

The Light on the Horizon



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Ken,
For your info.
Keith

DOC/CTCA ADVISORY COMMITTEE ON
PHASE II ELIE FIBRE OPTIC FIELD TRIAL

1st Meeting

December 6, 1979; 1:30 PM

CTCA Conference Room
1 Nicholas St., Ottawa

Attendees:

Martin Fournier	DOC (Chairman)
Max Melnyk	DOC
Metin Akgun	DOC/CRC
John Wilson	CTCA
Cleve Pendleton	N.B. Tel
Jim McDonald	AGT
George Jull	DOC/CRC
Keith Chang	DOC
Robert Rogers	Bell
Jack Crossman	CTCA
Ed Allan	Bell
Bob Bennett	DOC
Steve Sokolowski	CTCA
Brian McCallum	DOC/CTCA
David McKendry	DOC
Rod Kachulak	MTS (part time)

1. Membership

The meeting was opened with a self introduction of the attendees. Dr. Fournier then stated that a DOC/CTCA advisory committee on Phase II of Elie Fibre Optic Field Trial had been set up upon instructions from Messrs. D. Cruikshank and D. Parkhill at their meeting on November 21, 1979. The committee would advise on the approach, cost and other pertinent aspects related to new service experiments on the Elie fibre optic system. It would make appropriate recommendations to the DOC/CTCA Board of Control. The composition of the committee would be, from CTCA,

Peter Nicolls
Jim McDonald
Cleve Pendleton
Robert Rogers
John Wilson

and, from DOC,

Martin Fournier
Bob Bennett
Nisar Ahmed

David McKendry
Keith Chang
George Jull

2. Background of Elie FOFT and Phase I Status

Brian McCallum briefly reviewed the background and current status of Elie fibre optic field trial. Essentially, the idea for a rural fibre optic field trial came about in 1976 when MTS made a proposal to DOC. In 1978, DOC and CTCA jointly sponsored two program definition studies to further develop the concept, one by Northern Telecom and another by Canstar. Northern Telecom was subsequently selected as the contractor to engineer, furnish and install the system. The contract was signed in September 19, 1979. The system would be installed on September 19, 1981. It would provide the basic services of telephony, cable TV and FM to 150 households. Progress of the contract work was on schedule.

3. Presentation of Phase II Proposal from MTS

Rod Kachulak presented the MTS proposal of new services experiments to be carried out on the system as Phase II of the field trial. The presentation followed essentially the submitted document. Some clarifications and questions were raised. These include the following:

a) Rate setting was not addressed in the proposal, but Mr. Kachulak indicated that it could be incorporated into the trial at a later stage if desired. The committee could decide, for example, to implement one year of free service followed by 6 months of changed service.

b) The present proposal did not incorporate anything to permit charging. It was noted that charging, or billing, might be possible through the service usage monitoring mechanism to be implemented as part of the basic system contract. However, some modifications or additions to both software and hardware were still needed to evolve it into mechanized billing.

c) "Standards" as indicated in the proposal was applicable only to the trial, although it was MTS' intention to use them as bases for imputing to or evolving into national and international standards.

d) The Canadian content of the work was estimated at 95%. All subcontractors would also be Canadian.

e) The proposal did not include Telidon terminals. They would be obtained through a separate proposal to DOC. The present proposal included approximately 38% of Telidon

related work, mainly for software and human resources.

f) The level of hands on experience available to other CTCA members was a concern expressed by CTCA representative.

g) The \$3.33M price was a firm price in actual cash-flow dollars. Whether it included sales taxes, however, was not clear.

h) Many questions were raised as to what the home computer, priced at \$90,000 total, would do and whether some or most of its functions could not be available from the Telidon terminal. Similar questions were raised regarding the details of other hardware, including data multiplex and video conference equipment. MTS was requested to furnish further details if possible. Some also expressed the view the video conference should be a low priority item and should be taken away if necessary.

i) A question was raised as to whether the funders would have any say on the selection of services and suppliers. It was recognized that too much participation in the management and decision making by the funders was not desirable. However, the fact that the proposal is firm-price and yet does not provide firm committment was a concern.

4. DOC/CTCA Strategy

It was decided that the committee should firm up its recommendations by the end of January 1980 in order to be ready for presentation at the next DOC/CTCA Board of Control meeting, scheduled for the first week of February 1980.

It was also decided that the committee would meet again on Thursday, December 13, 1979, to

- examine the respective objectives of DOC and CTCA
- consider setting up a working group to study the proposal in detail
- give direction to the working group
- prepare specific questions for MTS

5. Funding

Dr. Fournier indicated that the fund available from DOC for Phase II based on a Treasury Board approval, was \$1.3M plus 150 Telidon terminals, and that these figures were firm upper ceilings. A 50/50 arrangement between DOC and CTCA similar to Phase I would therefore not be adequate to cover the full cost of \$3.33M. It was decided that

a) Dr. M. Fournier would get in touch with DSS to determine whether the rates quoted by MTS were the rates that MTS would charge the most favored customers, and

b) Mr. J. Wilson would investigate the flexibility available within CTCA.

6. Next Meeting

To be held at 2:00 pm, Thursday, December 13, 1979, at DM's boardroom, 20th floor, DOC, 300 Slater street.

Do not discard. Historical significance for
DOC and CRC according to Dr. D. Johnson,
May 2000.

**New Services Proposal
for Rural Fibre Optics Trial
in Elie - St. Eustache,
Manitoba.**

**Prepared for the Department
of Communications by the
Manitoba Telephone System**

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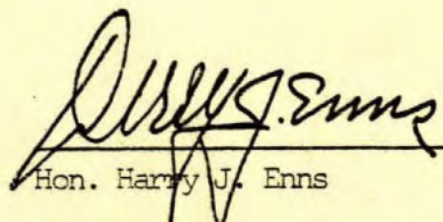
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I am both pleased and proud that the federal Department of Communications has chosen Manitoba for the first rural field trial study of fibre optics in Canada. Elie-St. Eustache was selected for a variety of reasons, one being that it is statistically a typical rural community in that it developed as a service centre for a farming community rather than as a satellite for a city. Another is that the cost of wiring such a rural neighbourhood for cable television service or even single-party telephone service is economically unfeasible. The introduction of fibre optics with its exceedingly high capabilities will greatly enhance the rural dweller's lifestyle.

The problems encountered in the delivery of telecommunications throughout the province are not unique to Manitoba. Rather, they are shared by all Canadian provinces and territories -- they have concentrations of population often surrounded by wide expanses of thinly populated countryside. The obstacles preventing each and every Canadian from receiving a wide range of communication services are formidable. It is with great interest, therefore, that the experiment in fibre optics in Elie-St. Eustache will be viewed throughout the land.

As Minister of Communications, I am also pleased with the vote of confidence that has been given to Manitobans and the Manitoba Telephone System in particular. As you will see, the System's collective expertise is truly remarkable. Its history is linked with Manitoba's future and I am certain that it will be highly successful in promoting Canadian technology and know-how around the world.

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Hon. Harry J. Enns

THE LIGHT ON THE HORIZON

Introduction by Gordon Holland

The Manitoba Telephone System's mandate from its early years has been to extend the best possible telephone service to the whole of Manitoba at the lowest possible cost. Today, despite distance, terrain, sparse population, climate and other impediments, more than 98 per cent of all Manitoba households are served.

The System's major Rural Service Improvement Program which began in 1974, will be substantially completed in 1981 at a cost of about \$34 million, benefitting almost 60,000 customers. Under this program, the average number of subscribers on a multi-party line will be reduced from 5.5 to 2.63.

Great progress in providing rural service has thus been made but there are problems remaining to be overcome. How can individual line telephone service become affordable to Canada's large farm community? How can the new service such as videotex, alarm reporting, cable TV, be provided to rural as well as urban customers? In essence, how can the rising demands and expectations of rural customers be accommodated at realistic costs?

The most promising solution to the problem lies in the use of fibre optics. In order to encourage development of the technology as well as to gain experience in its application in a rural Canadian setting, a fibre optics field trial has been initiated in the communities of Elie and St. Eustache, Manitoba.

The trial will involve 150 subscribers in the exchange area. All 150 subscribers will be capable of receiving single party telephone service, cable television, FM radio and a data channel suitable for interactive computer services.

In addition, the Manitoba Telephone System recommends the trial of new telecommunications services in this rural environment, such as those being tested in urban centres:

- Alarm forwarding
- Remote metering
- Load management
- Broadband
- Personal and business data

The detailed rationale, the methodology and key personnel required for this undertaking are documented in the proposal. With a considerable portion of Canada's population living outside urban areas, a fibre optics solution to the problem of providing rural service at standards comparable to urban services will be viewed with keen interest throughout Canada and even throughout the world.

The Manitoba Telephone System is honoured to be the host company for the fibre optics technology trial and confident that the rural services trial will yield significant additional benefits for the telecommunications industry, private industry and rural Canadians.



Gordon Holland
Chairman & General Manager
Manitoba Telephone System

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exploring the wired country



GENERAL

1.1 INTRODUCTION

The Manitoba Telephone System is proposing an experiment in new telecommunications services for the rural community of Elie-St. Eustache, Manitoba. The proposed project cost is \$3.33 Million; this amount will be shared equally between the Department of Communications and the Telecommunications Industry. The duration of the project is forty-seven months starting in February 1980 and ending in December 1983.

The Canadian Telecommunications Carriers Association (CTCA) and the Department of Communications (DOC) have contracted to Northern Telecom for the basic fibre optic transmission system. This fibre optic transmission system has the potential capability of providing the following telecommunications services:

- i. Remote Metering
- ii. Alarm Forwarding
- iii. Load Management
- iv. Broadband
- v. Personal and Business Data

The proposed program of work will provide these services on an experimental basis and will narrow the growing telecommunication services gap between urban and rural Canada. The present problem shared by all carriers serving rural areas is economic. The intent of this project is to demonstrate that the increased value of new rural services integrated on a common carrier system will greatly reduce the cost barriers.

The potential benefits resulting from this project will be the following:

- Increased industrial activity in Western Canada.
- Development of technology and know how with a large export potential.
- Clarification of technical and new services issues for the formation of policy and the regulatory process.
- Development of standards for integrated network technology.
- Improved telecommunications services to rural subscribers.
- Stimulation of private sector activity on the Telidon based information services.
- Stimulation of private sector activity in new services other than videotex, e.g. pay-TV, alarms, etc.

The Manitoba Telephone System has performed pilot work to verify and confirm the practicality of the project. The results are as follows:

- a) Some forty new service suppliers have indicated an interest of participating in this project. A sample of letters of intent from suppliers are attached in Appendix 'A'.
- b) Manufacturers and high technology firms have confirmed the technical feasibility of the network enhancements and that the necessary hardware and electronic highway software can be developed in time for this project.
- c) Residents of Elie-St. Eustache have indicated their desire to participate in the project.
- d) The Manitoba Telephone System has the required skills and experience to carry out this project.

The approach taken in project IDA, an urban integrated services trial, has been one of encouraging the local residents to actively participate in the creation and utilization of new services.

The experience gained from the IDA trail will be applied in Elie-St. Eustache. Hence, the selection of services and creation of new ones will be influenced by the participants. As a result the project plan cannot have the precision to which we are usually accustomed. However, we have developed a work plan that will enable strict budget control so that the project is completed successfully within the financial constraints.

The prime mission of the Manitoba Telephone System is to provide the best possible telecommunications service to its subscribers. It is in this spirit that the Manitoba Telephone System presents this proposal to research, plan, develop, trial and analyze new rural services in Elie-St. Eustache Manitoba.

1.2 METHODOLOGY

A project work plan is given in Section 4. The project is divided into six parts with all tasks in each part constituting a major milestone towards the completion of the undertaking. Each part also represents a logical division for review. The main thrust of this project is to upgrade the basic system in order that the electronic fibre highway is complete and configured to trial new rural services. These new services will be determined partially by new service suppliers and by the Elie-St. Eustache community and its residents. The stimulation and coordination will be provided by the Manitoba Telephone System.

The project will begin by building up an information base during the research phase which will further confirm and clarify information on new services developments on the domestic and international scene as well as provide an opportunity to further increase the participation of the numerous new services suppliers. The full participation of the Elie community and its residents to contribute and create local services will also be encouraged. During this research phase, the initiation of industrial exploration development work will be started.

The tight schedule, a result of the already determined basic service project, imposes an extensive overlap of research and planning activities to provide for an effective new service trial.

During the planning phase, a practical implementation plan will be developed which will take into consideration the Elie community and individual household needs, the limitations of budgets, technology, timing and other factors which are identified in the work plan and other sections of this proposal.

The third phase, which is the development task, is constituted of numerous activities designed to implement the plan by installation of necessary hardware and making the necessary final arrangements for the introduction of new services.

The fourth phase, which is the new services trial, is designed to assess and verify the new services under real field conditions to determine, among other things identified in the work statement, their usefulness to the Elie community and the individual households. The trial phase will be followed by a rigorous analysis of the information gathered leading to production of a planning approach for the introduction of the most promising service.

The sixth and last task will be to prepare a final report which will make the Elie Manitoba experience highly visible across the country.

The Manitoba Telephone System believes that the methodology and the information that will be developed during this project will greatly assist in the formation of national consensus on new telecommunications services and will be essential input for policy formation.

1.3 BACKGROUND INFORMATION

1.31 Basic System Description

The basic system involves the provision of a fibre optic based transmission and switching facility to 150 customers in the multicultural rural environment of Elie and St. Eustache, Manitoba.

The services provided will be single party telephony, 7 FM radio channels, access to any of 9 one way TV channels, and one full duplex data channel (56 Kilo bits) to each of the 150 subscribers.¹ It does not include the actual provision of peripheral terminal devices like TV sets, FM receivers and data terminals.

This activity is scheduled to go on for 18 months from the date of final acceptance (i.e. Sept. '81 to March '83). The budget for this part of the project is slightly over \$6M, to be split on a 50/50 basis between the government and the communications industry. In the memorandum of agreement, the possibility of further service experiments by the parties involved was anticipated. Such experiments if carried out, would enhance the value and raise the profile of a successful technology trial.

- (1) For detailed background information and system description please refer to Appendix 'B' A Rural Distribution Trial with Fibre Optics by B.B. McCallum, Elie Fibre Optics Trial Program Manager for the Canadian Telecommunications Carriers Associations and the Department of Communications.

1.32 Proposed New Services System Description

The system has been designed to provide an enhanced network capability overlaying those already provided in the Elie Technology Trial. On an overall basis, this enhanced network capability involves the carriage of the following generic classes of service systems.

- i) Remote Metering (utilities)
- ii) Alarm Forwarding (security)
- iii) Load Management (energy)
- iv) Broadband (pay TV, educational TV)
- v) Personal and Business Data (Telidon)

These systems have been defined with a modular, integrated and evolutionary approach towards the development of an overall electronic highway. They are modular in the sense that development of services and technologies are accomplished in components which can be transferred to other Canadian projects. The systems are integrated so that service and technology development is connectable and coordinated towards a set of mutually supporting goals.

The foregoing service classes are defined as follows:

- i) Remote Metering - This module involves electronically or electro-mechanically metering and in some instances recording a variety of parameters:
 - hydro meters
 - gas meters
 - water meters
 - grain bin moisture content
 - greenhouse temperatures
 - pay-TV etc.

ii) Alarm Forwarding - In this module, the appropriate signals from a remote monitoring element would be forwarded to a predefined destination such as:

- fire
- the police department or a neighbor
- combustion
- intrusion
- medical alert
- low water reservoir

iii) Load Management - This service module would include:

- information flow,
- selective load shedding/shaving,
- hydro,
- water

iv) Broadband - This service module includes the provision of a capability for a variety of high information rate services:

- video educational programming,
- pay-TV,
- shopping and community services

v) Personal and Business Data - This module will be the Telidon based videotex service:

- government services
- educational services
- business information
- health information
- transportation information

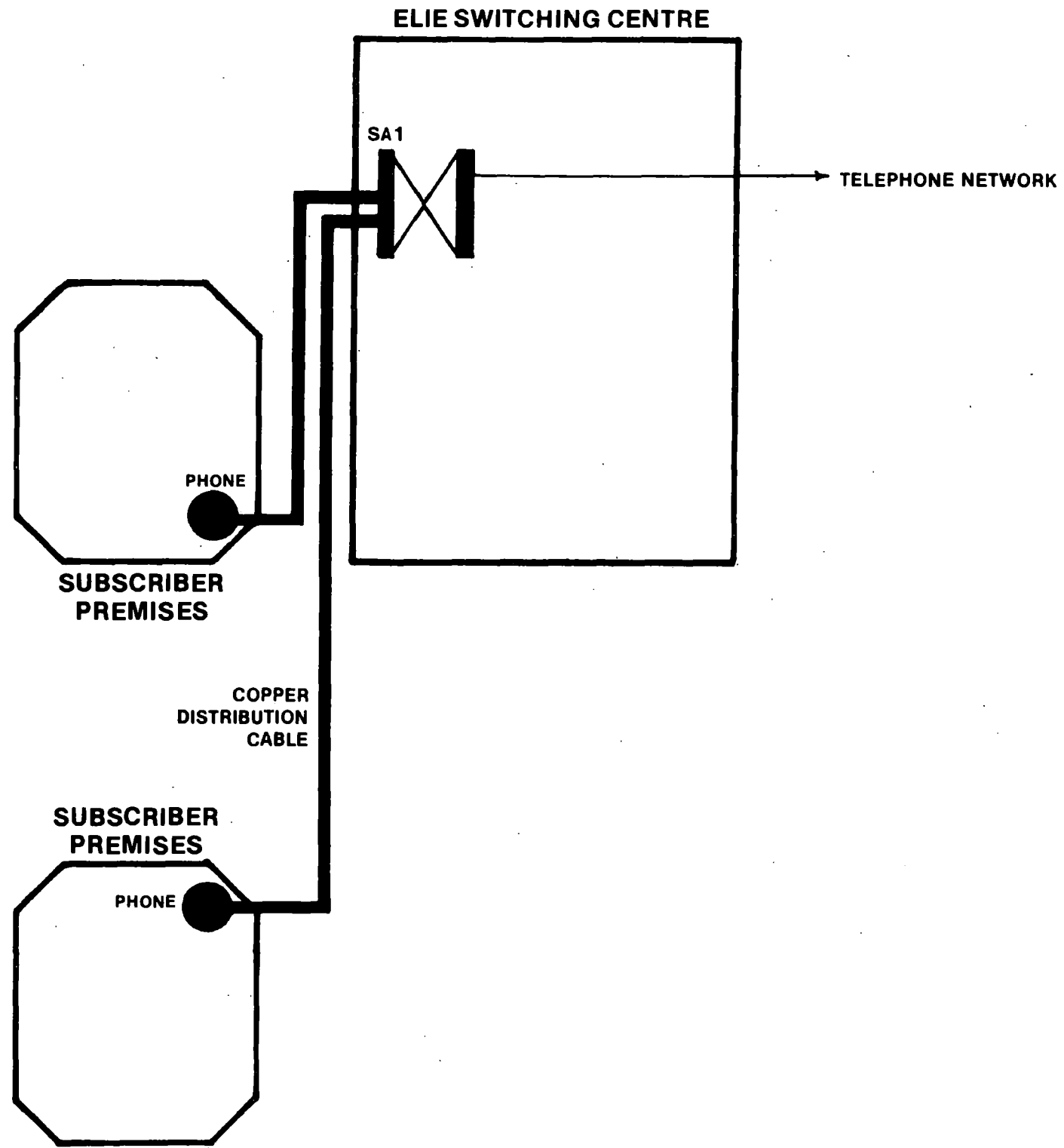
One of the benefits of organizing the services into these classes is the resulting ease with which the corresponding delivery systems can be configured.

The MTS approach in this new services proposal is to make the necessary enhancements to the basic system provided in the technology trial so that private entrepreneurs, both national and local, can provide the services. The service modules have been designed to encourage experimentation with the facilities. In this way, we will develop a practical understanding of new services and their impact on network development.

The following diagrams describe the changes in the network architecture in Elie resulting from the introduction of the basic technology trial, the enhancements proposed in the new services trial, and further possible planned developments. To conclude, the general layout of service supplier locations, connected through a central control complex in Winnipeg to the Elie central dial office with local distribution to households is shown in figure 4.

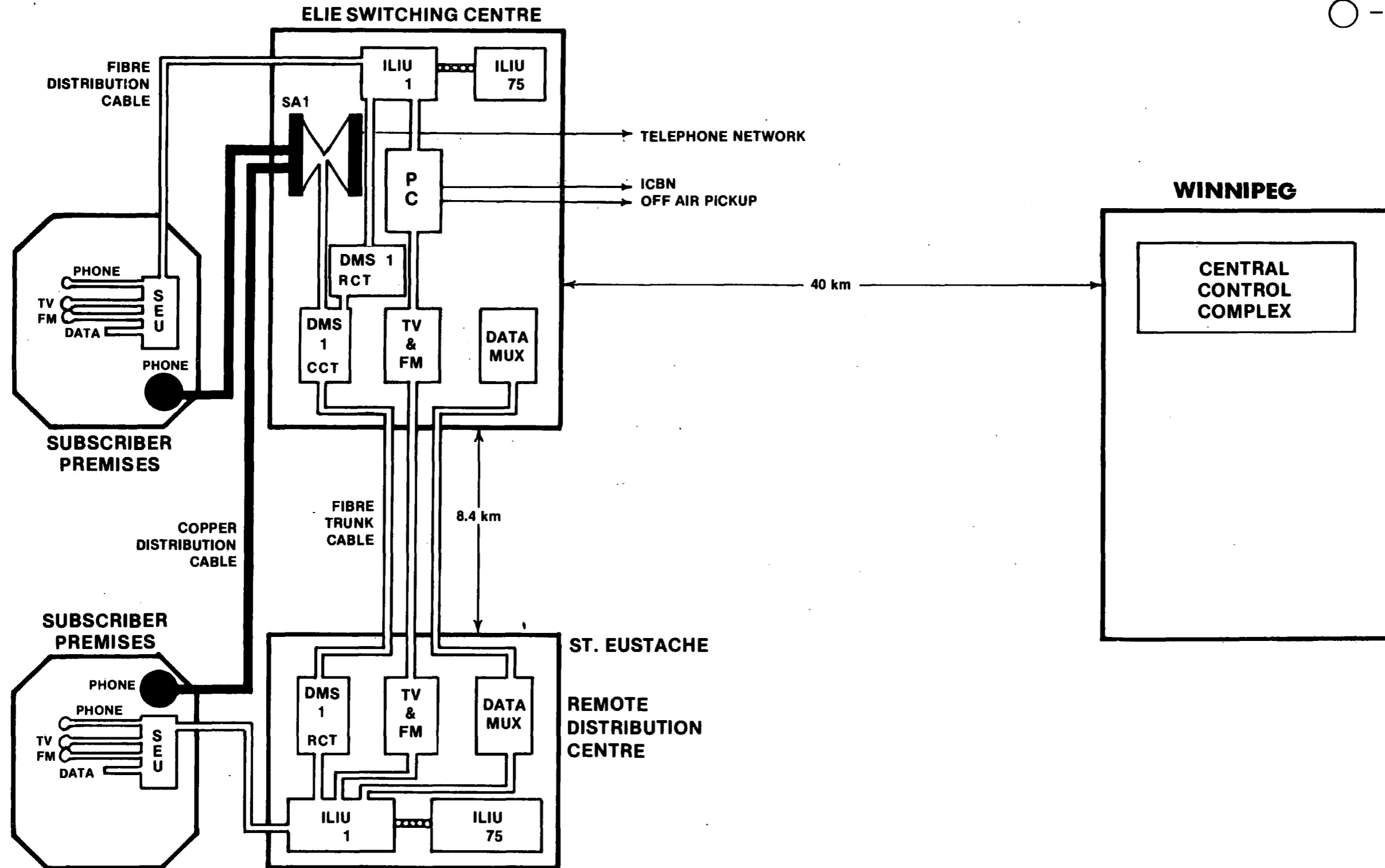
ELIE INTEGRATED RURAL COMMUNICATIONS SYSTEM TRIAL SYSTEM ARCHITECTURE

KEY
● — EXISTING



SA1 — Northern Telecom analog cross bar common control telephone switch.

ELIE INTEGRATED RURAL COMMUNICATIONS SYSTEM TRIAL SYSTEM ARCHITECTURE



SEU — SUBSCRIBER ENTRANCE UNIT: Provides electro-optic interface and primary multiplex function at subscriber location.

DATA MUX — Multiplex Interface between 56 kbit streams and the fibre trunk cable facility.

ILIU — INTEGRATED LINE INTERFACE UNIT: Provides electro-optic interface, multiplex and video switching functions at switching centre.

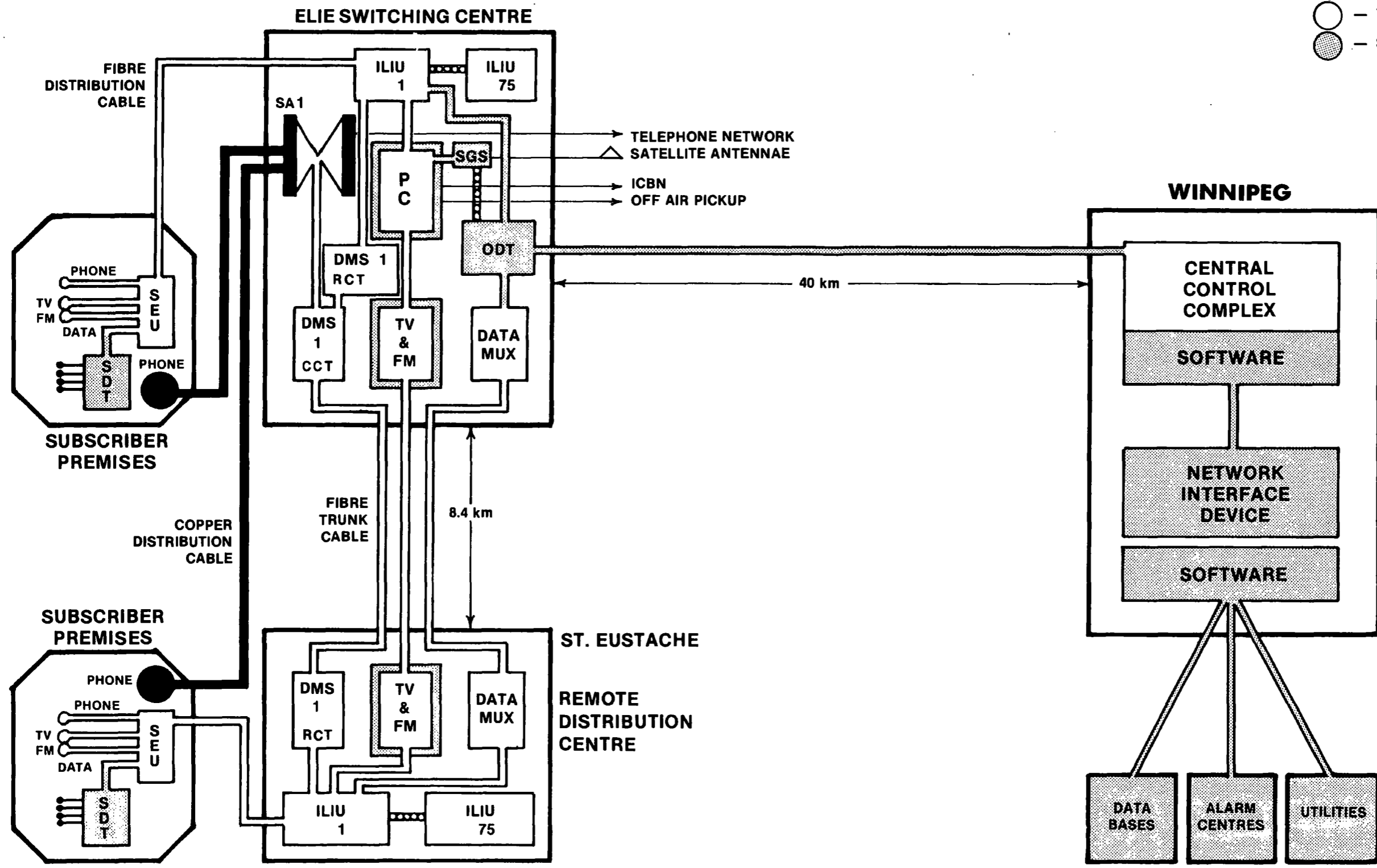
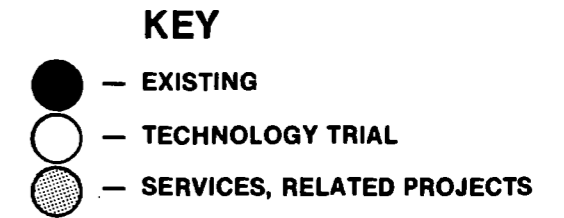
DMS 1 — Subscriber line concentrator.

PC — PROGRAM CENTRE: Provides multiplex for all video and FM radio programming.

CCC — CENTRAL COMPUTING COMPLEX: Provides the usage monitoring function and overall control of data network.

TV&FM — TRUNKING EQUIPMENT for v radio programs.

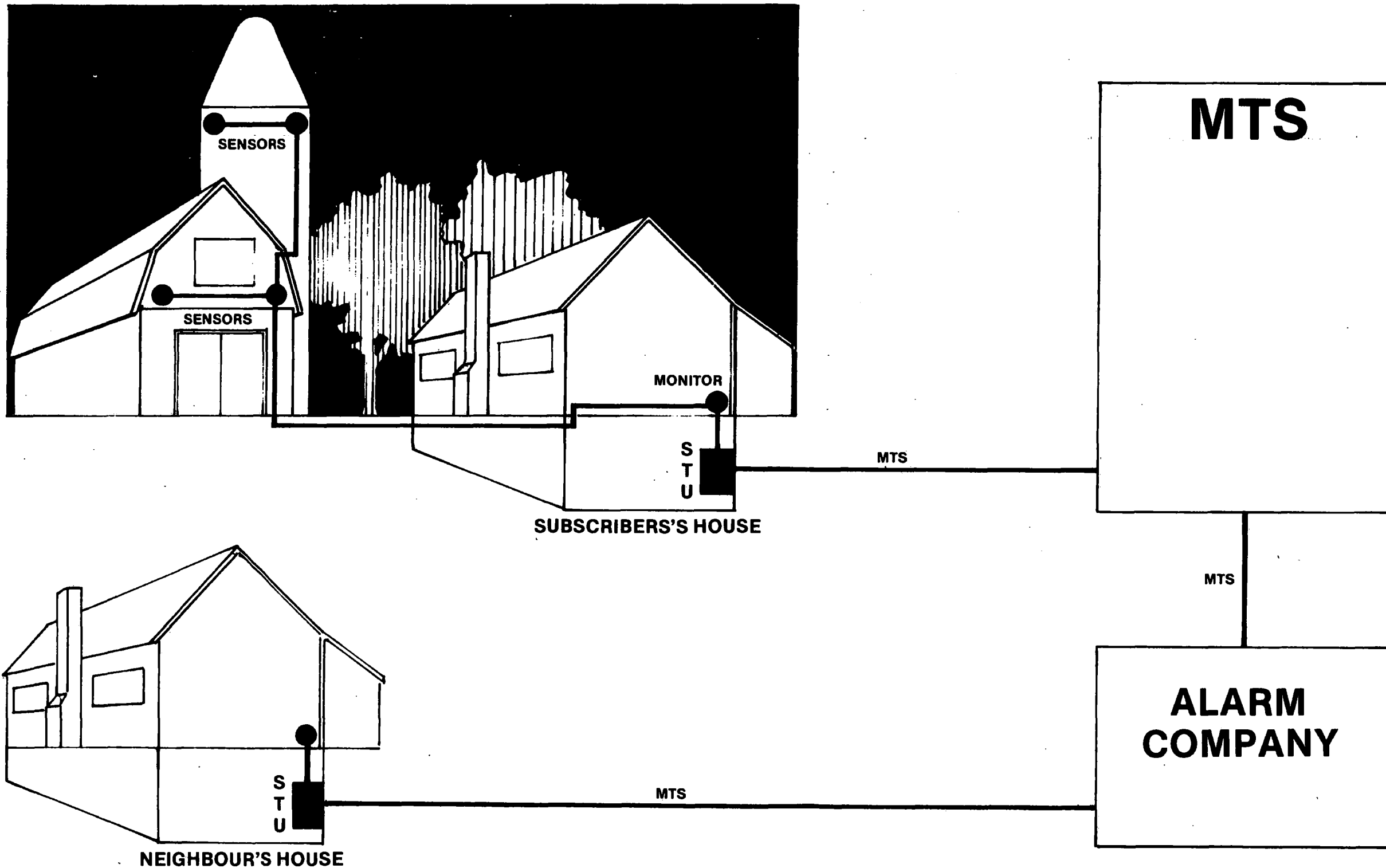
ELIE INTEGRATED RURAL COMMUNICATIONS SYSTEM TRIAL SYSTEM ARCHITECTURE



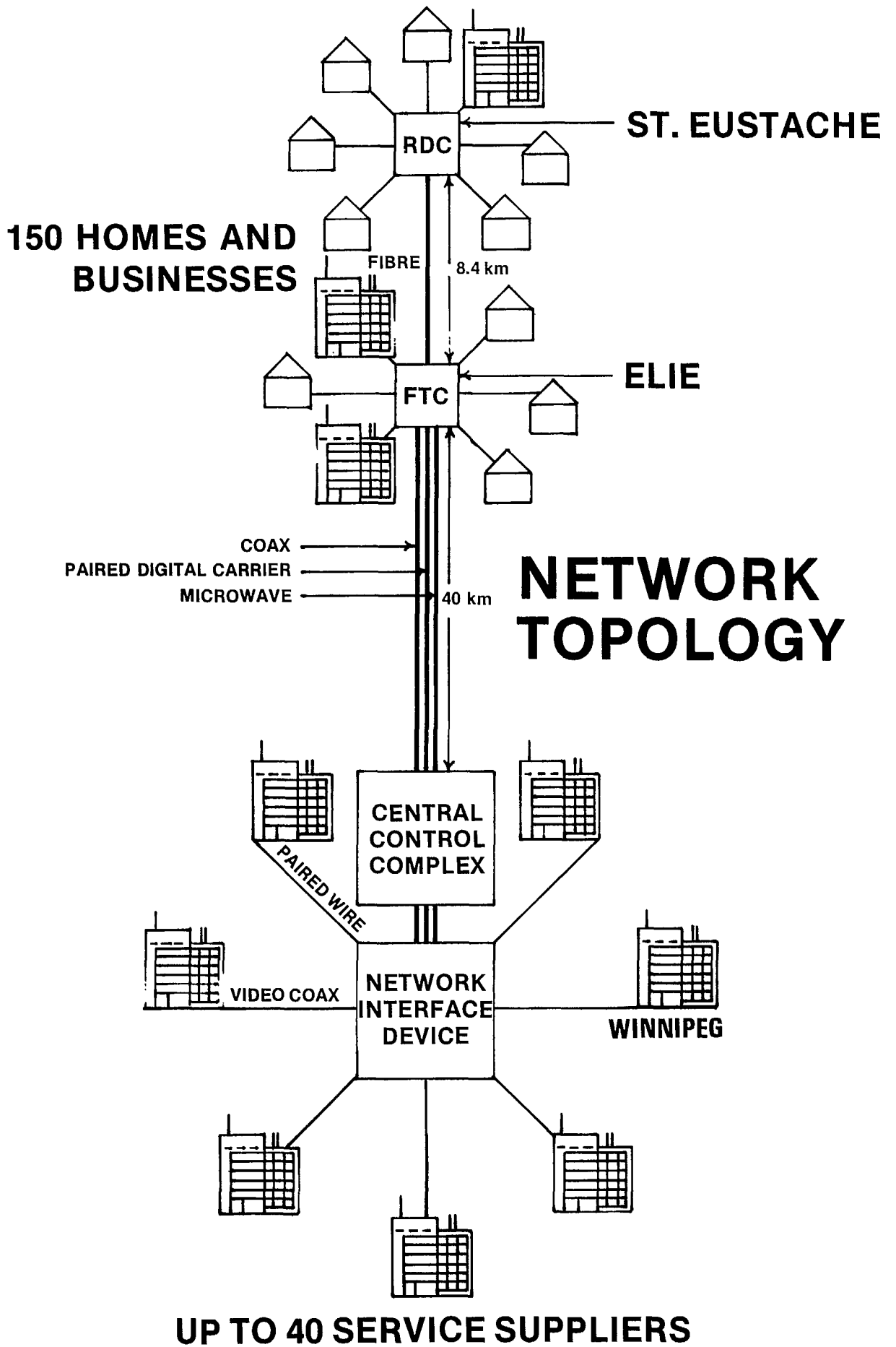
SDT — SUBSCRIBER DATA TERMINAL: Provides multiplex function between 56 kbit stream and the individual service inputs (e.g. Telidon).

SGS — SATELLITE GROUND STATION: Provides earth station facilities for satellite based telecommunication services.

ODT — OFFICE DATA TERMINAL: Provides multiplex (possibly switching) function to interface 56 kbit streams and outside world.



RURAL ALARM SERVICE CONCEPT



Brief descriptions of each of the modules enhanced or provided through this proposal are provided below.

Subscriber Data Terminal (SDT) - Data multiplexers will be provided at each subscriber location to interface between the home (Telidon, alarms subscriber polling responses, utilities, etc) and the 56 kilobit data port on the Subscriber Entrance unit (SEU).

Office Data Terminal (ODT) - This equipment will be provided at the central switch location in Elie. It will interface between the 150 data streams from the subscribers via the ILIU and the central control complex located in Winnipeg. The provision of a high speed data link connecting these two modules is also included as a part of this proposal.

Central Control Complex (CCC) - This module will be the control point for the various data services. Basic hardware provided through the technology trial will support the central usage monitoring function. A variety of enhancements, to primarily software, will be made on the services trial to facilitate overall control of the data network in this module.

Network Interface Device (NID) - An interface between the various information service suppliers and the Elie Trial is necessary because of the diversity of protocols used by those suppliers.

This proposal includes software enhancements to the network interface device which is provided through a related MTS project. Provision is made in this proposal for the data links between Elie service suppliers and the Network Interface Device.

Program Centre (PC) - Enhancement of the program centre will be necessary to facilitate the availability of additional broadband services such as pay TV and educational TV. These services could be provided via a satellite ground station located at Elie.

The network enhancements proposed here will enrich the basic technology trial by raising its profile and facilitating the provision of a broader spectrum of telecommunications services including those which can be developed by the rural subscribers themselves. MTS expects that the enhanced trial will yield a unique data base of information from which will be derived a statement, based on experience, of the communications needs of the modern day rural resident.

1.33 Telecommunications Environment

Effective and efficient telecommunications systems are essential to the sovereignty and integrity of Canada. Yet the diverse topography and demography of this nation makes building such systems extremely difficult and expensive. In spite of these difficulties Canadians are fortunate to have serving them, one of the finest communications infrastructures in the world.

This system with its over \$14.5 billion in plant is a coordinated mix of many operations owned and operated by both governments and private investors. Together, these companies invest annually over \$2 billion in capital over and above operating expenses. All of this activity takes place under regulatory controls at various levels of government. Therefore, the responsibility is shared between governments and industry to ensure that the industry continues to grow, generating economic activity and satisfying Canadian communication needs. The industry generates economic activity directly through Canadian operations, and also the international scene as well.

In terms of satisfying Canadian communication needs, we find that over 98% of Canadian homes are served with basic telephone service. However, many of those unserved are concentrated in the rural and remote areas. It is certainly a joint objective of industry and government to ensure that more is done to see that Canadians living in rural

environments have better access to high quality communication services. In recognition of this, the Federal Government established the Rural Communications Program in 1974. The program involved a variety of in-house and contracted studies which primarily examined the various aspects of providing conventional telephone and television services to the rural community. For its part, the telecommunications industry has spent billions of dollars to provide more and better service to the rural and remote customer. Examples of this in Manitoba are the new microwave routes providing high grade service to the north and an accelerated program to reduce the average number of customers on party lines.

The telephone companies have an existing rural network structure which can be upgraded with fibre on an evolutionary basis when the cost of fibre based distribution systems become competitive. This process could be accelerated because the revenues generated from services provided over integrated facilities could support a higher level of investment.

Of course, there is still much work being done to determine the needs of the rural residents and the technologies which are or can be made available to satisfy them. The various government bodies undertake some of this work themselves, and also encourage such work to be done by industry through grants, contracts and tax incentives. The work and progress made in this arena is important not only because of its impact on rural Canada, but because it is placing Canada in

a leadership position in the communications field. This is important because of the very large potential export markets available in the U.S., and other countries. Improvements in the telecommunications field on the international scene would help shrink Canada's deficit trade balance.

The Manitoba Telephone System is playing a leadership role in telecommunications systems development in Canada and therefore, the world. In the words of Howard Anderson, President of the Yankee Group Telecommunications Consultants, when speaking on the MTS IDA project, "Manitoba is doing now what AT&T may do in ten years".

There is, of course, a major initiative which has not yet been discussed and which has been undertaken jointly by private industry and the Federal Department of Communications. This is, of course, the Elie Fibre Optic Field Trial. Contrary to how things can happen in the rest of the world, the Federal Government has committed itself to support a joint program with the Canadian Telecommunications Carriers Association, Northern Telecom and Manitoba Telephone System. The project will cost over six million dollars and is designed to test the feasibility of using a rural fibre optic distribution system to deliver a variety of telecommunication services.

The Department of Communications has enhanced, through its program, Canada's position in the international scene through:

- its pioneering work in rural and remote communication systems.
- its pioneering work in Telidon,
- its pioneering work in space communications system,
- its important contributions to international standards.

On an overall basis, there has been a significant amount of R&D carried out by Canadian governments and industry. This work has lead to significant benefits to Canada, both in terms of direct economic activity and the improved efficiency of Canadian industry as a result of high quality telecommunication services. This also has a positive impact on our economic welfare through increased exports on the world markets.

As mentioned previously, all of this has been accomplished in a regulatory environment which involves federal, provincial and municipal governments. However, in spite of some problems with jurisdiction, the various levels of government do cooperate. An example of this is the agreement between the Federal government and that of the Province of Manitoba which was signed in November of 1976. "The agreement recognized the responsibility of the Federal Government for the regulation and supervision of all broadcasting and broadcast-related services (including pay TV) distributed by the Manitoba Telephone System, while at the same time

recognizing the responsibility of the provincial government for the regulation and supervision of other telecommunications distributed by this carrier. The Federal Government agreed that cable television operators may lease from the Manitoba Telephone System most of the cable and other equipment required to distribute the signals through the streets and home to home." (1)

In Manitoba, MTS is the dominant provider of telecommunications services. In this context, high quality and low cost communication systems are essential to maintain the economic and social viability of the province.

To fill this mandate, the MTS is continuously reviewing and studying the service needs in its urban and rural environment for both business and residential customers. With these needs identified, it undertakes the necessary research and development to satisfy those needs on a sound economic and financial basis. In this way, the residents of Manitoba have received high quality exchange and long distance service from a financially self-sufficient organization. At the same time, employees of MTS are developing competence, proficiency and satisfaction from the work they do.

(1) 76/77 Annual Report - Department of Communications

The employees of MTS in their efforts to provide high grade communications services have conceived, developed and carried out many projects which have broken new ground in the field. For example, the MTS is now operating and extending its services by means of its innovative Inter City Broadband Network (ICBN). This project involved using for the first time feedforward amplifier technology on 250 miles of coaxial cable to carry cable television signals to 9 rural communities. In addition, the system has provided coaxial cable distribution systems in communities where local CATV operators are licensed to distribute signals. In this way, the MTS has accelerated the coverage of national TV systems to the benefit of rural residents.

MTS is now extending this network as fast as its limited capital capability will allow. This is not to say that only CATV signals will be carried on the ICBN coaxial cable system. MTS is now in the process of putting digitized message traffic on the coaxial cable system through further innovative work. This developmental work has been done jointly with private enterprise organizations which, as a result, will be able to carry what they have learned to other projects beyond the borders of Manitoba.

In another dimension of coaxial cable technology, MTS is carrying out the IDA project. The initial phase of this undertaking involves providing 100 homes in the Winnipeg area with the capability to be served by a variety of information services provided by private enterprise organizations.

Upon successful completion of the initial field trial phase, MTS has plans to improve the variety and quality of the services provided at Headingley (the test bed site) and to expand the project horizontally beyond Headingley. This will involve providing more Manitoba residents with a coaxial cable based information services capability. Marketing trials will also follow the initial field technology trial. All of this work is being carried out with the joint participation of a variety of Canadian equipment and Canadian service supplier organizations. With the initial turn up of the IDA trial scheduled for summer 1980, MTS is pushing ahead our country's competitive position in the world. Through this work Canada will be able to generate significant amounts of foreign exchange by exporting complete communications systems including planning, design, manufacturing, installation and training.

From an economic development point of view, it is important that the communications industry be encouraged to participate in the Manitoba economy to a greater extent. This increased activity will help to alleviate the problem of relatively low average per Capita (4th lowest in comparison to ten provinces) wages and salaries in the province. Of course, with new and developing industries come new jobs and this is essential to the well being of our country.

This proposal is addressing, in particular, the needs of rural Canadians who comprise approximately 1/4 of our total population (30% in Manitoba). It is common knowledge that the rural residents have not had the same grade of communications services available as do their urban cousins. This is one of the reasons that there has been a general migration of rural residents to urban centres. The Manitoba Telephone System has, as a result, been accelerating its efforts to facilitate better telecommunications services for its rural customers. The ICBN/LBN projects are visible but in addition, MTS has undertaken a program to reduce the average numbers of subscribers on its rural lines to 4 or less by 1981. We are also participating in some fundamental R&D work jointly with private industry to develop an economic single party per line, integrated services capability for rural subscribers. The most nationally and internationally visible R&D activity addressing rural needs in which MTS is participating is the Elie-St. Eustache Fibre Optics Field Trial. The new services trial would further the enhance MTS position in this field of endeavor.



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NEW SERVICES TRIAL OBJECTIVES

2.1 PROJECT OBJECTIVES

The objectives of the new services trial are to:

- a) Assess the technical and economic feasibility of utilizing fibre optics technology for the introduction of new telecommunications services in rural areas.
- b) To expose telecommunications opportunities to the private sector and to develop a methodology for organizing and coordinating a large number of Canadian new service suppliers.
- c) Test the application of new rural telecommunications services under real environmental and operational conditions.
- d) Provide both government and industry with technical, economic and marketing data required for possible decisions with respect to policies, regulatory requirements and future choices of new services systems.
- e) Assist Canadian industry in developing new products to meet both Canadian and foreign requirements for new services in rural areas, and to provide Canadian industry with an incentive to develop a domestic systems capability in fibre optic and computer based technologies.

2.2 RESEARCH PHASE OBJECTIVES

General

To research new telecommunication services that will strengthen the evolutionary direction of this rural project to the benefit of both Manitoba and Canada.

Specific

- 2.2.1 Develop a data base of information on new services and new service suppliers for the Elie-St. Eustache trial.
- 2.2.2 Develop a detailed characterization of the people residing in Elie-St. Eustache to determine possible new service needs.
- 2.2.3 Identify and obtain information of new service developments in Canada through CTCA and other organizations.
- 2.2.4 Conduct an international survey of new service developments in the U.S., Europe and Japan, e.g. Hi-OVIS etc.
- 2.2.5 Conduct exploratory technical work on key technologies pertaining to the Elie-St. Eustache new service experiment by subcontracting the work.
E.g. - subscriber data multiplex.
 - software developments.

2.2.6 Issue a report on the research phase.

2.3 PLANNING PHASE OBJECTIVES

General

To develop a practical implementation plan of new experimental services for the Elie-St. Eustache community which may be used as a basis for the introduction of new telecommunications services in rural Canada.

Specific

- 2.3.1 Select new service suppliers for the Elie - St. Eustache project.
- 2.3.2 Develop an implementation plan for new services taking into consideration technological capabilities, budgetary constraints and the needs of the Elie-St. Eustache community.
- 2.3.3 Develop and provide interim standards for the guidance of information providers and electronic hardware suppliers.
- 2.3.4 Conduct exploratory development of key technologies to determine what further development of standards is required.
- 2.3.5 Establish a consensus acceptance of MTS plans from CTCA membership.

2.3.6 Issue a report on the planning phase.

2.4 DEVELOPMENT PHASE OBJECTIVES

General

To develop the capabilities required for the orderly introduction of new telecommunications services and technology in Elie - St. Eustache.

Specific

2.4.1 Develop technical and visual standards.

2.4.2 Monitor progress of information supplier projects to ensure that they meet project objectives.

2.4.3 Establish a dialogue with Elie - St. Eustache subscribers on the new services package.

2.4.4 Firm up plan for the introduction of services.

2.4.5 Select terminal devices most suitable for the Elie - St. Eustache trial.

2.4.6 Organize a team to monitor and assess the usefulness of the services provided.

2.4.7 Define acceptance test procedures.

2.4.8 Procure hardware.

2.4.9 Develop maintenance and repair procedures.

2.4.10 Issue a report on the development phase.

2.5 TRIAL PHASE OBJECTIVES

General

To provide a package of new telecommunications services for the rural Elie-St. Eustache citizens; to monitor their acceptance of the new services as an optimization process.

Specific

2.5.1 Install and accept hardware, sub-systems etc.

2.5.2 Integrate system and conduct extensive testing.

2.5.3 Analyze technical results and correct problems.

2.5.4 Introduce new services to the customer.

2.5.5 Monitor initial customer reaction to the new services.

2.5.6 Provide immediate feedback to suppliers on customer reaction.

2.5.7 Conduct in depth interviews with customers both individually and on a group basis to learn from their experience.

2.5.8 Issue a report on the trial phase.

2.6 ANALYSIS PHASE OBJECTIVES

General

To analyze all aspects of the new services trial and to extend these findings to a general introduction of the most promising services to rural areas.

Specific

2.6.1 Establish a value system of assessing services.

2.6.2 Assess the new services.

2.6.3 Evaluate the system concept used in Elie - St. Eustache and identify improvements.

2.6.4 Assess the technology used in Elie-St. Eustache and recommend improvements.

2.6.5 Examine the Elie - St. Eustache pilot project and determine the implications of introducing it on a total network basis in Manitoba.

2.6.6 Issue a service plan for a broader introduction of the most promising services.

2.6.7 Issue a report on the analysis phase.

2.7 FINAL REPORT OBJECTIVES

General

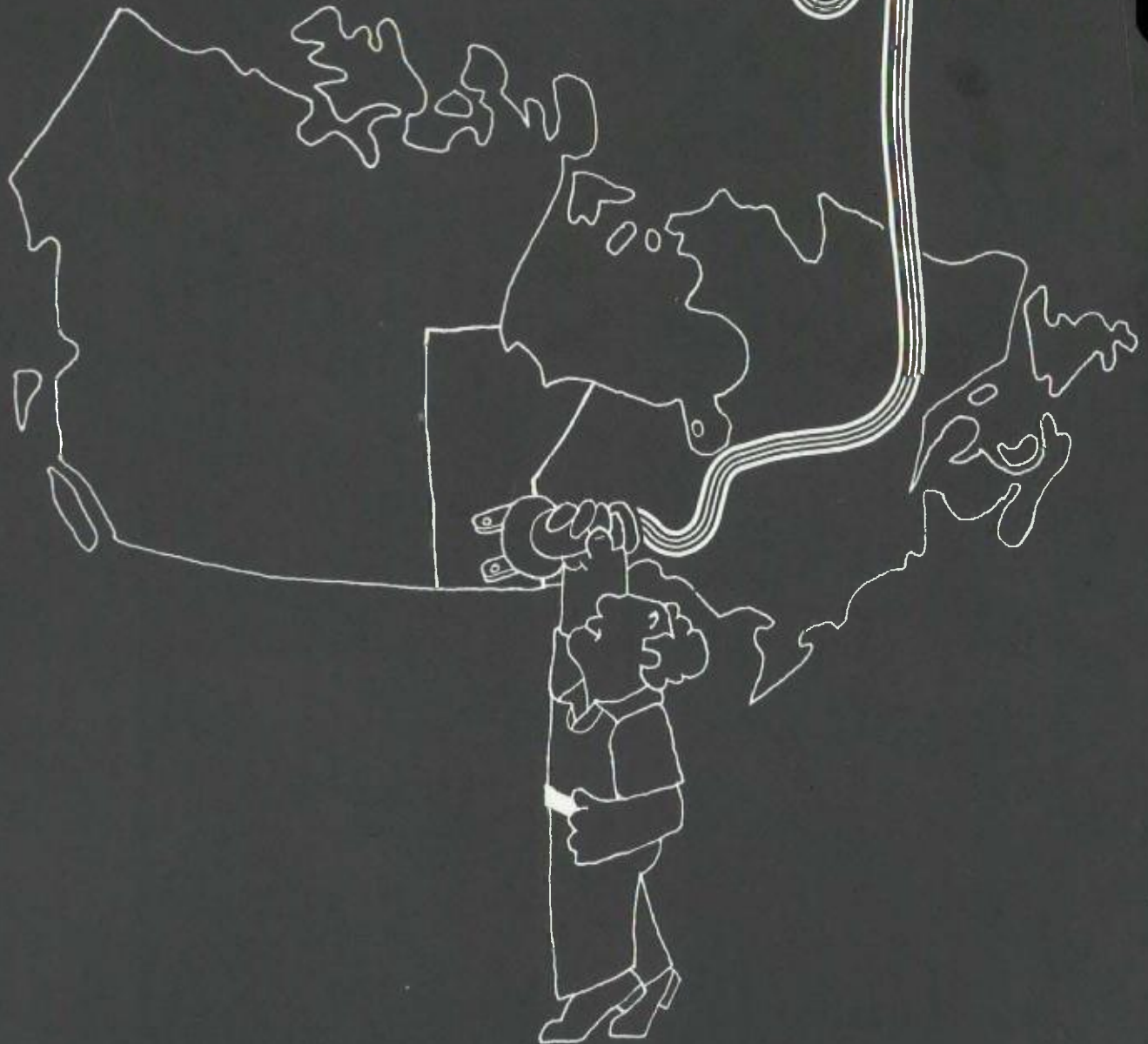
To issue a final report that will disseminate the findings of the new service trials and encourage the development of improved telecommunication services in rural areas.

Specific

2.7.1 Issue final report.



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STATEMENT OF WORK

3.1 RESEARCH PHASE

3.11 Information Data Base on New Services and Suppliers

MTS will continue to contact, inform and solicit organizations which have the potential to provide services on the Elie - St. Eustache project.

3.111 MTS will gather detailed cost and technical information on new service systems in the following categories:

- i) Remote Metering
- ii) Alarm Forwarding
- iii) Load Management
- iv) Broadband
- v) Personal and Business Data

3.112 MTS will to assemble an information database on new services from which an experimental new service package will be selected for the trial.

3.113 This activity will be undertaken on the Winnipeg, Manitoba and the National scene.

3.12 Characterization of the Elie-St. Eustache Community and
Initial Identification of New Service Needs

MTS undertakes to conduct a detailed characterization study of the Elie-St. Eustache community and its residents to identify and scope the potential need for new services.

3.121 MTS will develop a survey questionnaire and carry out a survey of the Elie-St. Eustache project residents.

3.122 MTS will analyze the resulting survey data and establish a preliminary criteria for the selection of applicable new services for the Elie-St. Eustache community.

3.13 Obtain Information on New Service Developments in Canada

MTS together with the CTCA will identify and obtain information on new service developments in Canada which are relevant to the rural Elie-St. Eustache environment.

3.131 MTS shall provide information on new service experience gained from the IDA project.

3.132 MTS will contact the appropriate organizations and obtain information on new service trials such as the BellCanada Vist II project, AGT new service trial, and others which are primarily designed for mainly urban needs.

3.133 MTS will analyze and document this data to determine its relevance to the rural Elie - St. Eustache project.

3.14 International Survey

3.141 MTS shall conduct an international survey on new service developments in the U.S., Europe and Japan by visiting administrations and laboratories to determine what service and technology developments are taking place.

3.142 MTS will use the findings of this survey

- i) to further assess the Elie-St. Eustache project in the light of international developments,
- ii) to incorporate service and technology changes wherever possible to maintain a leadership position, and
- iii) to provide feedback to DOC, CTCA and industry on developments in this area.

3.143 MTS will prepare and present a description of the Elie-St. Eustache project to foreign administrations to promote Canada's position.

3.144 MTS will prepare and present papers for international conferences.

3.145 MTS will enlist the support and participation of Canadian suppliers to the Elie-St. Eustache project whenever possible to strengthen Canada's industrial visibility during the survey.

3.15 Technical Specifications

MTS will prepare technical specifications for exploratory technical work on technologies pertaining to the Elie-St. Eustache new services experiment.

3.151 MTS will determine from the "basic system" specification how to enhance the data facility to provide the following services:

- i) Remote Metering
- ii) Alarm Forwarding
- iii) Load Management
- v) Personal and Business Data

3.152 Preliminary specifications on data multiplexing and software supervisory system will be developed by MTS in conjunction with suppliers.

3.16 Research Report

3.161 MTS will prepare a report on the research phase activities which will contain in the following information:

- i) Summaries of work done in activities
3.11 to 3.15
- ii) Recommendations as to how the project be continued within budgetary constraints.

3.2 PLANNING PHASE

3.21 Review and Select New Service Suppliers

3.211 MTS shall develop selection criteria on which basis new service suppliers will be invited to participate in the trial.

3.212 MTS will review the project with all interested service suppliers to determine their ability to participate in the trial.

3.213 MTS will select and enlist new service suppliers based on the chosen selection criteria.

3.214 MTS will prepare and sign agreements with service suppliers.

3.22 Implementation Plan for New Services

3.221 MTS shall develop an implementation plan for the new services taking into consideration the following:

- Elie - St. Eustache needs
- technological capabilities
- budgetary constraints
- new service supplier limitations

3.222 MTS shall take into consideration the introduction of basic services provided through the technology trial when the new service package is developed by allowing time for customer adjustments.

3.223 MTS shall provide for a subscriber learning and exposure period for each service provided.

3.224 MTS shall verify with service suppliers the implementation plan.

3.23 Interim Standards

3.231 MTS shall develop interim standards for the guidance of information providers.

3.232 MTS shall develop interim standards for the guidance of electronic hardware suppliers.

3.233 MTS shall verify the ability of both information providers and hardware suppliers to meet the standards.

3.234 MTS shall refine and issue interim standards.

3.24 Exploratory Development of Key Technologies

3.241 MTS shall define in detail the work to be undertaken by hardware and software suppliers.

3.242 MTS shall contract out the work to hardware and software suppliers.

3.243 MTS will direct and monitor the work in progress.

3.244 MTS will accept deliverables and assure quality of performance.

NOTE: Further information on key technology undertakings is provided in Schedule 1, Appendix 'C'.

3.25 CTCA Concensus

3.251 MTS shall encourage a concensus acceptance of MTS project plans.

3.26 Report on Planning Phase

3.261 MTS will prepare a report on the planning phase activities which will contain the summaries of work done in activites 3.21 to 3.25.

3.26 Report on Planning Phase

3.261 MTS will prepare a report on the planning phase activities which will contain the summaries of work done in activities 3.21 to 3.25.

3.3 DEVELOPMENT PHASE

3.31 Technical and Visual Standards

3.311 MTS will refine and update technical standards for the purpose of assuring the compatibility and basic quality of the Elie - St. Eustache trial system.

3.312 MTS will refine and update visual standards for the purpose of assuring the compatibility and basic quality of the Elie - St. Eustache trial system.

3.313 MTS shall verify the ability of both information providers and hardware suppliers to meet the revised standards.

3.314 MTS will issue revised standards as appropriate.

3.32 Information Supplier Projects

3.321 MTS shall monitor information supplier projects to determine their progress and will take corrective action whenever necessary.

- by assisting suppliers with technical information.
- by identifying scheduling problems and by taking corrective action as appropriate,
- by assessing the supplier's capability to meet the standards and taking corrective action as appropriate.

3.33 Dialogue with Elie - St. Eustache Subscribers

3.331 MTS will continue its dialogue with the Elie-St. Eustache subscribers by introducing them to the new package of services.

This will be done both on an individual household and group basis.

3.332 MTS will encourage and assist subscribers to initiate their own community services.

3.34 New Services Implementation Plan

3.341 MTS shall refine the implementation plan for the new services taking into consideration the following factors:

- Technical developments
- Elie-St. Eustache community and individual household needs
- Technical constraints of the basic system
- Financial constraints
- Status of service supplier systems

3.35 Terminal Devices

3.351 MTS shall select appropriate network terminal devices to support the new services package.

3.352 MTS shall assist new service suppliers in the selection of appropriate terminal devices for specific services.

3.36 Team to Assess New Services

3.361 MTS will organize a team of marketing, technical and customer service specialists to monitor and assess the usefulness of the services provided.

3.37 Acceptance and Maintenance Procedures

3.371 MTS will develop acceptance and maintenance procedures for system hardware and software.

3.38 Installation, Maintenance and Repair Procedures

3.381 MTS will develop installation, maintenance and repair procedures for the new service package.

3.39 Procure System Hardware and Software

3.391 MTS shall procure the selected hardware (including test equipment) and software required for the carriage of the new services package within budget limitations.

3.392 MTS shall develop the communications interface system required to link Elie-St. Eustache with the outside world.

Note: Further information on system hardware procurement is provided in Schedule 2, Appendix 'C'.

3.310 Development Phase Report

3.3101 MTS will prepare a report on the development phase activities which will contain the summary of work done in activities 3.31 to 3.39.

3.4 TRIAL PHASE

3.41 Installation and System Acceptance

3.411 MTS shall install the new services system up to and including data multiplex equipment on the customer premises.

3.412 MTS will conduct acceptance tests to assure the equipment meets specifications.

3.413 MTS shall co-ordinate the installation of new service supplier equipment at the customers' premises.

3.414 MTS shall install the support facilities required for data and video link communications with the Elie-St. Eustache basic network within budget limitations.

3.42 System Integration

3.421 MTS shall integrate the new services package with the basic system.

3.422 MTS shall conduct extensive systems measurements to determine the limitations and quality of the integrated system.

Note: Further information on system integration is provided in Schedule 3, Appendix 'C'.

3.43 Analysis of Technical Results

3.431 MTS shall analyze measured parameters and determine the appropriate action required.

3.44 Introduction of New Services

3.441 MTS shall introduce new services according to the implementation plan.

3.442 MTS shall provide operations support to suppliers of new services maintenance of the Elie network enhancements.

3.443 MTS shall maintain the enhanced Elie network.

3.444 MTS shall provide data and video communications links between Elie and Winnipeg for the duration of the new services trial.

3.45 Customer First Reaction to New Services

3.451 MTS shall interview and monitor the subscribers' first reaction to the new services to determine customer satisfaction.

3.46 Feedback to Service Suppliers

3.461 MTS shall provide feedback to the new service suppliers based on the subscribers' first reaction.

3.462 MTS shall assist where possible in correcting problems which will improve customer satisfaction.

3.47 Customer Interviews

3.471 MTS shall develop a questionnaire and conduct a survey to determine customer reaction to new services.

3.472 MTS shall conduct group discussions with customers to acquire further feedback on the new services package.

3.473 MTS shall analyze and document the above data, provide feedback to the service suppliers.

3.48 Report on Trial Phase

3.481 MTS shall prepare a report on the trial phase activities which will contain the summary of work done in activities 3.41 to 3.47.

3.5 ANALYSIS PHASE

3.51 MTS shall establish a value system concept for assessing new services.

3.52 MTS shall assess new services using the established value system concept.

3.53 MTS shall evaluate and assess the integrated services system concept used in Elie-St. Eustache and prepare recommendations for improvements.

3.54 MTS shall assess the technologies used in the Elie - St. Eustache project and recommend improvements.

3.55 MTS shall examine the Elie-St. Eustache project and determine the feasibility of introducing it on a total network basis in Manitoba.

3.56 MTS shall prepare a plan for a broader introduction of the most promising service on an integrated network basis.

3.57 MTS shall prepare a report on the analysis phase activities which will contain the summary of work in activities 3.51 to 3.56.

3.6 FINAL REPORT

3.61 MTS shall prepare a final report on all activities covered in sections 3.1 to 3.5 including recommendations to the Federal Government on policy and regulatory issues affecting new service introduction.

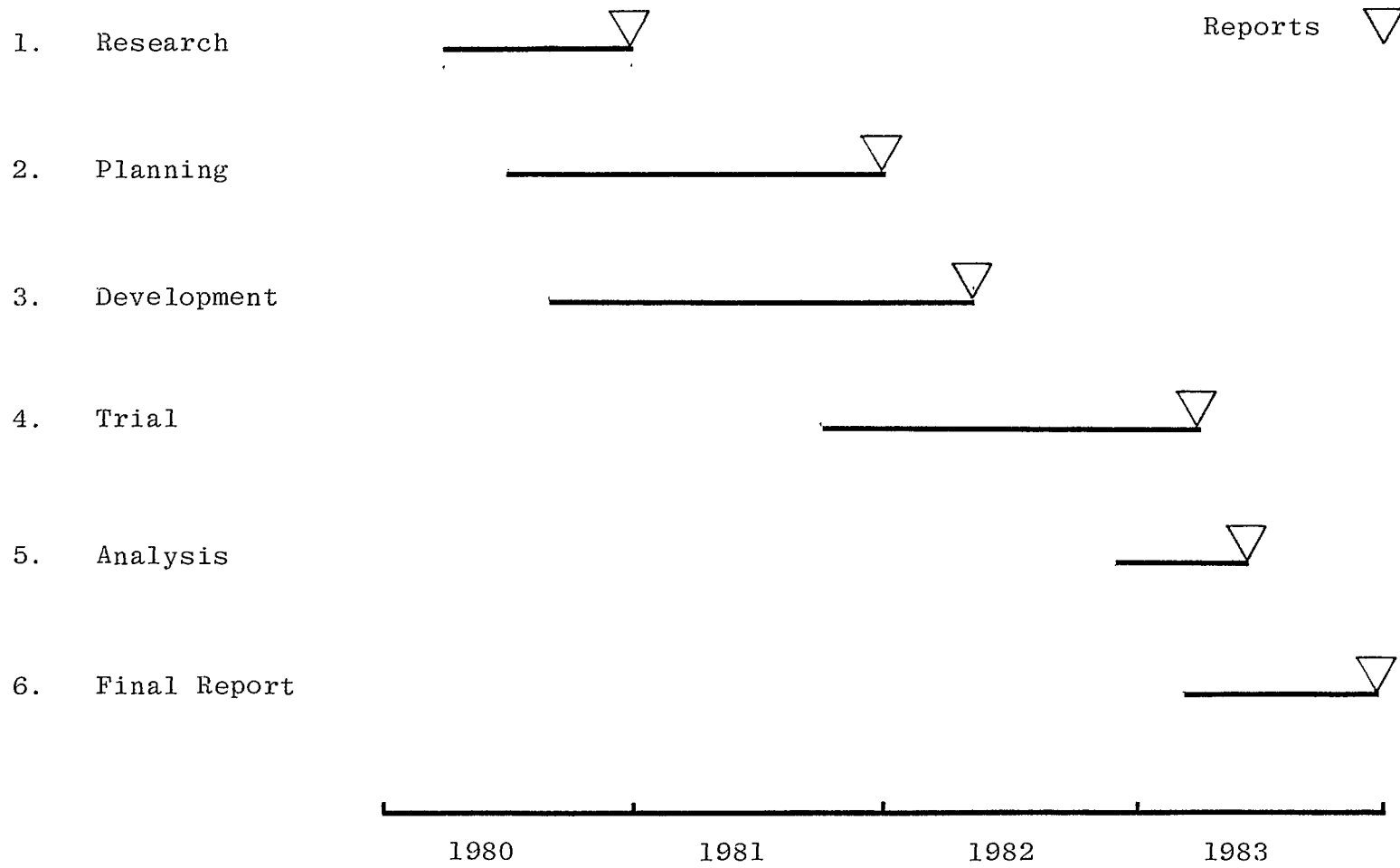


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ACTIVITY

SCHEDULE



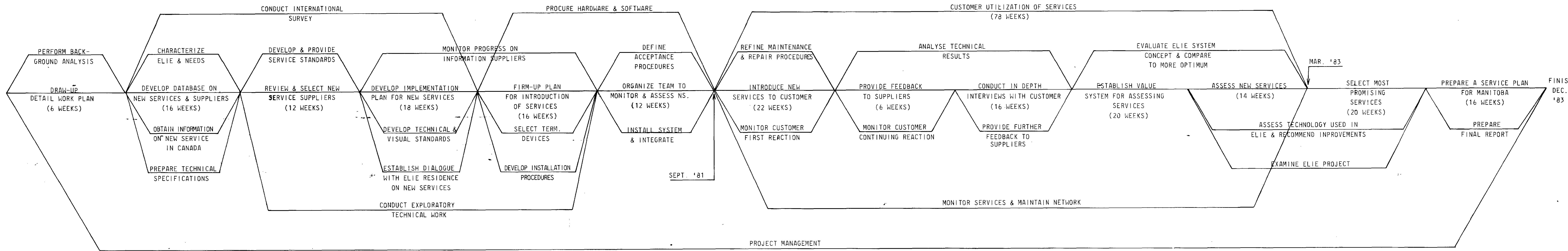
ISSUE REPORT ON RESEARCH REVIEW MEETING CTCA & DOC
 FEB. '81

ISSUE REPORT ON PLANNING
 DEC. '81

ISSUE REPORT ON DEVELOPMENT
 MAY '82
 JUNE '82
 REVIEW MEETING

ISSUE REPORT ON TRIAL REVIEW MEETING
 MAR. '83
 ISSUE REPORT ON ANALYSIS
 AUG. '83

ISSUE FINAL REPORT FINAL MEETING
 DEC. '83



NOTE: PLANNED START DATE
 FEB. 1, 1980

ELIE PROJECT- NEW SERVICES TRIAL
 PROJECT FLOW CHART

NOTE: MEETINGS WITH THE SCIENTIFIC AUTHORITY WILL TAKE PLACE ON A REGULAR BASIS TO ENSURE THAT DOC'S MAJOR INTERESTS ARE ADDRESSED. THE FREQUENCY AND/OR TIMING OF THESE MEETINGS WILL BE DETERMINED DURING CONTRACT NEGOTIATIONS



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PROJECT MANAGEMENT

5.1 INTRODUCTION

In order to ensure a successful Trial the Manitoba Telephone System proposes to establish a project management team to carry out this undertaking. Wherever possible MTS will attempt to fit this project into its existing organizational structure. Given in this proposal is MTS' historical background and general organization as well as that specific part of the overall organization which will be dedicated to the proposed work program. In addition, other relevant information such as how the work program will be managed is provided.

5.2 HISTORICAL BACKGROUND

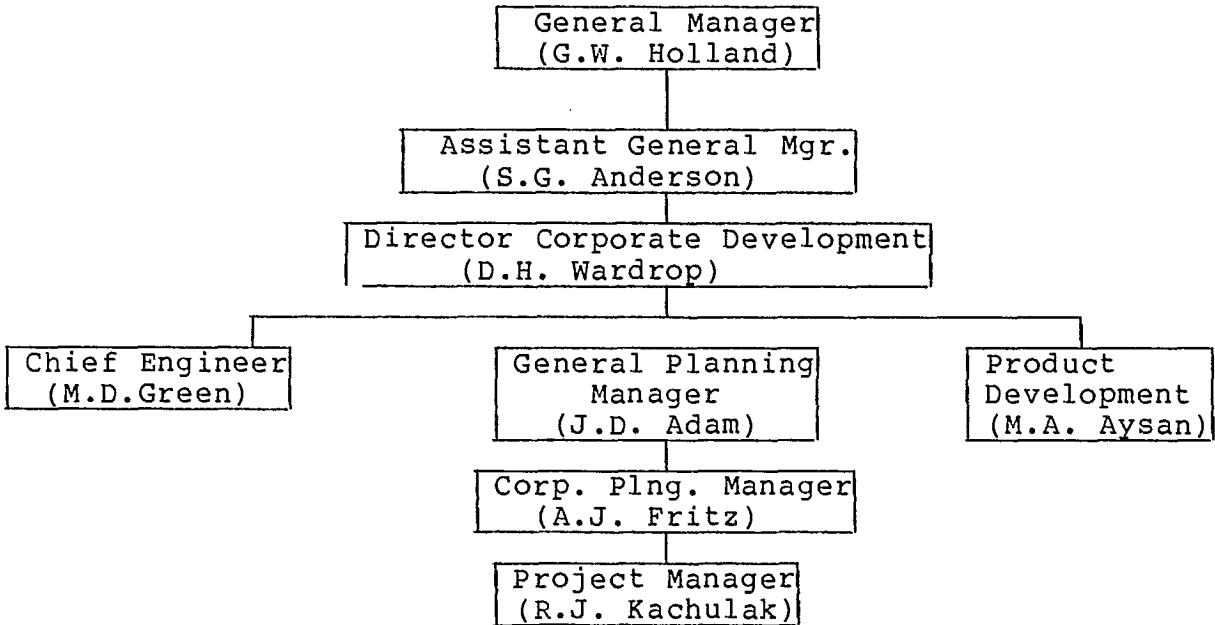
Manitoba Telephone System has over 70 years experience in providing telecommunications service to Manitobans. The high quality of service provided by the system is mainly due to highly developed management skills possessed by the MTS staff.

Project management skills have been used by MTS in the past with great success on advanced services projects.

This can be illustrated by two recent major projects that were undertaken, one being the Richardson's Securities Network, and the second being Project IDA which we described in Section 1 of this proposal.

5.3 COMPANY ORGANIZATION

The following is the organization chart of the Corporate Development Directorate segment which will manage the proposed work program.

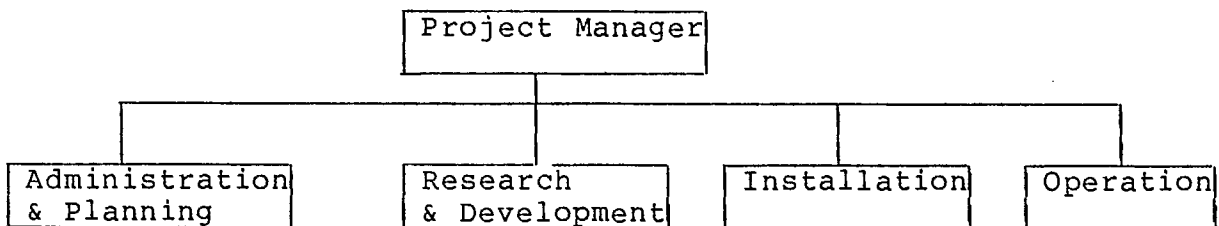


5.4 PROJECT ORGANIZATION

The project team will consist of a multi-discipline group of people working in the following areas:

1. Administration & Planning
2. Research and Development
3. Installation
4. Operations

Within each of these areas a team co-ordinator will be appointed to work with the team members and co-ordinate all activities of that team. The team sizes will vary with the amount and timing of work throughout the project period.



5.5 DETAILED PLANS FOR MAJOR ASPECTS OF THE PROJECT

The following are details of major aspects of the project and how they relate to the working teams:

5.51 Administration & Planning

This team will be responsible for the project administration. This will include:

- contract activities
- scheduling
- purchasing
- accounting
- service supplier interface
- customer interface
- public affairs
- legal affairs
- customer training

Within this mandate the MTS administrative team will:

- negotiate and administer all contracts signed (i.e. with DOC, Equipment Manufacturers, Service Suppliers, any lease agreements with outside parties etc.).
- administer an overall project schedule developed from the individual team schedules.
- procure all equipment required by the project teams for the services trial.
- carry out billing and tracking activities to insure budgetary and contractual obligation are being met.
- draw up a detailed work plan for the Services Project.
- be responsible for the dissemination of all information, reports and schedules to appropriate bodies.

- support service suppliers in their pursuit of funding for their participation in the Elie Trial.
- ensure that service suppliers are provided with all necessary technical data.
- ensure that customer is well informed and trained, ensure that all necessary documentation is in the participants hands.
- address all legal aspects of the services trial (i.e. liabilities, waivers of claim etc.).
- provide a Public Affairs Package that will enhance the image of this trial as well as that of the participants (i.e. DOC, CTCA, MTS, NTL) both on the national and international scene.

5.52 Research and Development

There are two specific areas that must be addressed by this team:

1. Technology
2. Market

Both of these require research and development work which cannot be totally separated and will be addressed by the one team.

The technology aspect has been split into three specific areas:

- A. Network Design
- B. Terminals & System Protocol
- C. Software Development

A. Network Design

In this area the team will be responsible for:

- network design (i.e. from service supplier to participants home but excluding NTL basic system).
- development of network standards such that all necessary external criteria (i.e. BP 23, data inter face standards, etc.) are met.
- integration of the services trial technology with the NTL technology.

- supervision of subcontractors' activities
- providing the service suppliers with appropriate technical network data.
- selecting equipment manufacturers to provide system hardware.

B. Terminals & System Protocol

In this area the team will be responsible for:

- develop terminal & protocol standards to be used on the trial
- ensuring that these standards are introduced into the network design process.
- ensuring that all service suppliers are aware of the standards to be used in the creation of their data bases.
- selecting the terminals to be used on the trial.
- supervision of subcontractor activities.

C. Software Development

In this area the team will be responsible for:

- software development related to the services trial with the exception of service supplier software. This development will include the administration and maintenance software for local network, software relating to the control link between local network and the network interface device.
- consultative support to suppliers in their software development.
- turn up and testing of software modules.

The marketing activities have also been split into specific areas:

- A. Market Research
- B. Service Planning

A. Market Research

The following are the areas that will be addressed:

- a characterization of the community of Elie-St. Eustache and its residents
- carry out a needs analysis with the Elie-St. Eustache residents providing their views
- develop a database of service suppliers
- review and select the services to be implemented on the trial. This will also entail the selection of the service suppliers
- conduct in depth interviews with subscribers
- establish a value system for assessing new services
- participate in project evaluation and input to final report
- provide information for feedback to service suppliers on ongoing basis
- carry out monitoring of services and their usage throughout the trial period.

B. Services Planning

The following are areas that will be addressed:

- develop an implementation plan for new services.
- organize the team to monitor and assess services.
- carry out the assessment of services.
- selection of most promising services.
- participate in the preparation of a services plan for Manitoba in conjunction with technology group.

5.53 Installation

The team will be responsible for the installation of all equipment related to the Elie Services Trial. This will include:

- local network, multiplex equipment
- communication link from Elie-St. Eustache to the service suppliers.

Within the context of this mandate the team will:

- develop an overall installation schedule
- co-ordinate installation of all involved organization
- ensure that all necessary equipment and materials are delivered to site.

- supervise subcontractor installation activities
- provide an adequate number of well trained personnel for installation requirements.

The team will also be responsible for system line up and acceptance testing for this trial. This will include:

- local network
- communication links
- end to end testing
(i.e. service supplier to Elie subscriber)

Within this mandate the installation team will:

- develop a testing plan
- identify necessary test equipment
- co-ordinate testing
- produce a testing report with all pertinent data as to the test results.

5.54 Operations

The team will be responsible for the ongoing operations of the new services trial. This will include:

- routine front line maintenance
- trouble shooting
- ongoing interface with equipment manufacturers
- development of operational statistics and reports.

Within the context of the work outlined above:

- MTS will maintain the equipment up to but not including service supplier's hardware or software.
- MTS will maintain the system to the prescribed standards as laid out in the development stage of the project.
- MTS personnel will repair troubles as they occur; where this is not possible manufacturer support will be obtained to rectify any abnormal situations.
- MTS operations personnel will maintain close liaison with the manufacturers for any new developments in the equipment in use on the services trial.
- MTS operations personnel will compile the statistics and develop maintenance and trouble reports for the service trial. These documents will form part of the overall reports to be developed by the project team.

As previously stated, MTS is proposing to use a multidiscipline group of employees to carry out this project. In order to provide a perspective as to MTS's resource capability we have provided the profiles of personnel in Section 8 of this proposal.

5.6 SPECIFIC AND OTHER MANAGEMENT TOOLS AVAILABLE

In carrying out the management of this project a mechanized program called "Projacs" will be utilized to assist in controlling this complex project.

The following is a brief description of this program.

The IBM Project Analysis and Control System (PROJACS) is designed to assist project managers in planning, scheduling and monitoring. In addition to PERT/CPM and Precedence Notation, Time Analysis, Multi-Network Resource Allocation, Cost Evaluation, and other techniques, the modularity of this package and the flexibility of its use aid in achieving these goals.

MODULARITY

PROJACS is a modular set consisting of:

- . The MAIN PROCESSOR handles input data, manages files and produces most of the reports. It also performs network analysis and time computations, and supervises the other processors.

- . The RESOURCE ALLOCATION PROCESSOR is based upon the results of time analysis to schedule activities in accordance with resource constraints.

- . The COST EVALUATION PROCESSOR computes direct costs for the activities, summarizes these costs by functional subdivisions of the project, and spreads them over time periods.

- . The NETWORK PREPARATION PROCESSOR performs two subsidiary functions: management of a standard subnet library and network drawing.

The MAIN PROCESSOR is a prerequisite for the other processors which are optional.

The modularity of PROJACS allows the user to tailor his project management system according to his specific needs, and to implement it progressively.

FLEXIBILITY

PROJACS is flexible in that it provides a set of control statements which specify the functions to be executed in a run and the options required. For example, the project analyst can decide to update a network without re-analyzing the critical path, and, in another run, request a time analysis

5.7 POSSIBLE IMPACT ON OTHER PROJECTS

In assessing the Elie- St. Eustache Trial it becomes apparent that other projects could be affected. For example, there is a very real possibility of service supplier interchange between Project IDA and this service trial in light of technological similarities.

Impact on other projects outside MTS territory is difficult to assess without further in depth study.

5.8 SUBCONTRACTING

MTS proposes to subcontract out portions of this project. In dealing with subcontractors it is MTS's intention through the management team to maintain appropriate control of all subcontractors and to ensure that subcontractors provide adequate management control mechanisms to ensure a successful trial. It will also be necessary to ensure that proprietary rights are respected.

5.9 POINT OF CONTACT

In order to maintain a smooth running and effective trial, it is proposed that only one contact be established at MTS, that is the Project Manager. It will be his responsibility to interface on all matters pertaining to MTS involvement in the Trial.

Project Manager: R.J. Kachulak
Manitoba Telephone System
489 Empress Street
P.O. Box 6666 R3C 3V6
PH: (204) 947-7707



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PRICE PROPOSAL

6.1 SUMMARY

MTS proposes to undertake this new services project on a shared basis between Government and Industry. The total cost of the project is estimated to be \$3.33 million assuming a February 1980 start date and December 1983 completion date.

6.2 COST ELEMENTS

The main cost elements for the proposed six phase project are the following:

<u>Major Activity</u>	<u>Cost \$</u>
1. Research	410,000
2. Planning	510,000
3. Development	1,285,000
4. Trial	955,000
5. Analysis	120,000
6. Final Report	<u>50,000</u>
<u>TOTAL COST</u>	<u>\$3,330,000</u>

The estimated project cost distribution, based on the five classes of services, is the following:

i) Remote Metering (utilities)	12%
ii) Alarm Forwarding (security)	12%
iii) Load Management (energy)	15%
iv) Broadband (pay-TV, educational TV)	23%
v) Personal and Business Data (Telidon)	<u>38%</u>
	100%

6.3 MTS HUMAN RESOURCE REQUIREMENTS

The following is an estimate of MTS personnel effort required for this project, identified with the activities described in the work statement.

	<u>Activity #</u>	<u>Senior Staff, PM</u>	<u>Staff, PM</u>
1. Research	3.11	4	5.5
	3.12	4.8	6.8
	3.13	4.4	0
	3.14	16.3	0
	3.15	1	10.7
	3.16	<u>1</u>	<u>0</u>
	<u>Sub Total</u>	<u>31.5</u>	<u>23.0</u>
2. Planning	3.21	14.4	0
	3.22	9	0
	3.23	9.1	13
	3.24	6.4	9.2
	3.25	<u>1.3</u>	<u>0</u>
	<u>Sub Total</u>	<u>40.2</u>	<u>22.2</u>

3. Development	3.31	2.7	10.4
	3.32	5.5	13.2
	3.33	3.4	15.2
	3.34	1.9	0
	3.35	1.8	9.2
	3.36	0.8	0
	3.37	0	5.4
	3.38	7.6	0
	3.39	13.4	25.7
	3.310	<u>1.7</u>	<u>0</u>
	<u>Sub Total</u>	<u>38.8</u>	<u>79.1</u>
4. Trial	3.41	0	40.4
	3.42	5.1	43.0
	3.43	0	6.0
	3.44	0	12.6
	3.45	2.5	0
	3.46	0	15.9
	3.47	1.0	5.7
	3.48	8.2	36.4
	3.49	2.0	11.4
	3.410	<u>1.6</u>	<u>0</u>
	<u>Sub Total</u>	<u>20.4</u>	<u>171.4</u>
5. Analysis	3.5	17.2	4.7
6. Report	3.6	<u>4.6</u>	<u>2.3</u>
<u>TOTAL MTS, PM</u>		<u>152.7</u>	<u>302.7</u>

PM - PERSON - MONTHS

MTS senior staff rates are \$59,174.50 per annum and staff rates are \$42,267.50 per annum for the 1979/80 fiscal year. The rates are expected to increase by 6% for the next two years and 5.5% in the third year.

The foregoing estimates reflect these expected increases. The project management estimate is not given as the MTS staff rates include this component.

6.4 TRAVEL EXPENSES

The following budget provisions are made for travel in connection with this project.

	<u>Activity</u>	<u>Amount \$</u>
1. Research	3.11	5,000
	3.13	7,000
	3.14	30,000
	3.15	5,000
	2. Planning	3.21
	3.22	3,000
	3.23	5,000
	3.24	5,000
	3.25	3,000
3. Development	3.31	5,000
	3.32	10,000
	3.35	10,000
6. Final Report		<u>10,000</u>
<u>TOTAL</u>		<u>\$108,000</u>

6.5 SUBCONTRACTS

Part of the following activities will be subcontracted by MTS.

The amounts are shown below:

	<u>Activity</u>	<u>Amount \$</u>
	3.14	30,000
	3.15	90,000
	3.24	170,000
	3.32	20,000
	3.39	<u>230,000</u>
	<u>TOTAL</u>	<u>\$540,000</u>

6.6 HARDWARE PROCUREMENT

MTS will procure hardware to upgrade the basic Elie-St. Eustache network for the new services. The cost of hardware is estimated to be \$500,000. A detailed estimate is provided below:

<u>Hardware Type</u>	<u>Quantity</u>	<u>Amount \$</u>
Data Multiplex	150	90,000
Home Computer	150	90,000
FMT-FMR Terminals	6	60,000
Video Conferencing facility	1	165,000
Spare Equipment	--	20,000
Test Equipment	--	40,000
Miscellaneous Equipment	--	<u>35,000</u>
<u>TOTAL</u>		<u>\$500,000</u>

6.7 OTHER COSTS

In addition to the above expenses, MTS will provide communications links between Elie-St. Eustache and Winnipeg at an estimated price of \$175,000 for the duration of the trial. This will include installation, operation and maintenance.

6.8 CASH FLOW

The proposed project cash-flow requirements are shown below by quarter fiscal year start 1st April.

<u>Year</u>	<u>Quarter</u>	<u>Amount \$</u>
1979-80	4	90,000
1980-81	1	240,000
	2	310,000
	3	350,000
	4	330,000
1981-82	1	540,000
	2	510,000
	3	250,000
	4	170,000
1982-83	1	130,000
	2	100,000
	3	90,000
	4	120,000
1983-84	1	60,000
	2	30,000
	3	10,000
<u>TOTAL</u>		<u>\$3,330,000</u>

MTS is proposing to undertake this project without charging any profit-fees.



exploring the wired country



MANITOBA
TELEPHONE
SYSTEM

FINANCIAL ARRANGEMENTS

The proposed financial arrangements for this jointly funded project have been tailored to meet the requirements of the principles involved.

The costs for the program have been budgeted at three million three hundred thirty thousand dollars and would be shared equally between the telecommunications industry and the Department of Communications (DOC). Over and above this, service supplier organizations will be committing substantial resources to participate in the trial. It is proposed that the DOC would contribute its 50% share on a monthly basis, based on the expenses incurred during the month and consistent with the quarterly cash flow schedule identified in Section 6. Because of the non profit orientation of the project and because the Manitoba Telephone System is a crown corporation, it is suggested that any holdback would be inappropriate.

The Manitoba Telephone System will contribute directly twenty percent of the \$3.33 M and will arrange for the Canadian Telecommunications Industry to provide the remaining thirty percent. The details of this portion of the funding will be included as part of the overall contract for this project.

The Canadian content of the proposed program, including all labor and materials is over ninety five percent.



exploring the wired country



EARLY HISTORY

The telephone came to Manitoba in 1877, when Horace McDougall introduced the first two sets to Winnipeg. There were 26 subscribers by the time McDougall sold his telephone interests to Bell Telephone Company in 1881.

A year later, Ida Cates became the first female telephone operator in Manitoba. Customers soon came to recognize her as the "voice with the smile", who cheerfully handled a wide variety of requests for information or assistance.



Ida Cates

Telephone service was extended to additional areas in Manitoba during the next decade. All was going well until the Canadian Bell patent expired in 1893.

Almost instantly, hundreds of companies offering telephone service sprang into existence. Customers already with service found they needed as many telephones as there were companies. Competition was ruthless.

Competition and duplication were proving inefficient and extremely costly. Gradually, the public's demand for government ownership grew, especially as the unprofitable rural areas were not being adequately served.

Between 1906 and 1908, provincial authorities enacted the necessary legislation to set the stage for establishment of a long distance telephone system covering Manitoba. The government system would also assume the installation and management of local exchanges and rural lines.

The Bell operations, which served 17,000 of the 24,000 subscribers in Manitoba, were to be taken over by the government and compensation of \$3,300,000 paid. Officially, on January 15, 1908, Manitoba Government Telephones (as MTS was originally known) came into operation.

When asked why the purchase was made, Premier Rodmond Roblin replied:

"We purchased the Bell system for the purpose of avoiding the necessity of having a dual telephone system in the province, and in that way preventing the waste of several million dollars of capital as well



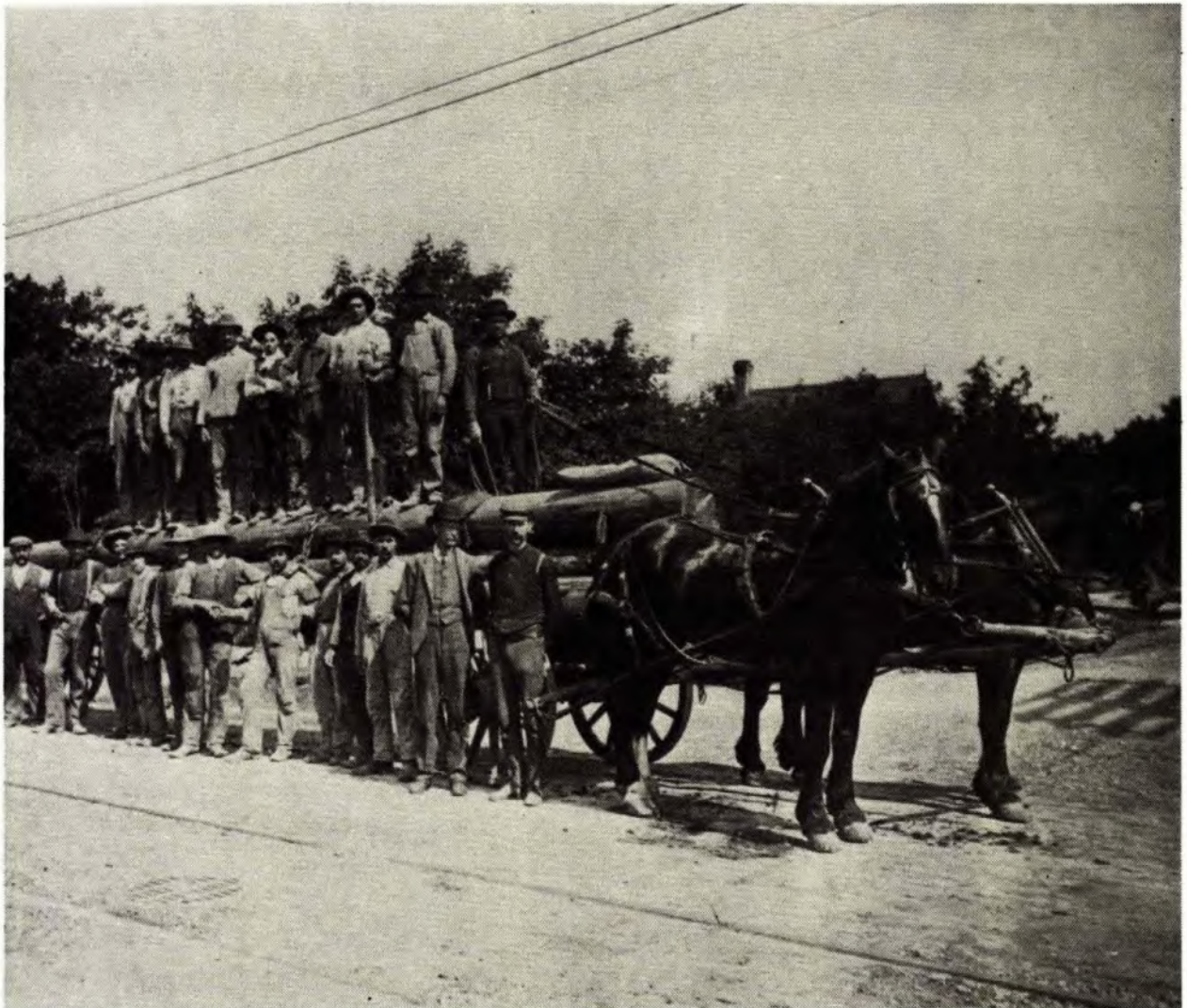
as the extra cost to the telephone user. I believe, also, that it is a good commercial proposition and whatever profit there is in the operation of the telephone system from this time on will belong to the people of Manitoba rather than to a private company. I am also proud of the fact that we have been able to secure for the people of Manitoba the first complete system of government-owned telephones on the continent of North America, and I am sure, from the information that has been secured, that the result, as years go by, will prove more and more beneficial to the people."

Since the early years of the century, the System's mandate has been to extend the best possi-

ble telephone service to the whole of Manitoba at the lowest possible cost.

The System's regulator, the Public Utilities Board, determines overall MTS revenue requirements and then approves equitable rate schedules which often bear little relationship to the cost of providing the service. The rate for basic telephone service in a Northern community is the same as for a community of similar size in Southern Manitoba. The rate is fixed by the size of the exchange, not by the radically different service costs.

In this way, telephone service has been extended throughout Manitoba with more than 98 per cent of the households in the province now served.



PEOPLE OF SERVICE

The System has always taken pride in its tradition of service. During an emergency, this strong tradition comes to the fore as employees in widely differing occupations combine their efforts to maintain or restore service in a struggle against the cruel whimsies of nature, with her floods, cyclones, ice and snow.

If a line went down in the old days, it often meant a two-day trip on snowshoes to repair it. If an ice storm uprooted thousands of poles and dumped

thousands of miles of wire — as happened on Hallowe'en night in 1929 — men and horses would work long hours in bitter cold and knee-deep drifts to restore service.

Spring floods have frequently been a challenge to the spirit and dedication of System employees. In 1950, for example, a new lake was formed by the Red River, stretching from the American border to Winnipeg, drowning towns, forcing evacuation, threatening epidemic, inundating fields and farms.



NORWOOD BRIDGE '50 FLOOD.

At the height of the flood, operators in Morris were evacuated, crossing 50 tricky miles of wind-swept water in an open boat. The test of telephone people and their response had indeed become a way of life.

Yet the high-water mark of the flood was more than matched by a high sense of duty from telephone people. Operators stayed at their post, sleeping in the exchanges to keep essential communications open. Repair crews worked around the clock to restore or maintain service.



MANITOBA TELEPHONE SYSTEM MISSIONS

The System has six missions, which form one of the foundations of the company. MTS activities are all related to one or more of these missions.

They are:

1. to offer prompt high-quality exchange service to every Manitoban — 98 per cent of Manitoba households have telephone service; there are now more than 672,000 telephones; the number of local calls exceeds 1.3 billion a year; rates are among the lowest in North America: the basic residential rate in Winnipeg is \$5.50 per month while the rural rate averages \$4.00 per month;
2. to offer prompt high-quality long distance service to every Manitoban — about 82 per cent of long distance calls are made by Direct Distance Dialing; Direct Dialing Overseas service to 33 countries is being extended to a growing number of exchanges;
3. to ensure that MTS will remain the dominant supplier of telecommunication services in Manitoba no matter how diverse these services may become; the System now provides voice, data, image and special services;
4. to be financially self-sufficient while, at the same time, maintaining a highly acceptable image to the general public of Manitoba; the company normally reports a net income each year — this income is ploughed back into the System;
5. to be a good corporate citizen;
6. to provide an environment which develops employee competence, proficiency and satisfaction.



Fort Rouge Microwave Tower

A CROWN CORPORATION

The Manitoba Telephone System is a crown corporation, owned by the Government of Manitoba and operated by a Board of Commissioners.

Since 1908, when Manitoba purchased the telephone assets of the Bell Telephone Company in Manitoba, communications services in Manitoba have been provided within the framework of a public utility, acting as a common carrier responsible for providing communications facilities that are accessible to all users. Rates charged by MTS for access to these communications lines are regulated by the

Public Utilities Board of Manitoba.

The System's accountability to its owners, the public, is carried out through a series of checks and balances: its regulatory authority, the Public Utilities Board; its Minister in the Government of Manitoba; the Legislature's Standing Committee on Public Utilities and Natural Resources; and the Members of the Legislative Assembly, regardless of political party.

Hon. Harry Enns is the Minister responsible for the Manitoba Telephone System and Communications.

RICHARDSON SECURITIES' COMMUNICATIONS SYSTEM

Computerized message switching and transaction processing system, valued at \$3.5 million over a five-year period, was sold to Richardson Securities of Canada in 1976 by MTS.

Headquartered in Winnipeg, Richardson Securities is the nation's largest Canadian-owned investment firm. Its contract with MTS called for the provision and maintenance of a sophisticated store and forward message switching system. This system allows for transmission of all business communications among the company's 43 offices in Canada, the United States, the Caribbean, the United Kingdom, Europe and the Far East, enabling investors to trade in securities and commodity futures. MTS offered the dedicated network in conjunction with the Trans-Canada Telephone System, of which it is a member. The contract represented the largest brokerage communications system of its kind in Canada. According to Francis Lamont, Richardson's Managing Partner,

"Transactions, commissions and account status are determined simultaneously at Winnipeg headquarters and forwarded to the branch later in the day or overnight, minimizing paperwork and virtually eliminating error. This frees our management from administration and gives time for better investment coverage of clients."

As well as transmitting orders from any Richardson Securities office to any exchange, and providing instant confirmation of the transaction, the system carries Richardson's up-to-the-minute private newswire.

"Because of the ease and economy of data flow," Mr. Lamont said, "We have been able to integrate the newswire and order wire functions. As a result, news impacting on stock, bond and commodity markets is provided to any branch almost as soon as it happens. At the same time, orders from any of our offices now reach markets at 12 times the speed."

PROJECT IDA

The mandate of the common carrier is really the responsibility of all communications institutions — to make the flow of information as broad and accessible as possible, to all users without discrimination. Guided by this principle and its corporate missions, the Manitoba Telephone System continually strives to improve telecommunications for the Manitoba public. Developing new methods and equipment enables the System to not only keep up with the demands of its customers, but provide them with the most cost-effective and advanced communication system possible.

Converging developments in telephones, computers and television will be explored by MTS next year in a market test of these technologies as they apply to the "home of the future" in Manitoba. The project is called Ida, in memory of Manitoba's first telephone operator, Ida Cates, and her important role as a provider of information as well as calling assistance. In the experiment, MTS intends to test technology that will one day prove economically viable for the entire province. In turn, activities generated by private involvement in the project promise to create jobs, open new markets and stimulate Manitoba's economy.

Project Ida will take place in Headingley, Manitoba, about six miles west of Winnipeg. The 100 participating residents will receive a varied range of services, all carried to their homes over a single, integrated system or "electronic highway".

Coaxial cable was a logical choice of transmission medium for the Ida system, because of its capacity to carry many kinds of voice, image and data signals simultaneously.

MTS' cable distribution network is accessible to the general public, and Project Ida will demonstrate that shared use of this electronic highway is the best way of meeting the communication needs of Manitobans. In endorsing this concept, participating companies were quick to recognize in Ida, an ideal opportunity to test new equipment, work out price

schedules and investigate customer demands. All hardware and software for the Ida trial are 100 per cent Canadian designed, engineered and manufactured.

Two types of videotex services will be tried in Project Ida, representing the first in-home test of the Telidon and Omnitel II systems. The latter was developed by Interdiscom Systems Limited, which recently opened its head office in Winnipeg. Suppliers of videotex information services include several Manitoba-based companies and others that have established operations in Manitoba in order to participate in the Ida trial.

Recorded stereo music on request and closed circuit TV services will be provided in the experiment by recently-formed Winnipeg firms.

Hydro and gas meters will be read remotely through the Ida system in cooperation with both local utilities, while the Winnipeg Fire Department and several alarm companies have been instrumental in developing Ida's capability for automatic fire and security alarm reporting.

The future potential of digital telephony is an important service-area to be examined in Project Ida. Cable television service will be made available to all Headingley residents over the same network as soon as a cable TV operator is licenced by the Canadian Radio-television and Telecommunications Commission.

Schools, universities and school trustees are also interested in the possibilities for enhanced education using the Ida system, and MTS is working with them to develop educational services for homes and schools in Headingley.

Project Ida is scheduled to begin March 1, 1980. A lab prototype has been developed, the distribution cable and house drops are now in place and the inside wiring of homes is mostly completed. Delivery and installation of the major network components in the homes and MTS central office will soon be in place.

Meanwhile, the Ida experiment is already being viewed with great interest internationally by the communications and computer industries. Telecommunications consultants such as the Yankee Group have singled out Headingley among other trial sites, noting that in view of the broad range of services being provided over coaxial cable, "Manitoba is doing now what AT & T may do in 10 years." Project Ida has been featured prominently in articles appearing in numerous telephone company and trade association publications. At the same time, the mass media are devoting more and more attention to the impending age of information.

Information sessions on Project Ida have been

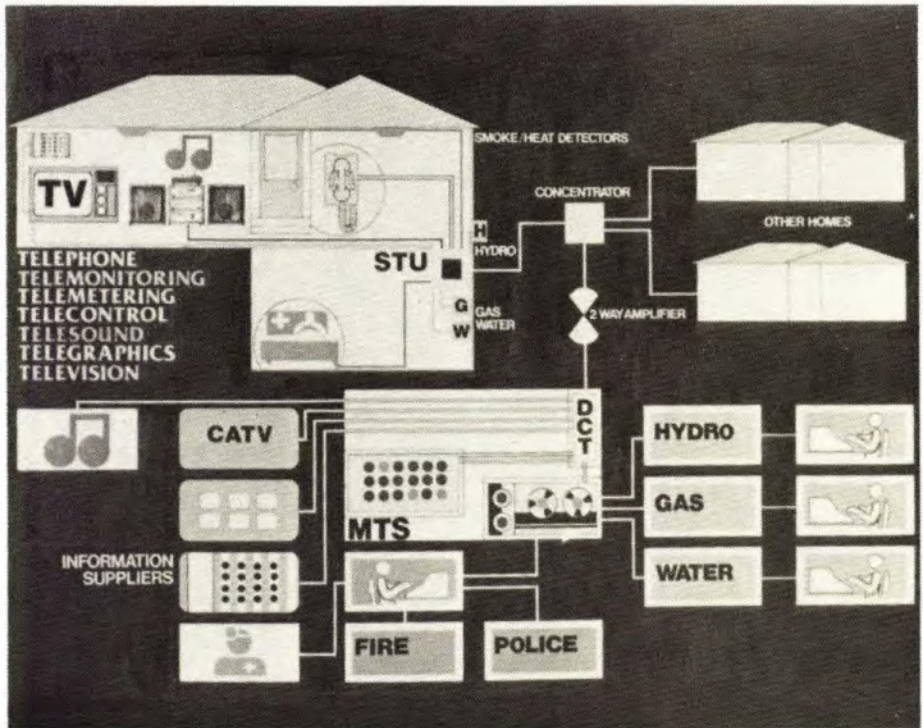
held by MTS on several occasions, leaving visitors favourably impressed. In September, System representatives discussed the project with members of a fact-finding mission sent to Canada by the French National Assembly to study computerized information systems and their impact on society. Guest lecturer Gordon Thompson of Bell Northern Research commended MTS on its ability to cooperate with the private sector in developing the integration experiment.

As the common carrier, MTS is interested in learning which services its customers may one day regard as vital as telephone service is today.

(Additional background information on Project Ida may be found in Appendix "D").



On September 10, MTS hosted members of the Durafour Mission from Paris, France, who were studying Canadian computerized information systems. While visiting MTS, the delegation had an opportunity to learn about Project Ida and its importance in shaping future telecommunications in Canada.



Services in the home are linked to private company suppliers by the MTS Ida network.



Video games on videotex entertain as well as teach.

MTS DEPARTMENT PROFILES

BROADCAST INDUSTRY OPERATIONS

The Broadcast Industry group is concerned with services provided to the broadcasting industry. These services include leased facilities for remote production (for example, of sports programming), network radio and television program distribution through microwave and cable, and distribution facilities for cable television.

As this work brings the group into close contact with the federal and provincial governments, it is also given responsibility for much of the System's liaison with government agencies.

Broadcast Industry has 21 employees.

CORPORATE INFORMATION SYSTEMS DEPARTMENT

The Corporate Information Systems Department serves the needs of the System for computerization, systems analysis and programming, and provides technical support to the Marketing Department in the design of computer communications systems for larger customers.

CIS works mainly on a project basis, responding to requests for systems development and programming services from the other Departments. It also coordinates the procurement of data-processing hardware and equipment.

CIS has a staff of 106 employees.

ENGINEERING DEPARTMENT

As the Plant Department maintains the System's physical facilities and the Traffic Department operates the facilities, it is the Engineering Department's concern to put these facilities in place, providing the System with the advanced technological expertise needed to keep its hardware up to date and efficiently operating at the least possible cost.

Thus, the Engineering Department is responsible for the control and maintenance of the System's multi-million dollar capital construction budget and for providing and placing into service all telephone equipment. It prepares, issues and controls the contracts for the supply and installation of new equipment and extensions to existing equipment.

The Department has a staff of 367 employees.

MARKETING DEPARTMENT

The Marketing Department is concerned with market research and analysis, new product developments and applications, pricing and rate setting, seasonal and other special promotions, the design and development of sales systems and sales aids, the training of sales staff, specialized sales and marketing for particular product groups and customer groups, and direct sales negotiations for big-ticket transactions.

A good deal of the attention of the Department is devoted to the business and government market.

The Marketing Department has a staff exceeding 170 persons.

PLANNING DEPARTMENT

The Planning Department prepares "front-end" studies and consultative services in relevant fields of economics and technology, monitoring changes and trends both within the telephone industry and beyond. The Department also provides administrative services and/or chair-persons for the planning committees.

Standards are another important concern of the Planning Department. Because of the requirement for compatibility of technical systems and methods in telecommunications and for sharing the radio-frequency spectrum that is at the heart of most telecommunications, standards must be developed and enforced provincially, nationally and internationally. The Planning Department is MTS's representative in this process, working with such groups as the Canadian Telecommunications Carriers Association, the Federal Department of Communications and the International Telecommunications Union. And in turn, they are MTS's advisors and authorities on standards within the System, to ensure the long-range compatibility of MTS operations, both internally and externally.

The Department employs a variety of engineers, economists and planning analysts. It has 86 employees.

PLANT DEPARTMENT

The Plant Department installs, repairs, tests and monitors all the hardware, switching, control and distribution facilities owned by the System.

Occupations in the Department are mainly in technologies and crafts, including station installers and repairmen, linemen, cable splicers, central office technicians, electronics technicians, construction craftsmen, etc.

The Plant Department is the largest one in the System, with 1,779 full-time employees.

PUBLIC RELATIONS DEPARTMENT

The Public Relations Department is concerned with the overall public image of the System, its customer relations, media relations, employee relations and its advertising.

The Information Services group produces a variety of news releases, brochures, reports, publications, photographs, slides and audio-visual material. It maintains a library of information to answer public inquiries on any aspect of telecommunications. It provides speakers and co-ordinates the System's community service activities.

The Advertising group plans and co-ordinates all media advertising for the System, develops advertising programs and display material, and works closely with the media, with advertising agencies, and with their colleagues in the TransCanada Telephone System, especially on nationwide media promotions.

The Department has 22 employees.

TRAFFIC DEPARTMENT

The Traffic Department has the task of managing and administering the flow of traffic over all of the System's plant and equipment. It operates the entire system, controls and directs the network's traffic and analyzes the operations to feed up-to-the-minute information to other Departments concerning conditions along the networks.

At any moment in time, the Department is controlling and routing millions of signals passing through the networks and monitoring that traffic to ensure a smooth flow of communications in spite of sporadic peak loads or breakdowns. It also operates and monitors the Manitoba section of the TransCanada Telephone System, handling national, international and overseas communications.

The Traffic Department has a full-time staff of 749 employees.

**MTS KEY PERSONNEL –
ELIE-ST. EUSTACHE PROJECT**



Rodney J. Kachulak

Rod is a University of Manitoba (1971) graduate with a Bachelor of Science Electrical Engineering degree.

In his initial position at MTS, as Outside Plant Engineer, Rod developed the procedure for cable acceptance testing in the province.

In 1973 he moved to Equipment Engineering where he became involved in providing toll equipment for such projects as the CBC French and CTV Microwave Radio to Thompson, Northern Fringe Radio Program, Brandon Toll terminal move and PCM Carrier Installation.

In 1975, Rod was promoted to Data and Video Service Planning Engineer. He researched and prepared studies on the Local Broadband Network, Interprovincial Data Network, System Wide Area Paging, Brandon-Winnipeg Video Teleconferencing and the Northern Manitoba Satellite System.

A year later Rod became involved in technical long range plans for projects such as the Toll Facility Diversity Plan for Winnipeg, TCTS Fundamental Satellite Plan, Western Canada Fibre Optics Task Force and an International Consulting Steering Committee.

Since July 1979, Rod has been Project Manager Elie - St. Eustache Service Trial. He co-ordinates all activities associated with the technology trial as well as co-ordinate the additional services that can be provided through this experiment.

PROFESSIONAL AFFILIATIONS

Association of Professional Engineers of Manitoba.

Bob graduated from the University of Winnipeg in 1970 with a Bachelor of Arts degree and obtained his Bachelor of Science (Electrical Engineering) from the University of Manitoba in 1972.

Bob's career as an Electrical Engineer began in 1973 at the Health Sciences Centre in Winnipeg and continued in 1974 with Smith Carter Partners of Winnipeg.

Later in 1974 Bob joined the Manitoba Telephone System as a Senior Planning Analyst. He was involved in mathematical modelling, financial forecasting, conducting simulation runs and preparing corporate feasibility studies.

Recently Bob has been promoted to Project Manager-Integrated Services Planning. He establishes the strategic direction as it pertains to integrated telecommunication services. This includes defining that service for the home, business and farm environments and modularizing them into marketable packages. Bob manages the definition and approval of integrated services experimentation. This includes conceptualizing and selling integrated service trials and managing a matrix team of functional experts from other departments. Some of the projects Bob has been involved in are the Phone Centres and Project IDA. He has consulted on undertakings such as the Great West Life project, which assessed that company's communication requirements to accommodate its expansion into the international marketplace. He also consulted on the City of Winnipeg Alarm Project which provides a sophisticated system of alarm monitoring in the City Public buildings.



Robert I. Urquhart

PROFESSIONAL AFFILIATIONS

Association of Professional Engineers of Manitoba.

Institute of Electrical and Electronics Engineers.

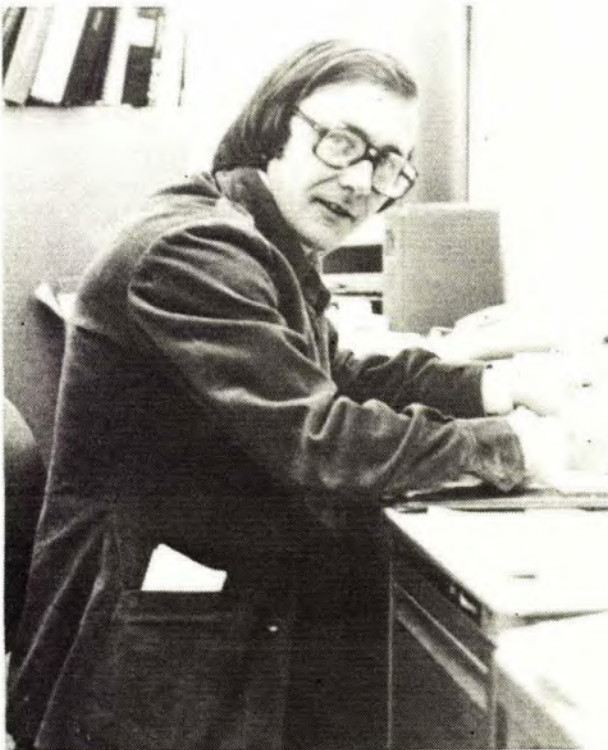
Brian graduated from the Manitoba Institute of Technology in 1967 with a diploma in Electronic Technology.

Brian joined the Manitoba Telephone System in 1967 and until 1974 worked in Special Services and Transmission Engineering, designing a variety of services from complex data terminals to voice orientated type services. Some of his major involvements included implementing the CBC radio network under the new contract, providing private line and switched network services for Manitoba Hydro's northern development, and providing the necessary facilities for the Dial Fringe Radio System in Manitoba.

In 1974, Brian was loaned to the TransCanada Telephone System where he evaluated new equipment for possible standardization and provided technical support for existing products. Some of the equipment he evaluated included high speed modems 4800 bps and 9600 bps, teleprinters terminals D/C 300, D/C 400 and Centronics printers and point of sale terminals.

When Brian returned to MTS in 1976, he became involved in the design and implementation of various service and data communications circuits, completion of special assemblies for Vucom II and other specialized services. He also worked as an advisor to the Marketing Department, providing technical details pertaining to the computer communications field. Brian also was involved in the co-ordination of installation activities in the Richardson Securities Message Switching System.

In 1977, Brian was promoted to Staff Specialist Data in the Standards and Design Department. In this position he has been instrumental in designing and implementing the broadband communications network for Project IDA. He works very closely with suppliers in the design of the hardware on this network and co-ordinates the various stages of implementation of this project.



E. Brian McClintock

Joe attended Notre Dame college in Magog, Quebec for four years and St. Boniface College in Winnipeg for three years. He is completely fluent in English and French.

Joe began his career in computer technology in 1962 as a computer operator in the Manitoba Government Computer Centre. Two years later, as a Programmer Analyst, he designed, programmed and implemented a payroll system which is still in use today by the Manitoba Government. He was an integral part of the installation of an IBM 360/30. Joe was involved in developing on-line software for projects such as the Driver's Licensing system and the Sales Tax system.

In 1969, Joe was promoted to Operations Manager and directed the Operations and Systems software forces for the Computer Centre.

In 1974, Joe became the Advisory Technical Specialist. In this position he provided technical direction and support to senior management and developed tools to measure and provide optimum performance of hardware and software.

In 1976, Joe joined the Manitoba Telephone System as a Senior Engineering Representative in the Corporate Information Systems Department. He is a consultant and technical specialist in the area of data processing hardware and software for such systems as electronic switching equipment, Traffic Operator Position Systems, Centralized Automated Loop Reporting System, Switched Network Analysis Centre and Plant Alarm System. He provides technical expertise to professionals in all areas of computer communication trouble shooting and maintenance procedures. He also provides consulting services to Bell Northern Research and the TransCanada Telephone System. Joe has developed and implemented test procedures for all new generics with MTS.



Joseph G. Courchaine

Bill graduated from Lakehead University, Thunder Bay, in Applied Science and he holds an Electrical Engineering degree from McMaster University, Montreal.

From 1965 to 1967, Bill was the Director of Engineering for Lakehead Videon Limited in Thunder Bay, Ontario.

In 1967, Bill accepted the position of Director of Engineering with Metro Videon Limited in Winnipeg.

In 1970, he moved to Toronto as Director of Engineering with NORAM Communications Ltd.

Bill joined the Manitoba Telephone System in 1971 as an engineer and was involved in the design and implementation of data communications systems.

In 1972, he was moved to the MTS Planning Department where he directed two groups of engineers.

In 1975, Bill was appointed the leader of a small, select engineering - economics - marketing group to establish an MTS beach head in the provision of broadband coaxial communications facilities.

In 1976, Bill was promoted to Broadcast Industry Operations Manager. In addition to directing a force of engineers, craft personnel and market researchers, he prepares DOC-CRTC application data, engineering briefs for new CATV applications and related CATV consultative support.



William E. Evans

PROFESSIONAL AFFILIATIONS

Association of Professional Engineers of Manitoba

Association of Professional Engineers of Ottawa

Institute of Electrical and Society of Cable Television Engineers

Society of Motion Picture & Television Engineers



Gordon D. Temple

Gordon joined the Manitoba Telephone System in 1950 and until 1963 worked as a Journeyman Cable Splicer. Gordon received several promotions within the Construction and Service Departments while working in Northern Manitoba.

During his 2 years of northern tour, Gord designed and implemented the Telephone Assistance Plan. This project introduced 29 remote Indian Communities to telephone service. The success of this project led to dial service being provided to many of these centres.

In 1974 he returned to Winnipeg to Staff Group where he clarified and administered updated policies and practices. In 1975, Gordon was promoted to a Provincial Foreman's position in the Service Department. In this position he supervised twenty people who carried out test centre operations, business and residential installations, buried protection service and co-ordination of service requirements in the area.

In 1977, Gordon was promoted to his current position of Construction Co-ordinator in the Broadcast Industry Department. He plans, develops and implements Local Broadband Network and Intercity Broadband Network construction. He issues construction tenders, specifications and evaluates cost submissions. He co-ordinates field work between the Design team; Engineering and the Construction forces as well as evaluating and correcting standards in workmanship.



Edward S. Walker

Ed is an Electrical Engineer who graduated from the University of Manitoba in 1970.

Ed joined the Manitoba Telephone System in 1970 as a member of the Standards and Design Group. In four and one-half years he gained expertise in coaxial and paired cable design, VF subscriber carrier transmission equipment, methods and standards.

In 1975, Ed began co-ordinating service engineering groups to meet trunk provisioning objectives via voice frequency and PMC carrier transmission.

More recently he was promoted to Standards Team Leader within the Broadcast Industry Department. Ed evaluates and standardizes all Local Broadband Networks and Intercity Broadband Network equipment with MTS. This includes the development of coaxial system transmission standards, approval of broadband test equipment, preparation of engineering briefs and conducting studies to meet the Department of Communication's technical requirements.

PROFESSIONAL AFFILIATIONS

Association of Professional Engineers of Manitoba.

Helen graduated from the University of Manitoba in 1965 with a Bachelor of Science Degree and is currently enrolled there in the Masters of Business Administration program.

Helen began her career in 1965 as a senior programmer with Bell Canada in Montreal and worked on the programming of a toll accounting system and formulated appropriate training packages.

For part of 1968, Helen worked for Gamble Mcleod Ltd., trouble shooting on inventory control systems.

Later that year Helen accepted a position with the Manitoba Government Computer Centre where she designed a disbursements accounting system for the Province of Manitoba.

In 1972 Helen was promoted to Project Leader and conducted feasibility studies in Personal Property Registry System and methods of land titles processing. She also conducted exploratory research into integrated land data bank systems for the Attorney General's Department for the Province of Manitoba.

Helen assumed more responsibility when she became Project Manager in 1973. She managed a team which developed a system for Western Canada Lotteries Foundation, conducted system studies on companies and business operations for the Manitoba Trades Directory, and maintained operational systems of a financial nature.

In 1974, Helen became Manager, Systems Development Branch of Manitoba Data Services. She managed a staff of 50 people.

From 1977 to 1978, Helen was a consultant within the Manitoba Telephone System and developed long-range plans for Marketing Information Systems and Corporate Systems Development Plan.

Currently, Helen is Systems Application and Architecture Manger and is developing plans for the ever increasing data processing technologies.



Helen J. Searle



Nicholas Fedorchuk

Nick is a 1963 graduate in Electrical Engineering of the University of Saskatchewan. He is presently completing his Master of Business Administration with a Finance major at the University of Manitoba.

Nick joined the Manitoba Telephone System in 1963 as Engineer-Special Services and Transmission.

In 1967, he accepted a position as Senior Engineer-New Developments with Bell Canada in Montreal. In this position he completed studies which included the development of earth station site selection and frequency co-ordination criteria.

In 1965 Nick moved to Ottawa on a Term appointment with the TransCanada Telephone System. As part of the development of the TransCanada Telecommunications network west of Toronto, Nick designed a wide band data network from Toronto to Calgary.

Nick rejoined MTS in 1969 as Engineer-Carrier and Radio and supervised a staff of engineers and technologists.

In 1970, Nick was promoted to Manager-Transmission and managed a staff of 26.

Following this, he was moved to Manager-Financial and Radio where he managed \$40 million worth of facilities.

Currently, Nick is conducting Special Studies in the Inter-Carrier Settlements Group. He is reviewing maintenance expenses, political regulation impacts and studying the impact of new technologies as they pertain to MTS revenue sharing with other member companies of the TransCanada Telephone System.

PROFESSIONAL AFFILIATIONS

Association of Professional Engineers of Manitoba.

Institute of Electrical and Electronics Engineers.



Ken Kostick

Ken is a graduate of Red River Community College with a diploma in computer technology.

Ken joined MTS in 1974 after serving with the Manitoba Hydro where he was responsible for the installation and maintenance of computer control and data acquisitions in Hydro Generating Stations.

His initial position at MTS was as an Engineering Associate, Computer Communications Group, Engineering, where he designed special service data, voice and telemetering circuits. In this position he was design engineer for the banking industry's data communication networks.

In 1976, he became Engineering Associate (Computer System's Specialist) major contracts. He designs, implements and provides the ongoing support for major computer systems projects. He provides technical expertise and design support for the Richardson Securities of Canada International data collection and Message Switching System.

ASSOCIATIONS

Ken is a Registered Engineering Technologist with the Manitoba Society of Certified Engineering Technologists Inc.



Paul A. Smith

Paul is currently enrolled part time, in an honour listing degree program at the University of Manitoba.

Paul joined the Manitoba Telephone System in 1950 as an Equipment Installer.

In 1962, Paul transferred to the Engineering Department and until 1974 worked on the engineering and installation of switching equipment, including SP-1 Common Control machines.

In 1974, Paul was promoted to System Planner-Long Range Network Planning. He supervised four engineers who formulated long range plans for the Winnipeg Network.

From August 1978 to February 1979 Paul was contracted to work in Saudi Arabia with Aramco Communications Department. There he developed a plan for growth and modernization in Aramco's switched telephone network. He also participated in the day-to-day operation of the Communication Planning and Engineering Division.

Currently Paul is Engineering Supervisor-Basic Plans and he manages a professional staff of engineers who are preparing the long range technical plans for the Winnipeg and Provincial networks for the TransCanada Telephone System local and toll network.



Edmund H. Webber

Ed joined the Manitoba Telephone System in 1949, working as a Central Officeman until 1955.

In 1955 Ed held several jobs in the Engineering Department. He wrote specifications and oversaw installations of equipment.

In 1969 Ed co-ordinated the engineering portion of the local switching program in Manitoba. This included dial conversions in the rural areas and office extensions in the urban area. He wrote equipment specifications for purchases and installations.

In 1971 Ed was promoted to Staff /Supervisor-Long Range Network Planning. He co-ordinated the production of plans for the location of new local and toll switching centres in Winnipeg and throughout the province as well as plans for radio and for multiplex facilities to interconnect them.

In 1975 Ed was promoted to Sales and Marketing Manager-Directory Advertising. In this capacity, he was successful in blending all elements of the market mix-product price, channels of distribution, selling, advertising and sales promotion. This work resulted in doubling of revenues in two and one half years.

In 1978 Ed was moved to his current position of Marketing Research and Planning Manager. He is active in Market planning, product planning, product performance, market research and TransCanada product planning in a competitive but politically sensitive environment.

Euiwon graduated from the College of Engineering, the Seoul National University, Seoul, Korea in Electrical Engineering in 1967. He completed his Masters Degree in Electrical Engineering at the University of Manitoba in 1972. Also in 1972 he was admitted to the Department of Electrical Engineering at the University of Manitoba.

Euiwon began his career with the Manitoba Telephone System in 1974 as an Engineer. He worked on UHF, Microwave Radio and PDUV System in Transmission Engineering.

In 1975, Euiwon was assigned the position of Senior Engineer, Digital network Design with the TransCanada Telephone System in Ottawa. In this capacity he was involved in assessing modern technological developments and their impact on the overall telecommunications network.

In 1976 the TCTS/BNR Research Project Digital Network Standards Study was authorized and he was designated as the **Study Prime**.

Euiwon also played an active role in the TCTS/BNR Research project on Digital Network Architecture and the New Generation Satellite System Working Committee.

In 1978, he returned to MTS as Engineer-Transmission Standards. He is currently monitoring System developments and modern technologies and makes recommendations as to their application to MTS.

PROFESSIONAL AFFILIATIONS

Association of Professional Engineers in Ontario

Institute of Electrical and Electronics Engineers



Euiwon Kim



. Roger H. Ballance

Roger is a University of Manitoba Electrical Engineering graduate (1970) and is currently enrolled in the M.B.A. program there.

Roger began his career with the Manitoba Telephone System in 1970 as an engineer. In 1974 he became involved with evaluating and giving technical approval to Local and Toll switching equipment, including the introduction of Traffic Operator Position System (TOPS).

In 1974, Roger joined the TransCanada Telephone System in Ottawa as a Senior Engineer and in this position he interfaced between the TCTS and BNR for eight Digital Data Research studies.

In 1976, upon his return to MTS, Roger became involved in the development and production of long range strategic plans for the TransCanada, Provincial and Winnipeg Telecommunications Network.

In 1977, Roger was promoted to Staff Manager-Operational Systems. In this position he directed the planning, development, selection and advancement of minicomputer and microprocessor based systems in MTS.

Currently, he is Staff Manager-Outside Plant Standards. He is directing and co-ordinating a staff of engineers who provide equipment and procedural standards, seek out new technologies and support their introduction.

PROFESSIONAL AFFILIATIONS

Association of Professional Engineers of Manitoba.



Gordon H. Hauch

Gordon began his career in the telecommunications industry in 1942 working on radio aids to aircraft navigation for the Canadian Department of Transport. From 1946 to 1948 he worked on the Edmonton to Alaska wire section for Canadian National Telecommunications.

Later in 1948, Gordon joined the Manitoba Telephone System Engineering Department as a Radio Operator Technician. For more than 31 years Gordon has assumed increasing responsibilities and has been instrumental in the design and operation of Northern Manitoba area radio services, land, air, and marine mobile radio systems, and various types of special service offerings.

Gordon is an acknowledged expert on the TransCanada Telephone System and international radio standards. He has been a member of several of the Canadian Telecommunications Carrier Associations (CTCA) subcommittees, including the CTCA Telephone, Telegraph and Data Committee. He presently serves as Chairman of the CTCA Radio Subcommittee and the CTCA Mobile Radio Planning Committee. For 8 years he has been chairman of the International Radio Consultative Committee and Canadian delegate to the International Radio Consultative Committee in Geneva. For six years Gordon has also been Chairman of the Canadian Radio Technical Planning Board, Land, Fixed and Mobile Radio Committee which is an industry consultation body of the Government of Canada.

Reg graduated in 1965 from Red River Community College with a diploma in Electronic Technology.

Reg joined the Manitoba Telephone System in 1965 and was involved in acceptance testing of all types of toll, multiplex, VF and private line equipment.

In 1973, he moved to the Standards and Design Department where he assessed, and then developed procedures and practices for the maintenance of various types of switching equipment.

In 1975 Reg was promoted to, the Equipment Engineering Department where he planned and developed the Alarm and Control requirements for Heavy Route Radio and Central Offices within the province of Manitoba. He developed the graphic display software as well as the hardline engineering for this dual minicomputer based system.

In 1978 Reg became the Micro-mini Computer Applications specialist for the Operational Computer Systems Group within Standards and Design Engineering. In that position, he implemented the Manitoba Telephone System's Fundamental Network Operation Plan, which encompasses all the Operational Systems, present and future. Within that plan Reg provides the cost/benefit analysis of the individual operational systems to be employed, as well as developing the administrative and operational procedures. Some of the operational systems that Reg has developed include Heavy Route Radio surveillance and control of the TransCanada Telephone System.



Reginald R. Ibison

PROFESSIONAL AFFILIATIONS

Manitoba Society of Certified Technicians and Technologists INC.



Heather J. Nault

Heather has a Bachelor of Science Degree in Mathematical Statistics, one year post Graduate Studies - Statistics, and a Registered Industrial Accountant degree. She obtained all her education at the University of Manitoba.

Heather began her career at MTS in 1964 as Intertoll Trunks Assistant-Traffic Department. She was then promoted to Assistant - Computer Applications. In this capacity, she supervised the collection and processing of Traffic Data.

In 1970, she transferred to the Planning Department as Assistant-Planning Studies. She provided statistical support in the development of a Financial Framework Model.

In 1974, she became Rates Assistant, Marketing Department. She developed and administered Network Services Rates for both MTS and the Trans-Canada Telephone System.

In 1976, she was promoted to Manager Forecasts & Results - Marketing Department. She produced many corporate documents including the Official Revenue Forecast, General Administrative Forecasts, & the Inter-Province Toll Forecast.

In 1977, she became Manager Financial Framework-Planning Department where she was involved in long range financial projection and analysis for MTS. (In this position she coordinates and produces all Corporate Financial Planning Documents.)

PROFESSIONAL AFFILIATIONS

Member of Society of Management Accountants (R.I.A.)



Clifford F. Durston

Cliff joined the Manitoba Telephone System in 1961 as a Television Operating Centre Technician and in 1965 he began doing transmission testing of the TransCanada microwave system.

In 1966 he was promoted to Staff Assistant Toll and Radio where he evaluated equipment and problems associated with various environmental conditions. He evaluated the maintenance parameters of the Interlake Radio System and the debugging of all other radio systems in Manitoba.

From 1972 to 1977, Cliff was the Datic Representative for MTS. During this period he designed and built the present Data Test Centre.

In 1977, Cliff assumed greater responsibility as Manager-Data Technical Support and Intelligent Terminals. In this capacity he was appointed Implementation Manager and later Network Manager for the Richardson Securities Project. Cliff also maintained all minicomputer systems owned and operated by MTS.

In 1978, Cliff was promoted to his current position as Staff Manager-Transmission Systems and Special Services. In this capacity he is a member of several TransCanada Telephone System Committees, and oversees network maintenance as well as the computer communication operation. He monitors, controls, researches, develops and advises on all aspects of Transmission Systems and Special Services with MTS.



William Cordray

Bill is a communications designer under exclusive contract with the Manitoba Telephone System.

Bill graduated from the Brown Institute of Radio-TV Broadcasting in Minneapolis and thereafter joined Knox Reeves Advertising — one of the major agencies in Minneapolis — as a copywriter on Grain Belt beer, General Mills (snacks and cereals) and Alberto Culver.

Moving to Toronto in 1968, Bill began writing for a diverse range of nationally distributed consumer products, which included Toyota, Goodyear, Nestles, Admiral and Canada Trust.

Prior to coming to Winnipeg, he was Associate Creative Director in the Toronto office of Ogilvy and Mather (Canada) Ltd., where he conceptualized and directed the advertising for products such as Tang, Kool-Aid, Gainesburgers, Coffee Crisp and Aero.

Bill has been a consultant in Winnipeg for the past 3 years and has developed award-winning communications programs for the Manitoba Liquor Commission and the Toronto-Dominion Bank. His experience combines the skills of advertising, public relations and marketing.

He currently heads up the Special Projects division of the Public Affairs Department at MTS. In this capacity, his responsibilities include Project IDA and the Elie - St. Eustache Fibre Optics project.



Carolyn Rickey

Carolyn received her Bachelor of Arts Degree (Honors) in History from the University of Winnipeg in 1972. She obtained a Graduate Degree in Communication Arts from Concordia University (Montreal) in 1976.

Carolyn began her career in telecommunications in 1976 with Moffat Communications. In this position she worked as a radio news reporter, music librarian and producer of several talk shows. She also filled a researcher/public relations position for Winnipeg Videon.

Carolyn has freelanced with the CBC and worked on extensive special projects. She researched an article on whether the CBC National News is truly national and prepared a graduate paper on cable television in Manitoba.

In 1978, Carolyn joined the Manitoba Telephone System. She is employed as Special Projects Co-ordinator. She has done public relations work on several major projects including Project IDA and Project Elie. She was responsible for the planning and co-ordination of telehealth '79, Canada's first conference on telemedicine. Carolyn's background in cable television has enabled her to prepare numerous speeches and presentations on the subject.

PROFESSIONAL AFFILIATIONS

Canadian Association for Future Studies.

Winnipeg Press Club.

Women's Advertising and Sales Club of Winnipeg.



Genevieve C. McRobbie

Genevieve obtained a Bachelor of Library Science Degree from Columbia University in New York, New York in 1949 and a Bachelor of Arts Degree from the University of Manitoba, Winnipeg, in 1967.

From 1950 to 1954 Genevieve was librarian for the Provincial Department of Health in Regina, Saskatchewan and from 1957 to 1959 she was Information Secretary for the Canadian Institute of International Affairs in Toronto, Ontario.

In 1963, Genevieve returned to Winnipeg and accepted a position as librarian at the Manitoba Hydro. In 1969, she assumed the duties of cataloguer for the Manitoba Museum of Man and Nature.

Genevieve joined the Manitoba Telephone System in 1976 as a library consultant and established an Information Resource Centre. Currently, as librarian, she ensures the latest technical periodicals and texts are available to all technical and non-technical staff members, and maintains a liaison with other professional libraries.

PROFESSIONAL AFFILIATIONS

Manitoba Library Association.

Canadian Library Association.

American Society for Information Science, Western Branch.



Boris A. Baryla

Boris has a Bachelor of Science degree from the University of Manitoba.

Boris joined MTS in 1962. He conducted the Division of Revenue Studies in the Traffic Department and developed Toll Trunking and Switching Equipment forecast requirements.

In 1964 he worked with I.B.M. on the design and analysis of a framework for processing Traffic & Engineering Data gathered from Switching Offices. As a result of this, he implemented the Mechanical Traffic Data Processing System (MTDS).

In 1970, he was assigned to the TransCanada Telephone System. He developed the TransCanada Toll Management Model and designed and implemented the on-line data base system for the Toll Models Investment Model.

In 1973 he became a Systems Analyst. While in this position, he prepared all systems definitions for the Electronic Traffic Data Collection.

In 1976, as Methods Assistant-Traffic Systems Co-ordinator, he initiated and directed operational reviews which resulted in his design and implementation of SL-1 Electronic Private Branch Exchange Data collection and processing system.

In 1978 he assumed his current position of Supervisor Administrative Systems Methods. He manages a multi project program of feasibility studies and System implementations, such as Call Analysis Reporting System (CARS), Overseas Country Calling Report for TCTS and Operator Force Management System.



Pawas S. Verma

Pawas is a professional engineer with a Masters degree in Electrical Engineering from the University of Manitoba. He earned his Bachelors degree in India from the Birla Institute of Technology and Science, and a Masters of Engineering (Electrical Communications) from the Indian Institute of Science.

From 1970 to 1971 Pawas worked at the University of Manitoba where he was responsible for the design of a new hospital emergency and status reporting system.

In 1971 he joined the Federal Government's Department of the Environment where he was involved in pollution control programs. Later, he was attached to RCA and Bristol Aerospace for the Canadian Communications Technology Satellite project to design electronic power switching systems on the space segment.

Pawas joined MTS in 1974 and worked in the Transmission Engineering group performing various tasks including acceptance tests of new telecommunications systems. In 1975 he was transferred to the Special Services engineering group where he took on the responsibility of designing the MTS broadcast program network.

Currently, Pawas has been working in the personal radio telephone service field. He has developed MTS fundamental plans for automatic mobile telephone services, paging services, cordless telephones and other personal radio telephone services.

PROFESSIONAL AFFILIATIONS

Association of Professional Engineers of Manitoba



A. T. Schindler

Andy is an advisor on planning matters to the Manitoba Telephone System. In this capacity he has carried out a study on Telidon application to the Winnipeg Commodity Exchange. He has also advised MTS on high technology industry development in Manitoba and new service opportunities in rural environments.

Andy graduated in 1959 from the University of Plymouth, U.K., in Electrical Engineering. He has taken courses at the University of Ottawa and Carlton towards his Masters degree.

From 1962 to 1972, Andy was with Bell-Northern Research in Ottawa. He was project leader on an outside plant systems planning activity which involved 50 Bell Canada personnel. He also made major contributions to the definition of SL-1 business communications systems, restoration of LD-4 digital cable system, RA-3 family of microwave radio, system planning, design and development.

In 1974, he joined the Federal Government, Department of Communications as a staff consultant where he initiated and organized the Rural Communications Program. He later became Manager of Rural Communications.

In 1979, Andy founded Andrew T. Schindler & Associates. The purpose of this company is to provide consulting services to the telephone industry and government.

PROFESSIONAL AFFILIATIONS

The Institute of Electrical and Electronics Engineers

Charter Engineer



Douglas S. Hayward

Doug graduated from the University of Manitoba with a Bachelor degree in General Science in 1969. He also received his Bachelor of Science in Electrical Engineering in 1973 from the University of Manitoba.

Doug accepted a position with the Manitoba Telephone System in a planning group in 1976 where he developed, recommended, and initiated the implementation of plans to extend MTS toll transmission facilities.

In 1976, Doug moved to Ottawa for an assignment to the TransCanada Planning-Network Architecture group of the TransCanada Telephone System (TCTS). He initiated, developed and recommended long range plans (0-30 years) for the orderly and economic extension of the TCTS toll plant, both transmission and switching, with due regard for existing, new and "on the horizon" technology.

He returned to Winnipeg this year to work in the MTS Planning Department as Research Manager. This position requires him to interact extensively with a variety of organizations including the Canadian Telecommunications Carriers Association and its 20 member companies.

PROFESSIONAL AFFILIATIONS

The Association of Professional Engineers of the Province of Manitoba

The Institute of Electrical and Electronics Engineers

STAFF TRAINING AND DEVELOPMENT

To further training programs and opportunities for its employees, the Manitoba Telephone System opened the Employee Development Centre in Winnipeg in 1976. It is shared by all departments involved in technical, managerial, and customer relations training. This multi-function concept which the Centre embraces is unique in the telecommunications industry.

As well, the System maintains strong links with the academic community, especially the University of Manitoba.

The System actively supports and encourages employees who wish to further their education and various skills through outside courses.

Two types of education programs are available

to MTS personnel. The System will pay up to 100 per cent of the cost of a correspondence or night course if it is directly job-related, or up to 50 per cent for courses that may be of long term benefit to MTS.

Educational leaves of absence are also available to MTS personnel. Depending on the course's benefit to the System, an employee may receive a leave of absence with no payment, partial payment, or full payment, to pursue his or her education.

In addition to providing educational opportunities for its employees, the System firmly upholds its Equal Employment Opportunity policy. The policy notes that three specific minority groups — women, native, and the handicapped — are to be given equal opportunity for all jobs.



Albert Mills, a Real Estate employee, is using the MTS educational assistance program to study business administration at Red River Community College.



Assisting employees furthering their education is an integral part of the over-all training process offered by MTS. Traffic employee Kathy Ritchie, recently graduated from a four year management university course through the help of MTS's educational assistance program.

SYSTEM EMPLOYEES IN SAUDI ARABIA

Bell Canada began its operations in Saudi Arabia slightly more than a year ago. To date, the company has met its obligations on the five-year, \$1.1 billion contract, to ensure that Saudi Telephone will become an efficient telephone system.

The Manitoba Telephone System has played an important role in the carrying out of this mission. Although the majority of the 700 Canadian telecommunications workers have come from Bell Canada,



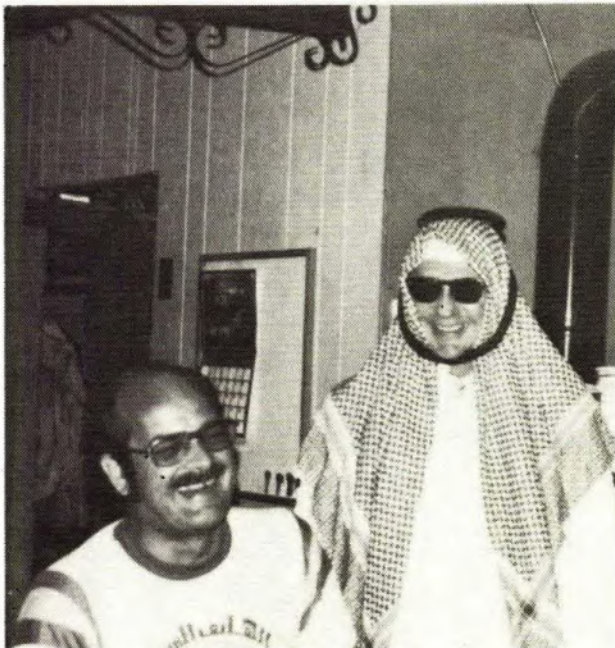
Joe Peters, one of 28 MTS employees loaned to Bell Canada for the Saudi Arabian telephone project, finds robes more comfortable than Western clothes. He is standing in front of a Saudi Telephone car.

MTS has supplied more on-loan employees than any other TransCanada Telephone System member company. This is not surprising, for MTS employees are highly respected among Canada's telephone companies for their sound training and technical abilities.

Presently there are 28 System employees from various departments working in Saudi Arabia. The first group left Manitoba in August, 1978, on contract to Bell Canada.



The Mideast Saudi Telephone building is just one of the various locations that the 28 MTS employees on-loan to Bell Canada in Saudi Arabia work out of.



Ted Scoles, left, an MTS employee presently working on-loan to Bell Canada in Saudi Arabia, had a former co-worker, Blair Ledger, Northern Region, try on a Saudi headpiece or Gutra when he was home this summer.

TELECOMMUNICATIONS IN MANITOBA

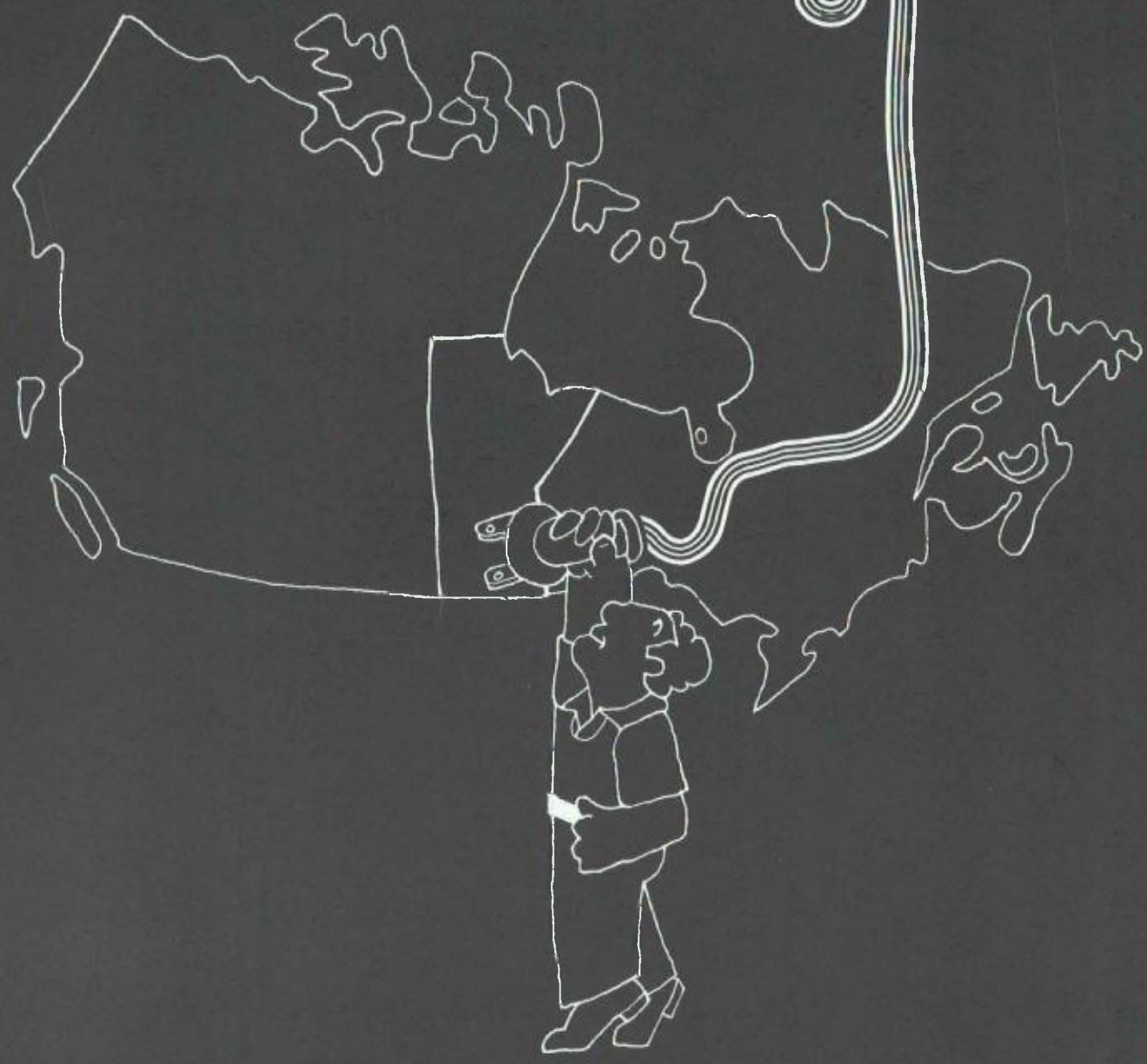
- 1877 - First two Manitoba telephones installed in Winnipeg.
- 1882 - Ida Cates becomes Manitoba's first female telephone operator and became known as The "Voice with a Smile."
- 1887 - First long distance line in Western Canada placed in service between Winnipeg and Selkirk.
- 1908 - Telephone System in Manitoba becomes a public utility.
- 1917 - Manitoba's first dial telephones installed in Brandon.
- 1921 - The name Manitoba Government Telephone changed to Manitoba Telephone System.
- 1926 - Winnipeg becomes first city of its size in North America to have completely automatic dial service.
- 1931 - TransCanada Telephone System formed.
- 1948 - Radio terminals are opened at Gimli and Norway House to serve the North.
- 1949 - The extension of dial facilities to the rural areas of Manitoba begins.
- 1955 - 200,000th telephone in Manitoba installed in Brandon.
- 1957 - Manitoba section of TransCanada Microwave Network carrying network television, was completed.
- 1958 - Radio relay network to Flin Flon completed.
- 1962 - 300,000th telephone in Manitoba installed in Winnipeg.
- 1963 - New Administration Building on Empress Street in Winnipeg completed.
- 1965 - Direct Distance Dialing introduced in Metro Winnipeg.
- 1966 - System accelerates continuing local and rural service improvement.
- 1966 - DDD is introduced outside of Winnipeg for the first time.
- 1969 - 400,000th telephone in Manitoba installed in Thompson.
- 1969 - Network television provided to four communities north of the 53rd parallel.
- 1970 - MTS begins supplying its service to customers of the Rural Municipality of Wallace, the last municipally owned telephone system in the province.
- 1971 - Local calling exceeds one billion calls for the first time.
 - MTS announces the construction of a microwave system between Thompson and Lynn Lake. The network, scheduled for completion in the summer of 1973, will be used to carry network television to Lynn Lake as well as increase long distance telephone service.
- 1972 - Introduction of new business services called VUcom I, Dataroute and FAX-com.
- 1973 - System's 500,000th phone installed at Winnipeg's International Airport.
- 1974 - Gordon Holland succeeds James F. Mills as System's sixth Chairman and General Manager.
- 1975 - Automatic SP-1 equipment brings DDD to Brandon and 70 Western Region exchanges.
 - Long distance and TV service brought to Northern Manitoba via Microwave relay system.
 - MTS rate increase — first in 20 years.
 - Manitoba Data Services established in September as a division of MTS.
- 1976 - First of System's Phone Centres opened in January in Winnipeg's Unicity Fashion Square.

TELECOMMUNICATIONS IN MANITOBA (CONT'D)

- The Manitoba/Canada agreement signed, November '76 allows common carrier, MTS, to own all signal distribution hardware for cable television.
- 1977 - MTS becomes 100% dial operated with conversion of Rapid City.
 - The System's 600,000th telephone installed in a Winkler residence.
- 1978 - Direct Dialing to 27 countries begins.
 - MTS employees go to Saudi Arabia to assist with a telecommunication project.
 - Rural improvement program continues to receive high priority.
 - Delivery of American network television signals to Brandon, Portage la Prairie and Selkirk begins September 29, 1978, over the System's Inter-city Broadband Network (ICBN).
 - In April the second rate increase for MTS since 1955 goes into effect — increasing residence and business rates by about 12 per cent. MTS rates remain among the lowest in North America.
- 1979 - Project Ida, a Home of the Future experiment utilizing a coaxial cable network and integrating a variety of services such as alarm reporting, automatic meter reading, videotex, two-way TV, is announced. Approximately 100 homes involved. Scheduled to begin early in 1980, in South Headingley, Manitoba.
 - Project Elie, a Farm of the Future experiment utilizing a fibre optic network, sponsored jointly by Canadian Telecommunications Carriers Association, Federal Department of Communications, Northern Telecom Ltd. and MTS, scheduled to begin in 1981 in Elie, Manitoba.



exploring the wired country



APPENDIX

Appendix A — Service Suppliers

B — Basic Fibre Optic Field Trial
System Description

C — Work Statement Addenda

D — Project Ida background
information

A P P E N D I X A

S E R V I C E S U P P L I E R S

Service Suppliers

This appendix provides a sample of the organizations who have indicated an interest in participating in the Elie - St. Eustache Service Trial. In order to provide some perspective to the service supplier area we have listed them in relation to the services they could provide:

1. Remote Metering

i) Manitoba Hydro, Winnipeg Manitoba

2. Alarm Forwarding

i) Teleguard, Winnipeg, Manitoba

3. Load Management

i) Manitoba Hydro, Winnipeg, Manitoba

4. Broadband

i) Videotron, Montreal, Quebec

ii) Selecta Vision, Winnipeg, Manitoba

iii) CPMS Cable Stereo, Winnipeg, Manitoba

iv) University of Manitoba, Fort Garry, Manitoba

5. Personal and Business Data

- i) Department of Agriculture, Winnipeg, Manitoba
- ii) University of Manitoba, Fort Garry, Manitoba
- iii) Infomart, Winnipeg, Manitoba
- iv) Canadian Home Information Services Inc., Winnipeg,
Manitoba
- v) Manitoba Pool Elevators, Winnipeg, Manitoba
- vi) Yellow Pages (Manitoba Telephone System) Winnipeg,
Manitoba
- vii) Ontario Educational Communication Authority, Toronto,
Ontario
- viii) Canfarm, Guelph, Ontario
- ix) Great West Life, Winnipeg, Manitoba

It should be noted that this is by no means an exhaustive list of suppliers. Our contacts have been on a broad basis and even with this, we have received very favourable response. This can be seen from the accompanying letters of intent.

The University of Manitoba



Continuing Education Division Winnipeg, Canada R3T 2N2

Summer Session and
Credit Extension Programs
300 Fletcher Argue Building
474-9906

Non-Degree Credit
Programs
541 University Centre
474-9921

Special Mature Student
Programs
473 University Centre
474-9837

November 16th, 1979.

Mr. R. J. Kachulak,
Manitoba Telephone System,
489 Empress Street, Box 6666,
Winnipeg, Manitoba
R3C 0AZ

Dear Mr. Kachulak:

On behalf of the Continuing Education Division of the University of Manitoba may I congratulate yourself and the Manitoba Telephone System for the leadership you have exhibited in launching the Elie experiment in tele-communications. We at the University of Manitoba are anxious to participate with MTS in this far reaching communications experiment. The educational value of the fibre optics system to be used in Elie, we feel, is immense in its potential. As I have indicated to you on previous occasions, the University of Manitoba, through the Continuing Education Division, is prepared to be a source for the design, development and delivery of educational programs through the system. Currently, we are arranging funding for such involvement. Our need is to have MTS, or some other agency, provide funds to link the University of Manitoba to the system. If this can be arranged, we anticipate a significant level of involvement from all areas in the University. A number of faculty members have expressed interest, moreover, in providing a research capability, particularly around such issues as social impact and change in life-patterns, in relation to the project.

In summary, let me say that the Elie project is viewed by us as a landmark experiment in telecommunications and, indeed, education. You and your colleagues at MTS can be assured of our serious commitment to the central ideas of the project and our willingness to become actively involved as providers of educational programs. If there is anything which I can do to facilitate the achievement of the project's goals, please do not hesitate to call on me.

Looking forward to co-operating with you.

TRM/es

*Summer Day Courses
Summer Evening Courses
Intersession Courses
Off-campus Courses
Correspondence Courses
Canadian Forces Program*

*Professional and Management
Development
Social and Personal
Development
Summer Language Institute*

Yours truly,

T. R. Morrison,
Dean.

MANITBA
DEPARTMENT OF AGRICULTURE

153 Legislative Building
Winnipeg, Manitoba
R3C 0V8

November 23, 1979

Manitoba Telephone System
489 Empress Street
Winnipeg, Manitoba

Dear Sirs:

The Manitoba Department of Agriculture may participate in project IDA on a limited basis depending on evidence of demand for agricultural information.

We expect to increase participation in the Elie - St. Eustache trial project. Participation will be subject to contractual agreements with a computer vendor and the availability of funds.

Yours truly,



R.R. Filteau
Co-ordinator
Policies and Programs

RRF/eb



7 FLR. IMPERIAL TOWER
363 BROADWAY
WINNIPEG
MANITOBA
R3C 3N9
204-956-1293

November 9th, 1979.

Mr. Dennis Wardrop,
Director of Corporate Development,
Manitoba Telephone System,
P. O. Box 6666,
Winnipeg, Manitoba.

Dear Dennis:

We now have finalized our contractual agreements with the Great West Life as a client to take part in the IDA and Elie Tests. They will be providing to these tests attractive and valuable information for the use of the test homes.


A lot of the credit for our success in working with Great-West Life is due to Mike Aysan and his assistance in resolving the various questions and concerns that arose during the negotiations. Please express our appreciation to Mr. Aysan and his staff for their support.

Yours very truly,

CANADIAN HOME INFORMATION SERVICES INC.,

E. David Cortens, C. A.

EDC/sh
c.c. Mr. Gordon Holland



Electronic
Yellow
Pages

November 27, 1979

Mr. Mike Aysan
Product Development Manager
Manitoba Telephone System
489 Empress Street
Winnipeg, Manitoba
R3C 3V6

Dear Mr. Aysan:

This is to inform the Manitoba Telephone System, immediately, that we will be participating in the Elie/St. Eustache fibre optics trials as Information Providers.

We are operating under the title of Electronic Yellow Pages, E.Y.P.

For further information, please feel free to call.

Thank you.


Mr. John Finn
Video Services Manager

JMF/dg

x.c. A.V. Powell
R. Urquhart

Manitoba Pool Elevators

P.D. BDX 9800, WINNIPEG, CANADA R3C 3K7 • AREA CDDE 204, PHDNE 947-1171



November 23, 1979

Mr. Rod Kachulak
Manitoba Telephone System
P.O. Box 6666
Winnipeg, Manitoba
R3C 3V6

Dear Mr. Kachulak:

We take pleasure in confirming our continued interest in the upcoming Elite - St. Eustache Service Trial.

As you are probably aware, Manitoba Pool Elevators (MPE), as a producer-owned grain cooperative, provides a wide range of needed services at cost to some 20,000 farmer members. The Manitoba Co-operator, an agriculture weekly in its thirty-fifth year of publication by MPE, has a circulation of over 45,000 throughout Manitoba with up-to-date information covering the local, national and international scenes.

As a potential information supplier, we are prepared to discuss the feasibility of providing regionalized Want Ads, selected news articles, MPE bulletins, and daily street prices for Non-board grain.

Would you please keep us informed and we hope, with Mr. Bob Urquhart's and your assistance, MPE's participation may contribute towards the success of this project.

A handwritten signature in dark ink, appearing to read "B. Tuan", is written over the typed name.

B. Tuan
Manager,
Management Information Services

BT/rh

cc. Mr. G. W. Holland
Chairman of the Board and General Manager
Manitoba Telephone System

SELECTA VISION INC.

November 22nd, 1979.

Ms Marilyn Edwards,
Manager Market Development,
Elie Project,
Manitoba Telephone System,
P. O. Box 6666,
Winnipeg, Manitoba.

Dear Ms. Edwards:

As you are aware our firm will be participating in Project "IDA" trial in Headingley, Manitoba, commencing the first quarter of 1980.

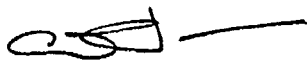
In reference your Project in Elie, Manitoba, please take this letter as our willingness to participate in the Elie trial on fibre optics, commencing the first quarter of 1981.

This letter is not a contract, final contractual details will be developed at a later date.

We look forward to participating in the Elie Trial and to working with you and your staff in this project.

Yours very truly,

SELECTA VISION INC.,



E. David Cortens,

SH/

Infomart

an information service of Southam Inc. and Torstar Corporation
Suite 1506, One Yonge Street, Toronto, Ontario M5E 1E5 Tel. (416) 366-3904
2000 West 12th Avenue, Vancouver, B.C. V6J 2G2
Suite 1610, 85 Albert Street, Ottawa, Ontario K1P 6A4

NOV 15 1979

November 13, 1979

Mr. Mike Aysan
Manager, Product Development
Manitoba Telephone System
489 Empress Street
P.O. Box 6666
WINNIPEG, Manitoba
R3C 3V6

Dear Mike:

I was very pleased to hear by telephone of your plans for the interactive trial in Elie, beginning early in 1981. As I understand it, MTS plans to set up a 150-terminal trial in the Elie area.

On behalf of Infomart, I want to confirm our willingness to participate in this trial in the same manner as we will participate in Headingley, acting as an information provider and broker with storage and processing capability.

We are also most interested in your plans for extension into a large market trial, and David Carlisle has asked me to assure you of our enthusiasm and our agreement to participate in discussions to help implement that project.

With all good wishes.

Yours sincerely,



Gerald Haslam
Director, Videotex Services
Southam Inc.



November 22nd, 1979.

Ms. Marilyn Edwards,
Manager Market Development,
Elie Project,
Manitoba Telephone System,
P. O. Box 6666,
Winnipeg, Manitoba,

Dear Ms. Edwards:

As you are aware our firm will be participating in Project "IDA" trial in Headingley, Manitoba, commencing the first quarter of 1980.

In reference your Project in Elie, Manitoba, please take this letter as our willingness to participate in the Elie trial on fibre optics, commencing the first quarter of 1981.

This letter is not a contract, final contractual details will be developed at a later date.

We look forward to participating in the Elie Trial and to working with you and your staff in this project.

Yours very truly,

TELEGUARD SYSTEMS INC.,

A handwritten signature in dark ink, appearing to read "E. David Cortens", with a long horizontal stroke extending to the right.

E. David Cortens,

SH/

A P P E N D I X B

F I B R E O P T I C

F I E L D T R I A L S Y S T E M

D E S C R I P T I O N

A RURAL DISTRIBUTION TRIAL WITH FIBRE OPTICS

Brian B. McCallum

Canadian Telecommunications Carriers Association and

Canadian Department of Communications

Suite 700, 1 Nicholas Street, Ottawa, K1N 7B7, Canada

I. INTRODUCTION

The problem of providing rural customers with equivalent or better communications services than those currently enjoyed by urban customers is primarily one of costs, which increase rapidly as population density decreases. There are in excess of 700,000 rural Canadian households on multi-party telephone lines [1] and the number of customers on a single line can range up to 10 with a current average of approximately 4. Many rural Canadian households pay long distance charges to telephone a school, shopping centre, municipal services and a doctor or hospital. Only 10% of rural households have access to a licensed cable TV system and the broad choice of programming associated with the service [2]. Current efforts by Canadian telephone companies indicate that reduction of multi-party line loads to provide a maximum of 4 customers on a rural multi-party line universally throughout Canada will require significant resources and accelerated effort to accomplish by the mid-1980's.

THE NATURE OF RURAL COMMUNICATIONS IN CANADA

Approximately 6 million people or 27% of the Canadian population live in an area exceeding 1 million square km which is classified as rural by the Federal Department of Communications. This definition of rural areas comprises small settlements and villages having population of 2500 or less and sparsely populated areas with a population density of at least one person per square mile (approximately 0.4 persons per square km). The average household density is 1.0 households per square km for the 10 provinces. Excluded from this definition are urban centres and low-density remote areas. Figure 1 illustrates the area included in this definition.

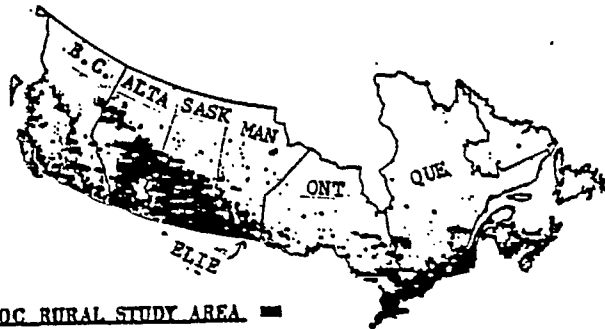


Fig. 1 DOC Rural Study Area

The solution to the cost problems of improving rural communications can be simplified to cost reduction of telecommunications plant and/or increased funding to cover the high cost. The potential solution of an integrated distribution plant with broadband capability offering overall cost savings and increased revenue potentials from cable TV and other new services has been recognized for many years. The advent of fibre optics, coupled with other cost reduction developments such as LSI's and microprocessors, indicate that the mid-1980's could see introduction of integrated fibre optic distribution plant. The feasibility studies which were initiated in 1976, and led to the above conclusions, are described in the next section. These studies also led to Department of Communications (DOC) and the Canadian Telecommunications Carriers Association jointly sponsoring the Elie Rural Fibre Optic Field Trial.

II. PRELIMINARY STUDIES LEADING TO ELIE FIELD TRIAL

The Federal Department of Communications (DOC) commissioned Bell Northern Research Limited (BNR) in 1976 to carry out a system study [3] of fibre optics for broadband communications. The objective

of the study briefly summarized "are to identify and develop the most suitable methods of using fibre optics for CATV, asymmetric switched visual services, and integrated distribution of video, voice and data services, and to examine the technical, economic and operational feasibilities of using fibre optics to provide these services. The emphasis of the study is places on rural areas..." This comprehensive study was completed in March 1978 and was comprised of ten separate study activity reports and a final report.

The BNR study came to the following major conclusions:

- a) Of the various system configurations considered, the switched star structured configuration consisting of a centre node and a number of satellite remote switching units was found to be the most technically attractive, particularly for the asymmetric switched visual services and the integrated distribution of video, voice and data services. This configuration overcomes near-term fibre optic technology limitations, offers flexibility in the alteration or expansion of service options, offers increased reliability by minimizing and concentrating field electronics and follows current evolutionary trends of the telecommunications network.
- b) For CATV Service only, the star structured system configuration is also suited for near term implementation with a non-switched tree structured system appearing more attractive with time as multiplexing and coupling techniques become more feasible and economical. However, inclusion of Pay TV or other interactive services would favour a switched system approach.
- c) In rural areas, optical fibre based CATV system with a switched star configuration are cost-effective in comparison with a conventional tree-structured coaxial cable CATV system - assuming the low end of fibre optic price projections for 1985 do in fact materialize.
- d) Integration of video, voice and data services on a single optical fibre-based network is technically feasible and cost-effective in rural areas at medium price projections. The fibre based integrated network would cost 20-30% less than separate telephony on pairs and CATV on coaxial cables.
- e) The subscriber terminal units at both the subscriber and remote switching ends are major cost elements and cost reductions here would enhance the economic attractiveness of integrated fibre optic based systems.

In the same time frame, the Manitoba Telephone System proposed a rural fibre optic field trial for Elie, Manitoba in late 1976. This resulted in DOC and CTCA jointly awarding a contract in 1977 to two Canadian Manufacturers, Northern Telecom and Canstar to develop study proposals for a rural fibre optic field trial at Elie, Manitoba. These study proposals [4,5] were completed in 1978 and the Northern Telecom proposal selected for field trial implementation. The Northern Telecom proposal was conducted using BNR, a subsidiary of Northern Telecom, and the Elie study proposal complemented and reinforced the findings of the previously mentioned BNR systems study.

III. DESCRIPTION OF FIELD TRIAL

OBJECTIVES OF TRIAL

The joint DOC/CTCA objectives of the Elie Trial are directly and indirectly oriented towards obtaining improved rural communications. They include:-

- Investigating the feasibility and determining future R&D directions of a switched integrated video, telephone and data distribution system in rural areas.
- Stimulating the development, manufacture and installation of cost-effective fibre optic technology.
- Gaining practical experience by Carriers in the design, construction, operation and maintenance of fibre optic systems in a harsh Canadian rural environment.
- Determining the social and market implications of improved TV and telephony services, particularly new home services such as interactive services, alarms and monitoring etc., in rural areas.
- To obtain technical, economic, social and operational data for future regulatory and policy decisions related to carrier versus content, carriage of new services, rural services improvement, Pay TV program/service and other concerns of public interest.
- To foster and develop cooperation between government and industry in the advancement of Canadian Telecommunications.

FIELD TRIAL LOCATION

Elie, Manitoba is a fairly typical rural location in the prairie provinces (Manitoba, Saskatchewan and Alberta) where the rural household density is the lowest in Canada ranging from 0.40 to 0.74 households per kilometer. There are a total of 452 customers in the Elie telephone exchange area of 378 square km, with 219 multi-party customers outside the two villages of Elie and St. Eustache, giving a density of 0.58 customers per square kilometer. The exchange

area is good quality farm land with support service industries including grain elevators, farm equipment dealers, garages, banks, restaurants, etc.

The geographic environment is very flat prairie consisting of deep, boulder-free, clay-silt soil. The temperatures are extreme, ranging from -40°C in winter to +38°C in summer. Frost penetration ranges from four to six feet deep during winter - with significant contraction and expansion of soil expected to provide a severe test of fibre optic cable since most of the cable will be plowed in the ground. Of the total cable length of 50 km, 43 km will be buried and 7 km will be aerial.

The population of 1000 in the Elie Exchange area is almost equally split three ways between the villages of Elie, St. Eustache and the surrounding rural farm land. The field trial involves 150 households with a corresponding three-way split between villages and farmland.

In 1976, the rural multi-party area outside the village of Elie received improved telephone service under the MTS rural service improvement program. Individual telephone line service replaced multi-party service in the village of St. Eustache. Rural customers outside the two villages were provided 4 party service so that the number of customers on a line range from 2 to 4 with no more than 4 on a line. Most households in the Elie exchange can receive 4 Canadian broadcast TV stations but cable TV service is not available.

BASIC FIELD TRIAL SERVICES

The basic field trial capability provided to each customer will be access to 9 TV channels, 7 FM radio channels, individual line telephone service and an individual 56 kbs data channel. A monitoring system is provided which will monitor TV and data channel usage for social and market research purposes.

FIELD TRIAL SYSTEM CONFIGURATION

The field trial uses a switched star configuration consisting of a central switching unit, a remote switching unit and customer entrance terminal units. The central switching unit is located in a portable office adjacent to the existing switching office in Elie, which houses a Northern Telecom SA-1 cross-bar switching machine installed in the early 1970's. The remote switching unit will be located in a portable office at St. Eustache, 8.4 km away and each customer will have an entrance terminal unit. A block diagram of the system is shown in figure (2).

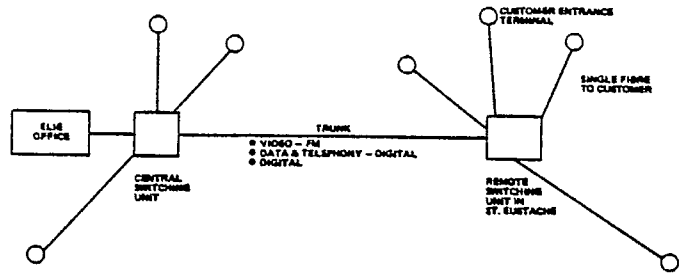


FIG. 2 SWITCHED STAR NETWORK CONFIGURATION

Transmission of a 56 kbs data channel and an individual telephone line to each customer utilizes digital carriers at DS-1 and DS-2 rates. Video transmission is FM on the feeder and VSB-AM on the distribution cable. A variety of both single and multiple fibres to each customer will carry the two-way transmission of data and voice, the TV selection signals and up to two independent TV signals between the customer and the remote switching unit or the central switching unit. No field repeaters are required for the 8.4 km trunk cable and the distribution cables which range up to 5 km.

The central switching unit consists of a Program Centre, a Data Vendor Interface, Integrated Line Interface Units (ILIU) and trunking equipment (DMS-1 and FA-1) to the remote switching unit as depicted in figure 3. Also included are a maintenance centre to monitor all aspects of the field trial and display centre where live demonstrations can be conducted of the system capability.

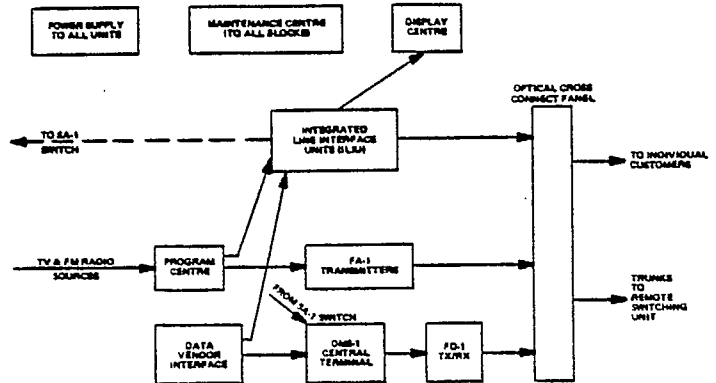


Fig. 3 Central Switching Unit

Integrated line units (ILIU) perform the video switching function using frequency division multiplexed switching. The ILIU also combines and conditions all the video, voice and data into one composite signal to be transmitted to the customers.

The remote switching unit has ILIU's similar to the central switching unit which receive the trunked video, data, FM radio and telephony signals and combine them to be transmitted to the customers. Figure 4 indicates the key blocks contained in the remote switching unit.

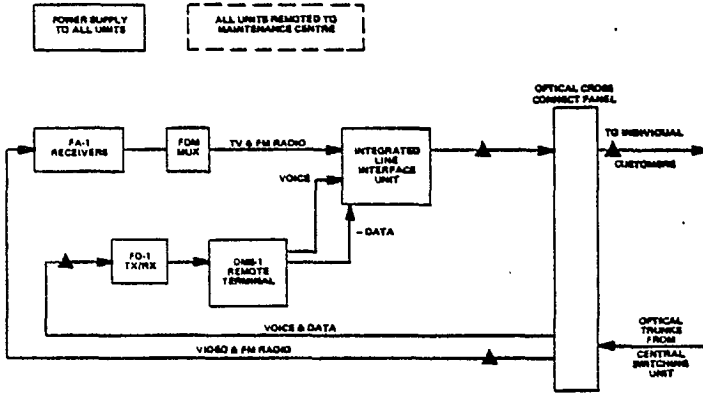


FIG. 4 REMOTE SWITCHING UNIT

The final major component in the System is the customer premises equipment which will consist of a customer entrance terminal, a TV set top transceiver and a remote control unit to change channels. This is shown in block form in figure 5.

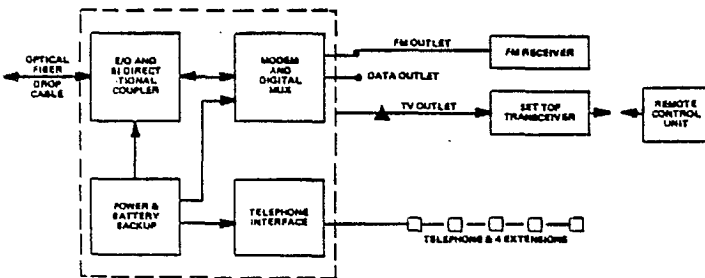


FIG. 5 CUSTOMER PREMISES EQUIPMENT

OPERATING TELEPHONE COMPANY INVOLVEMENT

One of the important objectives of the field trial is to obtain actual field experience by an operating company. This practical experience in a rapidly emerging technology is expected to prove valuable to members of the Canadian Telecommunications Carriers Association and will give the system

development community added insight into operating problems affecting future R&D and design. Manitoba Telephone System (MTS), the host company for the trial will participate in the engineering and placement of the outside plant portion of the Field Trial System. Administration and maintenance of the Field Trial System, customer contact, etc., will be performed by MTS to simulate a real operating environment. Summaries of trouble reports and other administrative problems will be documented by MTS with a view to evaluating the system in terms of its practicability, performance and service implications.

NEW HOME SERVICE TRIALS

The Elie Trial System has the capability of providing the wide range of new home services that exist or are forecast in the future. The capability combination of switched video, individual 9.6 kbs data channels and monitoring/billing for video and data services will enable provision of these services on a pay for usage basis and provide usage information for study purposes. The specific new home services to be provided during the field trial have not been finalized but will include videotex - type information services utilizing the DOC developed Telidon system. Other services under active consideration are fire and intrusion alarms, electric or gas meter reading and equipment control, farm management services, Educational TV, Pay TV, TV games, Telemedicine etc. Many of these services are ultimately expected to have more appeal in sparsely populated and isolated rural areas than urban areas, provided they are economically feasible.

TRIAL COSTS AND SCHEDULE

Total cost of the basic field trial system is currently budgetted at \$6.3 million, exclusive of new services trials. Cost estimates for new home services trials could increase the cost by \$3 to \$4 million depending on the scope and nature of the services selected. These costs are not indicative of an economically feasible system since they involve R&D, prototype and other first time costs involved in advancing the implementation of new technology.

The complete field trial system is to be ready for service in July 1981. A operational period of one and a half years to January 1983 is allowed for evaluation and experimentation with the system and new home services.

IV. FUTURE EXPECTATIONS

ECONOMICS

The economics of fibre optic and integrated video, data and telephony services will be a prime determinant for adoption by carriers of an integrated distribution system in the rural areas. As mentioned earlier, the economics are governed by decreased costs and/or increased revenues. The

previously mentioned BNR, Northern Telecom and Canstar studies all included comprehensive analyses of the projected 1985 costs of integrated rural fibre optic distribution systems. These analyses included extensive probability ranges of cost reduction due to R&D, mass production levels, various network configurations and other cost sensitive elements. The summary results of these projections indicate that the expected 1985 range of costs for Canada rural areas range from \$1000 or \$5000 per customer in 1978 dollars. The most likely costs appear to be in the \$2000 to \$3000 range.

What is the significance of these 1985 cost projections? One important aspect is that an integrated fibre optic system generally would cost 20-30% less than a separate distribution system of telephony on pairs and CATV on coaxial cable with corresponding savings also anticipated from the operation, maintenance and administration of one network (6). A second important aspect is that when compared to the Carriers current cost of approximately \$1000 per subscriber to improve rural multi-party telephone service, the increased cost factor of 2 to 3 for integrated video, individual line telephony and data services is fast approaching an economically feasible range, considering the long range network requirements, potential revenues from the additional services, and the eventual requirement for universal individual line telephone service in rural areas.

A third aspect of significance is the need to ensure that cost effective technology can be implemented when available. This requires a state of preparedness by carriers and manufacturers to ensure that the carriers' substantial annual investments will not become prematurely obsolete. For example, the annual capital expenditures of the Canadian Carriers approximate \$2 billion dollars with about \$600 million expended on distribution plant in urban and rural areas.

SYSTEM DESIGN FOR RURAL APPLICATIONS

The problem facing improved rural communications is most acute in sparsely populated areas, those with densities in the 0.5 to 3.5 households per square km range. The economics of placing integrated plant over long thin routes would be impacted favourably by the development of wavelength division multiplexing or frequency division multiplexing to the stage where multiplexing a large number of TV and other channels on a single fibre with minimal repeating becomes feasible and economical. A further expected development would see the remote switching units described in this paper reduced in size and available in small field housings such as those used in 1.544 Mb/s PCM carrier repeaters for subscriber and inter-exchange applications. Other problems such as power and temperature control for remote field housings are expected to be economically solved by 1985. Future integrated fibre optics systems are expected to incorporate modular electronics and microprocessors in a way that will permit flexible introduction

and addition of plant investment and new services. These systems will consequently avoid premature obsolescence, allowing the graceful evolution of the future electronic highways to meet technical and market developments of the future.

V. CONCLUSIONS

This paper has discussed the need for improved rural communications in Canada together with the potential solution of an integrated network using fibre optics as being feasible in the mid-1980's. The technical and cost problems currently blocking widespread introduction are expected to be largely overcome by the mid-1980's based on progress to date and projections for the future. The particularly formidable problems of cost are expected to become similar to the existing economics for current rural service improvement programs through a combination of 20-30% capital savings and 20-25% operating expense savings using integrated plant, together with additional revenues from TV programming and other new services. However, the sparsely populated rural areas with densities in the 0.5 to 3.5 households per square kilometer are not expected to be served by integrated plant without economic assistance.

The integration of rural plant and the need for some form of economic assistance will require future policy and regulatory decisions if the rural home and business customers are to be provided with communications services equivalent to urban customers. These decisions should consider the contribution of improved communications to the quality of rural life and to the success of rural businesses, along with improved rural employment opportunities, and the objective of stabilizing the rural population.

The Elie Field Trial is expected to provide information that will assist in determining what future technical, operational, economic, social and regulatory courses of action should be taken to improve rural communications in Canada.

VI. REFERENCE AND NOTES

1. G.D. Cormack, Television Network Coverage in Rural Canada compared with that in Census Metropolitan areas, Rural Communications Program, DOC, 28 August 1978.
2. Statistics Canada Catalogue 56-203 Annual, 1979 and 1972.
3. A System Study of Fibre Optics for Broadband Communications, BNR Study Reports for DOC, March 1978.
4. Program Definition Study of an Integrated Distribution System for the Field Trial in Elie, Manitoba; Canstar Study Report for DOC/CTCA, August 1978.

5. Program Definition Study of Fibre Optics
Rural Distribution Trial, Northern Telecom
Study Report for DOC/CTCA, May 1978.
6. Interagency Committee Report on Rural Communi-
cations, Office of Telecommunications Policy,
Washington, D.C., December 1977.

A P P E N D I X C

W O R K S T A T E M E N T

A D D E N D A

SCHEDULE 1

KEY TECHNOLOGY UNDERTAKING

The Manitoba Telephone System has already funded with industry, hardware and software development for an integrated services coaxial cable system to be used in project IDA. The hardware and software resulting from this work includes the following subsystems:

- Subscriber Terminal Unit (STU)
- Remote Video Data Multiplexor (RVDM)
- Intermediate Distribution Terminal (IDT)
- Distribution Control Terminal (DCT)
- Centralized Control and Applications Software

The foregoing subsystems are hosted on a Central Control Computer (CCC).

To apply this hardware to the Elie-St. Eustache fibre system modifications to the above equipment are required.

This work will be sub-contracted to industry.

The system description of the fiber configured system showing the application of the modified hardware is shown in section 1.32 of this proposal.

A detail work plan for this activity will be developed during the initial phase of this project.

SCHEDULE 2

HARDWARE PROCUREMENT

The hardware required to up-grade the basic fibre system to trial new services is the following:

<u>Hardware Type</u>	<u>Quantity</u>
Data Multiplex	150
Home Computer	150
FMT-FMR Terminals	6
Video Conferencing Facility	1
Spare Equipment	To Be Determined
Miscellaneous Equipment:	" " "

The cost breakdown of the foregoing list is provided in Section 6 of this proposal.

M.T.S. will carry out all the necessary work to procure this hardware for the Elie - St. Eustache new services project and will use standard company procurement procedures.

SCHEDULE 3

SYSTEM INSTALLATION, INTEGRATION AND ACCEPTANCE

The basic system acceptance tests are scheduled for completion by Northern Telecom for September, 1981. Up to this time the new services packages will be developed completely independent of the basic system. It is planned that the new services be introduced gradually after the basic system has been accepted. A total of thirty-four weeks is provided for New Services system installation, integration and acceptance, starting twelve weeks before and finishing twenty-two weeks after the September acceptance date.

At the present time it appears that there may be up to forty new service suppliers involved in the integration activity that have been working independently of each other with MTS as the coordinator. In order to assure a high quality outcome of this trial, MTS will undertake to perform the following tasks:

- a) Testing and acceptance of each new service package independently (up to a limit of 40) on service supplier premises.

- b) Installation, testing and acceptance of the new service packages under field conditions with gradual integration on the central control complex in Winnipeg.
- c) Installation, testing and acceptance of C.O. equipment (tests not to include the basic transmission system).
- d) Installation, testing and acceptance of subscriber terminal equipment.
- e) Simulated tests between subscriber and C.O. system on the basic transmission systems.
- f) End to end integration and testing of the total system from service suppliers to subscribers.

The procedures will be modified to suit the situation in hand as the project evolves and develops.

A P P E N D I X D

P R O J E C T I D A

B A C K G R O U N D

I N F O R M A T I O N

telephony

THE JOURNAL OF THE TELEPHONE INDUSTRY SINCE 1901

Just like the good old days

Telephone operators used to dispense the news along with telephone connections. Taking a cue from the past, Manitoba Telephone System's Project IDA will be a trial of the new telecommunications information delivery systems



IDA CATES, the first female operator in Manitoba, Canada, is the inspiration for the Manitoba Telephone System's Project IDA. Nicknamed "the voice with a smile," Ida Cates was a local clearinghouse for information. The MTS project will explore technology for the "Age of Information."

"AT YOUR fingertips." It's a commonly used phrase, especially in promoting the department store catalog or telephone directory. But from now on the words will assume a broader meaning with the arrival of new information delivery systems in which the consumer plays an active role.

Canadians today are seeing the much-prophesied "Wired City" materialize, as converging developments in telecommunications, computers and television have led to the introduction of various interactive service packages in current or proposed experiments.

The Manitoba Telephone System, Winnipeg, Manitoba, Canada, is interesting in exploring this concept. Using coaxial cable as the transmission medium, the System's upcoming telecommunications experiment, Project IDA, is designed to provide a variety of services over a single integrated system, or electronic highway.

Project IDA is scheduled to begin early in 1980 with South Headingley, Manitoba as the site. An automatic fire alarm reporting system will be offered information retrieval services, automatic utility meter reading and additional video services. These new telecommunications services are expected to have a dramatic impact on the homes, offices and farms of future Manitobans.

According to Dennis McCaffrey, MTS project-manager, South Headingley was chosen because

"the area is scheduled for telephone network upgrading and the trial can be economically incorporated into the improvement plans. Also, Headingley is not currently being served by cable TV and this presents an opportunity for residents to have cable service."

As a feature of our rapidly developing "information society," the integrated services concept shows how telecommunications have come full circle since the early days of the telephone.

Out of the past

In the late 1800s, when there were no radios, people relied on the telephone operator not only to put their calls through, but also as a source of many kinds of information.

Project IDA, in fact, is named in memory of Ida Cates, who became Manitoba's first female operator in 1882. Ida, who customers soon came to recognize as the "voice with a smile," was typical of the kind of operator who could handle almost any kind of request beyond her call of duty. You could ask her for medical advice, a recipe, hockey game score, weather forecast, the time of day or details about an important news event. You might even ask her to call and wake you up in the morning—and she'd do it. If you reported a fire, she'd sound the alarm to members of the volunteer fire department.

The information role established
Continued on page 22

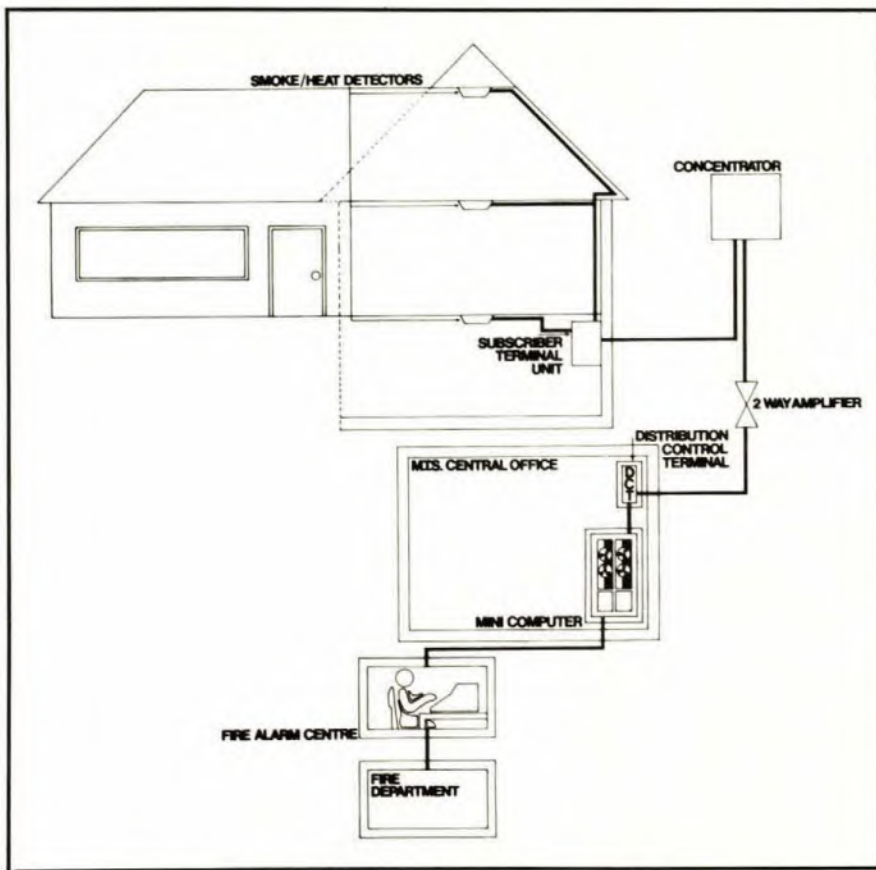


FIG. 1 Residential alarm system. Computer-aided learning (r) places information on the viewer's home TV screen.



by Ida Cates and her contemporaries remains an important part of our communications heritage and Project IDA is consistent with MTS' natural evolution as a provider of communications services. While the nature of telecommunications has changed dramatically through the years, adapting to newer methods and improved equipment has enabled the System to keep up with the demands of its customers.

Also, MTS is in the unique position of being one of the few telephone utilities anywhere in North America with legal access to the coaxial cable systems in its service area. The System wants to make

maximum use of its network to provide services which Manitobans may come to consider as vital as their telephone service is today.

Today it is known that only fiber optics technology surpasses coaxial cable in its capacity for carrying a diverse range of services simultaneously, including telephone and telegraph messages, television and FM radio signals and the kinds of interactive services being tested in Project IDA. While a universal practical fiber optics network is some years away—predictions run from 1985 to the year 2000—many miles of coaxial cable are already in place in Manitoba.

Also, it makes good economic sense to provide many services over one facility. Integration of services promises a whole new range of communications possibilities, particularly for those in rural and northern areas where it is economically prohibitive to even provide single-line telephone service today. With cable television, telephone, alarm services and others all being provided on one integrated facility, these services become affordable.

What are these services and why is MTS confident that Manitobans will one day need and want them?

Automatic fire alarm reporting has tremendous potential in terms of greater efficiency, lifesaving ability and cost reduction. MTS is now working with private alarm companies, equipment suppliers and the fire department to develop the experimental system for IDA, and basically it will work like this:

One of the popular types of smoke and/or heat detectors is installed in each participating home (see Figure 1). These alarms, provided by private alarm companies, are tied into the subscriber terminal unit, or STU. When set off by smoke or heat, the alarm travels through an MTS distribution network—the electronic highway portion—to a computer placed inside an MTS switching center. From there it goes through an MTS communications link to a reporting outlet. There, an alarm company representative has access to a screen display and customer file. After contacting the residence to verify that there is a fire, the representative notifies the fire department.

Such a system, if successful, could revolutionize traditional fire protection methods. By linking all homes in a community to an automatic alarm reporting system it would be possible to detect most fires in their early stages, resulting in saved lives and property, as well as reduced cost of fire protection services.

Along with the automatic fire alarm system, the coaxial network to be installed will have the capacity to bring cable television service to the area, pending licensing of an operator by the Canadian Radio-television and Telecommunications Commission. As mentioned earlier, approximately 50 homes also will have automatic meter

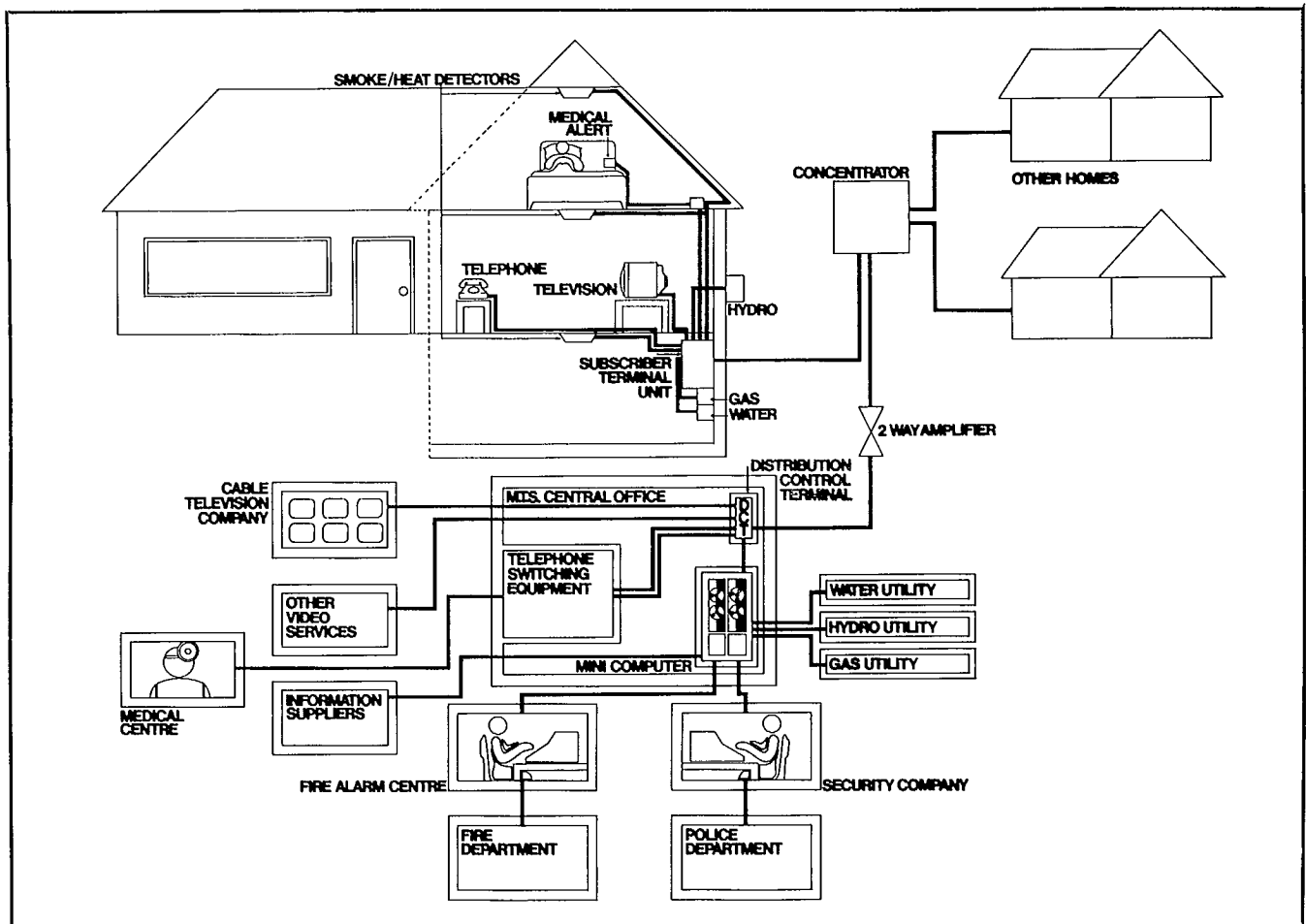


FIG. 2 Projected integrated services to be offered through telecommunications services over a single coaxial cable network. Project IDA will explore the potential of a wide range of network.

reading, other video services (for example, a film library) and an interactive information retrieval system.

Video information

IDA and other telecommunications experiments in Canada and the world offer valuable experience in the video information retrieval aspect of communication. Most systems have in common the following key elements:

- Information packages are supplied by companies or private individuals and fed into computer terminals for storage.
- The user terminal consists of a conventional television set for display of information and a control unit which links the customer's set with the telecommunications networks.
- A hand-held, calculator-like keypad gives you easy-to-use control of the system.
- At the push of a button on the key pad you can call up onto the screen a "page" of information

from the computer source.

An essential feature of any two-way interactive information service is that in many cases, the information displayed on the screen invites a response from the viewer. In other words, watching television becomes much more than a passive form of entertainment.

Some systems currently in use provide their users with news, want ads, movies and the ability to choose plot developments and endings for fictional stories.

Any kind of computer-stored information could be called up on the customer's screen at the push of a button. The possibilities likely will include transportation schedules, advertising, news briefs, library services, entertainment directories, telephone and television directories and a number of computer games. Access to financial, business, agricultural, government and educational resources also could be offered.

MTS views its role in the introduction of new services simply as a

common carrier, providing an electronic highway to all Manitobans on an equitable basis as the System has done since it was created by the legislature in 1908. The actual services will be provided by private business. In other words, MTS is interested ultimately only in providing the transmission medium.

It should be remembered that MTS' Project IDA is an experiment which will allow the System to proceed on the proper technological and marketing course in introducing new services.

Society has been defined as people in communication, and the electronic highway permits us to communicate in ways that once were unthinkable. MTS agrees with James Martin, author of "The Wired Society," who says that the correct choice of technological evolution can make our life on this planet better and richer. MTS is confident that its decision to involve Manitobans in Project IDA is the first step towards making the correct choice. □

Manitoba to be in the vanguard of 'visionary communications?'

By Richard Purser
Tribune Business Writer

A week from today, the Manitoba Telephone System is expected to announce details of forthcoming experiments in telecommunications that could prove the beginning of a new "information era" in North America.

As explained in a sneak preview before selected Winnipeg businessmen three months ago, the experiments will involve MTS as common carrier for the use of Teledon, a system devised by the federal communications department for providing computer services through linkups with home or office television sets.

The initial experiments will probably begin with a computerized fire alarm service in about 100 selected Winnipeg homes later this year, leading to more full-scale Teledon trials in Elie and St. Eustache beginning in 1981.

Details of the location and nature of these experiments, and of the private contractors involved, will be announced next week.

Local company

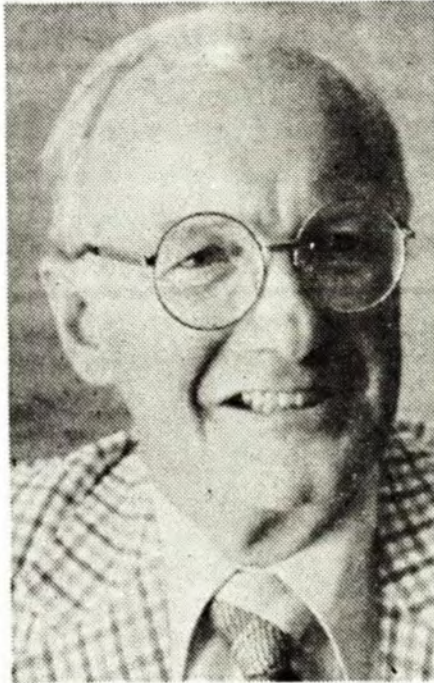
But one of the service providers for MTS will be a recently formed local company, Tele Guard System Inc. It has three principal shareholders, all Winnipeg venture capitalists: Victor Thiesen, president; Johnson Smith, treasurer, and another whose shares are held in trust.

An unofficial consultant to Tele Guard — a "friend" of the company, as Mr. Smith described him — is Gordon Thompson, a professional engineer with Bell Northern Research in Ottawa. He is one of Canada's foremost specialists in advanced communications, and is well-known and sought after in the industry for his authoritative views on the communications-based society that is about to dawn.

Some indication of his interests is given by the organizations to which he belongs. He is a governor of the International Council of Computer Communications and a member of the Canadian Association of Future Studies and the World Future Society.

Mr. Thompson, whose degree is in engineering physics with specialization in X-rays and spectroscopy, was in Winnipeg this week in connection with the forthcoming developments here, and left no doubt as to their importance.

Today's telecommunications links, he said in



Gordon Thompson

an interview, constrain the businessman to the telephone and to data processing systems. These telephone line systems are expensive and lack the ubiquitous presence that could be assured by TV-based communications linked through the technologies of coaxial cable, fibre optics, microwave, satellites, etc. They also lack the visual element — e.g., the equivalent of a sales catalogue cannot be communicated by telephone or through a data processing system.

Tele Guard will begin with the basics of two-way alarm and security systems, he said, but the thrust of these beginnings will be toward complex information services.

Mr. Smith said research by himself and his associates showed that the greatest advances in new integrated telecommunications were being made right here in Manitoba. Development was highly fragmented in the United States; Ger-

many and Japan were ahead of the world's supposed leader in technology.

Mr. Thompson said the U.S., with its plethora of regulatory bodies, has become attuned in business-government relations to management by confrontation. But in the case of MTS, there is government-industry co-operation. The fact, he added with a nod to the private telephone utilities dominant in Central Canada, "that MTS is a public utility has a lot to do with it."

The MTS, Mr. Smith said, developed the hardware and the two-way common carrier network through which private business can provide a variety of communications services. "It would be impossible for us to achieve what MTS has, but MTS works with us as an entrepreneur."

Mr. Thompson, who has a special interest in the study of how decisions about the use of technology are made, said there is no telling what lies down the road, given the endless possibilities raised by the prospect of widespread private access to common carriers.

"If we manage things properly, we will open a new era of 'convivial capitalism' where the little guy can hack it."

Analogy cited

Mr. Thompson likened the positions of the common carrier and the provider of specific computer-communications services to those of the developer of a shopping centre and the shopkeepers operating within it. "You need the 'big guy' to make it all hang together, but you need the little guys to make it work." Entrepreneurs, not corporations, will provide the creativity. "No corporation ever wrote a popular song."

Mr. Thompson, who can expound endlessly on themes that may seem visionary to those bound by previous technology, added:

"I want to make the 'information society' a viable choice for Canada, to make it a wealth-producing activity of a complex, computer-based system . . ."

"We begin with security, to use technology to answer the question: Is my house safe?"

Any alternative to changing the information system rather than continuing, for example, to change one's car every year, is too frightening to discuss, given the lack of energy and resources, Mr. Thompson said. "This is too important to let fail. What I fear most is 'educated incapacity' — that we won't do what we can do."

Residents accept Ida scheme

The Manitoba Telephone System has contacted most of the 130 homes in South Headingley and found them interested in participating in a home computer information and alarm service.

Dennis McCaffery, MTS manager of the Ida project, said evening information sessions will be set up soon at the telephone building on Empress Street to introduce residents to the system.

Installation will start in November and December and McCaffery said he hopes the system will be fully operational early in the new year.

MTS will spend \$1.6 million installing an "electronic highway" to the area, and 20 companies will cover their own

expenses in installing computer information services, remote monitored burglar and fire alarms and other services.

The telephone system lists 27 possible services which could be provided on the system which will see television sets converted so information in print form can be "called up" on the screen.

The system will probably also include cable television services, though no cable company has come forward yet with a licence from the Canadian Radio-television Telecommunications Commission to service the area.

"We certainly hope somebody applies," McCaffery said.

Free Press Aug 9/79

PARTICIPANTS IN THE IDA PROJECT

ALARM REPORTING SERVICES

Amplitrol Electronics Limited
Metropolitan Security
Protelec Limited
SDS Technical Devices Limited
Teleguard Limited
Winnipeg Fire Department

DESIGNERS AND MANUFACTURERS

Omnitel - Interdiscom Systems Limited
Telidon - Department of Communications

METER READING

Greater Winnipeg Gas Company
Manitoba Hydro

MUSIC SERVICES

CPMS Cable Stereo

VIDEO SERVICES

Select-A-Vision Inc.

VIDEOTEX SERVICES

Winnipeg Free Press
Winnipeg Tribune
Globe and Mail
FP Publications
Southam Press
Toronto Star
Cybershare Limited
Home Information Inc.
Yellow Pages

DIGITAL TELEPHONE SERVICE

Manitoba Telephone System

NEWS RELEASE COMMUNIQUE

DOC to deliver Telidon terminals to Manitoba
Telephone System for major field trial

OTTAWA, July 20, 1979 -- The Department of Communications is supplying the Manitoba Telephone System (MTS) with 19 Telidon user terminals and six information provider terminals for a major field trial using Telidon technology, Communications Minister David MacDonald announced today.

The MTS provided details of its field trial today. The Telidon terminals, manufactured by Norpak Ltd. of Pakenham, Ontario, will be on loan from the department. Delivery of the terminals will begin immediately and be completed by the end of 1979. More terminals from the next generation of Telidon technology may be delivered in 1980.

Telidon is a two-way television technology developed at the department's Communications Research Centre, near Ottawa. Telidon users would be able to use a key pad or key board to retrieve information from computer data banks for display on modified television sets. The information, in written or graphic form, can be delivered over various media, such as fibre optics, telephone or cable lines.

Telidon was successfully tested two weeks ago using Hermes, the high-powered communications satellite, and a portable earth station with a 1.2 m dish antenna. This was the first time Telidon was tested over satellite and opens the possibility of Telidon service to remote areas of the country.

. . . 2



Government of Canada
Department of Communications

Information Services
300 Slater Street

Gouvernement du Canada
Ministère des Communications

Services d'information
300, rue Slater

- 2 -

The Telidon sets being delivered to MTS will be used in a wide variety of applications, ranging from specialized business services to mass market services for home users.

- 30 -

For further information, contact:

John Smirle
(613) 996-4243

INTERDISCOM

SYSTEMS LIMITED

July 20, 1979

Head Office
Border Place
87-1313 Border Street
Winnipeg, Manitoba
Canada, R3H 0X4
Tel.: (204) 632-1436

To the Media:


Interdiscom is very pleased to be part of Manitoba Telephones' "Ida" project. The distribution system that makes it possible for MTS to offer all the new services you are hearing about today was originally conceived and presented to MTS by Coyne Associates Ltd. of Montreal our affiliated systems consulting company.

Interdiscom is now producing the system we call OmnitelTM₂ for MTS and it will be installed by the end of this year. We are talking to telephone companies all across Canada and in the United States about our OmnitelTM distribution systems and several companies are seriously considering market trials for new services like the one being installed by MTS.

In recognition of the support given to our company by MTS, Interdiscom has located its head offices in Winnipeg. We will provide here a total capacity for the hardware/software design and manufacture of micro-processor systems like OmnitelTM and we look forward to the rapid growth of our company in Manitoba.

Sincerely,

INTERDISCOM SYSTEMS LIMITED



Thomas J. Moorehead, P. Eng.
Vice President, Managing Director

TJM/if

The Winnipeg Tribune

A Southam Newspaper

P.O.Box 7000
257 Smith Street
Winnipeg, Manitoba R3C 3B2

FOR RELEASE FRIDAY, JULY 20, 10:30 a.m.

The Winnipeg Tribune is pleased to participate in Project IDA - Manitoba's pilot trial of two-way telecommunications services - as a major provider of services and information.

The Tribune intends to provide news, features, advertising and other materials for the pilot system, working with the national videotex consortium being formed by Southam Inc., Torstar and FP Publications.

"We are excited by the prospect for this new two-way television technology," said E. H. Wheatley, publisher of The Tribune.

"We recognize that the system is experimental but we are anxious to test out the viability of placing various kinds of information on it for access and use by home and business subscribers."

Videotex is a body of information distributed via cable or telephone lines to a home television set. The information is "called up" on the screen by pressing buttons on a hand-held control unit that looks like a pocket calculator.

The system includes the potential for two-way communication between the viewer and the suppliers of information or services.



"There are a great many potential applications for this inter-active system," said Mr. Wheatley.

"The Tribune is pleased to be in the lead in introducing Winnipeggers to this exciting new technology."

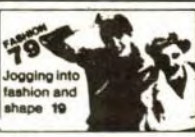
The exact nature of the information to be supplied by The Tribune will be determined in the near future.

For further information, contact Dona Harvey, Editor of The Tribune, 985-4603.

Irate commuter hijacks city bus

MTS 1979 — The driver of a city bus was hijacked by a man who threatened to throw a bomb if he was not taken to a hospital. The man, who was later identified as a 35-year-old man, was taken to the hospital and is now recovering from his injuries.

The hijacking of a city bus in Winnipeg is a rare occurrence. The driver, who was taken to the hospital, is now recovering from his injuries. The man who hijacked the bus is now in custody.



FASHION '79
Jogging into fashion and shape '79

Winnipeg Free Press : FINAL 15¢



Manitoba strikes it rich

Manitoba has struck it rich with the discovery of a large deposit of uranium. The discovery is expected to bring significant economic benefits to the province.

Summer in the city: more ways to beat the heat on page 8

The condo swindles
Five Manitobans fight for their Florida dreams

Five Manitobans are fighting a legal battle over a real estate scam in Florida. The case involves a large sum of money and the promise of a better life in a sunny state.

awash and beer

A group of people are enjoying a day of swimming and drinking beer. The scene is described as a relaxing and enjoyable summer activity.

Lily star of the show

A young woman, referred to as the 'lily star', is the focus of a story. She is described as a talented and promising young person.

Girl wins second million

A young girl has won a second million dollars in a lottery. The win is a significant achievement for her and her family.

Capt. & Tennille back

The musical duo Capt. & Tennille have returned to the stage. Their comeback is being met with great anticipation.

Kris runs for mayor

A man named Kris is running for the position of mayor. He is a well-known figure in the community.

Bargain beef prices

Beef prices are at a bargain level. This is good news for consumers looking for quality meat at a lower cost.

Bombers win

A team of bombers has won a competition. Their victory is a testament to their skill and teamwork.

Hairsty press dance

A press dance featuring hairstyles is taking place. It is a fun and creative event for the press.

Hospital needs

A hospital is in need of certain supplies and services. The community is being asked to help out.

Pasta is fasta

Pasta is becoming a popular and fast food choice. It is being promoted as a convenient and healthy option.

Advice for smokers

Advice is being given to smokers about the risks of their habit. The message is clear: it's time to quit.

The wonders of black gold

Black gold, or oil, is a valuable resource. The article discusses its importance and the challenges of its extraction.



Lily Schlegel speaking

PROJECT IDA

Project Ida offers us an opportunity to try, on an experimental basis, electronic delivery of the product we know best...We hope the experiment will enable the Free Press to put the written word and graphics into a reader's home at the touch of a button.

Publisher Donald Nicol,
Winnipeg Free Press, July 20, 1979



Winnipeg Free Press

July 20, 1979

The *Winnipeg Free Press* has chosen to become an information supplier to the Manitoba Telephone System's Project Ida.

The experiment, to be launched with the co-operation of 100 householders in suburban Winnipeg on January 31, 1980, involves utilities monitoring, automatic alarm systems and information retrieval through two-way television text.

The *Free Press* is participating as a major news and information gatherer and distributor in Manitoba. Publisher Donald Nicol sees the step as part of a natural evolution for modern journalism.

"Project Ida offers us an opportunity to try, on an experimental basis, electronic delivery of the product we know best. Using our additional expertise in electronic word processing, we hope the experiment will enable the *Free Press* to put the written word and graphics into a reader's home at the touch of a button."

Nicol stressed that the *Free Press* interest is in electronic news delivery as a supplement, not a substitute, to a modern newspaper.

"Replacement of daily delivery of news on newsprint is still a long time away," he said.

The *Free Press* will have the support of its parent organization, F.P. Publications Limited of Toronto, and access to a consortium being formed for such projects by Info Globe, the on-line information division of *The Globe and Mail*, Torstar Corp. and Southam Publications Ltd.

The *Free Press* is capable of supplying services ranging from digests of provincial and local news, sports, entertainment and opinion to service information such as consumer tips, coming events and a restaurant guide.

Although 100 households are to be part of the MTS experiment, only 30 are expected to have two-way communication with the newspaper's data base.

"Details, of course, are tentative at this stage," Nicol said. "We have a lot of technical matters to iron out with MTS between now and the end of the year.

"We are motivated by the challenge to our ability and a healthy curiosity about other methods of delivering the news."

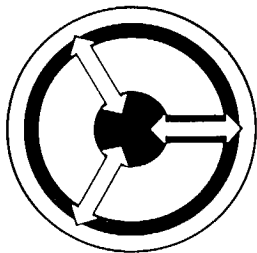
Three of Canada's leading communications companies are forming a joint venture to provide videotex information and services for market trials in various provinces.

Southam Inc., F.P. Publications and Torstar Corp. are expected to announce formation of the joint venture shortly.

The venture intends to become fully involved in the MTS market trial as a provider of information both on its own behalf and on behalf of national and local clients. The company anticipates establishment of a Winnipeg office and is defining the configuration and software which would be required to support its activities as a storage and processing enterprise in Winnipeg.

Gerald Haslam, representing the consortium, said the partners are looking forward to participation in the market trial. "We have taken a number of steps already to establish working relationships with some of the major participants in the trial, and we are anxious to provide a national market for videotex information and services which originate in Manitoba."

Further information: Gerry Haslam
Southam Inc.
416-925-2881



The Board of Directors of Cybershare Ltd. are pleased to announce their support for the Manitoba Telephone System in their IDA Project.

The proposed facilities will allow the average consumer access to a very broad range of services and facilities that would not normally be economically available. We salute M. T. S. for its foresight in conceiving and coordinating this project.

Cybershare's involvement in the project will be the investigation of the provision of computer resources in the home. The areas of concentration will include and go beyond the normally accepted computer functions of problem solving and record keeping. The potential services available in this context are virtually limitless. Some of the more obvious areas of Information Services or Facilities could include:

- | | |
|---------------------|--|
| Education | - Computer aided and prompted instruction |
| | - Handicapped education |
| | - Reference referral systems |
| Facilities | - Mathematical calculations such as amortization |
| | metric conversion, diet/calorie analyzer, etc. |
| | - Home accounting, budgeting and income tax. |
| General Information | - News articles |
| | - Attraction & entertainment schedules |
| | - Travel schedules |

In general we will investigate the feasibility of providing the facility through which organizations or companies could distribute information to the public.

In addition, when the rural areas become accessible, we propose to offer a full range of farm management services directly to the individual user. Such services could include least-cost feed formulation, feed lot and herd management, grain production management, along with farm accounting.



7 FLR. IMPERIAL TOWER
363 BROADWAY
WINNIPEG
MANITOBA
R3C 0T9
204-956-1293

Canadian Home Information Services Inc. will be an information broker for the Manitoba market.

The function of an information broker is to provide the means whereby information is gathered, formatted and stored in an electronic medium for retrieval by the consumers through their television set. Currently the Federal Government's Department of Communication has developed the most advanced protocol and technology in the world, called Telidon.

Canadian Home Information Services Inc. will be utilizing the Telidon technology as its vehicle. It will test this concept of information brokerage on Telidon through the IDA trial.

Due to the competitive nature of this business, Home Information Inc. will not unfold the information content to be available at the trial, until January 1980.

Canadian Home Information Inc. is totally funded by Manitoba investors. Its office is located on the 7th floor of the Imperial Tower Bldg., Broadway & Kennedy, telephone no. 956-1293.



MANITOBA
TELEPHONE
SYSTEM

DIRECTORY DEPARTMENT ADVERTISING SALES

BOX 6666, 41-1313 BORDER ST., WINNIPEG, MANITOBA, R3C 3V6 PH. 204-633-8190



yellow pages

July 20, 1979

The Directory Division of the Manitoba Telephone System will be one of the initial participants in Project IDA.

As long term producers of a classified advertising medium in print form, it is a natural course to extend this to a medium such as IDA. It is, therefore, our intention to provide Yellow Page type information as part of the project. This information will be placed on IDA on a gradual basis starting with those classifications that will be used most frequently. It is hoped that by the time that the trial begins we will have 1,500 to 2,000 pages of information available.

Longer range plans would include the investigation of supplementary information pertinent to the classifications available and ultimately the possible inclusion of the White Page listings.

Adrian V. Powell
Marketing Manager - Directory

AMPLITROL

HEAD OFFICE AND PLANT
SIÈGE SOCIAL ET USINE
51 BOULEVARD MARIE-VICTORIN
CANDIAC, QUÉBEC, CANADA, J5R 1B7

ALARM SYSTEMS THROUGHOUT CANADA
SYSTEMES D'ALARME PARTOUT AU CANADA

TÉLÉPHONE: (514) 659-9111
TÉLEX: 05-27350
CABLES AMTREC, MONTRÉAL CÂBLO-GRAMMES

WINNIPEG July 20th, 1979

FOR IMMEDIATE RELEASE

AMPLITROL TO PARTICIPATE IN MTS
IDA TRIAL PROGRAM

Amplitrol Electronics Limited, a Subsidiary of Honeywell Limited designs, manufactures, installs monitors and services electronic security alarm systems for Financial Institutions and for Commercial, Industrial, Retail and Residential applications.

Amplitrol, for over 30 years a leader in Canadian Security Alarm Services, has offices in every province of Canada and provides 24 hour monitoring from 15 secured stations in the major Metropolitan areas across the country.

Amplitrol is proud to announce its participation in the Manitoba Telephone System IDA Program. IDA is seen as a significant step in advancing the application of important new technologies which will enhance the quality of life for Manitobans.

Amplitrol will install, monitor and service various types of early warning fire alarm systems including smoke detectors.

For further information on Amplitrol's participation in IDA, please contact:

Gene Kohut
Amplitrol Electronics Limited
Tel: 204-947-1251



After a great deal of research, Teleguard Systems Inc. was incorporated to provide security services for the commercial, industrial, and in particular the residential market. Part of the research undertaken embraced a review of the "state-of-the-art" in two-way communications. This review indicated that one of the leaders in the development of the required technology was the Manitoba Telephone System.

We appreciate the opportunity of participating in the IDA Project being sponsored by Manitoba Telephone System and are confident that the results will prove the feasibility of the concept.

In today's complex and fast changing society people are seeking "peace of mind" and Teleguard Systems Inc. has been organized to offer security systems that will contribute to that end. Teleguard Systems Inc. plans to provide fire detection, intrusion alarm, medical alert, hold-up in progress alarms for small businesses and temperature and pressure alarms.

Teleguard Systems Inc. is located at 675 Pembina Highway and the telephone number is 956-1294.



METROPOLITAN INVESTIGATION & SECURITY (CANADA) LTD.

Friday, July 20, 1979.

EXECUTIVE OFFICE

PROJECT I. D. A. - MANITOBA TELEPHONE SYSTEM

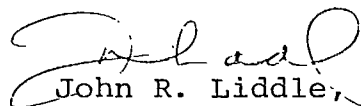
.

It is indeed an honour for our Company to announce its participation in M.T.S.'s exciting new Project - I. D. A.

M. T. S. is taking a bold innovative step forward into the electronic services field and is the first to conduct a telecommunications experiment where a whole range of new and existing services are integrated over a single facility or "electronic highway". Although this project initially only encompasses fire alarm protection, the system has the capability to handle such additional services including security protection, medical alert and energy management.

From a Company perspective, Project I.D.A. represents an excellent marketing opportunity to develop new products and services and to keep pace with a rapidly changing technology in the security services industry. Our participation is an extension of Metropolitan's service mandate to provide our customers with the best available security systems on the market today.

Yours sincerely,


John R. Liddle,
Executive Vice-President.

JRL:jg



THE CITY OF WINNIPEG

FIRE DEPARTMENT

5th FLOOR - PUBLIC SAFETY BUILDING • 151 PRINCESS STREET • WINNIPEG • MANITOBA • R3B 1L1

J. T. COULTER
Chief

ALL CORRESPONDENCE TO BE
ADDRESSED TO THE CHIEF

NEWS RELEASE

THE FIRE DEPARTMENT IS PLEASED WITH THE COMMENCEMENT OF THE IDA PILOT PROJECT FOR CENTRAL REPORTING OF HOME FIRE DETECTION SYSTEMS.

A RECENT SURVEY OF HOMES IN WINNIPEG SHOWS THAT 30% OF THE RESIDENTS HAVE INSTALLED SMOKE DETECTORS. WE ARE SURE THAT AS MORE SMOKE DETECTORS ARE INSTALLED THE NUMBER OF LIVES LOST IN SINGLE FAMILY OCCUPANCIES AS A RESULT OF FIRE WILL BE REDUCED.

THE CONCEPT OF CENTRAL REPORTING FROM RESIDENTIAL DETECTION SYSTEMS WILL NOT ONLY BENEFIT THE HOME OWNER IN LIFE SAFETY, BUT WILL ALSO PROTECT THE BUILDING WHEN NO ONE IS HOME, WITH A RESULTANT REDUCTION IN FIRE DAMAGE.

OUR MAIN CONCERN IS TO CONTROL THE NUISANCE ALARMS THAT EMANATE FROM RESIDENTIAL SMOKE DETECTORS INSTALLED IN CLOSE PROXIMITY TO KITCHENS AND BATHROOMS.

WE WOULD HOPE THAT A NUMBER OF DIFFERENT TECHNICAL APPROACHES TO GETTING CONFIRMATION OF THE NEED FOR FIRE DEPARTMENT RESPONSE WILL BE TESTED, AND WITH THE EXPERIENCE GAINED, STANDARDS FOR CENTRAL REPORTING WILL BE CONSIDERED FOR FUTURE LEGISLATION.

JULY, 1979

SELECTA VISION INC.

Selecta Vision Inc. has been formed to provide non-programming services in Winnipeg, Manitoba. Its plans include provision of educational television and home entertainment.

During the IDA trial, Selecta Vision will provide to the test households movies for home entertainment and high school and adult educational films.

Selecta Vision expects its service offerings to involve in terms of refinement of the entertainment and educational field. Looking down the road it is not inconceivable that it will be feasible for individuals to be enrolled in degree, diploma and certificate courses of study without having to leave one's home. Once this has been achieved the savings and benefits to be derived by Manitoba could be enormous.

Its office is located at 2571 Pembina Highway and its telephone number is 956-1295.



**SDS
TECHNICAL DEVICES LTD.**

Electronic Specialists

P.O. BOX 1998 WINNIPEG CANADA R3C 3R3 TELEPHONE (204) 944-1448

SDS Technical Devices Limited is a locally-based company which for several years has been involved in the installation of burglar-alarm and smoke detector systems in the Winnipeg area. It is the owner of alarm patents and the Guardetec trademark, which reflects the Company's capability of producing sophisticated Canadian safety products locally. The firm has also done design work in the fields of microprocessor applications, particularly as they relate to telemetering, industrial and environmental control.

It is because of this background in the electronics field that we welcome the opportunity of participating with others in the industry in Project IDA. We realize that technological advances have made it possible for our society to enjoy a better life through the utilization of the products of these advances, and we welcome the help of Manitoba Telephone System, as provider of the "electronic highway", in bringing these concepts into the realm of possibility.

We also feel that IDA provides a good example of the help which government can give in bringing together various elements of the private sector, and we consider it an honour to be associated with such a venture.

675 Pembina Highway,
Winnipeg, Manitoba.

NEWS RELEASE

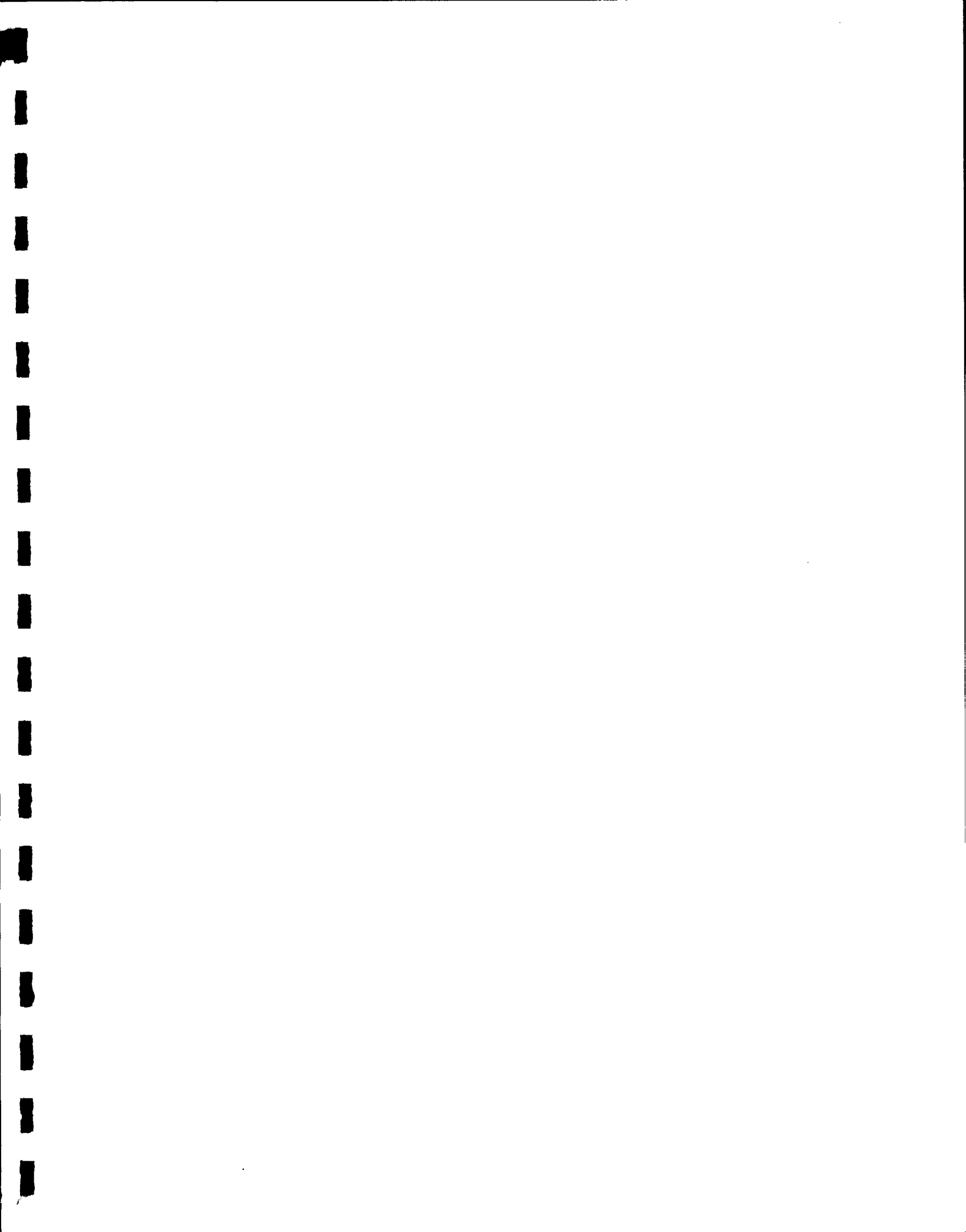
C P M S CABLE STEREO

We at CPMS Cable Stereo are pleased to participate in the IDA test project, as a provider of quality stereo music to the test homes during the trial period.

This is a closed-circuit method of delivery and all homes participating in the trial will be able to receive the signal. It is the first time in Manitoba that this approach will be tested over a coaxial cable network.

This system will offer a high quality collection of stereo offerings which will ultimately be expanded to provide the customer with specialized stereo packages suited to the customers' own personal tastes. —

Further information may be obtained by phoning Martin Zaplin, President of CPMS Cable Stereo, at 775-7937.





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