

## **Aerial Survey and 3D Scanning Technology Applied to the Survey of Cultural Heritage of Su-Paiwan, an Aboriginal Settlement, Taiwan**

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**Abstract :** This paper discusses the application of aerial survey technology and 3D laser scanning technology in the surveying and mapping work of the settlements and slate houses of the old Taiwanese aborigines. The relics of old Taiwanese aborigines with thousands of history are widely distributed in the deep mountains of Taiwan, with a vast area and inconvenient transportation. When constructing the basic data of cultural assets, it is necessary to apply new technology to carry out efficient and accurate settlement mapping work. In this paper, taking the old Paiwan as an example, the aerial survey of the settlement of about 5 hectares and the 3D laser scanning of a slate house were carried out. The obtained orthophoto image was used as an important basis for drawing the settlement map. This 3D landscape data of topography and buildings derived from the aerial survey is important for subsequent preservation planning as well as building 3D scan provides a more detailed record of architectural forms and materials. The 3D settlement data from the aerial survey can be further applied to the 3D virtual model and animation of the settlement for virtual presentation. The information from the 3D scanning of the slate house can also be used for further digital archives and data queries through network resources. The results of this study show that, in large-scale settlement surveys, aerial surveying technology is used to construct the topography of settlements with buildings and spatial information of landscape, as well as the application of 3D scanning for small-scale records of individual buildings. This application of 3D technology, greatly increasing the efficiency and accuracy of survey and mapping work of aboriginal settlements, is much helpful for further preservation planning and rejuvenation of aboriginal cultural heritage.

**Keywords :** aerial survey, 3D scanning, aboriginal settlement, settlement architecture cluster, ecological landscape area, old Paiwan settlements, slate house, photogrammetry, SfM, MVS), Point cloud, SIFT, DSM, 3D model

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