

The view from Telesat — planning for commercial service

Signing of a co-operative agreement by the Department of Communications (DOC) and Telesat Canada in July 1984 moved the MSAT program into the commercial arena.

Originally planned as a demonstration system to be owned and operated by the government, MSAT is now scheduled to provide mobile communications services on a commercial basis through Telesat from the outset.

During the transition from a government-led program to a commercial one, DOC is continuing development of technology for the MSAT spacecraft and ground stations, while Telesat is planning the commercial operation of the system.

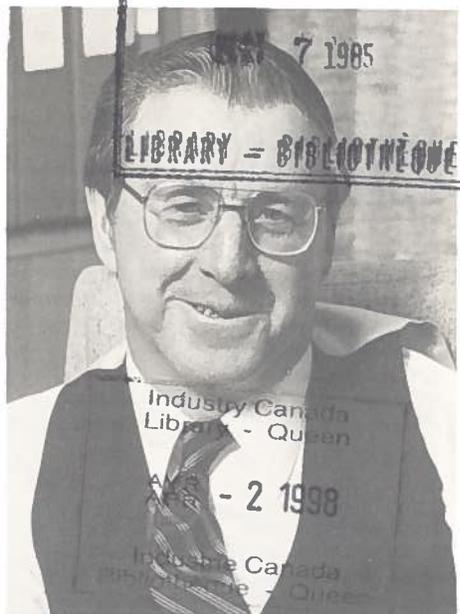
Telesat president Eldon Thompson told *MSAT News* that Canada could have commercial mobile satellite service by the end of the decade, if the federal government agrees to share in the risk of a first-generation system.

Telesat believes that MSAT has strong commercial potential in the long term. The problem is that a major capital investment must be made up front.

A significant revenue base could not be established until two or three years after the satellite is launched. Since no country in the world yet has mobile satellite service, there is no model to guide estimates of market demand.

"We need some sort of safety net if we are to raise capital in the money market to finance MSAT," Thompson said. "As we go out to raise \$150 million or more, we will have to demonstrate that this can be a profitable enterprise or at least that it will not put us in a bankruptcy situation. For a company the size of Telesat, it represents a huge commercial risk.

"We are looking to government to share the short-fall with us if projected markets are not achieved in the first-generation system. On the other hand, if revenues are as good as expected, there would be a full payback with interest."



Thompson: "The old idea of the Dick Tracy wrist radio is very close to the MSAT concept. No matter where you are, with a small device you can communicate to the world."

Under the proposed arrangement, Telesat would take responsibility for achieving a certain level of revenue, and for containing system costs within agreed limits.

Cost is another area receiving careful attention from Telesat. The approach in planning has been to try to keep costs in line with expected revenues by tailoring technical design of the system to the expected number of users. This line of thought suggests a small satellite for first generation MSAT services.

Planning is also based on the assumption of co-operation between Canada and the United States in operating compatible MSAT systems. DOC and the U.S. National Aeronautics and Space Administration (NASA) agreed in November 1983 to work together in developing plans for commercial mobile satellite service.

"Joint procurement and mutual back-up arrangements are critical. They could reduce spacecraft costs by as much as 50 per cent," Thompson said. "On a Canada-only basis, I doubt if we could build a standalone system at a low enough cost.

"We have had discussions with various satellite operators in the United States with a view to forming some sort of liaison to reduce the cost for both parties, but we can't go much further in that direction until the Americans designate an MSAT operator."

Thompson reckons Telesat will need four years from the time it calls for manufacturers' proposals until it has the system in operation.

Recent efforts by Telesat have focused on the preparation of a business plan outlining how the service would be introduced, and what terms and conditions would apply. As *MSAT News* went to press, Telesat was finalizing the plan for submission to the government.

"In the system I hope we would end up with," Thompson said, "Telesat would own and operate the satellite as well as the control stations.

"A wholesale/retail concept would apply, so those institutions and companies now providing mobile service could continue to do so.

"Telesat would need to expand its sales force to deal with the various service provider groups in Canada. These include radio common carriers, large private system operations, telephone companies and a new group of entrepreneurs expected to make use of MSAT to offer specialized services."

It is expected that only a moderate increase in personnel would be needed elsewhere in the organization.

"We could handle satellite control pretty well within our present system, but we would probably need to extend our maintenance operations, depending on the location of the central control station and the number of gateway stations involved."

The major changes would be financial. "MSAT would mean an addition of about one third to our asset base. For it to be viable, we would need a corresponding addition in revenue. So the figures leading to our bottom line would be much larger," Thompson said. ▸





"In terms of financing, it might be necessary to spring MSAT out as a separate company to demonstrate to the regulators that it is not a burden to our present business and that it can stand alone as a profit centre."

Telesat is enthusiastic about the MSAT concept. "It is a new area with the potential for major growth, and we are a commercial company seeking to do business on a commercial basis," Thompson noted.

"Much of Canada is not coverable today with any sort of terrestrial mobile system. MSAT would fill a gap in our telecommunications network. It would allow someone using a small, relatively inexpensive mobile radio terminal to access the whole world.

"In many ways, MSAT would deliver the kind of person-to-person communications that satellites have promised from the beginning.

"If we can resolve the financial, institutional and political problems, all that will remain before MSAT can become a reality are the technical problems. In our experience at Telesat, the technical problems are the easy ones." □

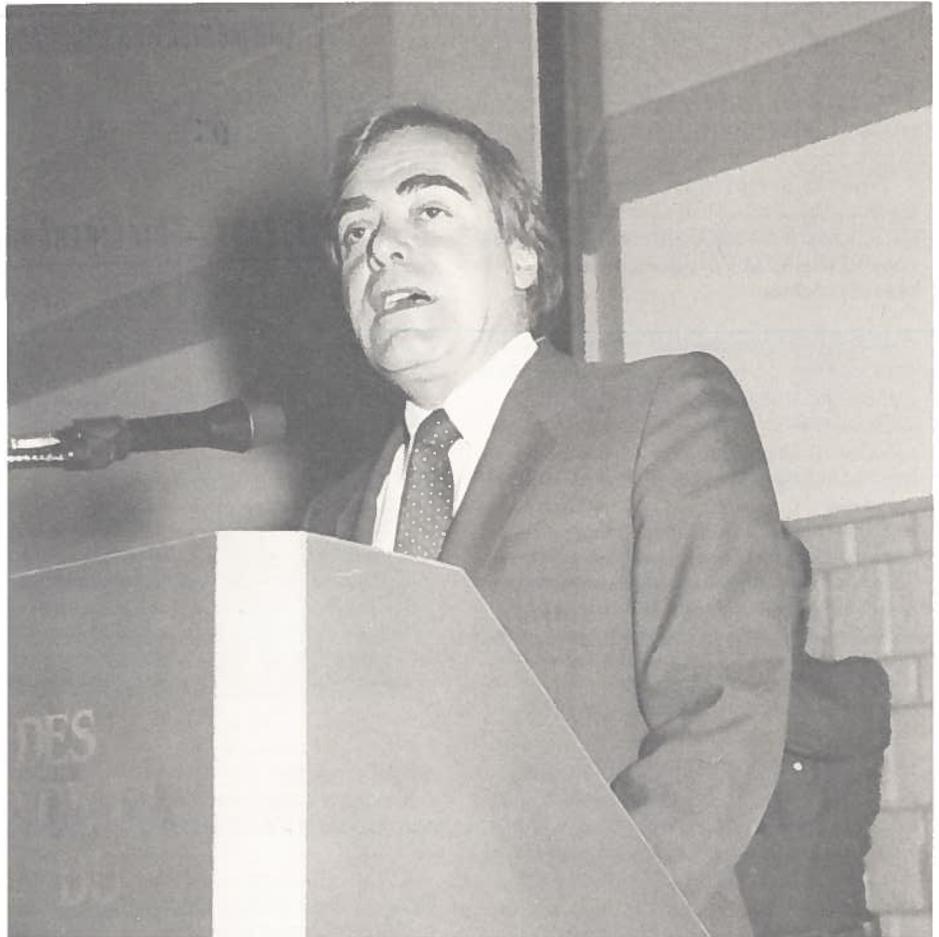
Communications Minister addresses Satellite User Conference

The Canadian Satellite User Conference held by Telesat Canada in Ottawa in November 1984 was the first occasion many people had to meet Communications Minister Marcel Masse.

During a luncheon speech at the conference, the Minister identified satellite communications as one of the highest priorities in his mandate.

"Canada needs and must have continued growth in space technology," Masse said. "We must have increased investment in research and development, to further the quality and quantity of that growth. And we must have increased and enhanced use of space and communications technology, in order to better serve all the people of Canada.

"To meet these objectives, the government will encourage initiatives from the private sector, stress international market development, and



In a welcome to those attending the Canadian Satellite User Conference, Communications Minister Marcel Masse said that MSAT represents an exciting initiative which promises to open a new era of major business opportunities and improved service to Canadians in rural and remote areas of Canada.

structure the policy and regulatory environment so as to help the growth of Canadian technology," Masse said.

He stressed that regulations are only a framework, and that initiatives must come from the private sector. He promised to support private initiatives to develop new applications and new services with clear economic and social benefits for Canada.

The Minister said that Canada should base its new satellites on user requirements, and cited MSAT as a good example of this approach.

"I look to the industry to tell me what their interests are. Telesat has seriously analyzed its business opportunities with MSAT. Both Telesat and the government must soon come to a decision on the MSAT program. The fact that MSAT would be a commercially driven program will certainly make the decision easier."

Masse pointed out the importance of remaining competitive in world markets. "Canada already has a record of achievement in the development and application of satellite technology . . . We must ensure that we remain among the world leaders."

At the same time, Masse endorsed collaboration and co-operation as routes for advancing technology and capturing markets.

In addition to keynote speeches, the conference featured 19 theme sessions including one on MSAT chaired by R.W. Breithaupt, Director of the MSAT Program at DOC. "It was a well-attended session," said Dr. Breithaupt. "About 150 people came, and there was standing room only." Overall attendance at the conference was about 500, according to Telesat. □



Field trial applicants to hear from DOC

Some 170 organizations have applied to take part in government-supported MSAT field trials.

According to Demetre Athanassiadis, manager of the MSAT post-launch communications program at DOC, about 120 of the applications came from the private sector, the balance from provincial and federal governments.

"DOC will advise applicants of the status of their proposals following completion of the evaluation process," Mr. Athanassiadis said. "Letters are expected to go out in the near future.

"Subject to budgetary constraints, every effort will be made to provide access to the MSAT trials to those who meet the published criteria," he added.

The purpose of the post-launch communications program is to stimulate demand by allowing potential users and service providers an early opportunity to evaluate the merits of mobile communications services.

Full commercial service will be available from the outset. □

FCC issues NPRM, opening door to applications for U.S. mobile licensee

On January 28, 1985, the U.S. Federal Communications Commission (FCC) released a mobile satellite Notice of Proposed Rulemaking (NPRM). The FCC notice addresses frequency allocation and licensing, and regulatory framework. It also requests public comment on licensee applications from satellite operators and service providers, by March 29, 1985.

U.S. applicants are asked to address the operational, economic and political benefits and drawbacks of international co-operation, particularly with Canada, on a mobile satellite service.

The FCC believes that only one satellite operator can be authorized to operate mobile satellite service in the United States, in order to carry out necessary international co-ordination and co-operation with Canada on the MSAT program.

The U.S. licensee would function as a "carriers' carrier," providing communications services to other carriers, without being prohibited from serving end-users directly.

The NPRM indicates that spectrum allocation for mobile satellite service in the 800 MHz band is in the public interest. The FCC is also proposing to allocate spectrum at L-Band. Public comments are requested on allocations for mobile satellite service at 800 MHz only, at L-Band only and at both allocations. □

Comments in on MSAT policy proposals

Deadline for comments on DOC's policy discussion paper on MSAT was January 7. Eugène Marquis, of DOC's Telecommunications Policy Branch, reports that comments were received from 49 organizations.

Published September 15, 1984, the discussion paper presented DOC proposals on earth station licensing, management of MSAT spectrum allocations, competition between service providers, and the role of Telesat in an MSAT commercial system.

Dr. Marquis said DOC expects to issue its final MSAT policy in spring 1985, through a notice in the *Canada Gazette*.

Meanwhile, the comments submitted are available for public inspection at the DOC Library, 300 Slater Street, Ottawa until January 7, 1986; or at the department's five regional offices until July 7, 1986. □

DOC working on spectrum policy for MSAT

"DOC expects to issue a final policy on the reallocation of radio frequency spectrum for the mobile satellite service by spring 1985," said Parke Davis of the Telecommunications Policy Branch at DOC.

Davis said the department received 28 comments in response to the *Canada Gazette* notice on this subject published May 19, 1984. The notice proposed changes to the Canadian Table of Frequency Allocations that would give mobile satellite service primary status in the 800 MHz

frequency band (821-825, 845-851 and 866-870 MHz) and in the L-band (1545-1559 and 1646.5-1660.5 MHz).

"A second spectrum policy proposal suggesting allocation of the band 890-896 MHz to mobile and mobile satellite service in Canada will likely be finalized at the same time," said Davis.

Davis pointed out that Canadian spectrum policy must take account of international radio regulations as well as our domestic needs.

"Under these regulations, Canada may use the 806-890 MHz band for mobile satellite services, providing we obtain the agreement of neighbouring countries that might be affected."

Davis pointed out that the situation is a little different for the 890-896 MHz band, which is internationally allocated to fixed and mobile service. Its use in Canada for mobile satellite would be subject to agreement with all other countries whose services are operating in accordance with the international regulations.

A change in the International Table of Frequency Allocations would clearly be a more satisfactory approach, but such changes can only be made at world radio conferences and depend on support from a sufficient number of countries.

Use of spectrum around 1500 MHz for mobile satellite would also require a change in the International Table of Frequency Allocation, since the current allocation is exclusively for the aeronautical mobile satellite service, Davis noted.

"Canada is trying to make arrangements so that allocations for mobile satellite service in the frequency range 500-2500 MHz can be discussed in 1987 at the World Administrative Radio Conference for Mobile Services," said Ed DuCharme of DOC's International Relations Branch.

"The agenda for this conference will be prepared in July 1985. We are trying to have an item included that would allow us to present our proposals.

"If we are unsuccessful, there would probably not be another opportunity to have such changes considered until the next general World Administrative Radio Conference expected to take place sometime in the late 1990s." □



Questions and answers

Q As an MSAT user, where will I obtain my mobile unit? Will it be leased or purchased? How much will it cost?

A Both purchase and lease options are expected to be available. You will likely be able to purchase your terminal directly from a manufacturer or from a service provider. Some service providers will probably also offer terminals for lease. In the first year or two of MSAT service, a terminal will probably cost in the range of \$3,000 to \$3,500 for a mobile radio service (MRS) unit, and \$4,000 to \$4,500 in a mobile telephone service (MTS) unit (all in 1984 dollars).

Q What will MSAT service cost?

A MSAT Phase B studies indicate a monthly charge of \$50, plus \$1.50 per minute (1984 dollars), for either MRS or MTS service.

Documentation

Contact:
Information Services
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Conference papers

"The MSAT Communications System Concept," by J.D.B. Kent, IEEE 1983 International Electrical and Electronics Conference and Exposition, Toronto, October 1983.

"Some Results of the MSAT Phase B Studies and their Impact on System Design," by J.L. MacNally, H.R. Raine and J.D.B. Kent, Department of Communications, Communications Research Centre; 35th Congress of the International Astronautical Federation, Lausanne, Switzerland, October 1984.

"A Commercial Mobile Radio Satellite System for the United States," by Roy E. Anderson, Mobile Satellite Corporation; Canadian Satellite User Conference, Ottawa, November 1984.

Q If Canada and the United States build complementary mobile satellite systems, will they use exactly the same frequencies?

A No. Both systems would operate within the same bands, 821-825 and 866-870 MHz, but each country would use only 2 MHz of each band. If one system were to break down, the other could fill in temporarily, making full use of the two 4 MHz bands. Antenna patterns would be designed to permit this by providing coverage of both countries. (The 821-825 MHz band is used for uplink from mobile stations to the satellite, 866-870 MHz for downlink to mobile stations.)

"Demand Assignment for Mobile Satcoms," by S.S. Kamal, J.D.B. Kent and J.E. Nicholson, Globecom '84 Conference, Atlanta, November 1984.

"MSAT — A Telco Perspective," by Kim Markvorsen, Telecom Canada; Canadian Satellite User Conference, Ottawa, November 1984.

"MSAT Phase B Studies and Future Plans," by J.L. McNally, H.R. Raine and J.D.B. Kent, Department of Communications; Canadian Satellite User Conference, Ottawa, November 1984.

"MSAT Service Concept and Business Opportunities," by D.J. Sward, Telesat Canada; Canadian Satellite User Conference, Ottawa, November 1984.

"The Need for MSAT Integration into Terrestrial Mobile Communications Networks," by Mike Kedar, KVA Communications and Electronics Co.; Canadian Satellite User Conference, Ottawa, November 1984.

"Skylink Mobile Satellite Service," by X. Terrell Quillian, Skylink Corporation; Canadian Satellite User Conference, Ottawa, November 1984.

News releases and speeches

"DOC and Telesat Canada agree to co-operate on mobile satellite program," News Release, July 26, 1984.

"Satellites: Towards the Twenty-first Century," Notes for a speech by Communications Minister Marcel Masse to the Canadian Satellite User Conference, Ottawa, November 21, 1984.

Program documents

MSAT User's Guide, Issue No. 2, Department of Communications, MSAT Program Office, May 1984.

Project Brief for MSAT Bridging Phase, Department of Communications, MSAT Project Office, May 1984.

Memorandum of Understanding between the Department of Communications of Canada and Telesat Canada concerning Co-operation on the MSAT Program, Department of Communications, June 1984.

Discussion Paper: Telecommunications Policy Proposals for Mobile Satellite Service, Department of Communications, Telecommunications Policy Branch, September 1984.

MSAT phase B contractor reports

The Market for MSAT Services, Woods Gordon, February 1984.

The Qualitative Description of the Social Impacts of MSAT, Final Report, Wescom, April 1984.

Assessment of the Commercial Viability of a Satellite-Based Mobile Communications System in Canada (Executive Briefing), Telesat Canada, September 1984.

MSAT videotape

A 16-minute videotape about MSAT is available on ½" VHS videocassette and ¾" videocassette through DOC Information Services or any DOC regional office.

Entitled "MSAT — Communications on the Move," the videotape explains how MSAT will serve users of mobile communications.