

## WP 3: Representative models of Built Environment Typologies (BETs) prone to SUOD/SLOD. Case studies selection and data collection

**T3.3 - Selection and survey of significant real-World case studies. Scan to BIM and implementation of risk parameters to set scenarios for VR. Case studies VR/AR representation. Users' exposure data collection**

### D3.3.1– SETTING UP OF BIM MODELS OF CASE STUDIES, IMPLEMENTATION OF INTEGRATED SURVEYS (SCAN TO BIM) AND PREPARATORY ACTIVITIES FROM BIM TO VR. DEFINITIVE 3D MODELS VR/AR (BA) OF CASE STUDIES (RM)

**ABSTRACT.** After the identification of the **nine BETs** (D3.2.1), the case studies samples have been selected, categorized, and characterized according to BE type, BE taxonomy and possible multi-hazard scenarios (D3.2.1 and D3.2.2). The results of D3.1.2 and D3.1.3 supported the setting up of **BIM models**, integrated surveys, and preparatory activities to create **multi-hazard scenarios** to be adopted in **Virtual Reality**. In particular, the approach has been tested on the case study of Narni, in Italy, affected by earthquake and air pollution. Firstly, the **Open Space of Piazza dei Priori** has been surveyed with laser scanning and photogrammetry providing an accurate point cloud, used to generate a BIM model of the content and the frontiers. Successively, BE parameters identified in D3.2.2 have been inserted in this information three-dimensional model to be available for risk assessment procedures and risk mapping. In parallel, the study proposes to structure the parameters' list according to GIS and BIM data models requirements. The digital reconstruction of the BE in GIS and BIM and the risk assessment outcomes, including evacuation simulation, are investigated and selected as training material to be inserted in the Virtual Environment (VE) based on Virtual Tour of the case study. The VR-centric workflow could enhance pervasive training with the aim of **enhancing preparedness and awareness of BE vulnerability and safe behaviour** thanks to web-based applications.

