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CRC Perspective

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The history of satellite communications in Canada is closely linked to the history of the Communications Research Centre. Following the launch of Canada's first satellite, Alouette 1, in 1962, CRC emerged as a world leader in ionospheric phenomena. In 1976, Canada became the first country to test the concept of direct-to-home television broadcasting with the launch of Hermes in 1976. Many of the technologies, applications and Ku propagation models were developed by CRC or in partnership with Canadian industry.

Throughout the 1980's much of the satellite communications research at CRC was directed towards mobile satellite communications. Some of the early developments demonstrated the technical feasibility of various sub-systems (e.g. voice coding, signal design, aeronautical antennas) and satellites. In the 1990's CRC's attention was focused on multimedia Ka Band satellite communications. During this period CRC developed Ka Band propagation models based on years of data collected using NASA's Advanced Communications Technology Satellite (ACTS) satellite. Multimedia satellite systems concepts were conceived, and development had begun and continues today on promising technologies that improve the reliability and efficiency of Ka Band satcom while reducing user costs. As well we continue to invest a considerable amount of our resources in demonstrating satellite applications, particularly in remote areas. These demonstrations, such as tele-education, disaster mitigation, and telehealth, are carried out in collaboration with our many partners in government and industry.

This preliminary R&D into multimedia satcom performed at CRC and at other research institutes and industries around the world has laid the ground work for Ka Band satellite systems now about to be launched. The first commercial Ka Band payload serving North America will be on Telesat's Anik F2. This Ka Band multimedia payload, which will make broadband access possible throughout Canada, results from a unique partnership that includes the Canadian Space Agency, CRC and the companies Telesat, EMS Technologies and ComDev.

Satellite communications is an important part of Canada's past, present and future. Part of CRC's mission is to work with other government partners such as National Defence, to help meet their needs for advanced communications technologies, and the Canadian Space Agency, where CRC supports space industry development programs by providing technologies and technical expertise in satellite communications. The research and development performed at CRC will continue to help ensure that satellite communications technologies and services are available to meet the needs of Canadians now and in the future. CRC's radio propagation experts are preparing for a measurement campaign needed to model propagation at frequency bands beyond Ka. CRC's research into more powerful and efficient source and channel coding, modulation techniques, protocols and RF subsystems will reduce the cost differential between terrestrial and satellite communications systems, thus helping to eliminate the barriers to access in remote communities. CRC will continue to work with schools, hospitals and communities in remote and rural areas to demonstrate applications that only advanced satellite communications can provide.

These activities at CRC and many others in terrestrial wireless and optical communications, fulfill our mandate as a federal government research centre by

making Canada the most connected nation in the world and one of the most innovative.

For more information about CRC, visit www.crc.ca.