

Bringing the Past to Life: Digital Technologies in Archaeological Parks

Abstract

The **ARCHAEODIGIT** project is pioneering the digital transformation of cultural heritage across four archaeological parks in Italy and Croatia. By introducing technologies such as virtual reality, interactive touchscreens, 3D printing, video projection, and analog-digital hybrid games, the initiative seeks to make ancient history accessible, engaging, and immersive for all audiences. The pilot actions, namely Sepino-Altilia, Helvia Ricina, Fulfinum Mirine in Omišalj, and the Trstenik Ships in Kaštela, demonstrate how digital tools can enhance interpretation, foster inclusivity, and safeguard archaeological remains while stimulating tourism and community connection. This article explores the methods applied at each site and reflects on how digitalization is reshaping the way we understand, experience, and preserve cultural heritage.

Digitalization and the Future of Cultural Heritage

In recent years, cultural heritage has increasingly embraced digitalization as a means of preservation and storytelling. Traditional site visits, once limited to stone ruins, static signs, and paper guidebooks, are now being complemented by immersive experiences that merge archaeology with technology. Digital technologies allow the recreation of traditional crafts and practices, offering visitors the chance to see, hear, and even touch elements of the past through virtual models and tactile tools. At the same time, 3D reconstructions of monuments and cultural



sites create the feeling of traveling back in time, bringing history to life in an immersive way (Carrozino & Bergamasco, 2010). These innovations are particularly relevant in the context of archaeological parks, where centuries-old remains often require interpretation to become meaningful. The **ARCHAEODIGIT** project, funded within the Interreg Italy-Croatia Programme, brings this vision to life by testing pilot actions in four areas across Italy and Croatia. Each pilot area adapts digital strategies to its unique environment, demonstrating that the future of cultural heritage lies not only in protecting ruins but also in reimagining how we engage with them.

Sepino: Playing with the Roman Past



The archaeological area of Saepinum-Altilia, in southern Italy, illustrates how gamification can become a powerful tool for learning history. Once a lively Roman settlement, the site today presents impressive remains of its theatre, basilica, and forum. Yet ruins alone can feel distant. To bridge this gap, **ARCHAEODIGIT** has introduced a suite of interactive experiences. Outdoor games linked with QR codes encourage visitors to explore the site as they solve puzzles, while a set of didactic panels and touchscreens provide clear explanations for audiences of all ages. Beyond

digital devices, analog games like Reconstructing a mosaic or The Memory of the Tanneries engage children in hands-on learning, simulating the reasoning process of archaeologists. The highlight of Sepino's pilot action is a lights-and-sounds show staged in the ancient forum or theatre, where projections, music, and narration recreate the atmosphere of Roman civic life. Lights-and-sound shows have proven highly engaging at historical sites, encouraging tourists to both enjoy the experience more fully and recommend it to others, turning each visit into a memorable and shareable attraction (Subedi Karuna, 2025). By combining games, storytelling, and sensory experiences, Sepino demonstrates how archaeological education can become participatory, inclusive, and memorable.

Helvia Ricina: Immersion Through Projection and Print



Helvia Ricina, in central Italy, was a prominent Roman town whose remains today offer only glimpses of its former grandeur. To bring its story to life, the park will feature an immersive multimedia room dedicated to the ancient theatre, where large-scale video projections combine drone footage, illustrations, and costumed actors with 2D and 3D motion graphics to dynamically

reconstruct the site and its surroundings. A voice-over guides visitors through key themes, including the town's historical context, urban layout, and regional significance, ensuring accessibility for all. The experience goes beyond visuals: visitors can trigger ambient sounds, from bustling streets to theatrical applause and daily market chatter, creating the sensation of stepping back into antiquity. Complementing these digital features, 3D-printed tactile tablets reproduce inscriptions and architectural details, enabling visually impaired visitors to explore the site through touch (Auricchio et al., 2017). By combining these technologies with inclusive design, Helvia Ricina demonstrates how digitalization can transform static ruins into a multisensory, living environment where history is both accessible and engaging.

Fulfinum Mirine in Omišalj: The Phygital Experience



On the Croatian island of Krk, the Roman town of Fulfinum Mirine provides one of the most technologically diverse showcases of the **ARCHAEODIGIT** project. Visitors will be greeted by outdoor touchscreens with tactile elements, offering interactive maps and access to a virtual exhibition of 3D objects, texts, and audio descriptions. Younger audiences are drawn into a playful mini-game that encourages exploration of the ruins, while virtual reality headsets allow participants to walk through reconstructed Roman spaces, experiencing the site as it once stood. Perhaps the



most innovative feature is the outdoor “phygital” game, which blends physical exploration with digital challenges. Equipped with smartphones, visitors follow clues, scan QR codes, and solve riddles across the archaeological area. This treasure-hunt approach transforms learning into active discovery, making Fulfinum Mirine a vibrant model of how heritage sites can engage both families and digital-native generations. Additionally, in this shift toward visitor-centered experiences, emerging technologies and storytelling not only help preserve cultural heritage but also broaden access, encourage active participation, and give space to multiple voices and perspectives, making engagement richer and more inclusive (Hulusic et al., 2023).

The Trstenik Ships of Kaštela: From Sea to Screen



The bay of Trstenik, near Kaštela in Croatia, holds a different kind of archaeological treasure: ancient shipwrecks. Most of today's maritime heritage, from ancient to modern shipwrecks, remains submerged and largely inaccessible to visitors, mainly due to limited funding for underwater research and conservation or due to access restrictions, which makes both preservation and public engagement challenging (Manglis et al., 2021). Here, digitalization provides a bridge. Interactive 3D prints allow the public to touch and examine reconstructions of ship hulls, keels, and cargoes, while videos and touchscreens present the archaeological process of



underwater excavation. Visitors can rotate digital ship models, gaining a sense of how these vessels once connected Adriatic communities through trade and travel. By translating fragile underwater remains into tangible and explorable forms, Kaštela's pilot action highlights how digital tools expand access to heritage that would otherwise remain invisible. This approach not only educates the public but also supports preservation by reducing the need for physical contact with sensitive artifacts, while also preserving the marine ecosystem.

Beyond the Pilots: Rethinking Heritage Engagement

Together, these four pilot actions reveal a wider transformation underway in cultural heritage. Digitalization is not simply about adding technology for its own sake but about enriching interpretation, enhancing accessibility, and fostering engagement. The **ARCHAEODIGIT** project demonstrates how archaeology and technology can work hand in hand to preserve and share cultural heritage in innovative ways. By piloting digital tools in four diverse parks, the project provides a roadmap for future initiatives across Europe and beyond. The lessons learned about combining digital and analog approaches, tailoring experiences to local contexts, and prioritizing accessibility, offer valuable insights for museums, heritage sites, and cultural institutions worldwide. What remains constant is the core idea that heritage must be experienced to be understood. Thanks to digitalization, the ancient world is no longer confined to stones and fragments; it is alive, interactive, and ready to be rediscovered by new generations.

Bibliography

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