DESIGN AND TECHNOLOGY. PEOPLE, ENVIRONMENT, SYSTEMS

TIM S.p.A. -User Engagement in Web 3.0: designing immersive tourism and cultural services in the Metaverse

Funded By	TIM S.P.A. [P.iva/CF:00488410010]
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Context of the research activity	The transition to Web 3.0 and the Metaverse is redefining digital interactions, introducing new ways to engage audiences, improve accessibility, and create meaningful digital experiences. This research project aims to develop innovative engagement models in the tourism and cultural heritage sectors, leveraging Web 3.0 applications and using immersive digital environments, provided by XR technologies, as testing grounds to evaluate opportunities for broader commercialization of tourism offerings. The tourism and cultural sector is a particularly compelling use case due to its strong visual and experiential components. The growing demand for interactive digital experiences, combined with evolving visitor expectations, calls for new approaches to engagement. This research will explore how Web 3.0 can enable more personalized, accessible, and interactive cultural experiences, transforming the way users engage with museums and historical/cultural sites, while also creating economic value for institutions and service providers. The methodology will be developed through different theoretical frameworks, with a focus on integrating Interaction Design with Lean Business methodologies, as already tested by the tutor in European projects, including SYNFONICA, the EU project for assessing user needs for CCAM systems.
	a. User Engagement in Web 3.0 Tourism and Cultural Services by means of interaction design • Develop a framework to identify visitor needs and enhance the visitor experience in virtual cultural spaces. • Analyze how immersive storytelling and gamification can foster prolonged engagement. • Explore the role of social interaction and co-creation in immersive cultural experiences. b. Codesign of Business Models and Monetization Strategies

Objectives	• Investigate how immersive digital experiences can increase visitor participation and support monetization (e.g., NFT-based digital tickets, premium content, digital merchandising). • Integrate XR and generative AI technologies as premium services, offering fully immersive guided tours and interactive exhibitions to boost visitor engagement and open new monetization channels. • Increase value for museums, cultural institutions, and local administrations through the creation of dynamic interaction networks. • Explore hybrid revenue models, including membership programs, transactional access, and advertising partnerships. • Design scalable business models for the commercialization of Web 3.0 and XR-based services by TIM. • Integrate TIM technologies, particularly TIM's Smart Tourism platforms, to support these new business models. c. Scalability and Expansion Beyond Tourism • Validate the research in the tourism/museum sector and analyze its potential extension to other sectors (retail, education, smart cities, food metaverse, and live events). • Identify key technological enablers, such as 5G, blockchain, cloud infrastructure, and Artificial Intelligence, to support real-time immersive experiences. • Develop a design methodology for integrating digital cultural assets into broader digital service ecosystems. Methodology This research integrates qualitative and quantitative methods to ensure applicability and scalability: a. Integration of methodologies: combining Interactive Design approaches with Lean Business principles. b. Stakeholder engagement and qualitative analysis: conducting interviews and workshops with museum directors, tourism operators, and Web 3.0 developers to identify challenges and opportunities. c. Technological exploration: analyzing existing Web 3.0 platforms, XR technologies, generative AI, tokenization models, and decentralized identity solutions to assess their applicability in the tourism sector. d. Prototyping and case study development: designing immersive museum experiences and interactive exhibitions, measuring their impact on visitor engagement and participation. e. Business model validation: testing different engagement and monetization models to determine their feasibility in real-world applications. f. Comparative analysis: evaluating existing digital tourism solutions to identify the distinctive factors enabled by Web 3.0 technologies.

Skills and competencies for the development of the activity	The PhD candidate will have a strong background in strategic communication and stakeholder engagement, with an interdisciplinary approach to research. Building on solid experience in user engagement strategies and innovation in engagement models, the candidate will be able to interpret and model the gap between technological advancement and public needs, ensuring that the research remains focused on user experience, applicability, and scalability.