

# MULTI-TEMPORAL VIRTUAL 3D CAMPUS INTEGRATED WITH HISTORIC GIS DATA

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## Preference: poster

**ABSTRACT:** 3D digital city is an emerging research and application topic in Geo-Spatial and related fields. There is a wide range of 3D digital city applications such as urban and regional planning and management, smart transportation, virtual tourism, disaster prevention and many others. In addition to the functionality of visualization, 3D building models with information-based attributes can be used in diversified applications. The objective of this study is to present the historic development of National Central University from 2D to 3D changes combining multi-temporal aerial images and 3D building models. Within the constructed virtual campus, attributes and spatial information such as parking and campus facility management can be achieved with this virtual platform. Geospatial and non-geomatic information play an important role in spatial applications and analysis. Therefore, such a virtual environment does not only display a digital campus but also enables variable applications.

For building model reconstruction, the developed techniques can achieve high level of detail, including the exterior and interior structures. Besides, new buildings can be pre-visualized and simulated in the virtual system, which also allows the users to change the design before the construction. With the management of geospatial data and integration with multi-temporal 3D building models, the developed virtual environment provides the functionality to explore the entire campus and possible future development through the internet and digital devices. Furthermore, this type of virtual campus system can be used as a promotion and management platform as well as the step stone of achieving a 3D e-campus.

**KEYWORDS:** 3D digital modeling, attributes, multi-temporal modeling, spatial information and applications