

A MIXED RECORDING PROCEDURE: A CASE STUDY ON ANCIENT CITY BISHAPUR

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Abstract

Bishapur is an ancient Sassanian city founded in the 3rd century AD by the Sassanian king, Shahpur the Great, six years after his victory over the Roman Emperor, Valerian. Due to existence of different types of desired objects such as rock-relieves, ancient buildings, the ruins of a Sasanian fortress, topography, and other components of an ancient city, a mixed recording procedure have been arisen. Documentation of such object leads to several data acquisition methods, map scales, coordinate systems and spatial data modeling. Within the framework of this paper, the following subjects will be studied.

1) Heritage Documentation:

The object should be regarded in its environment. It is important to document a monument with the its surrounding. Broader aspects such as preservation and urban planning can be considered, only if the heritage object does not see as an isolated object. Superimposition between large scale maps (1:100, 1:500) and medium scale map (1:25000) give us a powerful tools for further investigations. As an example in Bishapur, the water supplying and drainage system and the reason of selecting that location can be studied by the extracted DEM from medium maps. The datum, projection system and resolution should be select with regards to map integration. In this paper the criteria for such integration are discussed.

2) Combination of the data collection methods:

Various data acquisition methods should be considered. The Global Positioning System (GPS) can be used to preparing main network, common points to calculate transformation parameters between coordinate systems. Modern tachometers can measure and record azimuth, zenith angle, and slope distance. This method are used for providing map 1:500, 1:100, improving existing control and monitoring network in order to deformation analysis. For objects up to about 100 m in size, close range photogrammetry is in many cases a good option to record object geometry. Complicated objects can be documented in relatively short time. In many cases it is an advantage that the objects can be measured without being touched. Among them, photogrammetry plays a key role in 3D data acquisition.

Based upon the group works [Malek, 1999a], [Malek, 1999b] and [Malek, 2000] a low-cost and precise approach to make orthophoto and a finite element method for nonmetric camera calibration are offered.

3) Map structure:

The usability of the result should be not restricted to a group of specialists. Furthermore, documentation needs to be flexible and software independent. A methodology, which made use of feature-based map structure, is introduced. This structure is selected while minimum changes in the national standard are occurred. It will be shown that not only such maps are GIS ready but also can adapt with different technical aspects of the application.

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