



[Volume XL-5](#)

Int. Arch. Photogramm. Remote Sens. Spatial Inf. Sci., XL-5, 327-329, 2014
www.int-arch-photogramm-remote-sens-spatial-inf-sci.net/XL-5/327/2014/
doi: 10.5194/isprsarchives-XL-5-327-2014

3D Modeling By Consolidation Of Independent Geometries Extracted From Point Clouds – The Case Of The Modeling Of The Turckheim's Chapel (Alsace, France)

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Keywords: 3D Modeling, 3D CAD, geometric consolidation, cultural heritage

Abstract. Turckheim is a small town located in Alsace, north-east of France.

In the heart of the Alsatian vineyard, this city has many historical monuments including its old church. To understand the effectiveness of the project described in this paper, it is important to have a look at the history of this church. Indeed there are many historical events that explain its renovation and even its partial reconstruction.

The first mention of a christian sanctuary in Turckheim dates back to 898. It will be replaced in the 12th century by a roman church (chapel), which subsists today as the bell tower. Touched by a lightning in 1661, the tower then was enhanced. In 1736, it was repaired following damage sustained in a tornado. In 1791, the town installs an organ to the church. Last milestone, the church is destroyed by fire in 1978. The organ, like the heart of the church will then have to be again restored (1983) with a simplified architecture.

From this heavy and rich past, it unfortunately and as it is often the case, remains only very few documents and information available apart from facts stated in some sporadic writings. And with regard to the geometry, the positioning, the physical characteristics of the initial building, there are very little indication.

Some assumptions of positions and right-of-way were well issued by different historians or archaeologists. The acquisition and 3D modeling project must therefore provide the current state of the edifice to serve as the basis of new investigations and for the generation of new hypotheses on the locations and historical shapes of this church and its original chapel (Fig. 1)

Citation: Koehl, M., Fabre, Ph., and Schlüssel, B.: 3D Modeling By Consolidation Of Independent Geometries Extracted From Point Clouds – The Case Of The Modeling Of The Turckheim's Chapel (Alsace, France), Int. Arch. Photogramm. Remote Sens. Spatial Inf. Sci., XL-5, 327-329, doi:10.5194/isprsarchives-XL-5-327-2014, 2014.

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