Chapter 6
6G Technology and Heritage Cities: Enhancing Preservation and Visitor Experience

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ABSTRACT

Heritage cities face the dual challenge of preserving their cultural legacy while meeting modern tourism demands. The advent of 6G technology offers a transformative opportunity to address these challenges by enhancing preservation efforts and visitor experiences. This paper explores the potential of 6G in revolutionising heritage city management through technologies like augmented reality (AR), virtual reality (VR), and the Internet of Things (IoT). These technologies enable immersive and interactive experiences for tourists while facilitating real-time monitoring and proactive maintenance of heritage sites. Case studies from Rome and Kyoto illustrate the practical implementation of 6G, highlighting its benefits and challenges. The integration of 6G requires careful consideration by urban planners and heritage managers, balancing technological advancements with the preservation of cultural authenticity. As 6G technology continues to evolve, its role in heritage city strategies holds promise for sustainable tourism and the enduring conservation of global cultural heritage.

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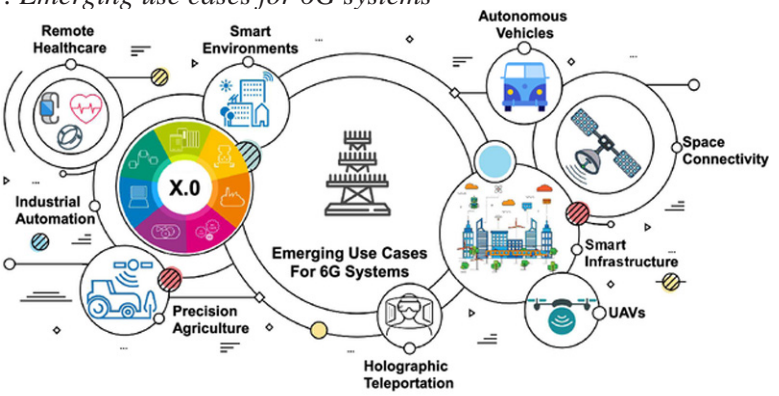
1 INTRODUCTION

Living embodiments of the intricate tapestry of human civilisation are heritage towns distinguished by their historical value and profound cultural legacy. Encapsulating millennia of architectural success, creative expressions, and societal attractions, these towns symbolised cultural diversity and shared recollections revered by individuals and communities worldwide (Zhao, 2022). Urban planning and heritage management specialists vouch that notwithstanding their grandeur and historic splendour, heritage towns must strike an equilibrium while tackling the promptly evolving desires of modern tourists and safeguarding their tangible and intangible cultural heritage (Thakur, Bandyopadhyay & Datta, 2023). Cultural resources must be safeguarded from ecological deterioration, conflict with urbanisation and destructive impacts of time to preserve in intact form the physical aspects and artefacts and cultural lifeline of such heritage, as asserted by Yildirim & Çakici (2022). At the same time, mainstreaming heritage tourism is challenging in increasing tourist participation, managing tourists, and maintaining infrastructures without harming the value of these valuable cultural resources, as Slimani, Khoulji & Kerkeb (2023) claimed.

Even with the steeplechases above, 6G technology ensures support, management, and tourism promotion in and protection of historic towns. Building on 5G's success, 6G is set to cause a revolution in wireless communications. It will offer fast data speeds, quick response times, and connections everywhere to work with cutting-edge devices. Sinha (2021) points out that these tech improvements open doors to try new ideas (refer to Figure 1). These could boost efforts to protect cultural treasures and make visiting more enjoyable. This, in turn, helps make sure we keep our rich cultural history safe for the future.

Figure 1. Emerging use cases for 6G systems



(Source: Akyildiz, Kak & Nie, 2020)