

expected to shrink in importance to roughly 20 percent in favour of the overseas markets.

The world civilian market for satellite communications ground segment equipment is estimated at \$2.5 billion to \$2.9 billion. It is growing at an annual compound rate of 7 percent.

The military satellite communications space and ground segment market is about equal in size but is heavily protected and dominated by the U.S., with \$2.1 billion budgeted for 1992.

Positive trends include rising demand for:

- space-based, mobile, personal communications and direct broadcast or direct-to-home satellite communications, and
- Very Small Aperture Terminal (VSAT) networks in North America for business networks and in countries where the terrestrial telephony infrastructure does not exist.

Both the civil and military markets for space segment equipment are dominated by the U.S. Two thirds of the world's geostationary satellite systems (excluding those of the former U.S.S.R.) were supplied by three U.S. companies. Canada supplies less than 3 percent of the world market for civil geostationary satellite systems.

Remote Sensing

Satellite-based remote sensing is increasingly able to service the rapidly growing market for geographically based information used by natural resource managers. A greater concern with the environment, and the need to obtain information over large areas in a cost-effective way, will strengthen the already rapid growth of this sector.

The space segment of remote sensing consists of meteorological satellites (which had a fairly constant market at about \$600 million per year between 1986 and 1992) and earth observation satellites (which had a market growth from about \$325 million to \$800 million per year between 1986 and 1992). Although space budgets are under pressure around the world, the importance of satellite data for understanding environmental

problems continues to shield this portion of national budgets from significant cuts.

While the recent growth rate of remote-sensing satellite construction is not expected to continue, the stage has been set for considerable future activity in the ground segment and in the user community (hardware, software, processed data, education, consulting). The market will be in equipment to receive data and in activities which add value to the data, i.e., services and equipment that convert data to usable information.

Space Station

The ISS program, led by the U.S. and involving Canada, Japan and ESA, is projected to cost about \$30 billion, with Canada's share at about \$1.4 billion (construction only). The ISS is currently undergoing a major design review in order to reduce costs and Russia has been invited to be a partner in order to make use of its considerable space assets.

Space Science

Annual spending on space science by the U.S., ESA and Japan runs at about \$3 billion, with Canada spending about \$25 million per year. Programs are invariably sponsored by governments. Market opportunities are for the provision of specialized equipment.

Canadian Position

The space industry in Canada employed an estimated 4 000 people and generated sales of \$620 million in 1991. Seven companies recorded space-related sales in excess of \$10 million and accounted for over 85 percent of industry sales, with Spar Aerospace representing over half of total industry sales and employment. The majority of the companies in the industry are Canadian-owned.

The Canadian space industry is comparable to that of most other industrialized countries in terms of per capita sales and employment. It exports a larger proportion of its total production