



INSTITUTE OF ARCHEOLOGY  
AND ART HISTORY OF ROMANIAN  
ACADEMY CLUJ-NAPOCA



UNIVERSITATEA TEHNICĂ  
DIN CLUJ-NAPOCA

JAHA  
JOURNAL OF ANCIENT HISTORY  
AND ARCHAEOLOGY

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# Journal of Ancient History and Archaeology

DOI: <http://dx.doi.org/10.14795/j.v13i1>

ISSN 2360 266x

ISSN-L 2360 266x



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No. 13.1/2026



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Design & layout: Petru Ureche



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## CULTURAL HERITAGE PROTECTION

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### GAMIFICATION AS A CATALYST FOR COMMUNITY-BASED HERITAGE WORK IN LOW-DENSITY TERRITORIES: SELECTED BEST PRACTICES FROM EUROPE<sup>1</sup>

**Abstract:** This paper examines the transformative role of gamification in engaging small communities with cultural heritage. By integrating serious games and interactive strategies, gamification enhances public participation, fostering cultural citizenship and sustainable development in low-density regions. These approaches not only make cultural objects more accessible but also encourage deeper reflection on their significance within contemporary society. Focusing on best practices, gamification emphasises innovative, community-centred solutions that bridge academic research and public interaction. Fostering partnerships between small communities and academics provides a framework for identifying, safeguarding, and disseminating heritage. Highlighting successful examples, these practices demonstrate how gamification can facilitate participatory and democratic engagement, offering scalable models for broader application. This foundation supports the development of international principles for digital heritage and collaborative cultural networks.

**Keywords:** *gamification, low-density territories, best practices.*

#### INTRODUCTION

The transition to fully democratic cultural citizenship in heritage safeguarding requires the active engagement of individuals, communities, cultural practitioners, and youth, particularly those from academic institutions and heritage groups. Grounded in the principles of the Porto Santo Charter, this shift requires heritage professionals to acknowledge and respect the knowledge, traditions, and voices of all stakeholders. Rather than imposing external cultural frameworks onto local territories, this approach elevates existing local cultures while fostering a dialogue that integrates diverse cultural expressions. This synergy bridges local experiences with universal cultural narratives, enriching both in the process<sup>2</sup>.

<sup>1</sup> This article stems from the Erasmus+ project No. 2023-1-PT01-KA220-HED-000154261, "A Gamification Model for Community-Based Heritage Work," co-funded by the European Union. The views expressed are solely those of the author(s) and do not necessarily reflect the positions of the European Union or the European Education and Culture Executive Agency (EACEA). Contact: [sec.techenart@ipt.pt](mailto:sec.techenart@ipt.pt)

<sup>2</sup> The Porto Santo Conference, a Portuguese Presidency of the Council of the European Union

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The growing recognition of the role of communities, both as individuals and collective actors, in heritage work underscores the urgency of adopting innovative approaches. Recent years have witnessed an increasing reliance on gamification and serious games as tools to engage the public in heritage practices<sup>3</sup>. These strategies have gained prominence in Europe, particularly within higher education institutions, as avenues to foster collaboration and participation. However, research reveals that heritage games often remain isolated, one-time initiatives, lacking replicability or sustained networks. Strengthening partnerships and fostering continuous collaboration are essential to maximizing the potential of gamification in cultural heritage<sup>4</sup>.

This need is particularly acute in low-density territories, which often face socio-economic challenges, limited technological investment, and reliance on industries tied to cultural landscapes and historical heritage. As highlighted by the European Parliament Committee on Transport and Tourism, such regions have untapped potential to leverage cultural heritage for sustainable development<sup>5</sup>.

A critical aspect of addressing these challenges lies in identifying and disseminating best practices. By analyzing successful community-based initiatives, stakeholders can develop operable frameworks for implementing gamification strategies in heritage work. These efforts not only foster participatory and democratic engagement but also ensure that heritage work remains inclusive and adaptable to local needs. The integration of gamification further enhances this dynamic, enabling small communities to contribute to safeguarding and promoting their cultural heritage actively.

The growing body of research and practice in this field marks a significant step toward the broader goals of embedding international principles in digital heritage and fostering global collaboration. Through sustained engagement and the dissemination of best practices, the heritage sector can better navigate the evolving technological and cultural landscape while fostering meaningful connections between academic research and community participation.

This article aims to explore the transformative potential of gamification and serious games in fostering community-based approaches to cultural heritage work, with a particular focus on low-density territories. By examining best practices and innovative frameworks, the paper seeks to highlight how these tools can enhance public engagement, strengthen cultural citizenship, and promote sustainable development. Additionally, the paper investigates the role of small communities and academic collaborations in developing participatory strategies that bridge the gap between local traditions and global heritage narratives. Ultimately, the research aspires to contribute to the broader discourse on democratizing heritage work and establishing replicable,

scalable models for integrating gamification into cultural heritage initiatives.

This article is an outcome of the project “A Gamification Model for Community-Based Heritage Work” (No. 2023-1-PT01-KA220-HED-000154261), implemented within the framework of the Erasmus+ program during 2023-2026. The partnership running this project includes the Polytechnic University of Tomar (Portugal), D. A. Tsenov Academy of Economics (Bulgaria), Valahia University of Târgoviște (Romania), University of South Bohemia in České Budějovice (Czech Republic), University of Trnava (Slovakia), University of Camerino (Italy), and Adana Science and Technology University (Türkiye). One of the project’s Work Packages (WP) focuses on Best Practices. The primary objective of this WP is to identify and analyse best practices for using gamification in community-based cultural heritage work, including identification, safeguarding, and dissemination<sup>6</sup>. To achieve this, each project partner from the seven participating countries identified and presented at least two examples of gamification in community-based heritage work. From these, two cases per partner were selected for in-depth analysis. As a result, the booklet includes 14 case studies of best practices. The Work Package (WP) was coordinated by the D. A. Tsenov Academy of Economics and Valahia University of Târgoviște. Most of the conceptual and methodological approaches detailed in the project are based on the document titled *List of Criteria for Best Practices*, authored by the D. A. Tsenov Academy of Economics. The analysis of best practices was conducted by Valahia University of Târgoviște, based on contributions and completed questionnaires from all partner institutions.

While this article provides meaningful insights into the transformative potential of gamification and serious games in community-based cultural heritage initiatives in low-density territories, its analytical framework is based on 50 practices, of which 14 were identified by the project authors as best practices and documented across 7 countries. Although this selection reflects some geographic and contextual diversity, it does not purport to provide an exhaustive or systematically representative account of all relevant practices across Europe.

## 1. CONCEPTUAL FRAMEWORK AND METHODOLOGY

### 1.1. Conceptual Framework

Best practice refers to a technique or method that, based on experience and research, has consistently demonstrated its effectiveness in achieving the desired results<sup>7</sup>. It is a standard or set of guidelines known to produce favourable outcomes when adhered to<sup>8</sup>. Additionally, best practices are those that specific groups consider more effective in delivering particular outcomes compared to other methods, and thus, they serve as benchmarks to aspire to<sup>9</sup>.

Best practices should not be interpreted as a state of perfection; the term “best” is not meant in a superlative

Initiative, Porto Santo Charter, Culture and the Promotion of Democracy: Towards a European Cultural Citizenship (Porto, 25th April, 2021): 6, <https://portosantocharter.eu/the-charter> (accessed July 15th, 2024).

<sup>3</sup> SIGALA/MICHALIS 2015, 1-12; HUOTARI/HAMARI 2017, 164-76.

<sup>4</sup> SUSI et VÍLCHEZ 2016, 105-118; MARQUES et alii 2022, 68-75; MARQUES et alii 2023, 5935-5951; FESENMAIER/BATEMAN 2014, 387-402.

<sup>5</sup> BISASCHI et alii 2021, 15-20; BRAMWELL/LANE 1993, 1-5.

<sup>6</sup> SMOKOVA et alii 2024.

<sup>7</sup> WHO 2008, 6-8;

<sup>8</sup> WHO 2017, 6-7.

<sup>9</sup> ANDREWS 2012, 137-153.

sense. Instead, best practices serve as benchmarks because they are evidence-based. An integral part of best practices is documenting and applying lessons learned about what does not work and why, helping other projects avoid similar mistakes. Sharing and adopting best practices is essential to benefit a broader audience.

In our project, we consider best practices to be the knowledge of which gamification tools, when applied to cultural heritage work, achieve desired results, create sustainable effects, and engage the target community. Identifying best practices involves judgment and requires prior analysis using two types of criteria: impact and gamification.

Impact criteria are universal and general, applicable to assessing any case study or initiative. These criteria measure the extent to which an initiative generates, or has the potential to generate, outcomes and effects across performance, accessibility and inclusion, innovation and creativity, and social and cultural impact. When considering the impact criteria, we evaluate subcriteria such as performance (including effectiveness and sustainability), accessibility and inclusion, innovation and creativity (including originality and creativity), and social and cultural impact (including social development, enhancement of social culture, and multiplier effects).

Effectiveness measures the extent to which the initiative successfully achieved its objectives of raising cultural heritage awareness within the community and increasing local revenues. In evaluating sustainability, we examined the initiative's capacity for long-term maintenance, including its ability to sustain operations over an extended period (e.g., at least five years post-implementation) and its potential to maintain activity delivery, such as continued funding sources, at least one year after external support ends.

The initiative's accessibility criterion assesses whether it provides equitable access, allowing all interested parties to benefit from its outcomes and experience the gamification mechanics. Originality assesses the extent to which the initiative offers a novel and distinct experience for the target community that they had not previously encountered. Creativity gauges how the initiative immerses the target community in an engaging 'real world' or 'real age' environment, enabling meaningful interaction with the settings and characters.

Social development criteria assess how effectively the initiative fosters a sense of community among users, thereby promoting integration and connection. Cultural impact refers to the extent to which the initiative enhances the community's awareness of and tolerance for local customs, beliefs, religious practices, and cultural expressions. Finally, the multiplier effects criterion examines the generation of beneficial spin-off effects, whereby the empowered community acquires durable skills, knowledge, values, and resources that enable it to uplift other communities, leading to collaborative efforts that produce unexpected and positive outcomes.

Gamification criteria are specific to the field of study and provide representativeness from gamification strategies,

heritage significance, and IT/technological perspectives. The criteria considered in our assessment were divided into intrinsic motivation heuristics, extrinsic heuristics, and context-dependent heuristics.

Intrinsic motivation heuristics encompass several key components: purpose and meaning, challenge and competence, completeness and mastery, autonomy and creativity, relatedness, and immersion. Purpose and meaning refer to the system's ability to help users identify and pursue meaningful goals that benefit themselves or others, fostering a sense of reflexivity and personal significance. Challenge and competence measure how well the gamification satisfies players' intrinsic need for competence by presenting difficult challenges or goals and enabling them to discover or create new challenges for self-testing. Completeness and mastery pertain to the system's ability to fulfil users' intrinsic need for competence by completing a series of tasks or collecting virtual achievements, such as prizes and trophies. Autonomy and creativity are supported by affordances that satisfy users' intrinsic need for autonomy by providing meaningful choices and opportunities for self-expression, including the creation of new content. Relatedness addresses how the system meets users' intrinsic need for social connection through interactions with other players, emphasising fairness and encouraging newcomers. Immersion evaluates how effectively the system enhances users' aesthetic experience through thematic elements, narratives (whether real or fictional), interactions with virtual objects, and pleasurable exploration of the environment.

Extrinsic motivation heuristics include ownership and rewards, scarcity, and loss avoidance. Ownership and rewards are affordances designed to help users achieve meaningful goals within the system, thereby benefiting both themselves and others. These affordances often include mechanisms for providing information and opportunities for reflection aimed at self-improvement. Scarcity involves affordances that motivate users by evoking a sense of status or exclusivity, typically through the acquisition of rare or difficult-to-obtain rewards, goods, or achievements. Loss avoidance pertains to affordances that create a sense of urgency by presenting users with potential losses of acquired or prospective rewards, goods, or achievements if they do not act promptly. This heuristic motivates users to engage actively to avoid missing valuable incentives.<sup>10</sup>

Context-dependent heuristics encompass feedback, unpredictability, and change and disruption. Feedback involves providing users with information about their progress and guiding them on the next available actions or challenges. This includes offering clear, immediate, and actionable feedback, as well as making progress comprehensible and tangible to the users. Unpredictability refers to the affordances that surprise users by varying tasks, challenges, feedback, or rewards. This element is intended to sustain users' curiosity and engagement by introducing surprise and variability. Change and disruption involve affording users opportunities to contribute positively to the system, such as by suggesting new features or improvements,

<sup>10</sup> TONDELLO *et alii* 2019, 224–244.

while managing disruptive tendencies. This heuristic aims to harness users' desire for change constructively, thereby avoiding negative behaviours such as cheating, hacking, or other forms of manipulation.

## 1.2. Assessment Methodology

All partners used the file 'Best Practice Identification Criteria.xlsx' to archive all identified projects, evaluate them, assess inter-rater reliability, calculate final scores, and rank the projects in descending order. The top two projects were defined as 'best practice' for each country. These identified best practices from the seven countries were used to prepare a synthesis report.

Each partner was responsible for collecting information on community-based gamification in cultural heritage projects implemented in their countries. All collected data were archived and coded as follows: CountryCode-xxx, where xxx was the project ID number (e.g., BG-001, BG-002 for Bulgaria; PT-001, PT-002 for Portugal; RO-001, RO-002 for Romania; CZ-001, CZ-002 for the Czech Republic; SK-001, SK-002 for Slovakia; IT-001, IT-002 for Italy; TR-001, TR-002 for Turkey). Coded projects were assigned to raters for evaluation. To minimize subjectivity and rater bias, each project was assigned to two independent raters. Raters evaluated the projects independently, entering their codes and ratings in the 'Gamification Criteria' (GC) and 'Impact Criteria' (IC) sheets. Rater codes followed the format Ryy, where yy was the rater's ID number. Raters used a 6-point scale (5 = very high, 4 = high, 3 = neither high nor low, 2 = low, 1 = very low, 0 = not applicable).

The projects, rated by the raters, were collected in the 'Ratings' sheet and sorted by the rater's code. Ratings for each project from both raters were copied from the 'Ratings' sheet and pasted into the 'Inter-Rater Assessment' sheet to assess reliability (using Paste Special-Transpose). If the agreement coefficient (cell G24) was  $\geq 80\%$ , it was highlighted in green, indicating reliable ratings. If the ratings were not consistent, a third rater was assigned to review the criteria and evaluate the project. Once an agreement threshold of at least 80% was achieved (cell T24 highlighted in green), the final project score was calculated as the average of the raters' scores.

All evaluated projects were described in the 'Characterisation' sheet and sorted in descending order by their final project scores. The top two projects with the highest scores were titled 'Best Practice' for each country.

Typology included tangible, intangible, and natural heritage. UNESCO defines material heritage as the physical manifestations of human creativity and expression that are valued for their cultural, historical, aesthetic, scientific, or spiritual significance. This includes tangible objects, structures, sites, and landscapes that have been created, modified, or used by humans over time and hold cultural significance for communities, societies, or humanity as a whole<sup>11</sup>. Intangible heritage, as defined by UNESCO's Convention for the Safeguarding of the Intangible Cultural Heritage, comprises the practices, representations,

expressions, knowledge, skills, and cultural spaces that communities, groups, and individuals recognize as part of their cultural heritage. Examples include traditions, oral history, rituals, performing arts, social practices, traditional craftsmanship, and knowledge systems transmitted across generations<sup>12</sup>. Natural heritage refers to natural features, geological and geographical formations, and delineated areas that constitute the habitat of threatened animal and plant species, as well as natural sites valued for their scientific, conservation, or aesthetic value. This includes privately and publicly protected natural areas, zoos, aquaria, botanical gardens, natural habitats, marine ecosystems, sanctuaries, and reservoirs<sup>13</sup>.

The classification of heritage utilized in the assessment was delineated into three categories: local, national, and international. Local assets are defined as those whose preservation and enhancement bear primary cultural significance for a particular community, reflecting the unique heritage and values of that local context. National assets are characterized by their substantial cultural importance at the national level, representing shared heritage and historical identity across the country. International assets are those recognised for their global value and are included in UNESCO's lists, which acknowledge their universal significance and contribution to the world's cultural and natural heritage.

Technologies and tools refer to the underlying frameworks and methodologies of the gamification or experience, including Virtual Reality, Augmented Reality, Artificial Intelligence, analogue supports, geolocation, and interactive tools. Equipment pertains to the devices utilized, such as mobile phones, computers, tablets, wearables, and paper.

The assessment encompassed several components. Community involvement was characterized as requiring more than mere consultation; it necessitates active participation from local non-governmental stakeholders, including associations, groups, entrepreneurs, and individuals, in the decision-making process.

## 1.3. Discussion of Results

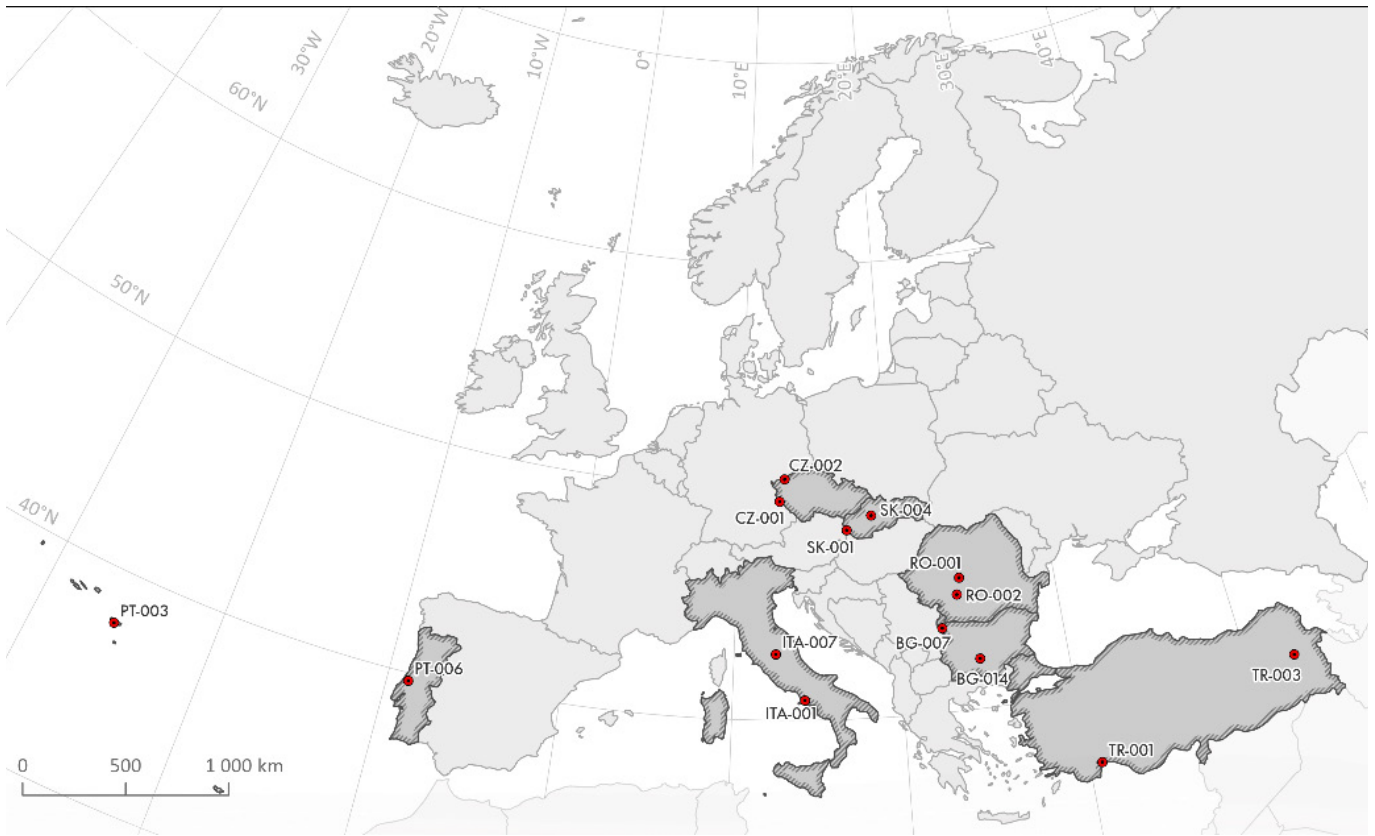
Seven teams analysed 50 heritage initiatives across 7 countries during the spring and early summer of 2024. As mentioned in the introduction, the goal was to select the 14 best practices, with each team choosing two top initiatives from their respective countries or abroad. The selected case studies from the seven countries provide valuable insights into the effectiveness and areas for improvement in gamified cultural heritage projects. By comparing the results, we identified common strengths and weaknesses, as well as unique characteristics that contribute to the success of these initiatives.

Most of the selected heritage initiatives encompass both tangible and intangible aspects of heritage, including natural heritage. While the focus is predominantly on local

<sup>11</sup> World Heritage Convention 1972, 2.

<sup>12</sup> UNESCO 2022, 5-6.

<sup>13</sup> World Heritage Convention 1972, 2.



**Fig. 1.** Map illustrating best-practice gamification initiatives examined in the research (Vojtěch Blažek)

or regional heritage, there are also instances of national and international heritage being addressed. Typically, these initiatives engage with local heritage through the promotion of buildings, storytelling, or a combination of both, often with aims that include community engagement, educational purposes, and preservation.

Community involvement is a significant aspect of these projects, with 12 of the 14 initiatives incorporating community input into their design and all but one including it in the development and post-development stages. Notably, eight of the selected initiatives are located in low-density areas, highlighting their relevance to projects aimed at revitalizing or preserving heritage in less populated regions.

The technologies employed across the 14 games demonstrate a diverse and innovative approach to player engagement and experience enrichment. Geolocation is a prominent technology, used in various combinations to create interactive, location-based gameplay. It is paired with QR codes in some games to enhance interactivity, allowing players to unlock content or solve puzzles by scanning them at designated locations. Mobile apps

are another common technology, often combined with other tools like geolocation, QR codes, or storytelling, to provide a comprehensive platform for gameplay and narrative immersion. Storytelling is a recurring element, frequently integrated with web-based platforms, mobile apps, and social media to weave narratives and engage players more dynamically. The use of web pages and social media suggests an emphasis on accessibility and community engagement,



**Fig. 2.** Živé Hory Heritage Gamification (photo Vojtěch Blažek)

**Table 1.** Results of gamification scoring of the selected 14 best practices

Project Code	Project name	Intrinsic Motivation Heuristics					Extrinsic Motivation Heuristics					Context Dependent Heuristics		
		Purpose and Meaning	Challenge and Competence	Completeness and Mastery	Autonomy and Creativity	Relatedness	Immersion	Ownership and Rewards	Scarcity	Loss Avoidance	Feedback	Unpredictability	Change and Disruption	
<b>BG-007</b>	Belogradchik Highlights <sup>14</sup>	5	1	5	1	5	4	4	1	5	5	5	0	
<b>BG-014</b>	Roman Plovdiv <sup>15</sup>	4	2	3	5	4	3	4	0	3	3	4	5	
<b>CZ-001</b>	Grafenried-Lučina	5	3	4.5	3	3	4.5	5	1	5	4	4.5	1	
<b>CZ-002</b>	Živé Hory	5	3	4.5	3	3	4.5	5	1	5	4	4.5	1	
<b>IT-001</b>	Naples: Father and Son 2	4	3	3	4	0	3.5	0	0	0	5	2	1	
<b>IT-002</b>	Humbria <sup>16</sup>	5	5	5	4	1.5	4	4	4	3	5	2	0	
<b>PT-003</b>	Lagoa Geotour	4	4	4	3	5	2.5	5	1	1	0.5	3.5	0	
<b>PT-006</b>	Aldeia Pintada	2	2	0	4.5	3	5	4	0	0	0	4	4	
<b>RO-001</b>	Rasinari <sup>16</sup>	5	5	5	3	4	4	3	5	4	4	4	0	
<b>RO-002</b>	Climate Change	4	4	4	4	4	5	4	5	4	4	4	2.5	
<b>SK-001</b>	Golden Ticket Hunt	5	4	4	4	4	5	5	5	5	5	5	4	
<b>SK-004</b>	City QR Game in Handlová	5	3	4	4	4.5	5	5	3	3	5	5	5	
<b>TR-001</b>	Anatolian Silk Road <sup>17</sup>	5	5	5	5	5	5	5	5	4.5	5	5	3	
<b>TR-003</b>	The Sericum Via <sup>18</sup>	5	5	5	3.5	5	5	5	4.5	4	4	5	2.5	

<sup>14</sup> Full name: Belogradchik Highlights: A High Wizard's Legacy.

<sup>15</sup> Full name: Roman Plovdiv - Urban game.

<sup>16</sup> Full name: Open the Gates to Raşinari Legends.

<sup>17</sup> Full name: The Anatolian Journey Along the Silk Road.

<sup>18</sup> Full name: The Sericum Via: A Serious Game for Preserving Tangible and Intangible Heritage of Iran.

often involving hidden clues or interactive content that encourages exploration and collaboration. YouTube is also used, primarily for supplementary content or promotional purposes, to enhance the overall experience through visual storytelling.

The equipment utilized across the 14 games reveals a focus on mobile and portable devices as the primary tools for engagement. Smartphones and tablets are the most commonly used equipment, reflecting their versatility and widespread accessibility for players. These devices are employed for interactive features such as geolocation, QR code scanning, and mobile applications, which facilitate dynamic, location-based gameplay. Pen and paper are also used in some games, often in conjunction with mobile devices, suggesting a blend of traditional and digital methods to enhance the gaming experience. This combination allows players to engage in physical note-taking or puzzle-solving alongside digital interactions. Books, promotional materials, and golden tickets indicate that some games incorporate physical items into their gameplay or promotional strategies. These materials often serve as supplementary tools or rewards that enrich the gaming experience and provide tangible elements for player interaction.

To compare the performance of the 14 gamification cases across the specified criteria, we will summarize the strengths and weaknesses for each criterion and identify the top-performing and underperforming cases.

First, we calculated the average score for each criterion across all Gamification criteria.

Analyzing these practices in more detail, we see varied performance across different criteria. In Purpose and Meaning, the top performers were High Wizard's Legacy, Grafenried, Živé Hory, MED GAIMS, Rasinari, Golden Ticket, City QR Game, Anatolian Journey, and Sericum Via (all scored 5). The only underperformer was Painted Village. For the Challenge and Competence criterion, the top performers were

**Table 2.** Average score for each criterion across all gamification criteria

Criterion	AVERAGE SCORE
Purpose and Meaning	4.5
Challenge and Competence	3.5
Completeness and Mastery	4
Autonomy and Creativity	3.64
Relatedness	3
Immersion	4.29
Ownership and Rewards	4.14
Scarcity	2.54
Loss Avoidance	3.32
Feedback	3.82
Unpredictability	4.11
Change and Disruption	2.07

MED GAIMS, Rasinari, Anatolian Journey, and Sericum Via (each scored 5). The underperformers were High Wizard’s Legacy (1), Urban Game (2), and Painted Village (2). In the Completeness and Mastery category, top performers were High Wizard’s Legacy, MED GAIMS, Rasinari, Anatolian Journey, and Sericum Via (all scored 5). Underperformers included Painted Village (0), Father and Son (3), and Urban Game (3). Regarding Autonomy and Creativity, the top performers were MED GAIMS, Golden Ticket, and Anatolian Journey (all scored 4 or higher). The underperformer was High Wizard’s Legacy (1). In Relatedness, the top performers were Anatolian Journey, Sericum Via, Climate Change, and Urban Game (all scored 5). The underperformers were Father and Son and Geotour (0). For the Immersion criterion, Grafenried, Živé Hory, Rasinari, Golden Ticket, City QR Game, Anatolian Journey, and Sericum Via scored the highest (all scored 5). The underperformers were Geotour (2.5).

When evaluating the three Extrinsic Motivation Heuristics, we find that in Ownership and Rewards, the cases of Grafenried, Živé Hory, Geotour, Golden Ticket, City QR Game, Anatolian Journey, and Sericum Via performed well. In contrast, Father and Son underperformed with 0 points. For the Scarcity criterion, the top performers were Rasinari, Climate Change, Golden Ticket, and Anatolian Journey (all scored the maximum points). Conversely, Urban Game, Father and Son, and Painted Village received 0 points. In the Loss Avoidance category, top performers were High Wizard’s Legacy, Grafenried, Živé Hory, and Golden Ticket (all scored 5 points). The underperformers were Father and Son and Painted Village, both receiving no points. Regarding the first of the three Context Dependent Heuristics, Feedback, the top performers with maximum points were High Wizard’s Legacy, Father and Son, MED GAIMS, Golden Ticket, City QR Game, and Anatolian Journey, with Geotour and Painted Village receiving almost no points. For Unpredictability, the top-ranked were High Wizard’s Legacy, Golden Ticket, City QR Game, Anatolian Journey, and Sericum Via (all scored 5 points), while Father and Son and MED GAIMS scored only 2



**Fig. 3.** Rasinari Gamification, The memorial plaque to honor the memory of Emil Cioran (Photo Silviu Miloiu)

points. In the final criterion, Change and Disruption, which was not well addressed by the 14 games, only Urban Game and City QR Game scored excellently, with Painted Village and Golden Ticket considered very good. However, seven games, including High Wizard’s Legacy, Grafenried, Živé Hory, Father and Son, MED GAIMS, Geotour, and Sericum Via, scored 0 or 1.

The analysis of the 14 gamification cases reveals several key insights. Strong performance in Purpose and Meaning, Ownership and Rewards, Unpredictability, and Completeness and Mastery indicates the importance of clear objectives, meaningful rewards, and engaging narratives. Future gamification initiatives should incorporate these elements to enhance player engagement. Feedback, Autonomy and Creativity, Relatedness, Challenge and Competence, and Loss Avoidance were above average, suggesting that regular feedback, opportunities for creativity, fostering social connections, balanced challenges, and the fear of loss are also essential components. However, the low scores in Scarcity and Change and Disruption highlight common weaknesses. Future initiatives should focus on introducing rare and valuable elements and dynamic, unpredictable changes to maintain player interest. By leveraging these insights, new gamification projects can improve their effectiveness and player engagement.

Table 3 presents a graphical overview of the impact scores for 14 selected best practices, highlighting their strengths and identifying areas requiring improvement across dimensions such as performance, accessibility, innovation, and socio-cultural influence. The findings reveal a spectrum of approaches and varying levels of effectiveness in achieving comprehensive outcomes. These insights will be explored in greater detail in the subsequent discussion of the average scores on the criteria outlined below.

**Table 3.** Results of the impact scoring of the selected 14 best practices

Project Code	Project name	Performance		Accessibility and Inclusion		Innovation and Creativity		Social and Cultural Impact		
		Effectiveness	Sustainability	Accessibility	Inclusion	Originality	Creativity	Social Development	Enhancement of Local Culture	Multiplier effects
<b>BG-007</b>	Belogradchik Highlights	5	3	4	3	5	5	2	1	3
<b>BG-014</b>	Roman Plovdiv	5	5	4	5	5	5	5	4	5
<b>CZ-001</b>	Grafenried-Lučina	5	5	4.5	5	5	5	5	5	5
<b>CZ-002</b>	Živé Hory	5	5	4.5	5	5	5	5	5	5
<b>IT-001</b>	Naples: Father and Son 2	4	2.5	4	5	3	3	3	5	5
<b>IT-002</b>	Humbria?O	5	4	5	4	3.5	3	5	5	3
<b>PT-003</b>	Lagoa Geotour	5	4	3	4	4	4.5	5	5	3
<b>PT-006</b>	Aldeia Pintada	5	5	3	3	5	5	4	5	4
<b>RO-001</b>	Rasinari	5	4.5	5	5	4.5	4	4	5	4
<b>RO-002</b>	Climate Change	4	4	5	5	4	5	4	4.5	4
<b>SK-001</b>	Golden Ticket Hunt	4	4	5	5	5	4	4	4	5
<b>SK-004</b>	City QR Game in Handlová	5	5	5	5	3	5	4	4	0
<b>TR-001</b>	Anatolian Silk Road	5	5	5	5	5	3.5	5	3	4.5
<b>TR-003</b>	The Sercum Via	4	5	5	5	4	5	5	3.5	3

Overall, the evaluation of the gamification initiatives reveals strong overall performance across most criteria, though there is notable variation in multiplier effects. Most projects demonstrate effectiveness, with the majority receiving top scores, indicating their success in engaging users and achieving objectives. However, sustainability shows a broader range of scores, suggesting that while many projects demonstrate strong long-term viability, improvements are needed to ensure sustained impact.

Accessibility and inclusion are generally well-addressed, with many projects scoring between 4 and 5. Nonetheless, some, such as Lagoa Geotour and Aldeia Pintada, received average scores, indicating areas for improvement. Inclusion scores are particularly high, reflecting a strong commitment to integrating diverse audiences, although a few projects, such as Belogradchik Highlights and Aldeia Pintada, performed at a more average level.

**Table 4.** Average score on Impact criteria.

Criteria	Max Score	Mean Score (All Cases)
Effectiveness	5	4.71
Sustainability	5	4.36
Accessibility	5	4.43
Inclusion	5	4.57
Originality	5	4.36
Creativity	5	4.43
Social Development	5	4.29
Enhancement of Local Culture	5	4.21
Multiplier Effects	5	3.82

Regarding innovation and creativity, originality scores are mixed: several projects achieve top marks, whereas others, including Naples: Father and Son 2 and City QR Game in Handlová, show less originality. Creativity scores also vary: many projects excel, but some, such as Naples: Father and Son 2 and The Anatolian Journey, could benefit from more inventive approaches.

In terms of social and cultural impact, projects generally perform well in social development, with many achieving maximum scores. However, there is room for improvement, as evidenced by projects such as Belogradchik Highlights and Naples: Father and Son 2. To enhance local culture, half of the projects received top scores, whereas others, such as Belogradchik Highlights and The Anatolian Journey, were rated average.

Finally, multiplier effects vary significantly: five projects achieved full scores, whereas others, including City QR Game in Handlová, scored none. This variation underscores the need for greater consistency in maximizing the broader impact of gamification initiatives.

The analysis of 50 heritage initiatives across 7 countries, distilled into 14 exemplary case studies, reveals a wide range of strengths and areas for improvement in gamified cultural heritage projects. The majority of these initiatives demonstrate high performance in effectiveness, purpose, and meaning, with several projects excelling in ownership and rewards, unpredictability, and completeness. These findings underscore the importance of clear objectives, meaningful rewards, and engaging narratives in enhancing player engagement.

Notable strengths include the integration of diverse technologies, such as geolocation, QR codes, and mobile

apps, which collectively enhance the user experience through interactive, location-based gameplay. The frequent use of storytelling across platforms also contributes to immersive and dynamic narratives. The equipment employed, predominantly mobile devices, reflects a modern approach to accessibility and engagement, while the combination of traditional elements like pen and paper with digital tools highlights an innovative blend of methods.

However, the analysis also reveals significant variability in certain criteria. While most projects score highly in accessibility and inclusion, a few perform at an average level, indicating opportunities to make these initiatives more universally accessible and inclusive. Similarly, scores for creativity and originality are mixed: some projects demonstrate exceptional innovation, whereas others lag, suggesting that future projects could benefit from a greater emphasis on creative approaches.

Lower scores on scarcity, change, and disruption indicate common weaknesses in sustaining player interest through rare, valuable elements and dynamic change. Addressing these areas could significantly enhance engagement and long-term player retention. Variations in multiplier effects also highlight the need for more consistent strategies to amplify the broader impact of gamification initiatives.

## 2. LESSONS LEARNED AND STRATEGIC RECOMMENDATIONS FOR ENHANCING GAMIFIED CULTURAL HERITAGE INITIATIVES

Some of the lessons learned and actions needed are as follows:

1. **Emphasize clear objectives and rewards:** Future gamification projects should continue to prioritize clear goals and meaningful rewards, as these elements are crucial for effective engagement and user satisfaction. Ensuring that objectives are well-defined and rewards are perceived as valuable can drive higher levels of participation and impact.
2. **Enhance creativity and innovation:** While some projects are highly original, others show less innovation. Future initiatives should focus on fostering creativity and incorporating unique elements to stand out and provide fresh experiences. Embracing new technologies and storytelling methods can enhance originality and engagement.
3. **Address accessibility and inclusion:** Although many projects perform well in these areas, there is room for improvement. Ensuring that gamification initiatives are accessible to a diverse audience, including those with varying needs and backgrounds, will enhance their effectiveness and reach.
4. **Incorporate scarcity and dynamic changes:** To maintain player interest and engagement, future projects should introduce rare and valuable elements and incorporate dynamic, unpredictable changes. This can help maintain the experience's freshness and engagement over time.

5. **Improve multiplier effects:** Given the significant variation in multiplier effects, future initiatives should focus on strategies to maximize their broader impact. This includes developing approaches to enhance the reach and effectiveness of gamification beyond the immediate user experience.

By synthesizing these lessons, future gamified cultural heritage projects can be designed to engage better, educate, and resonate with communities and players, ensuring they are not only entertaining but also culturally enriching and impactful. Integrating these insights will lead to more successful and meaningful gamification initiatives in the cultural heritage sector.

## CONCLUSIONS

The future of heritage safeguarding lies in redefining the relationship between communities and cultural legacies through innovation, inclusivity, and sustainability. This paradigm envisions cultural heritage not merely as a static repository of the past but as a dynamic resource for addressing contemporary challenges and shaping shared futures. By centring participatory practices and interdisciplinary collaboration, this approach amplifies the agency of local actors while fostering broader global connections, emphasising that cultural preservation is both a personal and collective responsibility.

Emerging technologies and creative methodologies, particularly gamification, are transforming heritage into an interactive and accessible domain. These tools not only make heritage more engaging but also serve as platforms for education and dialogue, enabling diverse audiences to interact with complex histories and narratives. The integration of advanced technologies, such as augmented reality, mobile apps, and immersive storytelling, exemplifies how digital innovation can reimagine the heritage experience while maintaining the authenticity of cultural expressions.

In regions with limited infrastructure or socio-economic challenges, heritage initiatives must go beyond technological integration to address systemic inequities. Low-density territories, in particular, offer untapped opportunities to model adaptive and context-sensitive solutions that balance technological advancements with the preservation of intangible traditions. These regions can lead in crafting frameworks that prioritize sustainability, aligning heritage with local development goals and creating models for others to emulate.

Viewed through the lens of fifty heritage initiatives spanning seven countries, and distilled into fourteen best-case studies, both the strengths and areas for improvement within gamified heritage projects become evident. These initiatives demonstrate a creative convergence of technologies—such as geolocation, QR codes, storytelling, and hybrid methodologies—that enhance user engagement and broaden accessibility. Notably, storytelling emerges as a central, unifying medium that facilitates dynamic connections between players and cultural narratives. However, inconsistencies in inclusivity, creativity, and gameplay dynamism highlight key areas for innovation.

Addressing these discrepancies could significantly enhance the impact and sustainability of heritage gamification initiatives.

A critical element of this transformation is the establishment of networks that bridge disciplinary, institutional, and geographic boundaries. Sustainable partnerships between universities, cultural organizations, and local stakeholders must become the norm rather than the exception, allowing for the exchange of best practices and resources. These collaborations can foster innovation, enhance capacity-building, and ensure that heritage initiatives are responsive to evolving cultural and technological landscapes.

Looking forward, the challenge lies in ensuring that heritage safeguarding remains adaptable without losing its essence. This involves rethinking success metrics, prioritising inclusivity, creativity, and long-term impact over immediate outputs. It also requires reimagining accessibility—not only in terms of physical or digital access, but also through the deeper integration of marginalised voices and underrepresented narratives into heritage discourses.

Ultimately, the democratization of heritage preservation is an opportunity to redefine cultural citizenship on a global scale. By leveraging emerging tools and fostering participatory frameworks, heritage work can transcend its traditional boundaries, becoming a catalyst for societal growth, intergenerational dialogue, and global solidarity. This vision calls for bold experimentation and a commitment to embedding cultural values into the fabric of contemporary life, ensuring heritage remains a vital force for progress.

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