

*The Notre-Dame
Translation Project*

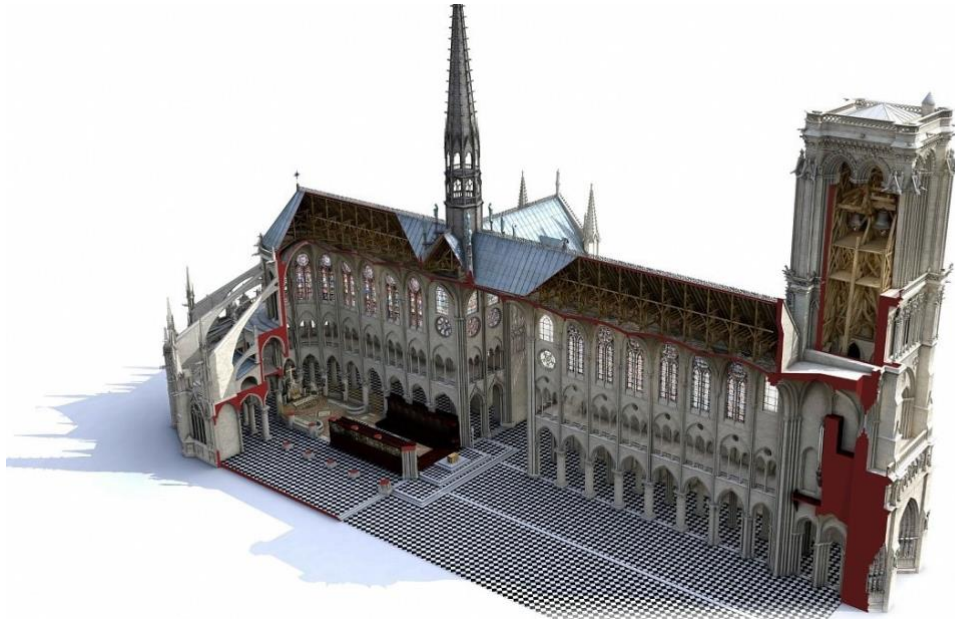
X. Digital Preservation

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3D Digital Reconstruction of the Cathedral

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3D digitization technologies facilitate the capture of the structure of an object or a building by means of machines known as “scanners.” There are various kinds of scanners, adapted to different types of objects (according to their size or surface appearance). For buildings, the technology used is lasergrammetry, which produces a precise topographical survey of a large area. The instrument emits a beam of visible light (laser); the beam is sent back after having touched the object being digitized; the instrument deduces from this back and forth the distance between the object and the scanner. Numerous points can be evaluated simultaneously at long range, making the technology ideal for scanning large areas quickly. The result of a scan is an immense point-cloud; to visualize an expanse as vast as the interior of Notre-Dame of Paris, several scans had to be made and assembled digitally. Photographs may then be overlaid digitally onto the point-cloud data, resulting in a legible, 3D color image.

The archive containing this 3D data is today the only complete trace of the whole missing timber roof framework. Surveys can thus be made based on the data that are metrologically exact: topographical indications, spacing of the

beams, size of the parts, etc., surveys indispensable for researchers who work on Notre-Dame.

Performed [the week after the fire] by the same company, the scan of the cathedral's current silhouette will enable, via comparative analysis, the visualization of the deformation of the vaults, the study of the structure after the fire, the calculation of the forces now acting on the weakened structure.

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