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Use Of A Digital Twin For Remote Monitoring And Asset Management Of Buildings

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The use of digital twins for asset management is becoming an increasingly important topic. In this paper we consider the practical implementation issues of how this might be applied to a building in practice using remote monitoring. The case study considered is a three-storey structure that can be monitored using remotely accessed sensors. Data is streamed into either local or cloud-based storage. A digital twin of the structure is used to provide the building owners and management team with key information regarding the current state, and potential future state of the structure. This is achieved by combining analysis of the sensor data records with structural dynamics models that have a predictive capability. In this paper, finite element simulations are updated within the digital twin based on the dynamic behaviour inferred from the data recorded from the structure. Results show that this process can also quantify degradation of the structure over multiple cycles of updating.