

# High-Density LiDAR Surveying in the Oil and Gas Industry of Western Canada

Ward Matheson<sup>1</sup>

*In western Canada, the use of high-density LiDAR datasets has until recently been limited to corridor mapping applications. The latest developments in laser scanners however, allow for a high-density system that is capable of surveying wide area projects without a significant decrease in data detail or accuracy. These systems, including Fugro's FLI-MAP 400, are now being applied to broader applications in the Oil and Gas land surveying industry.*

*FLI-MAP 400 has been operational for over a year, and Fugro has flown approximately 1500 km<sup>2</sup> of high-accuracy LiDAR data to aid in the delivery of wellsite and construction plans in western Canada alone. With high point densities, high-resolution imagery and onboard video capture, the system has successfully been used to scout and place over well 500 wells in surveyed and unsurveyed territory and 400 km of pipeline. Systems such as FLI-MAP 400 are the future of surveying as they:*

- *Obtain high accuracy, resolution and point densities*
- *Require limited or no site access*
- *Allow for in-house data mining to extract accurate topological and surface details repeatedly*
- *Provide high-resolution imagery to aid in decision-making*
- *Cause no negative environmental impact.*

*This presentation outlines the experiences of Fugro SESL Geomatics Ltd surveying using FLI-MAP 400, and shows how LiDAR data can be utilized and integrated into a GIS, allowing end users to make field decisions in the office faster and more economically.*

<sup>1</sup>Fugro SESL Geomatics Ltd, Calgary, AB

**Ward Matheson** grew up in the small southeastern Saskatchewan town of Moosomin. He graduated from McNaughton High in 1982, then continued on to complete one year of sciences at Brandon University. He relocated to Winnipeg to attend Red River College, graduating in 1986 with a diploma in Survey Technology.

Upon graduation, Ward commenced his career working in Brandon for the City of Brandon, Engineering Division, and Lennon Surveys. In 1989, he began working for Trans-Canada Pipelines where he was involved in all facets of engineering, surveying and construction of large diameter pipelines across Canada. His position and responsibilities within Trans-Canada rose from Field Surveyor to Senior Survey Technician. Ward was also involved with many international projects working in areas such as Tanzania, California, Nevada and Florida over his seven years with Trans-Canada.

In 1996, Ward joined Fugro SESL Geomatics Ltd. and with opportunities and his vast knowledge of the industry he rose from his position as Marketing Representative to General Manager. He oversees all aspects of the Calgary and Regina division. He is well respected in the industry and is continually called upon to advise on several matters regarding projects from Project Managers and from within Fugro as well as from his peers.

With his extensive knowledge of the industry, Ward was able to envision the need for a new technology not only for the oil and gas industry, but for transportation and many other applications as well. He was recently instrumental in helping Fugro launch FLI-MAP 400. This technology has been well received not only as a cost-savings measure to many of their clients, but also as an environmentally friendly vehicle to a now very environmentally conscious nation.

With his relentless drive to succeed in working with both the private and public sectors, Ward is well positioned within Fugro to promote cost-saving new technologies to both sectors. His ambition and energy are the trademarks of his success as he drives to succeed for Fugro and the industry sectors within the public and private domains.  
Email: wmatheson@fugro.ca