# Master recherche 2024-2025

## Spécialité Bâtiment Exploitation Maintenance et Sécurité

Title:

Digital Twin Technology in Smart Building Management: Innovation and Application

Abstract:

The application of digital twin technology in smart buildings has revolutionized the management and operation of buildings, especially in the context of global energy consumption where buildings account for nearly one-third of the total final energy consumption and approximately 55% of global electricity demand. This technology involves the creation of digital replicas of physical buildings, enabling real-time management thanks to the integration of diverse data by offering a detailed view of buildings in real time, facilitating optimized energy management, preventive maintenance, and improved safety. These systems collect data from a variety of sources, including IoT sensors and monitoring systems, to provide accurate analysis and recommendations. Existing examples of digital twin implementation in buildings mainly provide general frameworks or possibilities for performance. To effectively harness the potential of digital twins in building, establishing connectivity and predictability for data exchange between the physical and virtual realms is crucial.