

Complete Solutions for Mobile Surveying



Welcome to the Revolution



LYNX

MOBILE MAPPER



Optech Incorporated has been in the lidar business for over 35 years, helping customers around the world survey their world. We have created a family of advanced laser-based instruments that fit every survey need on Earth and beyond. And now Optech's newest products incorporate our proprietary iFLEX™ technology. The result of decades of research into lidar measurement techniques and electronic design, iFLEX is the common platform at the core of Optech's lidar technology—creating an infrastructure of unprecedented performance and accuracy across multiple products.

Optech's Lynx Mobile Mapper™ represents the next generation in the rapid collection of survey-grade 3D data. This revolutionary mobile mapping system integrates the latest innovations in lidar sensors with best-in-class imaging, navigation, product warranty and support. The Lynx Mobile Mapper combines Optech's world-leading sensor technology and customer support with the very best third-party tools—creating an unbeatable surveying solution that maximizes return on investment by improving the efficiency of ground-based data collection by a complete order of magnitude.

The Mobile Mapping Solution

What is mobile surveying?

Mobile surveying, loosely defined, is the collection of spatially-located data from a moving platform. Depending on the application, mobile mapping systems can include any number of sensors. In the survey industry mobile mapping systems typically consist of cameras, GPS, inertial navigation and, most recently, high-resolution lidar.

What are the advantages of mobile surveying?

Mobile surveying facilitates the collection of spatially correct data on a large scale. Rather than survey individual buildings or areas, mobile mapping systems can be deployed to map entire cities or hundreds (even thousands) of kilometers of transportation corridors. Imagine collecting a high-resolution dataset of an urban neighborhood in a few hours, or generating an engineering drawing of 60 km of highway in a single day. Mobile mapping systems make it happen.

What are the advantages of high-resolution lidar-based mobile mapping?

Lidar technology is made for mobile mapping because lidars can maintain high accuracy and high resolution from rapidly moving platforms. They operate at very rapid measurement rates to produce inherently 3-dimensional data: Fast, accurate, eye-safe lasers coupled to high-speed scanners with large fields of view, operating day or night to collect survey-grade measurements. And Optech's Lynx Mobile Mapper incorporates the very best in high-resolution lidar—our 360° mapping sensor with iFLEX technology.



The Lynx Mobile Mapping Solution

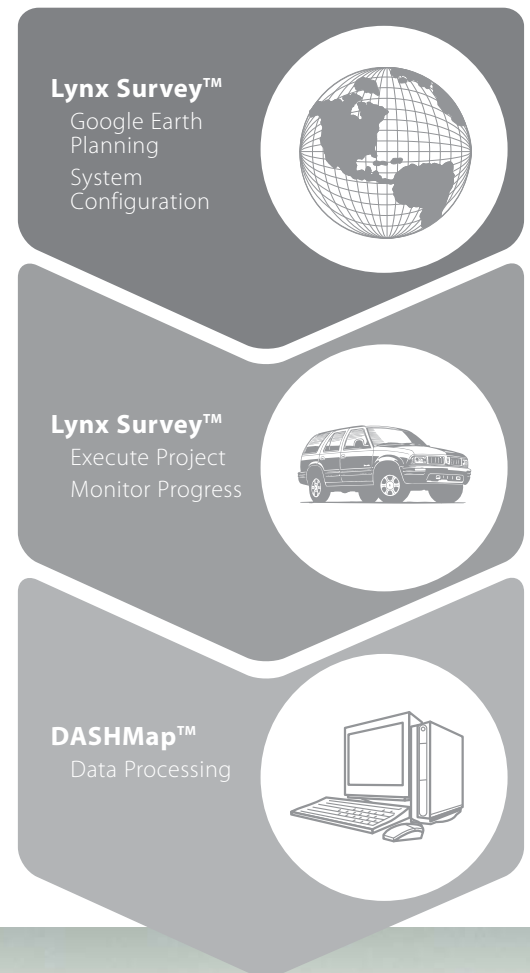
The Lynx Mobile Mapper not only integrates the latest in lidar and imaging technologies—it combines them with a proven software solution that focuses on the economical planning of a survey project, real-time information during project execution, and the rapid, accurate, and flexible post-processing of data.

Lynx Survey™

Lynx Survey™ facilitates the planning of Lynx surveys and is also the real-time interface between the operator and the system. With Google Earth support, on-the-fly data display and real-time system control, Lynx Survey makes sure that you meet your survey objectives and your data is accurate—the first time.

DASHMap™

A fully featured processing suite, DASHMap™ enables you to process mobile data quickly and accurately. Apply filters to your data, perform coordinate transformations, and output the data to a variety of file formats, all with DASHMap's simple interface. Designed to handle lidar's large data volumes, DASHMap optimizes your processing speed.



The Lynx Mobile Mapper is the most advanced mobile mapping solution





Optech
4000 Lakeside Blvd. Suite 200
San Diego, CA 92121
Tel: 619-594-1111
Fax: 619-594-1112
www.optech.com

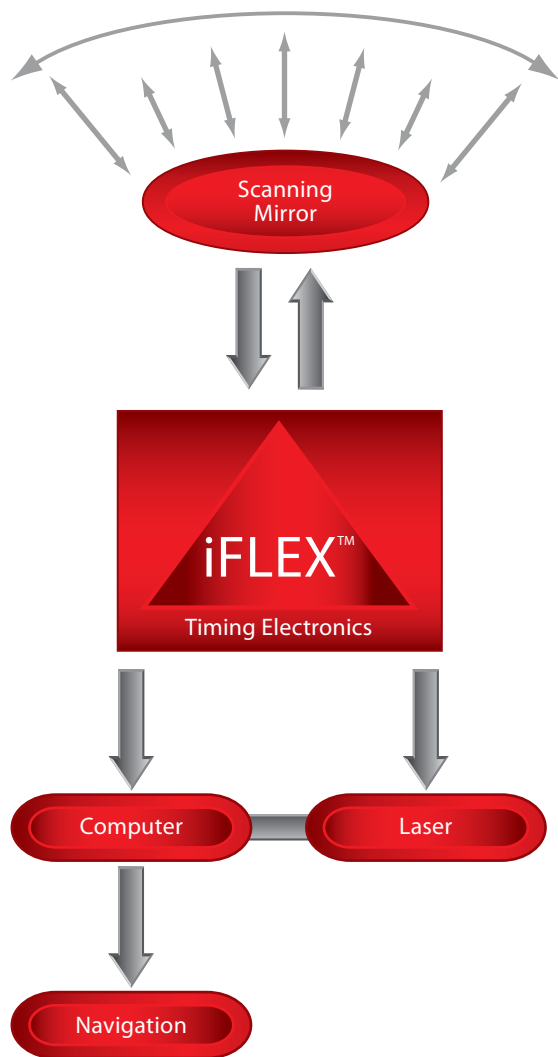
Technology Overview

iFLEX technology – Essential for high-accuracy data collection

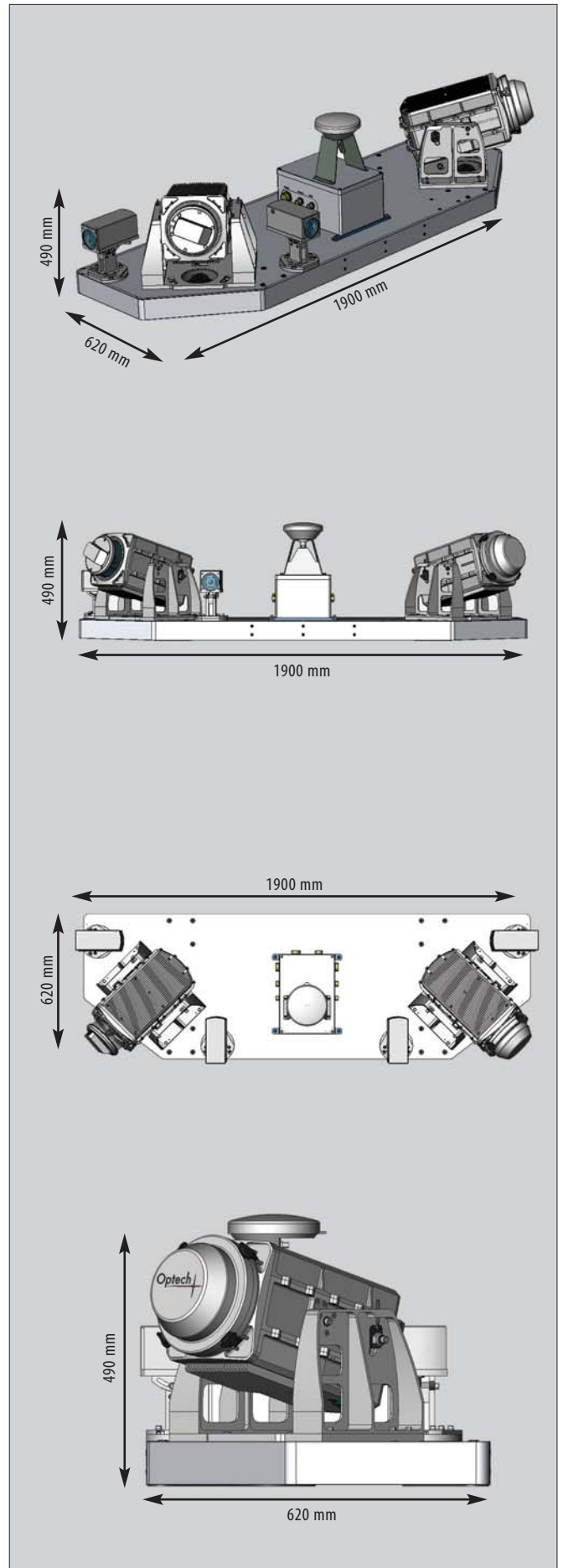
Optech's newest product family incorporates our proprietary iFLEX technology. We have leveraged decades of specialized expertise, honed in the commercial marketplace with rugged airborne, spaceborne, terrestrial and mining lidar products, to create a common platform for our next-generation lidars. Embedded in the Lynx Mobile Mapper, iFLEX captures the design of laser timing and receiver electronics, and high-speed data communications.

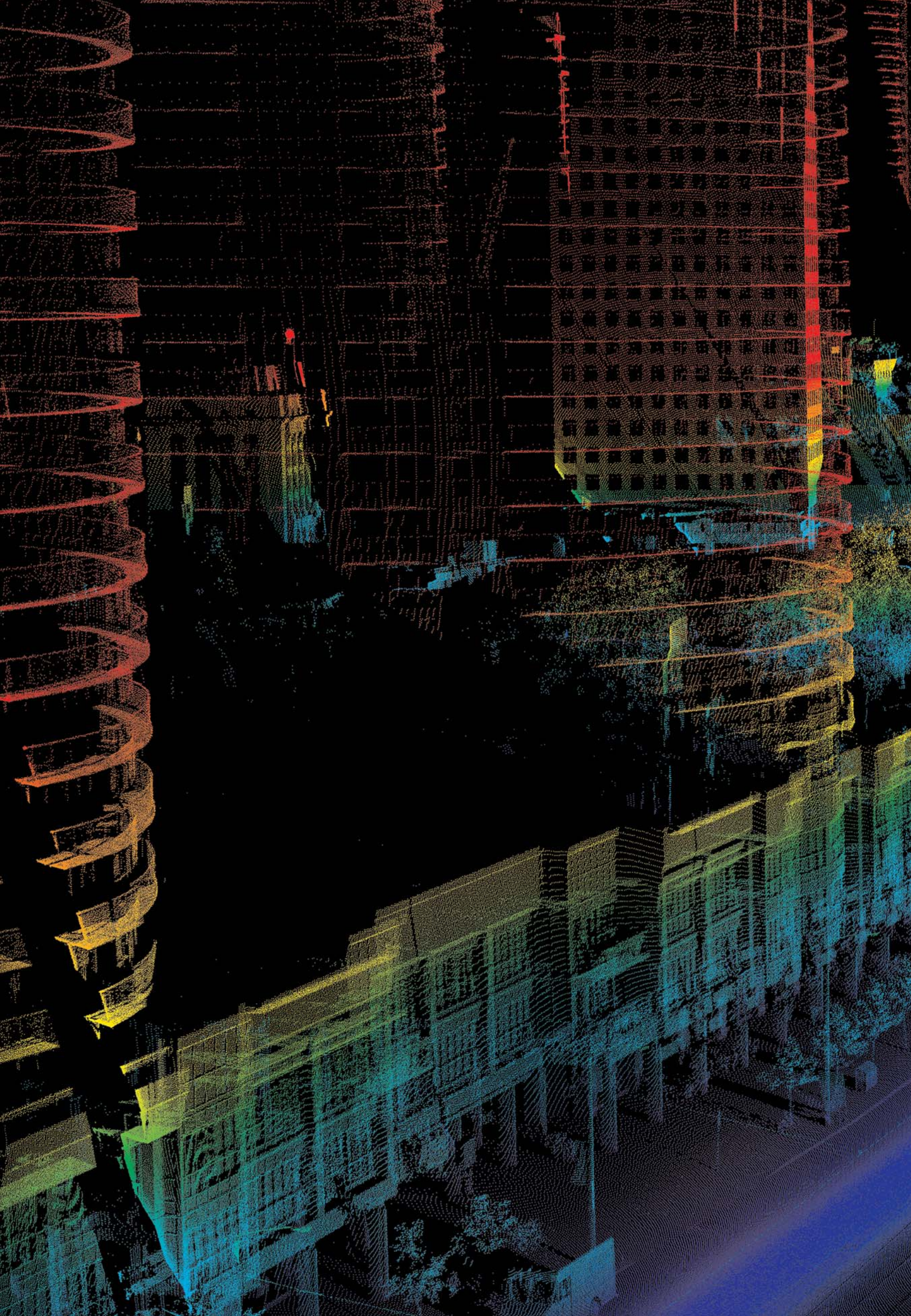
iFLEX – Timing is everything

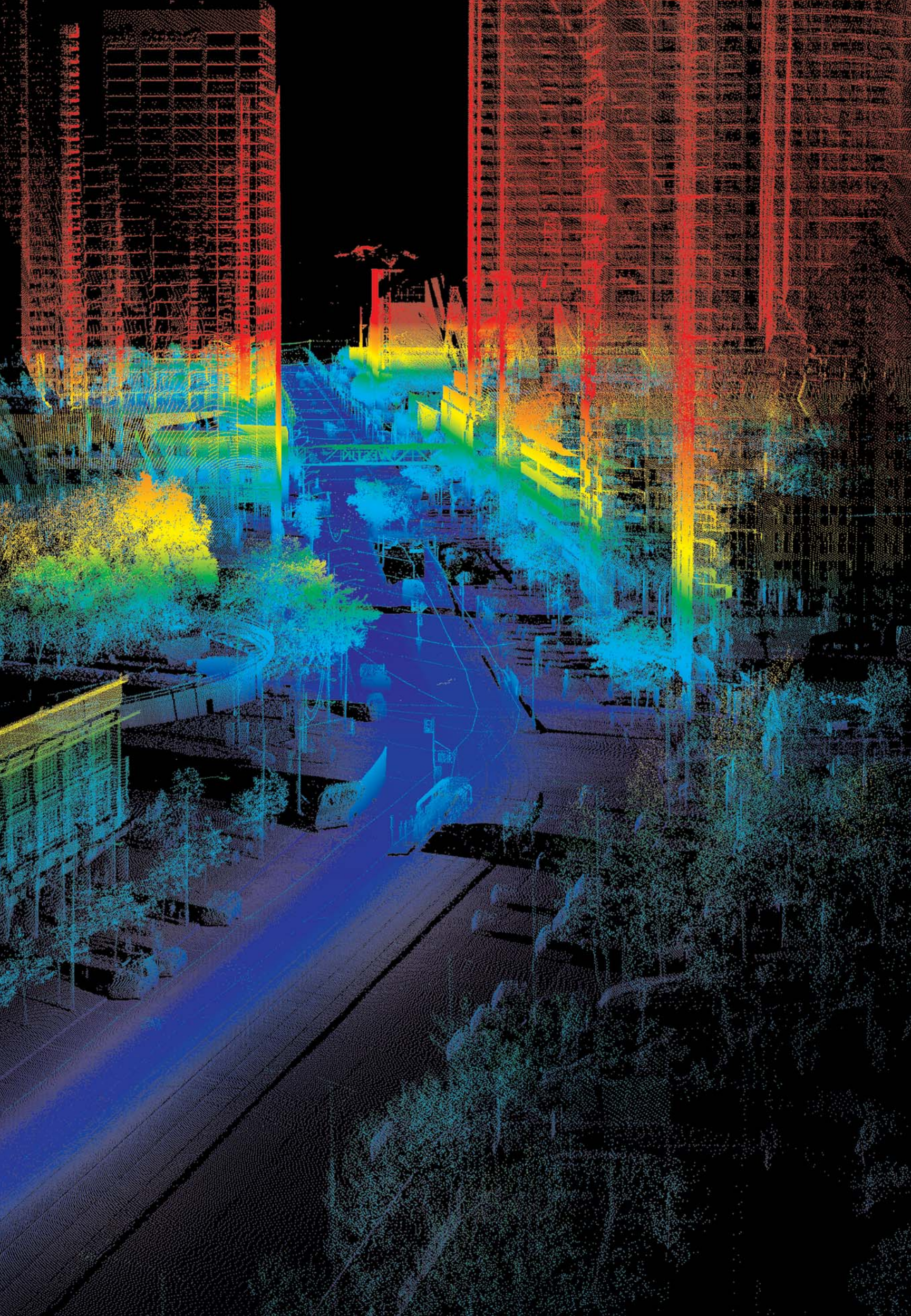
To maximize accuracy, lidars depend on state-of-the-art timing and receiver electronics, high-quality optics, and a cohesive design that facilitates the internal calibration of sensor subsystems. Optech is widely recognized for expertise in lidar technology. In iFLEX we fuse the highest possible time-of-flight lidar precision with next-generation achievements such as eye-safe lasers, high measurement speeds, wide field of view, and rapid scanner speed, all in a compact sensor and control package.



Integrated and Flexible Lidar Electro-optics









Technology Advantage

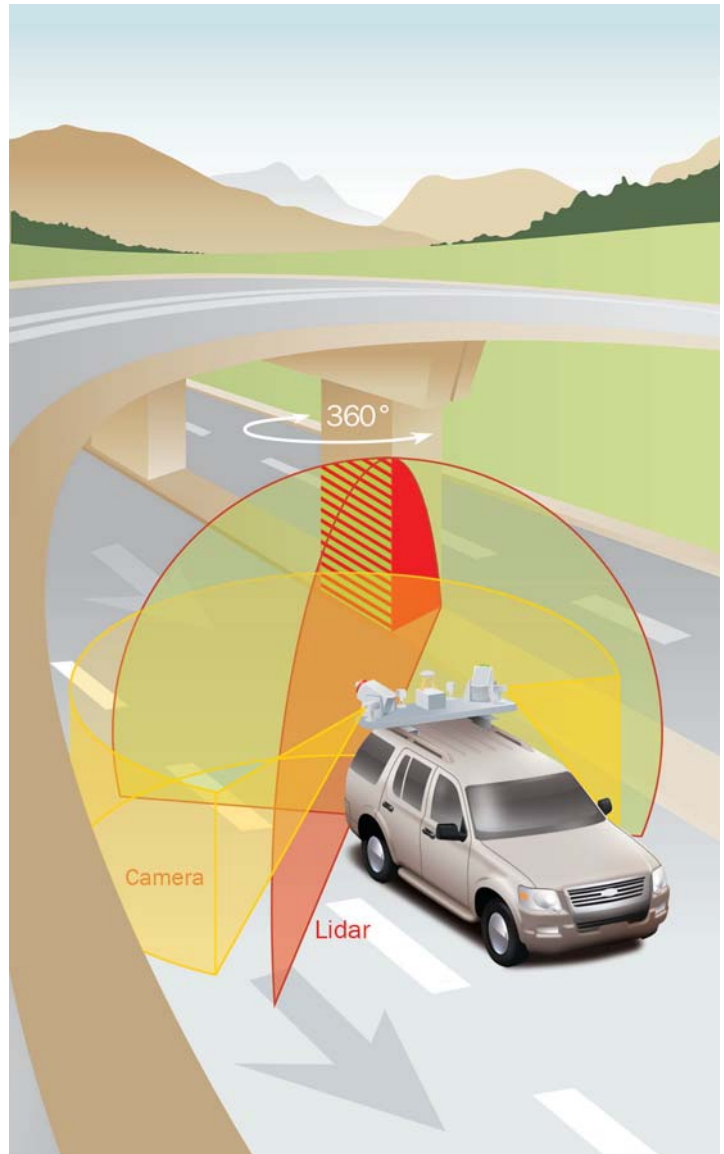
Laser scanning has advanced to the stage where it can generate graphical images of extraordinary quality, dense with structural and topographic detail. Unlike photography, images derived from laser data are inherently three-dimensional, require no orthorectification and can be acquired at night because the laser operates independent of ambient lighting conditions. This is a distinct advantage in mobile terrestrial surveying, as scanning can be performed overnight while traffic is minimal.

Data shadowing – The challenge

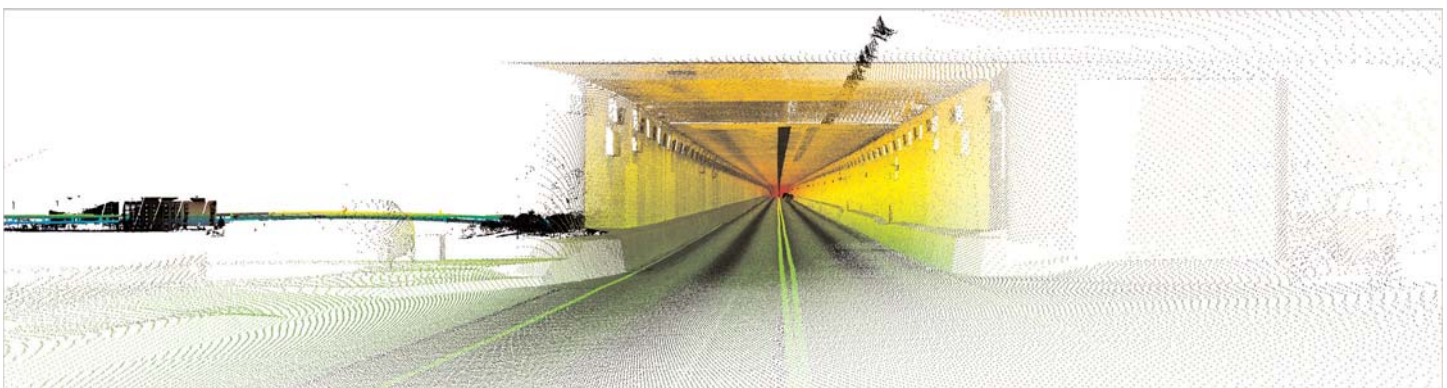
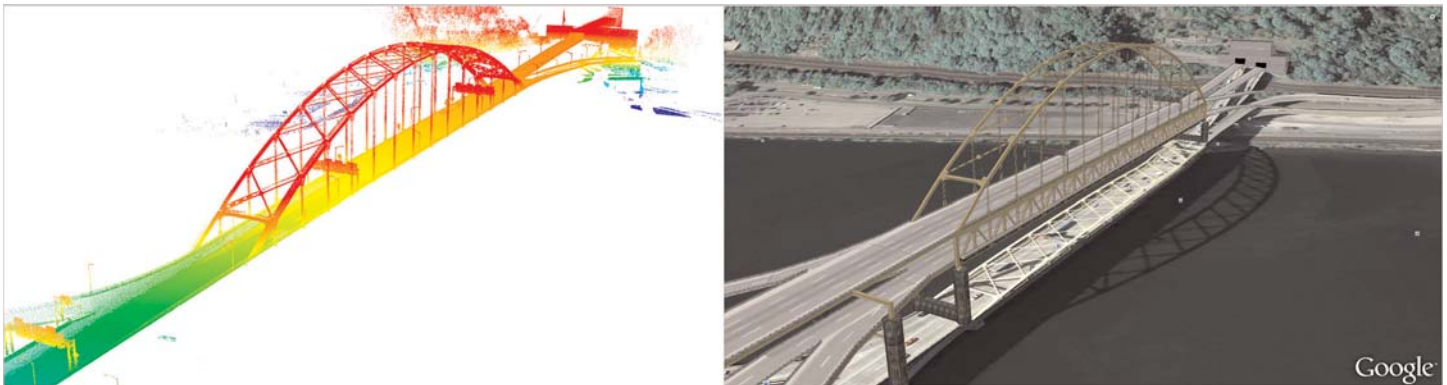
One challenge in laser scanning is a phenomenon known as laser shadowing. Lidar (Light Detection and Ranging) works on a line-of-sight principle. Therefore, when conducting a lidar survey, it can be difficult or even impossible to collect range measurements of all surfaces on a complex 3D structure. The operator must always be aware of how the instrument "sees" the object of interest.

Multiple Perspective Lidar™ (MPL)

The unique design of the Lynx Mobile Mapper minimizes laser shadowing by accommodating two laser sensors on one platform. By using a dual sensor configuration, each sensor optimizes the line-of-sight least accessible to its companion. In post-processing, range, angle and intensity data are combined from both sensors to produce a much more complete and accurate 3D model.



Full 360° mapping of highway features using MPL technology



Applications

Road

The Lynx Mobile Mapper provides a remarkable capability for the rapid 3D mapping of highways, infrastructure and buildings using vehicle-mounted lasers. It is a proven solution for collecting engineering/survey-grade lidar data over large areas where surveys are impractical with static lidar sensors but require an accuracy and resolution that exceed those of airborne technologies. Traveling at normal road speeds, day or night, the Lynx Mobile Mapper offers a 360° field of view, with higher precision mapping to very long ranges. Capturing every detail along the highway corridor, including road barriers, cracks in the road surface, ditches and overhead wires, surveyors can create highly accurate 3D computer models for new scheme planning, road maintenance, wide load route assessment and asset management applications.

- Analysis of road infrastructure
- Location of encroaching overhead wires, light poles, and road signs
- Complete asset management

Interchange: Colored 3D Point Cloud Data / 3D CAD Model
Image courtesy of SINECO S.p.A

Rail

The Lynx Mobile Mapper surveys with ease and speed when collecting lidar data for rail applications. Installation on a hi-rail survey vehicle has demonstrated the Lynx's ability to provide unprecedented detail for rail asset management. Traditional survey methods require frequent measurements on the rail base, the top of the rail, and the rail base on the opposing side—a labor-intensive, disruptive and occasionally dangerous process. By contrast, lidar data acquisition takes much less time and thereby minimizes the disruption to rail traffic. Surveyors are not put in harm's way, and measurements are more frequent and easily chosen by the operator.

- Data collection in hours instead of days
- Inventory completely acquired, including clearance of overhanging wires, natural obstructions (trees, rock faces), and tunnel/bridge clearances
- Switches, location and type, and "frogs" located with precise accuracy

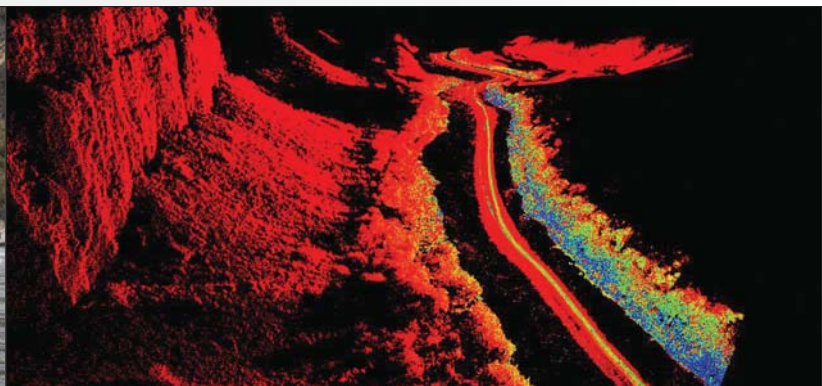
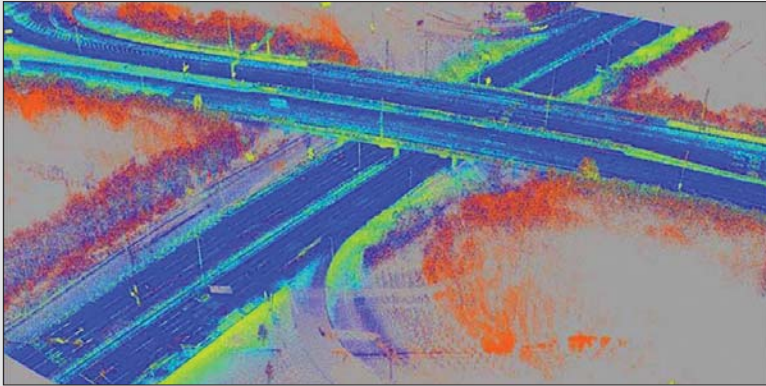
Railroad: Installation on hi-rail Colored 3D Point Cloud
Image courtesy of SAM, Inc.

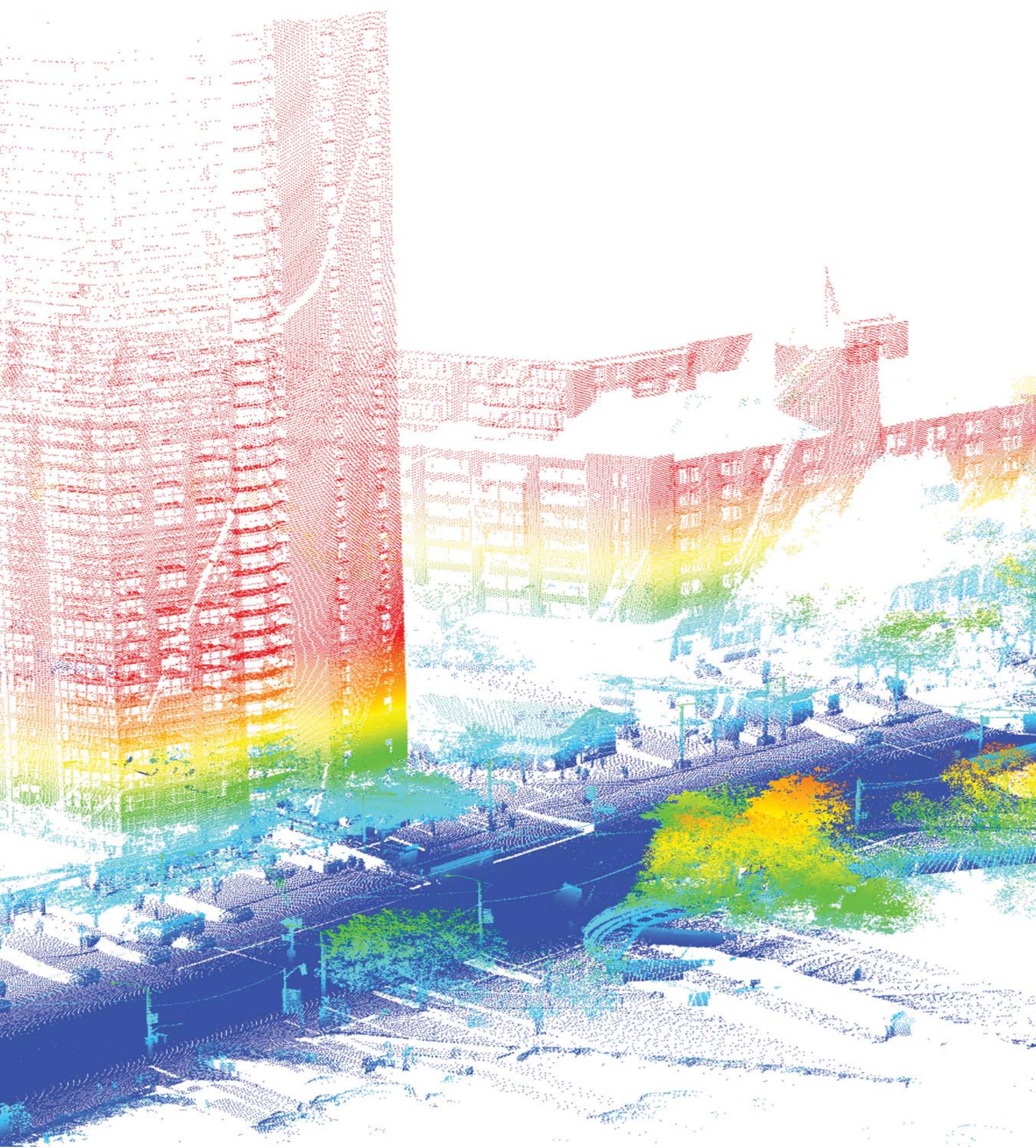
Water

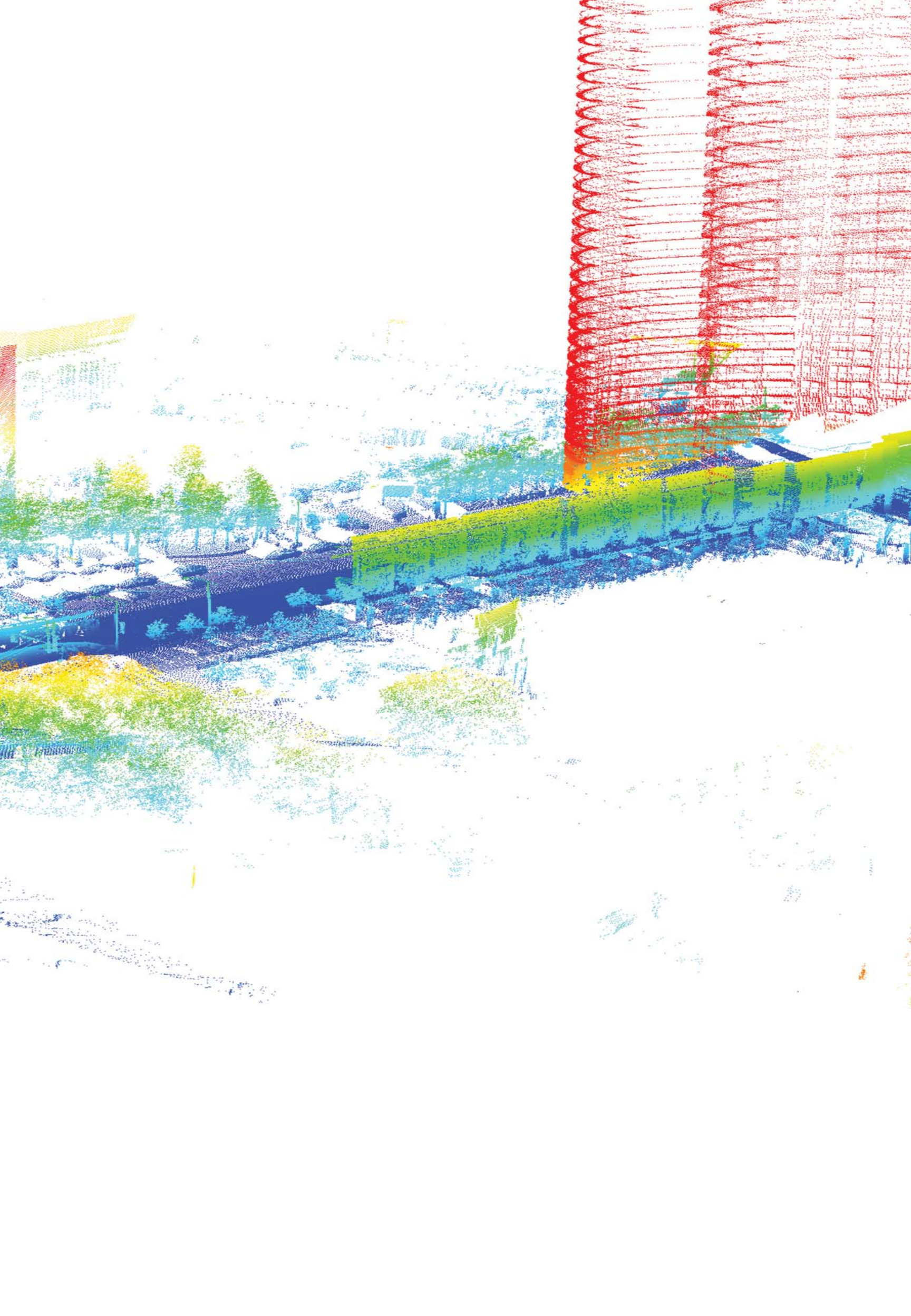
The Lynx Mobile Mapper offers unsurpassed 3D detail when surveying from a marine vehicle in motion. Remarkably, even with dramatic movements around river bends, the Lynx system collects high-accuracy data of river banks, vegetation, ridge walls, and gravel bars—all in a single pass.

- Measurement of trajectory and path of vessel via water turbulence returns
- Monitoring of gravel bar erosion, habitat of aquatic animal species
- Assessment of environmental needs

Shoreline: Jet Boat Installation / Elevation 3D Point Cloud Data
Image courtesy of WH Pacific Inc.









About Optech

Optech is the world leader in the development, manufacture and support of advanced lidar and imaging-based survey instruments. With operations and staff worldwide, Optech offers both standalone and fully integrated lidar and camera solutions in airborne terrestrial mapping, airborne laser bathymetry, mobile mapping, mine cavity monitoring, and industrial process control, as well as space-proven sensors.

Optech Incorporated

300 Interchange Way
Vaughan, Ontario
Canada L4K 5Z8

Tel: +1 905 660 0808

Fax: +1 905 660 0829

www.optech.ca