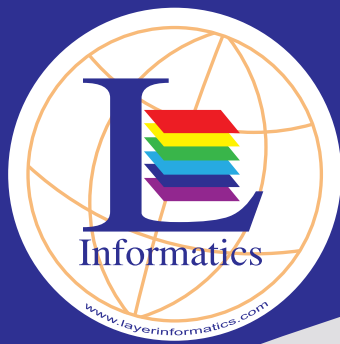




DTM AND DSM EXTRACTION FROM LIDAR POINT CLOUDS

A Case Study



CHALLENGES:

- Certain features such as moving objects, buildings were difficult to identify inside the vegetation class. They were identified with the help of Google Earth and orthos as a backdrop.
- Automatic classifications by routines were not completely successful and hence the missing points were manually classified with the help of the editable surface model.
- There was a little difficulty in obtaining a smooth ground and an accurate building class as the terrain was completely built-up with significant undulations and hence additional efforts were put to ensure that the accuracy levels are met.

Head Office:

Layer Informatics Pvt.Ltd.
#48/49, Sathyams, 3rd
Floor, 9th Cross, Sarakki
Main Road, J.P Nagar, 1st
Phase, Bangalore-560078.

INTRODUCTION:

The objective of the project is to extract DTM and DSM from Lidar Point Clouds. The scope included the classification of features such as Ground, Vegetation, Buildings, Bridges and Poles. The remaining features were moved to an unclassified class. The scope also included a 1m contour generation from the extracted DTM.

KEY ASPECTS:

- Auto-classification of Ground, Vegetation, Buildings and Noise followed by a manual check and edit of the classified points.
- Manual Classification of other features.
- A DTM creation from Ground Class.
- 1 meter Contour generation from DTM.

METHODOLOGY:

➤ Feature classification

- Automatic routines were run to extract the ground from the supplied point clouds. A surface model of the ground was created and was manually checked and edited for any irregularities in the ground. Bridges and Low points were moved to respective classes.
- Routines were run to classify the points at a height of 0.5m and above from the ground to a high vegetation class.
- Automatic routines were run on the high vegetation class to classify the Building Points.
- A surface model of Ground and High vegetation was created to classify the missing buildings. Together, the other features such as fences, walls, poles, moving objects and transmission lines were classified to the respective classes.
- A surface model of ground and buildings were created to classify any missing high vegetation points.
- The above steps ensured that the Lidar point clouds were classified to relevant classes. As a final step, automatic routine was run on high vegetation class to classify points at the

➤ DTM & DSM Extraction

- The points from the ground class were then triangulated to create a digital surface and were later exported to regular grid of ASCII points which comprised the DTM.
- All other points in conjunction with ground were used to create a Digital Surface Model (DSM).



DTM AND DSM EXTRACTION FROM LIDAR POINT CLOUDS

Page 2

TESTIMONIALS:

Thanks so much....
That is why I never
even look to get prices
from other aerial companies. I have had
nothing but good
experiences with
Layer.



► Contour Generation

- Contours at an interval of 1m were generated from the DTM.
- The contours were then checked for any crossings and edge mismatches between every tile and was delivered in a cad format.

► Deliverables

- Classified points clouds in Las formats.
- A regular grid of points in XYZ formats each for a DTM and DSM.
- Contours at 1m interval in Cad format.

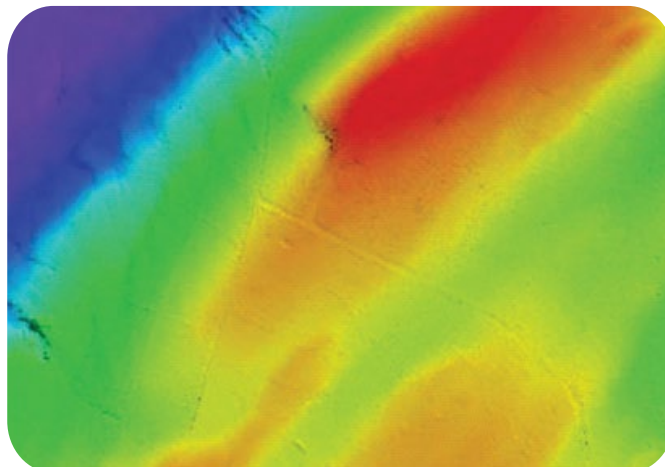
TECHNOLOGY:

- Microstation
- Terrascan
- Terramodel

APPLICATION:

- Urban Modeling
- Orthorectification
- Engineering Survey
- Forestry

SCREEN SHOTS:

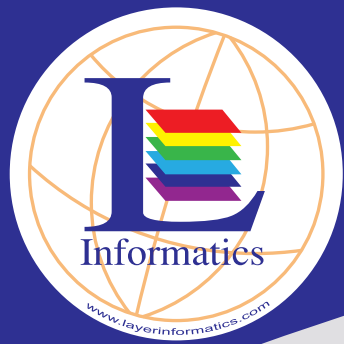


UK Office:

Edinburgh EH2 4AT,
Scotland, UK.

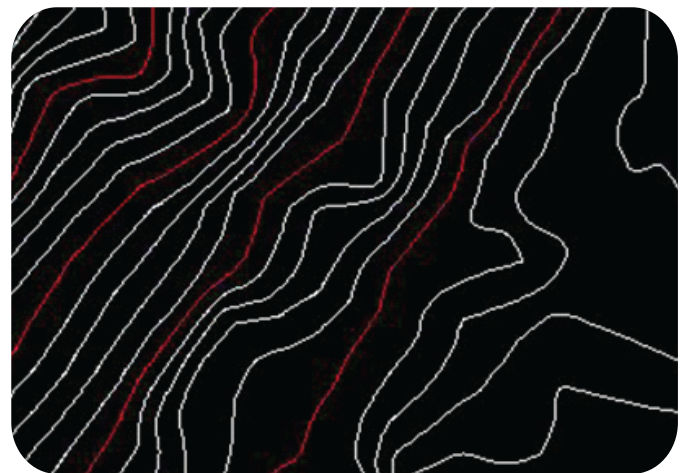
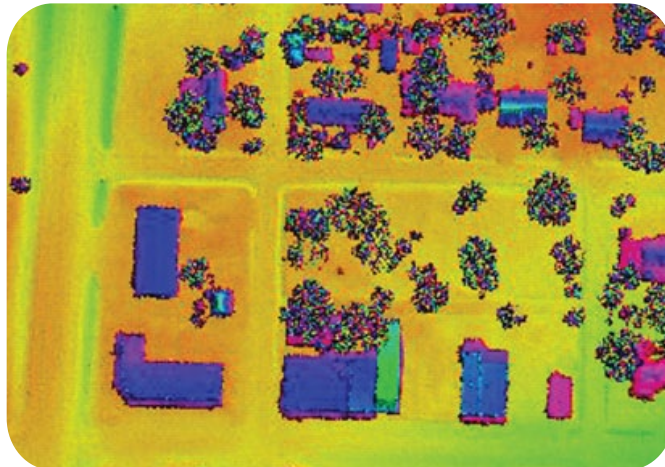


Layer Informatics Pvt. Ltd.
Vision Through Mapping



DTM AND DSM EXTRACTION FROM LIDAR POINT CLOUDS

Page 3



US Office:

Scranton, PA 18505

Middle East Office:

Doha, Qatar.



Layer Informatics Pvt. Ltd.
Vision Through Mapping