

3D Building and DTM Project



Figure1. High Resolution Satellite Image of the Core City



Figure2. Building Outline Overlaid on DTM

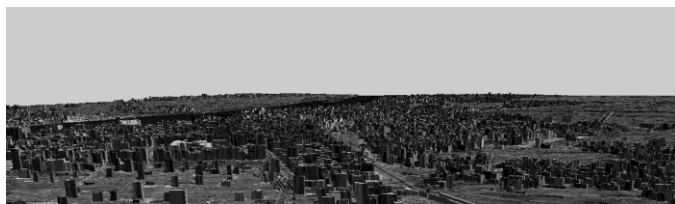


Figure3. 3D View of the City



Figure4. 3D View of the Outer Area

Business Need:

Aviation industry is growing rapidly in different parts of the world. Urbanization in different cities is also leading to growth of high rise buildings. High rise buildings near the airport may create hindrance during the landing and take-off. Simulation models of scenario around the airport could help pilots in safer landings and take-offs. It is therefore needed to create

- i) 3D Data on buildings of city
- ii) Create Digital Terrain Model of the city

Area Covered:

Data was created for the following three cities-

- i) Borge Al Arab
- ii) Al Arish
- iii) Luxor

Inputs Used:

- i) High Resolution Satellite Stereo-pair
- ii) DGPS points for Ground Control

Business Solution:

Aerial Triangulation of Satellite Stereo-pair was done. DGPS points supplied by the client were used as control during the Aerial Triangulation.

Stereo-compilation of each building was done to create 3D polygon for each building. Each building having minimum area of 50 sq m were compiled in stereo. Adjacent buildings having vertical height difference of more than 1m were represented as separate polygons.

Super-structures on each building were also captured. GIS data of each building having 'Absolute Height' and "Height above Mean Sea Level" was created for each building.

Auto-correlation of Stereo-pairs was done to create Digital Surface Model, representing terrain, buildings, vegetation and other natural and man-made features. Auto-correlated elevation points were edited in 3D environment to segregate terrain from vegetation and building data. Digital Terrain Model representing the terrain features were created after manual editing in 3D environment.

Project Shipment:

The following shipments were made-

- i) 3D building shape file containing
 - a. Absolute Height of each building
 - b. Height of building above MSL
- ii) DTM at 5m

