ICCROM guidelines. From these documents, core heritage requirements were identified and categorized. In the second stage, the concept of the Metaverse and its relevant technological features were examined through interdisciplinary literature, with particular attention to digital documentation, virtual restoration, evidence-based reconstruction, and immersive forms of cultural tourism.
In the final stage, selected international case studies employing Metaverse-related or immersive digital technologies were analyzed. These cases were qualitatively compared with the extracted heritage requirements in order to assess conceptual alignment, rather than to measure technical performance or accuracy quantitatively.

Results and Discussion:
The analysis indicates a notable degree of correspondence between Metaverse capabilities and the principles outlined in international heritage documents. Digital documentation within immersive environments reflects the Venice Charter's emphasis on systematic recording and archiving. High-resolution three-dimensional models produced through photogrammetry, laser scanning, or archival interpretation can function as durable digital records, particularly for sites that are endangered, inaccessible, or partially destroyed.
Similarly, virtual restoration and reconstruction practices can be consistent with ICCROM and Burra Charter principles when they are explicitly presented as non-invasive, reversible, and interpretive digital interventions. When supported by documented evidence and accompanied by clear explanations of uncertainty, such reconstructions can contribute to understanding historical layers without compromising authenticity or material integrity.
With regard to cultural tourism, immersive Metaverse environments are broadly aligned with UNESCO principles concerning accessibility, education, and sustainability. Virtual visits have the potential to reduce physical pressure on fragile heritage sites while enabling broader public engagement regardless of geographical or physical limitations. At the same time, several challenges must be acknowledged, including the risk of inaccuracies in digital reconstructions, high technological costs, unequal access to immersive equipment, and the tendency to prioritize visual impact over cultural meaning if critical frameworks are absent.

Conclusion:
Overall, the Metaverse should be understood as a complementary tool that can support heritage conservation and interpretation rather than as a substitute for physical preservation. The findings of this study suggest that, when applied critically and in accordance with established conservation principles, Metaverse-based technologies can enhance documentation, interpretation, and sustainable access to historic environments. Future research should focus on developing clearer methodological criteria and ethical guidelines to ensure that immersive digital applications contribute meaningfully to the protection and understanding of cultural heritage.

Keywords: Metaverse, historical context, Metaverse capabilities, application of metaverse in historical context, charters and statements

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Application of the Metaverse in relation to cultural heritage requirements based on international documents and conventions

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Historic urban fabrics and architectural heritage are subject to a wide range of international charters and conventions that establish guiding principles for conservation, restoration, documentation, reconstruction, and cultural tourism. Foundational documents such as the Venice Charter, the Nara Document on Authenticity, UNESCO conventions, and the Burra Charter emphasize concepts including authenticity, integrity, accurate documentation, and the responsible use of heritage resources. In practice, however, the implementation of these principles has become increasingly complex due to factors such as physical deterioration, natural hazards, restricted accessibility, and the growing pressures of mass tourism.

In recent years, advances in immersive digital technologies have introduced alternative approaches to addressing these challenges. Among them, the Metaverse understood as a three-dimensional digital environment integrating Virtual Reality (VR) and Augmented Reality (AR) has gained attention as a platform for experiencing, documenting, and interpreting cultural heritage. Unlike conventional visualization or presentation tools, Metaverse-based environments allow users to engage with heritage spaces interactively and remotely, often through digital avatars, thereby expanding possibilities for access and interpretation beyond physical constraints.

Although immersive technologies have been increasingly employed in heritage-related projects, their relationship with the normative frameworks defined by international heritage documents has not been sufficiently examined. Existing studies tend to focus on technical capabilities or user experience, while questions of compatibility with established conservation principles remain underexplored. This study seeks to address this gap by examining how Metaverse-related capabilities correspond to the requirements articulated in international charters and conventions concerning historic environments.

Materials and Methods:

The research is based on a qualitative, applied methodology using content analysis. In the first stage, key international doctrinal texts related to cultural heritage conservation were systematically reviewed, including the Athens and Venice Charters, the Nara Document, the Vienna Memorandum, the UNESCO 1970 Convention, the Burra Charter, and selected

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