

already a world leader in the reception, analysis and interpretation of radar data, and RADARSAT will be the world's first operational satellite providing radar remote-sensing data.

Canadian expertise in natural-resource management, environmental monitoring, mapping and remote sensing can be a valuable tool to increase sales of related products and services. The world market for value-added goods and services associated with satellite remote sensing is estimated to be about \$1.8 billion annually, and is growing at 10 percent to 15 percent per year. Canadian value-added companies that can demonstrate their superiority in using radar data and integrating it with other sources of remote-sensing data will be poised to capture an increasing share of the market for geographically based information, which is used worldwide for natural-resource and environmental management.

Export opportunities for Canadian companies on the ISS are limited to subcontracts to foreign companies. In space robotics, which is closely associated with Canadian involvement in the ISS, Canada has developed some unique capabilities. Markets are emerging for the handling of contaminated waste, which requires specialized hardware and software systems. While space robotics hardware is not appropriate for terrestrial applications, the merging of space software with existing terrestrial hardware could place Canada in an advantageous position. The United States represents a near-term market (some \$20 billion over 20 years), but similar requirements will eventually emerge in Eastern Europe. Although many opportunities will likely emerge in space for space robotics, such as satellite servicing, market size is unquantifiable and at least 10 years away.

National preferences dominate space science activities. Canadian government participation in foreign programs is usually required to obtain work for Canadian companies. Bristol Aerospace is an exception, exporting 95 percent of its sounding rockets for space science experiments, mainly to the United States.

The small size of the domestic market tends to place the Canadian space industry at a disadvantage in marketing high-volume products where cost is the critical factor. Nonetheless, some Canadian space firms are world competitors. The biggest obstacle to Canada's continuing success in space-hardware manufacturing is a shortage of capital to undertake large, multibillion-dollar activities, such as the new global mobile satcom projects, coupled with the corresponding large size of the participating companies.

Canadian firms have options in marketing in this competitive environment. Increasingly, space companies worldwide are using strategic alliances, teaming arrangements and joint ventures to gain access to markets, technologies and the financial resources required to undertake large projects. Canadian companies should consider wider use of such arrangements to compete in a world space market dominated by a few giants.

Canada's strengths lie in system and component design and integration; knowledge-intensive as opposed to mass-produced hardware; and complete information and/or communications solutions.

Critical factors for continued export success include:

- the formation of international alliances/partnerships (often requiring government-to-government agreements);
- innovative, government-supported export financing;
- stable, continuing government investment in the development of emerging new technologies.

Strategic Direction

Industry-government consultations have determined that key marketing priorities will include:

- satellite communications, particularly prepositioning for the developing mobile