



# Heritage

## Special Issue

# HBIM and Information Systems for Cultural Heritage Memory and Preservation

### Guest Editors

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### Deadline

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### Special Issue Information

Dear Colleagues,

Building Information Modelling for Architectural Heritage (HBIM) is becoming the standard in historic building preservation. It organises metric data and collects diverse n-dimensional layers of information.

HBIM methodologies and processes refer to information systems that manage heterogeneous data. This approach comes from the already established methods of Building Information Modelling (BIM), and it is enriched in the case of built heritage by diverse, complementary, and multidisciplinary actors. The complexity of this diverse knowledge is becoming increasingly challenging to manage due to the limited implementation possibilities offered by information systems underlying the most common BIM software. This requires novel advancements and solutions for data and 3D data structures, including semantics and standards for effective HBIM interoperability. Despite this, HBIM processes are increasingly becoming an expression of the digital transition affecting architectural heritage and, in a broader sense, our cultural heritage.

HBIM tools combine structured 3D data and information to describe architectural heritage in a comprehensive database where HBIM models become knowledge representation systems. Despite the widespread use of HBIM tools to provide memories and digital replicas of our common heritage, implementing BIM in Heritage (HBIM) still has its unsolved challenges. Shared guidelines and standardised procedures are still far from being addressed.

Diverse disciplines with different technologies and objectives address the themes of accuracy, reliability, and uncertainty of HBIM models and libraries. These approaches also include novel computational methods in synergy with visual programming tools.

Thanks to HBIM, the themes of preventive intervention, maintenance, and restoration became an integrated and planned investigation methodology that safeguards architectural and cultural heritage more efficiently than traditional methods.

Themes of diagnosis, monitoring, and economic planning address the process of preserving architectural heritage with systems that should be user-friendly, easily accessible, and updatable for all professionals involved in the management of historical and archaeological buildings.

This Special Issue aims to present new methodological advancements and applicative scenarios in using HBIM from an interdisciplinary and multidisciplinary perspective. These approaches can include HBIM methodologies for the memory and valorisation of historical knowledge and protocols for integrated management and preservation actions.

We welcome both practical and theoretical contributions from a wide range of fields, including 3D data and semantics, heritage management, archaeology, architecture, and tourism studies. We suggest the following thematic lines, although we invite authors to combine them or propose other topics.

#### Documentation and representation:

- 3D data, semantics and standards;
- Historical data collection and visualisation;
- Integrated survey techniques and scan-to-BIM;
- Public awareness and knowledge dissemination.

#### Preventive conservation:

- Decay process diagnosis and modelling;
- Restoration and reuse projects;
- Construction site management;
- Preventive conservation in national laws and international directives.

#### Monitoring and Heritage Science:

- Knowledge-based Digital Twins;
- IoT systems for monitoring and conservation;
- Deep Learning techniques for heritage data analysis;
- Predictive management of heritage buildings.

We look forward to receiving your contributions.

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