Development of Geospatial Smart Cities and Management

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SUMMARY

The global smart cities market for information and communications technologies reached about $350 billion in 2016 and expected to reach $800 billion by 2021. Smart geospatial data development constitutes the foundation for smart cities.

This paper discusses a cutting-edge 3D Geospatial solution for smart cities, local governments and governmental agencies followed by very successful case studies in three countries as excellent examples of smart 3D geospatial data for smart cities.

The paper first introduces our software package, called KANAVA, which provides methodology and solution that are based on high resolution intelligent and object based 3D geospatial data for smart cities. KANAVA uses high resolution imagery, geometry, geospatial semantics, artificial intelligence, deep learning, automation and topology.

Then, the paper discuses very successful case studies in three countries as excellent examples of smart 3D geospatial data for smart cities. These examples are:

• Cerkes 3D Smart Data (Turkey): In April 2017, 3D Smart City was produced using the KANAVA software. The project area of 27 km2 was flown by an UAV and 5cm GSD imagery was collected at 80% overlap and 60% sidelap. The 3D City model was created in 10 days' time by one operator consisting of:

- 5cm GSD orthophoto,

- DSM / DTM

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/ Contours all to the precision of 5 cm.

- 3D buildings (5,916 buildings),

- 3D Trees (about 6,000), fences, power lines, and other planimetric features

• Read Sea Mega Tourism Project (Saudi Arabia): During 2016-2017, Geo Tech Group has developed a comprehensive geospatial project covering an area of about 55,000 km2 and covering the development of 3D Geospatial Smart Data using 1.5m stereo satellite images, 0.18m stereo aerial images and terrestrial 3D mobile mapping.

• Hannover Case Study (Germany): The discussions are under way to implement our cutting-edge technology in Hannover before the end of 2017.

Thus, the KANAVA software combined with aerial imagery of very high resolution makes it possible to develop smart geospatial data for smart cities in a nearly automated fashion in weeks rather the years that would be required using traditional approaches and techniques. Therefore, our approach shall affectively serve:

• Object based 3D GIS Establishment

• Cadastral registration and Real Estate Value Assessment

• Environmental Management

• Spatial Planning and Landscape Planning

• Urban Transformation and Traffic Planning

• Energy Efficiency

• Disaster Prevention and Management

• Tracking noise, air pollution, air flow, etc.

• Infrastructure Construction and others.