

Project Summary

Organization

Survey Department of Sri Lanka

Solution

Government

Location

Jaffna, Northern Province, Sri Lanka

Project Objectives

- Integrate spatial data collection and digital photogrammetry
- Produce 1:10000 scale digital topographic maps
- Create a geospatial model of the City of Jaffna from stereo pairs of aerial photographs

Products Used

Bentley Map[®], MicroStation[®]

Sri Lanka Survey Department Deploys Bentley Map for Digital Topographic Mapping

City of Jaffna Large-scale Digital Terrain Model Aids Decision-making to Support Development in the Northern Province

Improved Data Quality and Functionality

The Survey Department of Sri Lanka is a national surveying and mapping organization charged with providing high-quality land information products and services. Led by the Surveyor General, the department has more than 5,000 technically qualified and dedicated personnel in surveying, mapping, and allied fields. As part of a very large digital terrain model (DTM) project, the Survey Department used Bentley Map and MicroStation to deliver improved data quality and functionality for the City of Jaffna GIS.

The Northern Province of Sri Lanka faces urgent issues such as repatriating internally displaced persons, rebuilding infrastructure, renovating irrigation facilities, reconstructing fisheries, and planning new development. Jaffna itself covers an area of 20.2 square kilometers and has a population of nearly 84,500. The maps provide up-to-date and accurate information to aid planners in making decisions about how to address critical issues during development in the Northern Province.

Initiated in February 2010, the mapping project included production of 1:10000 scale DTMs and orthophotos, and GIS maps for the Northern Province. The project team was undeterred by the inability to take new aerial photographs or perform additional ground surveys due to terrorist activity in the area.

Advances in digital photogrammetry have bridged the gap between GIS data collection and conventional photogrammetry, making it possible to obtain accurate 3D information from existing aerial photography.

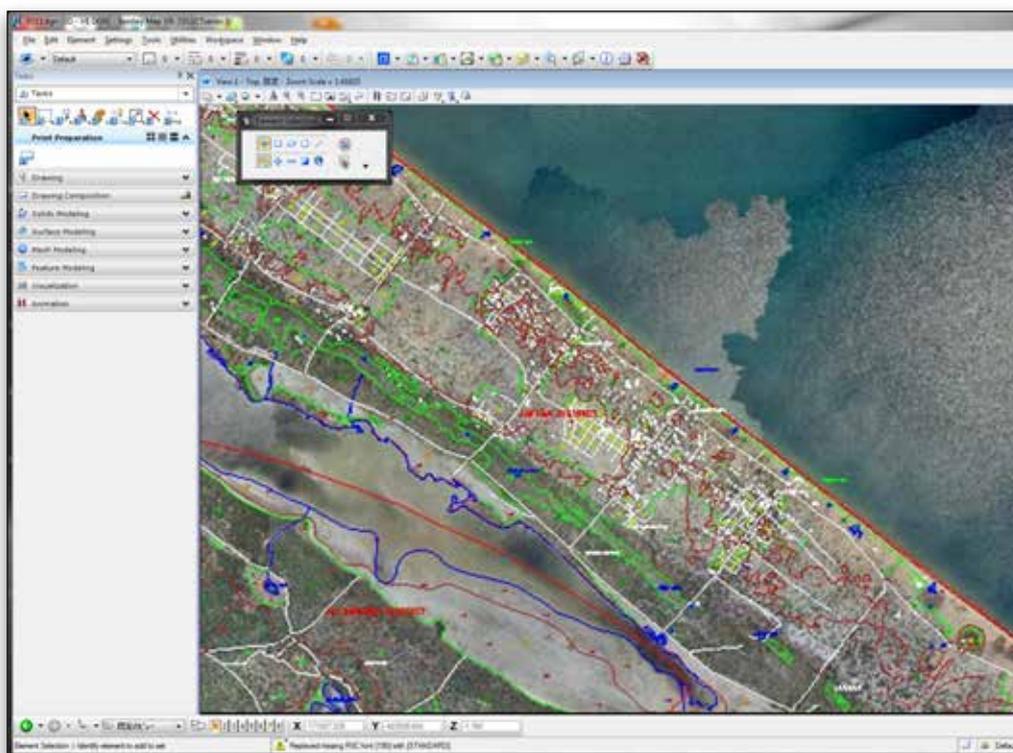
Work began with the creation of stereo pairs of 1:20000 aerial photographs and signalized ground control points using Intergraph's ERDAS LPS and the ORIMA add-on for aerial triangulation. DTMs were generated automatically, and orthophotos were created from the aerial triangulated block, digital terrain model, and stereo pairs. MicroStation provided the ability to produce topological vector layers in conjunction with ERDAS PRO600.

Fast Facts

- Bentley Map was used to build the large-scale digital terrain model for the City of Jaffna
- MicroStation provided the ability to produce topological vector layers
- Bentley software enabled digital mapping data extraction and topology clean-up
- MicroStation's advanced rendering improved the model's functionality

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- Bentley products enhanced project team workflows, improved data quality, and increased the number of data layers
- DTMs will contribute to improved safety in developing areas, where urgent issues can be addressed based on quality data
- The DTM project could not have been completed without Bentley software



GIS model shown in Bentley Map.

"Bentley geospatial software is the most suitable for editing digital mapping data, and topology clean-up."

*– Pitiyage Shammie Prabhath Jayatunga,
Photogrammetric Technician
Survey Department
of Sri Lanka*

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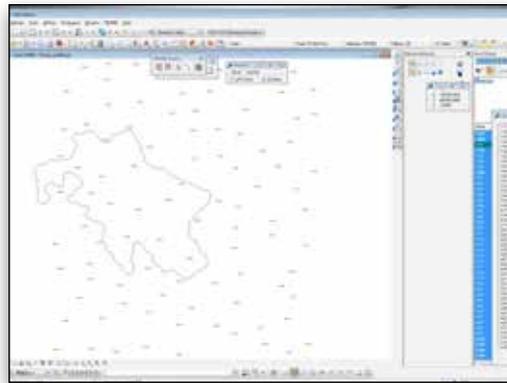
Bentley Map was used for editing and exporting the data to shapefiles. These tools also enabled the Survey Department to build the database with elevations. The digital terrain models, orthophotos, and vector layers were added to the geospatial information in ERDAS IMAGINE VirtualGIS.

Enhanced Workflows Enable Creation of Effective DTM Model

The challenges of this ambitious project were overcome, in part, with the help of the Japan International Cooperation Agency, which provides backing for inclusive and dynamic development in Sri Lanka, including grant assistance. Bentley products contributed to the accomplishment of the tasks with a high degree of accuracy. The Survey Department has used MicroStation for data extraction since 1992, when it first began collecting data from aerial photographs in digital format. Bentley Map was introduced to the workflow for this DTM project in early 2010.

Using Bentley products, the Survey Department of Sri Lanka was able to enhance their workflows, leveraging existing aerial photos to obtain the necessary information to build the database and GIS. The GIS functionality was also improved, thanks to MicroStation's advanced rendering features. Bentley software proved to be the most suitable software for digital mapping and topology clean-up routines.

The City of Jaffna and the Northern Province have benefited from the development of an effective digital terrain model, which could not have been done without the unique capabilities of Bentley Map. Completed in January 2012, the \$10,000 DTM project will contribute to the improved safety in developing areas, where flood hazards and other issues can be addressed based on accurate information.



An example of topological vector layers in MicroStation.