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Annual Report 2002-2003

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innovating today, transforming the future

Transfer of Technology and Knowledge

CRC has a successful record of transferring technologies and expertise to industry and universities. This transfer helps build an innovative, knowledge-based economy.

Results from the 2001-2002 fiscal year, released in 2003, position CRC as the top federal laboratory performer for technology transfer in North America, when intellectual property revenues are based on laboratory researcher per capita. Record intellectual property revenues of four million dollars meant that CRC earned almost 25 percent of all Canadian federal intellectual property revenues, while spending only about two percent of the federal R&D budget.

As of March 31, 2003, CRC had:

- 418 active intellectual property agreements
- 68 active contracting-in agreements
- 214 active patents and applications covering 89 inventions available for licensing (16 new patent applications were filed, and 14 patents awarded, in 2002-2003)

Industrial Development

The CRC Innovation Centre

Since 1994, the CRC Innovation Centre has been helping small and medium-sized companies incubate while they conduct their research and development, and prepare to launch their businesses. On a fee-for-service basis, the Centre offers Canadian companies office space and access to unique test beds, facilities, expertise and technologies.

More than 30 companies have passed through the doors of the Innovation Centre in the last nine years. In 2002-2003, the Centre welcomed:

Nimcat Networks, sponsored by CRC's Informatics group. The company is developing Voice-over-IP telephony solutions for small and medium-sized businesses.

Toronto company OnWebOS™, which is using CRC's Broadband Applications and Demonstration Laboratory to access the CA*net4 research and innovation network. This is so that the company can test video and audio over- IP technology needed for a widely available eLearning, eBusiness and virtual presence platform.

Spotwave Wireless and IP Unwired graduated from the Innovation Centre. Spotwave worked with CRC's wireless and antenna experts to develop products that make cell phones work almost anywhere, while IP Unwired worked with CRC's radio communications group to develop technologies for the military. Both companies are doing well in their markets.

Technology Transfer Activities

CRC licensed its patented video frame-rate conversion software, CRC-FRC, to Miranda Inc. The Montréal company builds equipment for the film and video production industry. Based on the strength of the CRC software, Miranda transferred the licence to its spin-off company, Algolith, which will concentrate on developing and commercializing algorithm-based software products that incorporate the CRC software as one of the core modules.

CRC-Predict technology was a key factor in Ottawa-based Marconi Wireless securing a worldwide product development mandate for its deciBel Planner. This software for radio signal analysis contains the CRC-Predict code.

More than 6000 users from companies, universities and research laboratories in Canada and around the world downloaded the free software code for Software Defined Radio, developed by CRC and Defence Research and Development Canada with support from the Software Defined Radio Forum. CRC's expertise in Software Defined Radio technology continues to be sought worldwide.

In the field of electromagnetic scanning, CRC entered into a collaboration agreement and option licence with EMSCAN Corporation of Calgary. The company is tapping CRC's expertise in electromagnetic measurement technology for its new radiation test equipment.

CRC's Forward Error Correcting codes were licensed to Advantech Advanced Microwave Technologies of Montréal, and Soma Networks of Toronto, to help the companies enhance the performance of their wireless communications systems.

CRC worked with a small Canadian company, Avendo Wireless Inc., to design multi-element antenna arrays. These helped the company demonstrate its leading-edge, high-capacity, MIMO wireless system. The success of the demonstration helped the company secure investment funding.

CRC licensed the fibre Bragg gratings portfolio that it markets under a cross-licence agreement with United Technologies Corporation to two Montréal-area start-ups. Avensys and LxSix Photonics signed agreements that will allow them to manufacture Bragg gratings. Avensys plans to use the optical components for environmental sensors, while LxSix has filed a patent for a highly automated manufacturing process for the gratings.

CRC continued its active review of patents for potential licensing to marketing partner British Technologies Group International Inc.

Patent Success Story

CRC became the first government laboratory in Canadian history to fight and win a patent interference case before the United States Patent and Trademark Office. CRC and United Technologies Corporation squared off against two large multinational telecommunications companies. At issue was a critical patent in a production process that has proven revolutionary in the optical industry. The patent is for a phase mask technology used for the cost-effective manufacturing of fibre Bragg gratings. CRC's victory sets an important precedent for the federal government in the protection of its intellectual property rights. For more on this story, visit www.crc.gc.ca/success_stories [1].

University Collaborations

CRC is collaborating with Carleton University on a MIMO system, a key technology for next-generation broadband wireless systems.

CANARIE Inc. has approved funding for CRC and researchers from the University of Ottawa for a project on dynamic end-to-end light-path provisioning.

A graduate student from the University of Manitoba worked with CRC researchers on techniques to improve the efficiency of holographic antenna feeds.

CRC presented two university radio science students with the annual Reginald A. Fessenden scholarship awards, funded by the Natural Sciences and Engineering Research Council of Canada.

CRC's work with the University of Québec and IMAX Corporation on video signal processing resulted in a video frame - rate conversion algorithm that was patented and licensed to companies.

The University of Ottawa and Carleton University worked with CRC on advanced broadband transmission technologies.

International Collaborations

CRC became a partner in the Information Society Technologies Europe-Canada project, whose goal is to foster R&D co-operation between European and Canadian organizations. This will be done through events and applications demonstrations in areas such as e-learning, e-culture, e-content, e-work and e-commerce.

In collaboration with the Hong Kong Academic and Research Network (HARNET) and CANARIE Inc., CRC held live, interactive virtual classroom sessions between students in Canada and Hong Kong during the ITU Telecom Asia Exhibition. This was the first international use of HARNET. The demonstrations supported the marketing efforts of CRC and its fellow Canadian exhibitors, and contributed to branding Canada as a global high-technology leader.

As part of a collaborative project with the National Science Council of Taiwan, CRC submitted innovative designs of monolithic microwave integrated circuits (MMICs) to OMMIC, a member of the Philips group of companies. The designs resulted in the successful fabrication of the circuits.

CRC concluded four collaborative research projects with India's Centre for the Development of Telematics (C-DOT). The projects focused on wireless technologies and were funded by the Canadian International Development Agency.

CRC is collaborating with the Electronics and Telecommunications Research Institute in South Korea on three-dimensional and digital television transmission technologies. Since South Korea has the same digital television standard as Canada, the collaboration allows CRC to use South Korea's equipment and expertise to carry out research and development for Canadian industry.

CRC shared its expertise with the Video Quality Experts Group, an international body that proposes recommendations to the International Telecommunication Union, which sets international telecommunications technology standards.

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