workshops, a toolkit, 'Digital Innovation of Cultural Heritage: Toolkit for Tourist Destinations', has been published.
- Reflection on Results and Processes

As part of the team that has led the training mentioned above and workshops for leading tourist destinations and implemented several projects as the main contractor, the authors have a comprehensive and holistic overview of the processes and results and wish

to share experiences and reflections on the outcomes. Our team has been the main contractor or sub-contractor in 13 destinations and has participated in project design and implementation. We have entered the projects with several internal guidelines and convictions we aimed to follow:

- Projects must respect and contribute to cultural heritage interpretation, not abuse it for promotion. We must advocate collaboration with heritage institutions and support the client in this collaboration.
- We aim to create complex interdisciplinary projects that cross sectoral boundaries. We shall involve the creative sector.
- We use technology to convey the message, not for its own sake. Sometimes, a simple technology can be more efficient than an advanced solution.
- We aim to submit to technical standards for digital capture.
- The end goal is heritage tourism products, not solely tourism promotion or heritage documentation.

Overall, the results show great creativity, inventiveness, and variety. Like the results, the processes behind them also vary, depending on clients' technical knowledge, local stakeholders' interest and involvement, and the complexity of the idea.

The projects address a wide range of cultural heritage: from pre-Roman and Roman to medieval and modern, from housing to industrial, from large-scale to small-scale, and from multi-location to one-location ... Although some initially feared that all the projects would focus on similar objects and stories (castles and knights), the diversity of topics is immense.

Example: The Castles of Posavje

For example, the Regional Development Agency Posavje project aimed to digitalise the cultural heritage of the Castles of Posavje and position Čatež & Posavje in the national and international space as a unique tourist destination. The castles subject to digitalisation are Rajhenburg Castle, Brežice Castle, the former Cistercian monastery Kostanjevica na Krki,

Sevnica Castle, Mokrice Castle, and the castle ruins of Svibno and Kunšperk.

To increase the visibility of Posavje Castles and its offer and to link the destination brand with the castle-themed offer, it was decided to address visitors in person and at the destination. The selected location was Terme Čatež, with the most visitors and overnight stays within the destination. An interpretation room in Terme Čatež, called the Digital Room of e-Posavje Castles, was established at 20 m², next to the main strolling path. The digital room has the latest technological equipment: holograms, VR glasses, LCD screens and smart tablets, and presents the castles attractively through 3D models, 3D reconstructions, 360° videos, videos with 3D models and an interactive web app. The Magnificent Seven: www.egradovi-posavja.si.

The Digital Room opened on 5 July 2021 and has attracted over 3,450 visitors in half a year. The local tourism office manages the room, training the staff on handling the technology and providing additional tourist information to the visitors. Entrance to the Digital Room is free of charge and mainly attracts families with young children, predominantly from Slovenia, Croatia, Serbia, Italy, Austria, and the Netherlands.

The main challenges in the development process were posed by the weather (cold winter with regular snowing postponing 3D digital capture, late spring postponing 360-degree video filming), short time frame (8 months for the whole project from start to launch), and many stakeholders with decision-making powers. The development processes involved various stakeholders, both from the public (various museums, development agencies, municipalities) and private (Terme Čatež spa resort), and the implementation team (storytellers and copywriters, 3D digital capture experts, filmmakers, hardware developers, interior designers, 3D animators and artists, sound artists...) which required much coordination in a very condensed time frame.

See trailer (in Slovenian): <https://youtu.be/KNC-Ohlmt3U>

Example: The Šalek Valley

Another example worth mentioning is the project of the Šalek Valley Tourist Board. The central premise of this project was to present and interpret a heritage lost to an artificial lake and, in a site- and heritage-specific way, bring to the forefront the story of 'Slovenian Atlantis'.

The ongoing coal mining activities have defined the Šalek Valley. Besides the mining heritage, industrial buildings, mining culture and traditions, another element stands out – the artificial lakes formed due to coal excavation. In forming new lakes, several villagers had to relocate, and several villages were partially demolished, submerged and lost.

The 'Mysteries of Submerged Villages' tourist experience is a 4-hour exploration of this story, combining guided tours, culinary experiences, picturesque views and digital media. It takes participants on a journey where they help a descendant of the Velenje miners, who mined one of the thickest layers of coal in the world and turned fertile fields into lakes, find a precious item under the water's surface.

The experience description captures it: 'Where once were villages, now are lakes. What happened to the houses, schools, and churches? Why did they sink, and where did the villagers go? What secrets can be uncovered in the depths of the lake? Discover the bitter-sweet life stories of the villagers, miners, and Velenje people. For their bright future, they mined coal but sank their past.'

The experience begins with an authentic tour of The Coal Mining Museum of Slovenia in Velenje with heirs of mining, where the elevator lowers the visitors into 160-metre-deep tunnels. The mine visit is enhanced by a short movie showcasing the lakes' formation. A 3D animation projects a century of the valley's history in a few minutes, highlighting the stark contrast between the past and the present. Moreover, the 3D animation continues and showcases the planned future expansion of the lakes.

The visit to the mine is followed by a walk to Velenje Lake, where the visitors board a boat and ride toward the underwater village of Škale. Above the old Škale, visitors experience a virtual dive into the lost village – using VR glasses, one finds oneself in a virtu-

al reality. The village was 3D reconstructed according to old photos, maps and memories of former inhabitants, and it visualises the village for the first time.

The experience ends with a culinary conclusion featuring selected local treats and a view over the lake. Here, guests can reflect on the bitter-sweet story of Šalek Valley.

Contrary to the examples of Posavje and Izola, this experience is available only upon appointment and payment. Due to its boutique nature, it is part of a marketing theme connecting the destination's past (mining) and present (recreation and activities at the lake). The experience can be understood as a 'showroom' of the destination's offer, combining several experiences that can be and some already are also commercialised individually. Thus, the experience is mainly suitable for business partners, small boutique organised groups and protocolar activities.

The main challenges in the development of this experience were posed by the several involved stakeholders (the mine – management, the mine-tourist mine, the museum, the tourist board, a former mine employee with several data, and a boat operator ...), each responsible for only parts of the finally unified and coherent programme which exemplifies the interdisciplinary nature of such projects and especially the importance of coordinating the contractor's role in partnership with the client. (See 3D reconstruction: https://youtu.be/uo_4CdUafto)

Beyond Immediate Results

We have generally witnessed an increased understanding of the topics and skills among the DMO staff. Through the workshops and training and primarily through hands-on implementation, the staff has acquired skills in the use of technology (familiarity with technological solutions – e.g. distinguishing between interactive and non-interactive media; understanding the technical conditions for the use of technology – e.g. challenges with lightning and humidity; handling different hardware – e.g. setting up VR glasses; understanding the functioning of different media – e.g. 360-degree image vs holographic projection). Secondly, product development skills (user-centred development, user experience, marketing and storytelling,

content management, team collaboration, stakeholder management ...) have been upgraded, while many of the staff have been, for the first time, involved in developing and launching a partially technological solution. Similarly, digital interpretation skills have been significantly improved, especially in cultural heritage interpretation. To develop the skills mentioned earlier further, continuous use of these skills is crucial – new projects and processes where skills can be put into action and further upgraded pose an essential element in developing sectors' development capacities.

Another benefit beyond immediate deliverables has been established collaborations. Newly or significantly strengthened collaborations have formed between tourism destination managers, tourism providers and technology providers, tourism and heritage sectors, and tourism and creative industries (digital artists and designers, interior designers, and sound artists...). Moreover, many civil society stakeholders, such as local associations, have contributed content and ideas to the projects. In the future, such collaborations could be further intensified – primarily when enough time for collaboration is allocated in the timeline, enabling structured involvement and equal consideration of all inputs by various organisations.

One of the foremost collaborations is between the tourism and cultural heritage sectors. We believe this collaboration has planted a seed of mutual – yet sometimes still conflictual – understanding between the sectors. On the one hand, the potential of cultural heritage (its stories, universal values, emotions, and relationships) has been stressed and, to some degree, accepted by the DMOS. Intertwining heritage stories and values with tourism offered a creative springboard for novel experiences and narratives. On the other hand, the cultural heritage sector was given a clear and, in most cases, honest invitation to co-create and co-develop tourism narratives and offers. Although somehow necessary, GLAM organisations in many destinations have not taken part, nor were they honestly involved in destination development until these projects.

Strategically, projects and processes initiated by them are essential precursors for tourism destination management – they signal an upgrade from a promo-

tional to a developmental focus in tourism destination development. As discussed at the third training and workshop, digital interpretation projects alter the position of DMOS from channel-oriented (managing channels) to content-oriented (creating content). This shift recognises a broader societal change toward the mass creation of engaging, authentic and personal content (e.g., influencers and micro-influencers...).

Awards and Prizes

At the 14th European Cultural Tourism Network conference in Athens under the central theme 'Regenerating European Tourism through Culture, Heritage and Creativity,' the Ministry of Economic Development and Technology of Slovenia received the ECTN award for its digital innovation project in cultural heritage. The Ministry was also awarded second place in the Digitalisation in Sustainable Cultural Tourism towards Smart Destinations category.

The Award enhances the visibility of European cultural tourism destinations, creates a platform for sharing experience and knowledge, and promotes networking between destinations. Still, it confirms the ambitious path toward bridging the gap between tourism and cultural heritage through digital technologies.

Conclusion and Way(s) Forward

Although initially too ambitious and uncharted, the Ministry of Economic Development and Technology's initiative to introduce 'digital innovation of cultural heritage' to the work of leading tourist destinations and their DMOS proved to be a bold and visionary step.

The initiative produced engaging experiences and attractive digital materials on Slovenian cultural heritage. It paved the path for further collaboration at the crossroads of tourism, cultural heritage and digital technologies. Digital innovation projects have often started with technology scepticism and the wish for 'regular ways of doing things'. However, through workshops and training, primarily through hands-on work at the local level and producing engaging and attractive results, scepticism has turned into enthusiasm. Learning about digital technologies and the rich resources of stories and narratives within the cultural

heritage, DMO staff has come to perceive the vast area of (economic, social, cultural and symbolic) possibilities collaboration at the intersection offers.

However, the public call of 2019 has only set the first stones – now, other actions need to follow. A proactive stance is needed to prevent this initiative and achievements from withering away. We wish to point out some of the necessary activities, starting with further developing the skill-set and building capacities, which should be done through regular annual workshops and training – for tourism and cultural heritage workers, but also technology companies –, international exchanges of practices and knowledge, and transfer of Slovenian knowledge and experiences abroad. Skill-set needs to be developed both regarding the quality of the technology (respecting technical standards, adoption of new technology approaches, testing new software, pivoting and optimising production processes, regular upgrades of the hardware ...) and the quality of interpretation (continuous research on target groups and their changing preferences, revising the interpretation based on the changing context, following the narration trends in popular media, adopting inclusion and diversity policies to reach out to vulnerable groups ...).

As seen with the project following the 2019 public call, workshops and training can only complement and never supplement practical work on local projects. Thus, public co-financing of further activities is needed to develop the initiative further and achieve wider societal and economic benefits (supporting creative and cultural industries, demystifying development in cultural heritage, preservation of cultural heritage both physically and digitally, ensuring even development across the country, engaging new and vulnerable social groups ...). We believe public co-financing should be targeted, having a clear mission and scope – to develop and upgrade digitally enhanced experiences of cultural heritage, from initial storytelling drafting through digitisation and digitalisation to final launch, promotion, and business operation.

Moreover, on the policy level, digital innovation in cultural heritage should permeate not only the cultural heritage and tourism sectors but also all levels of education, culture in general, research and develop-

ment, humanities and social sciences, and informatics design and engineering. As the last three years have proved, genuinely successful projects are interdisciplinary and often domain-bending. Luckily, in Slovenia, innovation does not happen only in sterile laboratories and away from the ordinary people but across the country, inspired by the generations of men and women working hard to make their lives and their children's lives brighter and happier.

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