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Global market opportunities review
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Global Market

Opportunities Review

Instrumentation

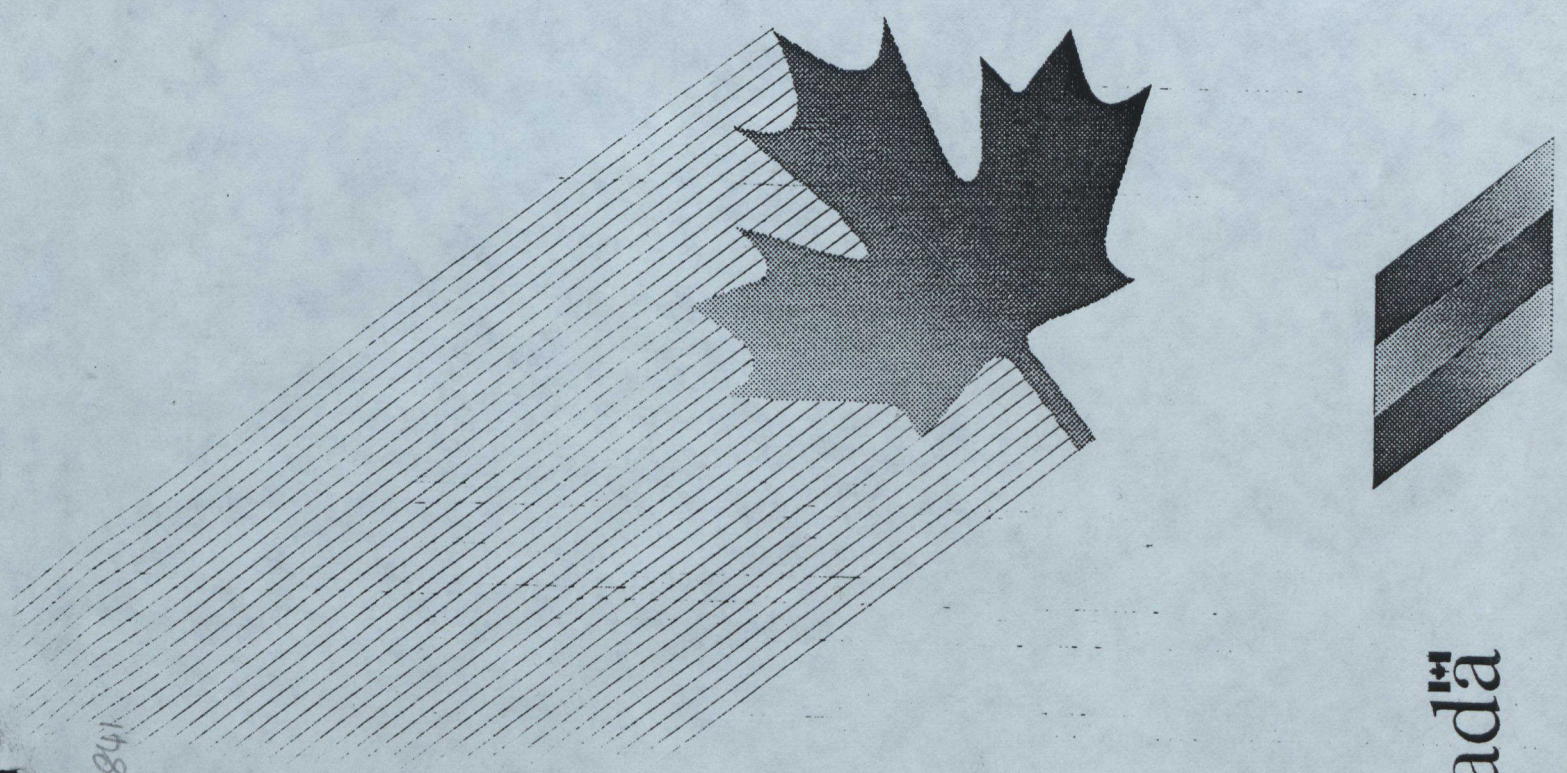
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Canada

INTERNATIONAL MARKETING STRATEGY

PRIORITY SECTOR: INSTRUMENTATION

PURPOSE: **To focus and enhance trade development in support of the instrumentation sector**

SECTOR DESCRIPTION:

- Industrial Process Control
- Building Automation, Security and Alarm Systems
- Test and Measuring Equipment
- Scientific, Medical and Laboratory Instrumentation
- Meteorological and Environmental Instruments, and
- Geological/Geophysical Apparatus and Services
- Photonics

Within these sub-sectors are a broad range of computer-based control, automation, monitoring and supervisory systems used in applications such as pulp and paper, gas and oil, steel, mining, petrochemical, chemical, food processing, transportation, electric power, water and sewage treatment and other primary and secondary industries.

Also included are electrical/electronic measuring and analytical instruments used in medicine, scientific laboratories, pollution detection and control, geophysical explorations for natural resources and in weather forecasting. Among additional applications the sector embraces energy management systems in large buildings, traffic controls, fire alarm and security devices and educational aids and implements used in teaching of electrical/electronics and computer science courses.

Historically, the growth and prosperity of the sector has been dependent upon the relative commercial well-being of the primary and secondary industries that it serves. The Canadian Instrumentations Industry, to a large extent, reflects the history of development of Canada's mineral resources and of its industrial infrastructure.

The sector consists of 250 to 300 export-ready companies. Approximately 50% of these companies are located in Ontario, 20% in Quebec and 25% in Western Canada. The sector is highly fragmented. 50% of the companies generate revenues of less than \$4.0 million per annum. Many of them are competing with parallel

product lines for relatively small domestic and overseas markets.

Out of the seven sub-sectors listed on page one, the Geological/Geophysical Apparatus and Services is the most competitive in the international markets. The companies in this sector use electrical and magnetic methods (airborne and ground) to compile data on the composition of earth, which is then analyzed to produce maps for mineral, environmental, geothermal, groundwater and oceanographic applications. Some of these techniques have found use in gas/oil explorations. In mining geophysics and mineral explorations Canada plays a dominant role. Canada accounts for about 15% of global expenditures in mineral explorations surveys and for 66% in world airborne services and has strong presence in geophysical software development, geological/geophysical instrument manufacturing and data analysis and interpretation.

Canadian geological/geophysical instrumentation manufacturers have captured approximately 70% of world markets. The sub-sector companies export over 60% of their output and allocate from 10 to 20% of gross sales to R&D. There are over 50 individual firms offering a complete range of equipment, services and geophysical software. The average employment per company is 20 to 30, except for Scintrex, a dominant company, which employs close to 150. World class Canadian software developers, Geosoft being one of the top three in the world, have made a significant contribution to Canada's reputation and to the competitive position of the geological/geotechnical sub-sector at large. Canadian data interpretation companies have captured over 50% of the world markets. In addition to the mining industry, the end users of these companies include petroleum and gas industries.

Main foreign competitors in geology/geophysics applications are France and Australia and, to a lesser extent, USA, Sweden and Japan. France, Australia and Sweden have recently acquired important Canadian firms (Geoterrex, Geonics and Questor). Australian industry and public institutions have made important gains and are now challenging Canada for the technological leadership in many areas of commercial applications of geosciences.

There are also several strong export performers in analytical instruments and in environmental monitoring and control including detection of toxic gases and radon gas. The remaining instrumentation sub-sectors, primarily industrial process control, building automation and analytical instruments are dominated by Canadian affiliates of multinational corporations. The marketing and sales functions of these corporations usually focus almost entirely on the domestic market. The remaining companies in this group are Canadian owned, and most of them are niche markets suppliers which in order to generate sufficient revenues have become global suppliers.

The following statistics were compiled from several sources and represent, to our knowledge, the best available estimate of the sector's performance.

	\$million
Canadian Market	\$3349
Domestic Shipments	\$1161
Exports	\$ 791
Imports	\$2249
Employment	25,000

The sources of imports into Canada were as follows:

U.S.	-	77%
EEC	-	9%
Asia	-	7%
Others	-	7%

The destinations of exports were as follows:

U.S.	-	70%
Pacific Rim	-	9%
EEC	-	13%
Others	-	8%

MARKET PROSPECTS:

The following markets, grouped by region, represent a synopsis of global market potential for instrumentation products. Each individual market within the region has not been identified, as this assessment is principally structured to reflect the trade plans submitted by posts abroad. Each noted market is rated in accordance with current marketing intelligence on the overall potential of this market compared to other markets within the region and also against other regions. These brief summaries are intended to provide a framework describing the overall environment, and allows a comparison of markets based upon their relative merits, i.e. attractiveness as direct export opportunities. Known success of Canadian companies within a specific market, market access difficulties, funding availability and infrastructure development are also factored into the overall market assessment. The markets are categorized as follows:

Tier A: Cash Market in most cases; clearly defined market access procedures with few restrictions; interest and success of Canadian companies at a high level; an established infrastructure; a proven, relatively stable, market growth potential.

Tier B: Emerging markets with proven interest in Canadian products; some degree of Canadian success; evolving infrastructure with capability to deal with large

development projects; generally moderate-to-high level of interest from Canadian companies. Intellectual Property legislation is in place and to some degree enforced.

Tier C: A combination of all or some of the following factors: long decision cycles; frequent complex business practices; intellectual property violations; lacking necessary infrastructure to adequately support development projects; not a high priority for most Canadian companies.

PRIORITY REGIONS

TIER A:

1. United States of America

The American market for instrumentation products is the second largest in the world behind the E.E.C. It has been assessed in 1989 to be in the range of \$26.0 billion, accounting for one third of the global instrumentation market.

A majority of Canadian exporters have identified and exploited narrow specialized niches in the U.S. market. This is especially true of the Meteorological/Environmental and the Geological/Geophysical sub-sectors and to a lesser degree of the Industrial Process Control sub-sector. Specific examples of these niches will be oceanographic/marine instrumentation, RF data communications, unique applications of lasers, ultra-sensitive analytical instruments for explosive detection and SCADA systems. For most of the Canadian firms whose specialized, custom-built products are made in much lower quantities, the relatively small scale of operations very often offers many advantages in reduced product costs and greater flexibility in designing and delivery of custom-made orders. On the other hand limited product lines, relatively weak financial and human resources and the higher cost of doing business in foreign markets are constraining Canadian firms from being fully competitive on major projects against large U.S. multinationals with full product offering and financing/turnkey capability.

2. Western Europe

Until three or four years ago Canadian firms tended not to address European markets primarily due to their own perception of the difficulties associated with the exploitation of this market. They felt that it was already well served by indigenous suppliers protected by very potent tariff and non-tariff barriers.

The situation has changed drastically since then because of the emergence of EC 1992 and the realization that fairly good prospects existed for a significant number of Canadian advanced technology products in Western Europe. Another factor in Canada's favour was the increasing trend towards promotion of joint ventures and strategic partnering among the high technology sectors in the fully industrialized countries.

The Italian domestic market for instrumentation is estimated at \$3.0 billion, 70% of which is being satisfied by imported equipment. There are nearly 60-70 Italian-owned firms which are potential joint venture partners for Canadian firms.

The total Netherlands market for instrumentation is estimated at \$3.2 billion but the market which could be addressed by the Canadian suppliers is in the range of \$1.0 billion.

The Austrian market for instrumentation is estimated at approx. \$1.0 billion. It includes re-exports to former COMECON countries. Most likely the latter component will decrease significantly as most of the trade with Eastern Europe will be shifted to local agents and distributors at the expense of Austrian, Finish and German trading houses which specialized in dealing with state run economies.

Germany, France and the U.K. constitute the three largest markets for instrumentation in the E.C. Thus far we have made no significant effort to explore or even to quantify EEC markets for instrumentation. It is planned to begin gathering pertinent marketing data from individual Canadian firms, trade posts abroad and published sources during the current fiscal year.

The most promising markets for Canadian companies in EEC countries are those concerned with environmental controls and monitoring and with industrial automation systems.

For the geological/geophysical instrumentation and services sub-sector Western Europe has been a steady but declining market. Canadian enterprises have done some joint work surveying parts of poorer EC countries: Spain, Portugal and Greece.

TIER B:

Latin America

Potentially attractive markets for Canadian instrumentation products and systems are Brazil, Argentina, Chile, Venezuela and Mexico. Mexico represents a unique opportunity because of the rapid growth of its primary and secondary industries and the subsequent need for industrial process control and industrial automation equipment. NAFTA negotiations have spurred the

interest of Canadian businessmen in investigating commercial opportunities there first hand.

South East Asia

The entire Canadian sector has secured a measurable share of the Southeast Asia markets. The market penetration by the geological/geophysical companies was quite high a few years ago but has declined somewhat since.

Eastern Europe (Poland, Czechoslovakia, Hungary)

These three countries are an important medium to long term market. Excellent business opportunities are likely to materialise in a couple of years in environmental monitoring, controls and industrial automation. Short term business prospects will be limited to projects funded by Western European and North American sources. Several such projects were identified during recent promotional projects to the area.

TIER C:

Africa

Airborne Surveying companies (Kenting, Geoterrex, GPR) have been flying in the last few years over Zambia, Zimbabwe, Zaire and Ghana locating deposits of copper, cobalt and chrome. The projects were funded by CIDA. There were no significant instrumentation sales in the area.

CANADIAN COMPETITIVE STRENGTHS:

About 120 companies traditionally export more than half of their output. These companies have been successful in export markets within narrow product and technology niches by virtue of relatively smaller size, low overheads, shorter delivery lead times and flexibility in responding to specific customer needs. The majority of these firms come from the predominantly Canadian-owned sub-sectors, namely the geological/ geophysical, environmental, oceanographic instrumentation and photonics (opto-electronics). In addition, several Canadian-owned firms in the industrial process control field have become significant exporters to almost all major markets of the world. This is especially true of SCADA systems used by primary industries and of Network Management Systems employed by telecommunications operating companies.

The Geological/Geophysical sub-sector is one of the truly competitive advanced technology industries in Canada. To a large extent this favourable position was achieved through a successful

partnership between the government agencies and private firms over the last 40 years. The Geological Survey of Canada (GSC), which is a branch of Energy, Mines and Resources, following the end of the war mapped 70% of Canada's land mass using aeromagnetic techniques. The GSC-developed technology was transferred to the newly formed companies and federal government agencies were instrumental in supporting the infant industry during 1950's and 60's. Geophysical projects funded by the federal government alone totalled \$ 16.5 billion between 1974-1984. This constituted 25% of total geophysical expenditures in this country.

There are 15 universities in Canada offering courses in geology/geophysics. Canada has been the centre of excellence for training of geophysicists for a number of years. Substantial, world-class research was conducted for a couple of decades at the University of Toronto and at McGill. In recent years American and Dutch learning institutions have taken a dominant position in training of foreign students and the role of Canada as a pioneering country in theoretical and practical geosciences has diminished. Nevertheless, there exists in this country a large and highly competent resource pool with academic qualifications at the community college, undergraduate and graduate university levels.

A small number of the Canadian affiliates of multinational corporations have obtained a full product export mandate. In such instances the Canadian made products and systems get full back up from corporate marketing skills and the necessary financial support from the parent company. In other instances, the foreign multinationals designate their Canadian plants to be the prime contractors and corporate sourcing centres on major projects financed by CIDA or EDC. Typical orders of this nature would entail complete instrumentation packages for capital projects overseas.

SECTORAL MARKETING PROBLEMS:

A number of marketing problems arise from the structural weaknesses of the sector. The majority of the companies have sales under \$ 5.0 million per annum, are controlled by the original founders, compete directly with other Canadian firms and tend to be rivalrous rather than cooperative in the world markets. Often they lack the financial and marketing skills necessary to compete internationally.

With the exception of the geological/geophysical sub-sector, there are no trade associations in place, which could play an essential supporting role on behalf of their members with appropriate government agencies directly engaged in export trade

promotion.

The fact that Geological Surveys of Canada (GSC) does not directly and effectively support Canadian industry abroad puts the private sector at a disadvantage. Foreign government agencies, on the other hand, provide direct assistance to their companies in form of joint private/public tenders on major projects, conduct training courses for foreign end-user operators and carry out personnel exchanges. The direct involvement of Canadian government agencies in export promotion is almost essential in developing countries where majority of projects are financed and supervised by international organizations, which tend to operate like bureaucracies and relate well to similarly structured bodies.

The entire sector needs to improve its commercial representation abroad including more staff at their sales offices, better service facilities and more training for their local agents.

EXPORT MARKETING STRATEGY:

The Instrumentation Sector has a strong export orientation but much needs to be done to ensure it remains competitive in international markets and increases its market share. More firms need to become export ready and all need greater access to market intelligence and foreign markets need to be made more aware of Canadian capability. The industry's trade associations need to become stronger in representing and promoting their export interests.

Market Intelligence

It will be an important part of our strategy to develop more efficient and effective means to obtain and deliver information on business opportunities abroad and to define the requirements of the industry for market intelligence. For example, in view of declining business levels of the mining industry world-wide, we might assist the industry to determine if there is a market for alternate applications of existing skills such as geotechnology for construction industry applications (as done by several Japanese companies) or radioactivity detection in scrap metal prior to melting (successfully introduced by Exploranium Co. of Canada).

Strengthening the Trade Associations

CAMESE (Canadian Mining Equipment and Services for Export) is a trade association formed to encompass heavy mining equipment manufacturers, mining engineering consultants and geological/geophysical instrumentation manufacturers, as well as

ground and airborne surveying firms engaged in mineral explorations.

GIAC (the Geomatics Industries Association of Canada) membership includes Canadian companies engaged in Remote Sensing and GIS, in addition to Mapping and Surveying firms. The technologies vested in these companies find an ever increasing application in mineral explorations.

A number of Canadian firms are now active in both industry sectors represented by these associations. Thus the potential for synergy between the two groups in promoting exports is a possibility. If the two trade associations would join forces or merge, they could negotiate with Energy, Mines and Resources for a greater support role by Geological Surveys of Canada for the industry's export marketing efforts, similar to the one now exercised by CCRS (Canada Centre for Remote Sensing). In essence GSC, at present, supports the industry domestically only.

The remaining subsectors should also investigate the feasibility of establishing a trade association to promote member companies in export markets. Such a body could be called Industrial Process Control and Instrumentation Association (IPCIA) or a similar such name. Another possibility would be to discuss formation of an Instrumentation Branch or Chapter within an existing organization such as EEMAC or CATA.

Promote Strategic Alliances

There is a significant trend towards consolidation of manufacturing and system integration industries in the industrialised countries. This trend will result in a smaller number of larger, more vertically integrated competitors with a truly global business focus. In view of these developments strategic alliances, consortia, teaming arrangements, which are considered to be the key to a longer term survival of the sector, should become an integral part of the departmental trade promotion programs for industry.

Market Awareness

It is imperative that foreign buyers be more aware that Canadian firms have the capability to meet their requirements, often with better technology and at better prices. Traditional mechanisms such as trade shows still have a place but will be fewer in number and better focused. The most important European promotional events for the Canadian instrumentation and industrial process control companies are: BIAS in Milan, INTERKAMA in Duesseldorf, HET INSTRUMENT in Utrecht C&I in Birmingham and GEOTECHBICA in Cologne. Priority countries within the EEC for future promotional projects are: United Kingdom,

Germany, Italy, Holland, and France.

The Department will continue to introduce new Canadian exporters to U.S. markets by means of established programs such as NEXUS and PEMD.

Departmental promotional projects will be intensified to enhance the position and to increase the market share of established Canadian exporters. Events such as training of personnel of foreign organizations which are potential buyers of Canadian products and services will be used to achieve this.

For South East Asia markets the department, together with the industry, will prepare a qualitative and quantitative assessment of our current position and competitiveness as well as an inventory of future major projects scheduled for the area. Based on the above we could then recommend an appropriate, 2 or 3 year program, designed to enhance our presence in Indonesia, Malaysia, Philippines and Thailand.

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