

STREETMAPPER™

Using robust and reliable laser scanning technology coupled with a high precision navigation system, IGI and 3D Laser Mapping have joined forces to offer a novel 3D mobile mapping system to scan roads, buildings and trees from a moving vehicle.



Key Applications:

Accident Reconstruction:

3D digital "maps" can be created of known accident black-spots, which can be used by investigators after an accident as part of their scene recording.

Coastal Surveying:

The flexibility of *StreetMapper* allows laser scanning to be performed on most terrains including sandy and pebbled beaches using a 4x4 vehicle.

Highways:

For maintenance and asset management of road surface and street furniture.

Abnormal load routes:

Accurate and rapid mapping of route clearance for transportation of oversize cargos (often known as abnormal indivisible loads).

Overhead line surveys:

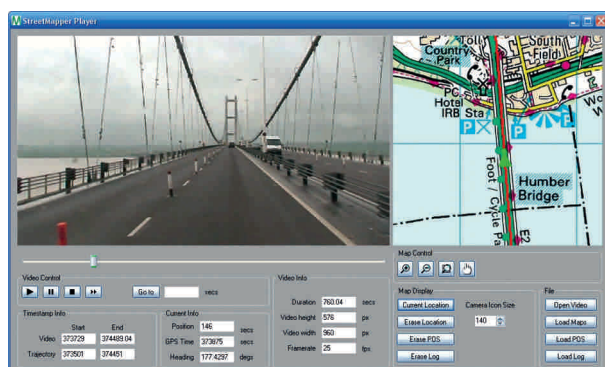
Wires down to 3mm diameter can be accurately located and heights measured.

Vegetation mapping:

Vegetation & trees accurately measured and cutting parameters created for utilities and arborist contractors.

City modelling:

Rapid data acquisition to enable generation of medium resolution 3D city models.



Key Benefits:

- Rapid and cost effective deployment (much lower cost to mobilise than an aircraft)
- Direct 3D positioning and measurements for GIS data
- High point density means increased resolution and smaller features can be mapped
- Fast mapping over overhead wire infrastructure height over ground and vegetation proximity
- Low cost data processing workflow using GeoCue and TerraScan
- Flexible deployment. The system can be used on a high roof van, 4x4 or quad bike



Key Features:

- Relative accuracy: 30mm (point-to-point within the data)
- Absolute accuracy: 50mm to 1m (depending on GPS quality)
- Multiple laser scanners for maximum effective pulse rate
- Easy to use in the field
- "Best of class" software for data processing
- Short range to target objects means high point density data
- Capable of mapping overhead wires down to 3mm diameter
- Output directly into GIS
- Compact and mobile instrumentation for flexible deployment

The *StreetMapper* survey system uses well-proven laser scanning technology to capture the position of up to 40,000 3D points per second whilst in motion. The typical positional accuracy is better than 1m and the point-to-point accuracy within the data is 3cm. The system is easy to mobilise and immediately after the survey the data is processed to provide point data with XYZ position and reflective intensity (which can distinguish white lines on the road, for example). Geo-referenced digital camera - *DigiCAM* - or video are available as options.

Further processing of the data allows different features to be extracted according to the individual customer's requirements. The laser scanners use the time of flight method to record distance by determining the time taken for a laser pulse to be reflected back from a target surface. This is a robust and reliable technique that can be used under most weather conditions.

Airborne laser scanners, such as IGI's *LiteMapper*, have become widely used over the past decade and are used for power line surveys, flood risk modelling and highway surveys. However, the cost of mobilising an aircraft makes this option expensive for all but the largest survey projects. This makes the *StreetMapper* a very cost effective survey technique.

Components:

StreetMapper uses multiple laser scanners, each with a range of 150 m and 80 degree scanning angle. Each scanner performs up to 10,000 measurements per second with a scanning rate up to 100 scans per second. Numerous laser scanners can be used and arranged on the scanner platform to suit the customer's requirement.

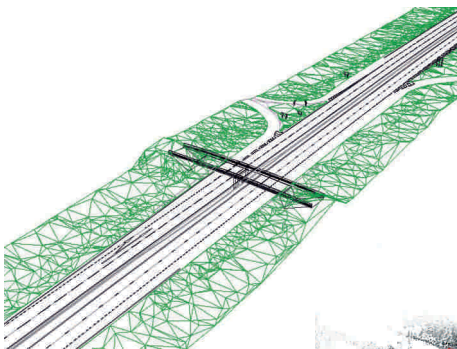
StreetMapper comprises state of the art DGPS and IMU components combined in the *TERRAcontrol* system, a roof-rack mounted platform, and a rack-mount PC / instrumentation cabinet. A custom-designed power supply and operator work station is provided for each system depending on the survey vehicle.

Hardware:

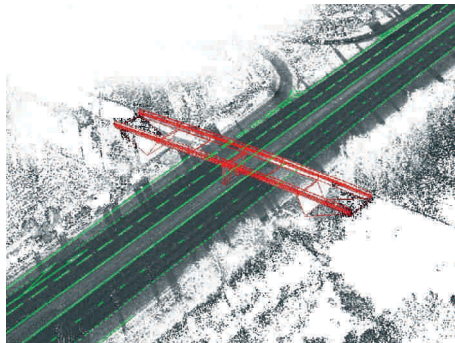
- LiDAR: 3x laser scanners for back and side mounting (4 or more scanners optional)
- *SMcontrol* computer unit with 8 inch TFT display for control and visualization of laser scanner data
- *TERRAcontrol* comprising:
 - Computer unit with integrated high end GPS receiver and GPS antenna
 - Calibrated Inertial Measurement Unit with 256Hz data rate
 - Speed Sensor
 - *DIA* - *Direct Inertial Aiding*
- 2x 0.5 megapixel documentation video systems

Software:

- Software for LiDAR data geocoding, transformation, and coordinate system projection
- TerraScan, TerraModeler and TerraMatch from Terrasolid for LiDAR data postprocessing of laser scanner points
- *TERRAoffice* inertial navigation software including forward / backward Kalman filtering



CAD wireframe with laser detail



CAD wireframe



Textured model