

Space shuttle vision spawns new defence and industrial automation markets for Neptec Design

Neptec offers fully functional smart 3D sensors as well as intelligent, embedded image processing and analysis tools that are designed to increase the effectiveness of existing sensor platforms

Fast facts

Corporate profile

Formed in 1990 as an engineering consultancy group, Neptec supports the NASA space shuttle program with vision systems for robotic operations and on-orbit inspection. In 2000, the company pursued an aggressive R&D program to channel its space sector expertise and diversify its sensor product lines for the defence and industrial automation markets.

Why Ottawa

Neptec has taken advantage of The Department of National Defence (DND). Neptec's original 3Di application was an Automated Target Recognition (ATR) system developed for DND. This was a seminal development for a number of reasons.

Representing one of the first successful uses of 3D for military target recognition, it provided the motivation for Neptec to develop ultra-fast and compact 3D processing and matching techniques which are still the fastest in the industry — often orders of magnitude better than other published techniques.

Business advantage

Neptec's original technology, the Space Vision System (SVS), was designed to help astronauts construct the International Space Station.

Neptec has seen the SVS through 12 formal software upgrades and 18 operational shuttle missions, and continues to provide operations support and sustaining engineering to the SVS program.

Look up, waaay up, and you will see the inspiration for Neptec's technology. Space is the business frontier for Ottawa's Neptec Design Group Ltd. Formed in 1990 as an engineering consultancy group, the company supports the NASA space shuttle program with vision systems for robotic operations and on-orbit inspection. In 2000, the company pursued an aggressive R&D program to channel its space sector expertise and diversify its sensor product lines for the defence and industrial automation markets.



Canada's Creative Economy Capital

Neptec became a NASA prime contractor in 1995, while developing and delivering the Space Vision System (SVS) for the shuttle and orbiting space station. Its purpose was to aid in the construction of the International Space Station. The company's Laser Camera System (LCS) was originally designed to be a 3D front end sensor for the SVS, but has become a mandatory system on every shuttle mission. It is used to scan critical areas of the shuttle's exterior to assess areas of damage, providing a few that was once invisible to astronauts. Neptec's next generation sensor, TriDAR, can be used for a variety of applications including automated rendezvous and docking, vehicle inspection and hazard avoidance.

Today, Neptec's expertise in fast 3D data acquisition and processing enables new and innovative solutions to overcome critical challenges in more earthly applications. By integrating intelligent processing with sensor technology Neptec provides a wide range of advanced functions including automated target recognition, object classification, dynamic change detection and real time object tracking by using very little bandwidth.

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Neptec's current staff of 80 is composed primarily of specialized engineering talent. The company also employs software developers, program managers, product assurance specialists, and production, assembly and test specialists certified for manufacturing equipment for manned space programs.

Neptec has also developed a unique metrology solution for the industrial automation market. The Laser Metrology System (LMS) makes high precision direct point measurements like a Coordinate Measuring Machine (CMM) and is able to make full digital surface models.

In addition to its fully functional smart 3D sensors, the company also manufactures intelligent, embedded image processing and analysis tools that are designed to increase the effectiveness of existing sensor platforms.

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Why Ottawa

Neptec is a company built on engineering talent, and Ottawa's status as a national capital containing leading edge government labs such as the National Research Centre (NRC) and Communications Research Centre (CRC). In addition, Ottawa has a strong infrastructure

of universities and colleges. All told, the region has the second largest concentration of science and engineering employment out of 316 North American cities, surpassed only by Silicon Valley. One in nine employees is a scientist or engineer.

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Future growth plans

The company's management team has demonstrated an ability to profitably generate growth and manage change. Growth has been financed almost entirely from operations by reinvesting profits in research and development, continuously building the capabilities of Neptec's core sensor and image processing technologies so they can be applied to applications including hazard avoidance, vehicle inspection and long-range vision systems.

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