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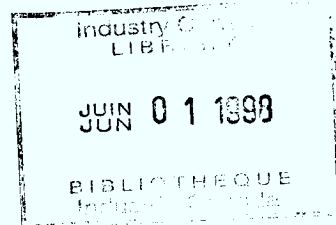
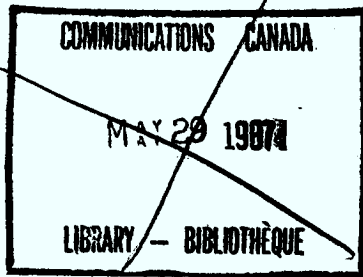


Government Telecommunications Acquisition and Management System

RECORD OF PRESENTATIONS
AT GOVERNMENT TELECOMMUNICATIONS
STUDY SESSION 85/1 JUNE 5 - 6, 1985
STATISTICS CANADA CONFERENCE ROOM
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AND
MANAGEMENT
SYSTEM



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Organizing Committee*

(Front row - 1 to r): Richard Paukstaitis, GTA (Chairman);
 Donna Ward, RC-CE;
 Bill Dyke, TC;
 Lucien Vesque, MC

(Back row - 1 to r): Rémi Givogue, GTA/NCR;
 Yves Brunet, DOC (Master of Ceremonies);
 Ida Noseworthy, EIC;
 Albert Schuiteboer, SC

(Absent from picture: Paul Bernard, PAC)

* Sub-group of the TAC Working Group for Telecommunications Training

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FOREWORD

This publication is intended to capture and convey information which was presented during the Government Telecommunications Study Session 85/1, June 5th and 6th, 1985.

Editorial changes to the verbal text were made to remove non-essential material without changing the essence or the tone of the presentation.

The information herein should be valuable to all personnel employed in various telecommunications functions in the government, as well as senior management concerned with the impact of information technology on their organizations. However, it should not be construed as official government policy.

As most of the guest speakers were employed, at the time of the presentations, in dealing with the issues that they addressed, unique insights may be gleaned from this material that would not be available elsewhere. On the other hand, it must be appreciated that the views are circumscribed to the time when they were expressed.

Although this publication was produced by the Government Telecommunications Agency, it should be noted that the Study Session itself was an inter-departmental effort, organized under the auspices of the Telecommunications Advisory Committee Working Group for Telecommunications Training. Furthermore, the printing was funded from the revenues stemming from the Study Session.

To help determine whether similar publications should be produced in the future, readers' comments would be much appreciated. Comments should be addressed as follows:

Letters: Director, Planning and Coordination
Government Telecommunications Agency
300 Slater Street
Ottawa, Ontario
K1A 0C8

CWP: AES Super+ (613) 990-7173

GEMS: GTA.DPC

Telephone: Richard Paukstaitis
(613) 990-2303

TELECOMMUNICATIONS ENVIRONMENT

In contemplating the exercise of management functions, such as planning, a perception of the environment within which the activities are to be carried out is a necessary pre-condition. It is necessary not only to understand what is going on now, but also to be able to project into the future, to the time when the various management functions will be performed.

Mr. Ian Angus, President of Angus TeleManagement, highlights those issues which are likely to have a very significant impact on telecommunications management.

Integrated
management

Telecommunications management, which was merely a challenge in the 1960s, has now practically become a crisis in the 1980s. It has become a necessity to integrate all telecommunications functions and to ensure integrated telecommunications management. There is a phenomenal quantity of information available, and the necessity of managing all this information is of critical importance to us. Evolving technology as well as the regulatory environment will oblige you to manage in a more efficient way in the future.

There are four subjects that I would like to talk about:

1. The new environment for the end of the '80s.
2. The planning crisis.
3. The five stages of telemanagement.
4. The five-step plan.

I will provide the guidelines in order to help you plan and manage.

The new environment

Environment

The environment has evolved considerably. Ten years ago, very few people would have attended this type of seminar. Today, however, it is of critical importance. One must look at the emerging environment.

The key elements are:

- economy;
- regulatory environment;
- marketplace;
- technology.

All of these factors have played a major role in modifying and shaping the telecommunications environment.

Economy

Let's take the economy. The 1980s do not have the same economic wealth as the 1950s. There are cyclic periods of resurgence and stagnation. The '80s are also characterized by new technology. In 1985, it is a common belief that technology will solve the unemployment problem. Everyone believes that telecommunications will have a major role in this. We are in a time of few economic resources. We cannot predict what the economy will be a few years down the road.

Regulatory environment

In the 1960s the telecommunications environment was regulated, in fact, it was very regulated. From 1963 to 1968, there were no increases in the Bell Canada tariffs. Today, the tendency is towards deregulation. This is a problem specifically related to Canada where telecommunications come under either provincial or federal legislation depending on which part of the country you are in. There are many different regulatory environments. Rules that apply to Bell do not apply to Northern Telecom. No one knows the rules governing equipment.

Marketplace

There is a proliferation of suppliers. In the 1950s, there was a somewhat limited marketplace. The advantage was that you knew who the supplier was. This is no longer the case. Just for terminal telephone equipment, there are in excess of 125 companies with little experience and background. Then, there are alliances such as Mitel and British Telecom which considerably influence the environment.

You must ensure that the equipment you purchase is standardized and interchangeable. It is alarming to see that one-third of the companies associated with the telephone have gone bankrupt. The market is very unstable. Rules change frequently. Deregulation means that individual companies will compete and negotiate. They will no longer be limited to simply respecting the tariffs.

Technology

Finally, the technological environment. The rhythm of change has greatly accelerated and increased over the last few years. We cannot separate telecommunications from other areas. It is harder and harder, practically impossible, to separate computers from telecommunications. We are witnessing the convergence of different technologies; for example, this is very obvious in the Meridian line of products. It is impossible to tell whether it is a data processing or a telecommunications system.

The planning crisis

Planning crisis

As for the planning crisis, these are some of the questions that we are faced with:

1. the home videotex markets;
2. executives and computers;
3. word processors;
4. voice or data; and
5. LAN vs PBX.

In order to plan, we must foresee. It is impossible to make predictions, but it is essential that we plan. This requires considerable time and effort. Costs must be justified, equipment and needs must be assessed.

Microcomputers are becoming increasingly important. Up until the 1980s, they did not fulfill the needs of personal use for senior management. Now, however, everybody is using one. IBM predicts that by 1990 there will be one computer per person. (IBM has almost never gone wrong except, possibly, with the PC Jr.).

Past planning assumptions were made with tunnel vision. Now the barriers are coming down. Integrated planning is critical. However, existing structures inhibit integrated planning.

Telemanagement

These are the five stages of telemanagement:

STAGE 1	Chaos
STAGE 2	Cost containment
STAGE 3	Cost management
STAGE 4	Cost effectiveness
STAGE 5	Integrated management

Stage 1 - Chaos

This is the norm - 75% to 80% of organizations have no management, no controls, no plans, and no knowledge. When we are called in for consultation, we need to know what you have, what is available. Do you have an inventory?

Stage 2 - Cost containment

Cost control,
not management

Most organizations that think they have telecommunications management actually have telecommunications cost controllers. We have cost reduction programs and absolute rules. Telecommunications is treated as a pure expense item, and "cheapest equals best" is the standard assumption.

Stage 3 - Cost management

Focus on
long-distance
controls

At this stage, we begin to introduce more sophisticated controls. We start planning telecommunications not in terms of hard dollar figures but in relation to need. But, we still focus on cost as an issue. This is usually the point at which you have a function called telecommunications manager. The focus in this period is on long-distance control i.e. trying to get long-distance costs down. This is the point at which most people suddenly realize that hardware is the least of their problems. Hardware is easy to predict. It does not change that much from day to day. But long-distance is the only area in the whole world where, in private corporations, there is no control. But now, long-distance controls are starting to appear. Generally, the most sophisticated firms in Canada are at this stage, putting in call detail recording systems, looking for cost benefits in relation to expenditures, trying to organize their costs so they spend the money where they get the best leverage.

Stage 4 - Cost-effectiveness

Conscious decisions
to increase telecom-
munications
expenditures in
order to improve
the efficiency and
effectiveness of
the operation

Leading industries such as banking and transportation are starting to look at cost-effectiveness. We make conscious decisions to increase our phone bills, to increase our telecommunications expenditures, as a method of improving the efficiency and effectiveness with which we operate. At this point, telecommunications planning becomes a part of corporate planning. Two examples from the industries I have mentioned are the proliferation of automatic teller machines in banking industries (that is a telecommunications function, i.e. a conscious decision to spend more on telecommunications as a method of getting more income), and, in the airline industry, the decision to put more on-line terminals in the travel agents' offices.

This is the point at which you begin to talk of telecommunications as a resource. Telecommunications is not simply one of these horrible bills you have to pay, but it is a resource that is available to help us to do what we do, better than our competitors do. We must assume that there are competitors for everything that we do. Therefore, you must do what you do effectively, or someone else will do it, or else it does not get done.

Stage 5 - Integrated management

Integrating technologies, management functions and corporate planning

The final stage is exceptionally rare. We are starting to see a bit of it in a few firms. Integrated management brings together various technologies and various management functions. We effectively integrate them with corporate planning. We recognize that managing telecommunications, managing data processing, managing records, managing all of the information-related resources has to be done in common.

Five-step plan

There are five steps to get from chaos to integration.

- STEP 1 Know your organization
- STEP 2 Know your system
- STEP 3 Know the industry
- STEP 4 Unify the planning process
- STEP 5 Develop a plan

I cannot get you to integration at this stage without a massive reorganization. But you will have to start thinking about it now. I would like to give you some guidelines for you, either as individuals, if you are thinking of a personal career development - and you should be, or as organizations, if you are thinking about the development of your organization - and you should be.

I would like to make a passing comment on why you as individuals should think about this. For the first time, in the past six months, I have been approached by people looking for senior telecommunications management people and quoting salaries in the six-figure bracket. The point is that the demand for capable people in this field is growing now and it is going to grow more. Just think in terms of personal career development, if nothing else.

Step 1 - Know your organization

Start with strategic planning

Know what you are doing. Most organizations, for example, change the way they do business to match the technology. Altogether too many systems are acquired that way. You must start off with what you are. Begin with all the classic questions of strategic planning. Strategic planning is something that you should be studying. Telecommunications is a strategic resource. What business are we in? What do we do? What are we good at? What could we improve?

Where are we going? And in a period of scarce resources and declining budgets, how can we leverage this stuff? How can we decide to spend money on those areas where we would get the biggest payoff? This is not easy. How can you leverage the money you are going to spend, because the money is going to be limited. So, how can you use this technology? So, you must know your organization.

Step 2 - Know your system

Make a technology
inventory

Get yourself a technology inventory. What do you have in place now, in terms of computers, word processors, electronic typewriters that increasingly today have communicating capabilities, facsimile machines, photocopiers (communicating photocopiers is the next big thing)? What is in place? What is it good at? What are we strong in? Focus on improving our weaknesses, but we must build on our strengths. What are the trends? What is going well? What is not? Traditional methods of forecasting trends do not work very well, particularly regression techniques, which predict the future on the basis of the past, i.e. we have been growing at five percent a year, therefore, we will continue to grow at five percent a year. The classic case, as I said before, is where the terminals suddenly start to appear; computers suddenly arrive.

For a lot of you, you have been planning telephones based on manpower forecasts. We know there will be so many people in this group, so we are going to need so many lines in our telephone system. A lot of people are going to need two lines, I do not care what anybody says about voice/data integration. The reality is that adding data to a telephone system, one way or the other, adds to the load on the PBX, the Centrex or whatever else it is. Think about growth taking place at different rates from those you have been ready for.

Get the information
in the hands of
people who make the
budget decisions

Report! Report! Report! Report! You are not going to get the money to do this if nobody above laundry services knows what is going on. Getting that information into the hands of the people who make the budget decisions is very important to you. I suspect that in your environment, getting it in the hands of the Cabinet is going to be important to you. Because telecommunications is going to be critical. There is a census next year, and there is another one, I presume, in 1991. By 1991, if the census is not electronic, I think the results are going to have problems.

Just think of your organization right now. When you look for a new application development, you go to your data processing people and say you have a new application you want to develop. What kind of lead time are they talking about? Two to three years for major applications.

ISDN Network

James Martin claims that the two- to three-year application is a myth. It is actually seven or eight years. It is just that most people are so fed up with data processing that they do not even ask anymore for the applications they really want. The Integrated Systems Digital Network (ISDN) is not a joke any more. The reality is that ISDN is going to deliver voice and data capabilities to everybody's desk over standard telephone wire. The first public field trials are next year. And if you want a measure of the consumer-related universality of this, the first public field trial is in the head office of McDonald's, the hamburger people.

McDonald's has made a fortune by understanding how to apply technology to the generation of hamburgers. Those things that you think are cash registers, are not. They are point-of-sale terminals, and their point is to have instant, on-time delivery of inventory, so the meat comes in the back door and the hamburgers go out the front door and there is no waste. This, McDonald's does well, and they are going to go to ISDN integrated networks beginning next year, because they know that this is the way to the future commercially.

By 1990, according to some of the senior spokesmen in the International Communications Association in the U.S., you can assume that every Fortune 500 company will be using ISDN-type services routinely. Routinely! I am willing to bet that if I went around this room and asked you what ISDN stands for, most people would not know what the initials stand for, and yet it is the most important thing happening in telecommunications today. But without the money, without the resources, and without letting people know what is going on, you cannot plan for it.

Step 3 - Know the industry

Fight tunnel vision
Expand your
knowledge

I am really happy to see this kind of forum taking place. Education is critical to your future, you have to jack up your education budget. But, even going to seminars is not going to do it for you. There are beginning to be a few courses in a few community colleges to train entry level people. But mostly, it is going to be a self-education process. Getting to know the different firms and technologies is critical to you. Periodical literature is the primary source, because changes are happening so fast that if you have to wait for books or any other form of literature, it will not be there. At the very least, you will have to get hold of half a dozen periodicals and read them on a regular basis and make sure that your staff also reads them on a regular basis. The exchange of information with your peers is vital to you.

And leading us into the next step is the issue of fighting tunnel vision. If what you know is telecommunications, do not subscribe to a bunch of telecommunications magazines, subscribe to a bunch of computer magazines. Insist on expanding what you are studying. Study outside your area. If you do not have the expertise in telecommunications, build yourself a core, but you have to expand it; otherwise, you are going to be blindsided. The technology will be coming from all over and you will not be prepared.

Step 4 - Unify the planning process

Get the managers
to communicate

This is the hardest single thing to do - getting the people like the office manager, the corporate planner, the facilities manager, the data manager, the telecommunications manager to talk to each other. I have been in corporations where we are hired to look at the voice/data PBX and discover that the data processing department is putting in a broadband local area network and the office manager is busy linking all of his word processors together with somebody's proprietary communications scheme, both at the same time. And they do not even know it - they were not talking to each other.

All kinds of voice/data PBXs are being put in and they are not being used. Why? Because they were put in by the voice manager and he did not talk to the data manager. And the data manager thought that PBXs were irrelevant and would not talk to the voice manager, and everybody blames everybody else. The DPW (data processing brickwall) gets in your way here. But you have got to talk to each other. If you cannot do it structurally, you do it over lunch. You do it by walking into their offices and insisting on talking. You do it by just carbon-copying them in on your memos. You have to start that process, because it is impossible for one person to have all that knowledge. It is impossible for ten people to have enough knowledge! You must get to the experts in data processing.

Maybe some of you are lucky and are responsible for all the wires in the wall. But I suspect you are only responsible for the telephone wires in the wall. There are whole bunches of other wires in the wall that somebody has to plan on. Basic rule: If you want to put a terminal on everybody's desk, you had better deliver wire to everybody's desk. How are you going to do that? You are not going to do it if you do not bring the various disciplines together. And I do not mean plans or blueprints.

I like short-term blueprints and long-term guidelines. Blueprints are what you do for the next year. Guidelines are what you do for the next five. And anybody that wants it out more than seven years, laugh at them. I do not know what is going to happen in the next seven years. Nobody else does either. You want to start with what you are doing, where your department is going, where your organization is going, and take your telecommunications and integrated systems plan to be part of that.

Step 5 - Develop a plan

In order to bring the various disciplines together you must develop a plan. You want to develop alternate scenarios because you want to deal with the fact that it may not go the way you expect, no matter how much you avoid tunnel vision.

Unify management

Your goal in all of this is to unify the management. I realize that this is awful; it cuts across everybody's vision of empire-building. Everybody wants their own defined area of responsibility. But the barriers are gone in the technology, and they are gone in the vendor community. The last remaining bastion is in the buyer community. And that means we cannot make use of the technology sufficiently. So, you must, to be efficient, move towards unified management. You will not accomplish that next month or next year. But it must be a goal. If you set 1990 as the date by which you will be running this stuff in an organized, unified way, then you will have done something very worthwhile.

PRESENT AND FUTURE OF TELECOMMUNICATIONS

Management of telecommunications in the Federal Government is governed by the telecommunications environment and the varied needs of departments. Some of the needs are unique to a specific department; others are common among several or all departments. To give some perspective on the variance and commonality of perceptions on the issues affecting government telecommunications, a panel of prominent members of the informatics community was convened to express their views on the theme "The Present and the Future of Government Telecommunications".

The formal portion of each presentation follows.

*Comments by panel member no. 1,
Dr. Wladyslaw Rajor, SSC*

Reason for Canada's
advances in telecom

Today, Canada is among the world leaders in telecommunications technology because our industry is good at serving the needs of end users located in remote and inconvenient places.

This may sound paradoxical to anybody used to thinking that monopolies do not have to worry about such things. Telephone companies have for a long time had to sell in-depth to homes and business and at the same time keep regulatory bodies happy during their vigilant, as well as their relaxed, phases.

The most important
advance in data
transmission

In the area of data transmission, which is the area I am most concerned with, the industry has taken large strides in the last ten years. As a manager, the most important set of advances to me are the ones that allow me to assign, on a cost-effective basis, the problems of managing a network to the common carriers, their computers, and their staff.

Need to adapt
to clients

A services organization such as the Department of Supply and Services depends on having as few obstacles as possible in designing and implementing national government-wide systems. The clients we deal with use a variety of ways to handle their data communications. We need to be able to adapt.

Data over telephone
system

If, at present, they are not involved in data communications, we like to provide service through their existing telephone system using the microcomputers which many of them have acquired. This way the costs are low, things can be done quickly, and easily.

Future growth of
DSS systems

Until a few years ago we had to rent physical links; acquire, set up, and run concentrators and multiplexers; and staff them with personnel with skills and expertise in communications technology. This was acceptable when we had only a few hundred terminals. In the future, the systems that Supply and Services will offer, will be connected to thousands of end-user computers and terminals. I can see the time when we will provide personnel, pay, accounting, financial, and materiel management information services to all the managers who need it across Canada. I can also see the time when users outside the government, in large and small Canadian businesses, could benefit from a direct connection to our supply-oriented systems.

This puts us in the same network size range as the banks. I understand that the banks today have hundreds of people to manage their networks.

Network management
function assignment
to the common
carriers

As I mentioned earlier, I take an opposite view and would assign the network management function to the common carriers. I am confident that they have the needed ability to innovate and respond to the needs of large organizations in business and government. After all, it is innovation that has placed Canada where it is in communications.

I can dial an eleven-digit number in Ottawa and make a rural party-line phone in British Columbia ring one long and two short, just as in the old days. If the engineers in the audience will indulge my technological innocence, I want to benefit from the same commercial instinct that led to that bit of invention.

Security and privacy
considerations

With data communications becoming more and more a part of our lives, concern with security and privacy also grows. Our concern with this has prevented us from taking advantage of a means of communication that would provide the lowest entry cost for our customers and make the initial network hook-up relatively simple. We want to use the dial-up networks, but we cannot because the industry has not yet provided a cheap, reliable and easy-to-use means of preventing unauthorized access. Expensive methods are available, and these tend to be fairly elaborate. I am looking for something simple and inexpensive. Between the intelligence in the microcomputer or other terminals and the intelligence in the common carrier's data network, the industry should be able to provide a solution that I would find easy to apply and be eager to buy at a reasonable price. I would like innovation and competition to provide me with such a product.

Innovation and
competition

There has been competition for a long time and recent developments in technology have intensified that competition in communicating data, voice, and both at once. Today, a number of suppliers can provide competing alternatives for any government-wide or departmental need. Certainly, the needs of my own department are sufficiently large that we could contract for our own network, if we so chose.

Government agencies
in competition with
industry

Personally, I would like to see a government agency competing with the rest of the industry for government business, including my own department's requirements. Concerns are that we need a benchmark for comparing costs and services, and the ability to take action when these appear to be getting out of line.

I share these concerns to some extent. While the private sector in both communications and computers is competitive and innovative, it is also compact. I have always found that when we took measures to ensure that competition was real, the price went down and the service got better.

Emphasis on
packet-switched
communications

Supply and Services will have the large network of terminals that I have already mentioned. It will consist primarily of packet-switched communications using the X.25 standard. This will give us the cheap and easy connection that our marketing strategy requires.

It is inevitable, of course, that as long as the major supplier of data processing equipment continues to favour its systems network architecture, we may have dedicated physical circuits as well, although we hope that the communications industry will provide us with a way to economize on this too.

Need for bulk
data transmission

In addition to this transaction-oriented network, there is a need for bulk data transmission across Canada. For example, Supply and Services prints 130 million cheques a year in centres across Canada. At the present time we are restructuring our databases on two national host computing sites, but much of our printing will continue to be done in regional production centres and we will need high-speed data links to do this.

Optimization of
data communications

We are at the beginning of implementing this strategy. As the pattern of our service becomes clear, we will be looking to optimize the way we obtain data communications. We will be looking at price, and we will also be looking at the other cost elements such as: the level of support in a world of proliferating offerings, the value-added services that we can get from the common carrier, and the flexibility offered to our clients, as the end users of our systems.

Importance of
competition approach

We will take an approach that provides the maximum competition. The benefits of such an approach are clear to me and I am convinced that other departments who are major data communications users will do so as well.

I am confident that providers of data communications would agree with a competitive approach. After all they have to keep in shape for the tough international market.

It will not do them any good to meet what may be perceived as less-demanding criteria in the significant portion of their market that the government represents, or to have a significant share of the data communications market diverted to an internal agency that is less than competitive in cost and service. Nor does it do the government any good to keep the advantages of innovation in the telecommunications industry unavailable by isolating ourselves from the market place.

These issues will become important to my own department as we develop our technology strategy for the late 1980s and early 1990s.

It seems obvious to me that the offerings of telecommunications suppliers in private industry and in government will have a significant impact on the effectiveness and economy with which we support government administration.

As we move forward, I look to true competition to keep service high and costs low.

*Comments by panel member no. 2,
Acting Commissioner Jack Wylie, RCMP*

The past

In order to discuss the present, as it relates to telecommunications, I found that I had to, first of all, examine the past. Until a few short years ago most government departments used the service offered by their telephone company to supply telecommunications.

1. Service offerings were rather simple.
2. The equipment was tariffed.
3. The impact of error on the department was low.
4. Intercoms were completely separate.
5. Data conveyance was rather limited.

Monopoly of
telephone companies

What I have described here, especially in the area of voice communication, was the total dominance by the telephone companies. This is best illustrated by the name the telcos attached to their clients. We were subscribers. We chose from the services they had to offer of which few, if any, were tailored to meet a department's requirements.

The result was that most departments did not need any particular expertise. They relied on the telco and, consequently, management in the departments was not overly concerned about telecommunications.

The present

Recent changes

The situation I have described began to change about six years ago and we now find ourselves in an entirely different set of circumstances.

1. Deregulation and interconnection are now well entrenched.
2. Equipment and service offerings are international in scope and almost limitless.
3. Telephone companies are removing customer equipment from tariff offerings. Their inventories are being eliminated while customer inventories are beginning to grow.
4. Departments often must assume their own building distribution requirements, with either large expenditures or leasing arrangements.
5. Before, we could cancel a tariff offering in 30 days. Now, departments will often own their equipment. If before there was a low impact of error, now departments will need to have their act together because the telcos will have little interest in a department that has outmoded or poorly selected equipment.
6. Wire services are no longer restricted to telephone. Facsimile is becoming very important and more appropriate in many cases than mail or courier services. Data conveyance is changing in leaps and bounds and the many microcomputers we now see are really only terminals waiting to be connected up. Many of the stand-alone word processors are in fact communicating with each other right across the country. Intercoms use either the same high level of switching technology or are part of the telephone system.

Extended wire
applications

Need for planning

7. No longer is there a low impact of error and departments have to carefully plan for their telecommunications needs.

Abuse of the
intercity network

8. And, finally, we now have an intercity network providing complete access to employees to any part of the country, if not the world. The abuses that are present, in my humble opinion, are very high and, with the present government deficit, the use of long-distance communication for other than work-related calls has got to stop. I know that my department is taking steps to control abuses and I am sure others are doing likewise. You, the people in telecommunications, can do something about it. It is quite obvious that the money spent for personal calls could be better utilized or, in fact, saved.

The future

Money the only
limit

As I see things, from a layman's view, we are really only limited by the amount of money we have and what technology can accomplish. If the last five years are any indication, the next five years will offer tremendous changes from the technological point of view. From the financial point of view, the situation is far different. I am certain that everyone will have to offer greater justification and new equipment and service will not come easily.

1. Telephone service with digital switches will certainly lead to an increased use of data on those switches.

LANs

2. Departments will rely more and more on local area networks to handle document preparation and electronic mail. Many nice but not always necessary features will be offered in what we now call office automation and departments will have to carefully consider this type of development.
3. Speaking of office automation, we have seen three different examples of semi-customized services for three departments. A Canadian product or system does not appear to be in the offing and what you will see is exactly what happened in the case of one vendor. After the trial in Ottawa, the standard offering from their U.S. counterpart is the device now being marketed.

4. Many departments are using both their voice and data links to communicate sensitive material. Some are taking steps to protect this communication while others do not recognize the importance. With more and more sensitive communication and the vulnerability of our unclassified communication systems, the future will, I am sure, demand greater precautionary measures.
5. The final concern in the upcoming years is that departments must become better represented and place greater emphasis in this rapidly changing field or they will become casualties in a field where error can be very costly.

*Comments by panel member no. 3,
Vice-Chairman, Task Force on
Informatics, C. Guruprasad*

Task Force on
Informatics

The Task Force on Informatics, which was established in July 1983, examined the impact of informatics on federal government operations. The word informatics was defined in the Cabinet mandate for the Task Force as the confluence of data processing, telecommunications, office automation and other related technologies, such as electronic publishing and archiving. Telecommunications was viewed as the integrator of office technologies, data processing and electronic publishing.

The emphasis on telecommunications reflected an interest on where the future of telecommunications is taking us: not only an interest by the professionals in the field, but also by the users.

I would like to talk about one aspect of the Task Force's work which has generated discussion, gained a certain amount of publicity, even acceptance, and which I personally believe will have an influence on the future.

Government-wide
systems
architecture

In our attempts to establish reasonable strategies for the future and an economic means of using technology, we found the need to develop a government-wide systems architecture. We discussed our ideas with experts and users in multi-national conglomerates who in some measure reflect and mirror our concerns as well as the complexity of the situation. We found that an architecture is necessary, not only to link the information held in different departments, agencies and organizations into government-wide information banks, but also to tie together the various office systems and production systems within each department, as well as to keep telecommunications costs down.

Networking

Why is it necessary to focus on the costs of telecommunications? A large number of organizations are defining the maturity of their information systems operations as a point where batch systems give way to teleprocessing; distributed networks complement teleprocessing; and, office automation based on local area networks and appropriate gateways becomes a part of an overall network. When these things happen, maturity unfortunately makes data communications the major cost item. Not surprisingly, management begins to look at networking as an item that has to be controlled in terms of costs; has to be exploited for the benefit of the organization; and, has to be used to tap into the sea of corporate information. Generally speaking, networking becomes at this point a survival issue in business profitability and, in our case, effectiveness.

In the future, some experts feel, as integration progresses more and more, the networks in an organization will be simply an organized way of linking workstations and personal computers and other processors: minis, maxis, with windows to the rest of the world. The problem is making the choice from many available offerings.

Development and selection

Between 1945 and 1975, a 30-year period, touch-tone telephony as well as step-by-step PBX were developed. Between 1975 and 1985, a 10-year period, we have seen the development of a first generation stored programs PBX; second and third generation solid state PBXs; and, fourth generation microchip-based PBXs and switching systems. With the development of voice over data and local area networks, appropriate gateway engineering has become a necessity: the acceleration of change, as well as the wide variance in prices and benefits, makes choice difficult. To the person who has the job of selecting equipment and engineering the proper network, the selection process has become a "Ouija Board".

Growth of digital devices

New products are in, even before the old ones can be depreciated out of the books. There is also growth to contend with. In 1984, digital devices and terminals installed in the United States numbered about 21.5 million. In 1989, it is expected that there will be 80 million digital devices installed. There will be a wide variety and the multi-vendor world will be a reality. If customers tailor the expansion of their businesses to what is available now or to a single vendor's view of the future, they will end up in an expensive mess. This is the challenge to the telecommunications designer of the future. Not all terminals need to be linked, but most will be linked and will be PCs with a window on the world. The trend in Canada will be the same: we are a communications-oriented country.

Topography of
federal government
informatics
architecture

The basic building block of a federal government information architecture is a work centre with multi-functional work-stations linked through local area networks. The bias towards a local area network is that it can provide sub-second transfers between terminals that are tied together.

Clusters of work centres will form divisions. The mini computers etc., will provide the storage required to enable the network of workstations to store historical data relating to their work and hold detailed information about personnel, finance, etc., to make full accountability a reality. Departments will have a number of programs tightly integrated inside their own sphere of influence but not beyond their boundaries. Departments could be considered to be loosely coupled systems, with interconnections between the appropriate mainframes which provide personnel and finance information etc., for functional management and the tightly integrated programs.

Open Systems
Interconnect
Standards

The Federal Government consists of a number of departments each of whom are reasonably autonomous and they could be interconnected through an Open Systems Interconnect protocol. The government is a multi-vendor operation: it cannot be otherwise. The optimal approach is to ensure, under the circumstances, that the International Standards Organization's Open Systems Interconnect Standards will provide the means to ensure compatibility. Is this not a reasonable expectation?

Accepted standards
internationally

Standards for the four physical transport levels are more or less accepted internationally. That which relates to the handling of information is not yet common currency. The pressure towards total ratification in countries like Sweden is a positive force. Even today, file transfers are possible at the top three levels without data being lost. In terms of our architecture, this is quite adequate and sufficient as a first base.

Role of
telecommunications

The role of telecommunications should be to link a number of departments, agencies and Crown Corporations, through appropriate gateways, to a government-wide data-exchange and interconnect network which in turn links to the various government-wide data bases. The design and the development of the government-wide data-exchange and interconnect network is probably the most challenging of all tasks and one that will make or break the Federal Government's informatics cost control structure. Most private sector companies are explicitly developing this type of architecture. Many multi-national conglomerates have this type of network, and ultimately, so will we.

To conclude, I would like to emphasize that, as technologies become integrated, organizations also get integrated. The question arises: who takes over whom? Who gets to the top? The data processing chief or the telecom chief, or someone else? Personally, I feel that there is no reason for fright as to who will take charge. There is room for all. The future is open-ended, particularly if one is service-oriented.

*Comments by panel member no. 4,
Director General Government
Telecommunications, Mr. Guido Henter*

Telecom needs

Government managers must organize their telecommunications resources to ensure that the departmental programs and objectives are met. This process was well described by Mr. Angus and was also clearly reflected by Mr. Guruprasad. In his exposé, Mr. Guruprasad described telecommunications as the integrating, cohesive force in the very complex world of computers in constant evolution.

Consolidations

I would like to give you an example of consolidation. GTA has approximately 40 switching points in the major Canadian cities. This network includes in excess of 160,000 interconnected telephones and this network handles several million telephone calls every year which represent over one hundred million dollars in long-distance telephone calls. Statistics show that long-distance calls coming from a government centre would have cost twice as much if they had been placed in other ways. This stresses the importance of telecommunications in the government. There is also in excess of 80 million dollars spent by several departments in telephone equipment acquisitions. You can also add 150 million dollars for such items as circuit acquisition and various other services for government. So, the total amount is over half a billion dollars per year and by 1990 it will exceed a billion dollars.

Data and voice
communications

At present, most of the communications are voice, although there is an increasing need for data communications. Voice services are increasing at a rate of 3% per year, while data services are increasing at a rate of 15% per year. Most of the voice communications are handled through shared services. However, most data communications are handled through specialized customized services. This gives us the possibility of more consolidations, where we can provide greater economy and introduce new technology.

Evolving technology
and needs

In looking at the future, there are two dimensions. First, the technological aspect and second, the evolving government needs and those of the public in general. Some of the technology aspects have already been covered. However, I would like to review some of the most important aspects from GTA's perspective. There is an increasing need for greater microchip capacity. While the cost is constantly reducing the capacity is forever increasing. This will allow us to put terminals on each desk. Presently, there are 175,000 employees who could, conceivably, work with a computer. The increased capacity, as well as graphic making capacities, will inevitably result in an increase in data processing and information exchange. In turn, this will be the ultimate test for the distribution networks.

Microchip capacity

Fibre optics

This will be followed by the emerging fibre optics which have almost unlimited transmission capabilities. As well there is the rediscovery of the twisted pair. A few years ago, this was considered an obstacle. However, today, following recent developments, we have concluded that the twisted pair can presently handle 2 or 3 megabytes and this will undoubtedly allow for processing of data.

Integration of
digital and voice
communications

Another technological development change that I would like to point out concerns the integration of data and voice communications. This integration lowers costs and in the face of increasing demand. From the government's point of view, we must also increase productivity in order to achieve more with less equipment and do it better. We must use more modern technology. Also the public's access to government program activities and the necessity of exchanging information within the government through electronic means will increase and will severely test our networks.

Planning guidelines
and framework

In view of the predicted future changes in telecommunications I would like to give you the guidelines or framework of GTA planning.

- 1) Voice/Data Integration.
- 2) Acquisitions that will allow the integration of both local and long-distance networks.
- 3) Interconnection, physical and logical, allowing different systems and databases to communicate.
- 4) Network access to systems and data.

Telephone networks

I am happy to say that telephone networks have the capability of meeting these guidelines. The method used included introduction of digital technology into the telephone system in 1982. This is now almost achieved by replacing the old switches with digital switches. We have also provided digital interconnection and increased digital capacity from one end of the network to the other. Between now and the end of the year, the transmission levels on the network will be of around 9.6 kilobits, and shortly after, 56 kilobits. These innovations allow the telephone system to be more quickly converted for data transmission as this market involves a high number of potential clients, since 160,000 telephone users will have access to this digital network.

Data networks

The installation of digital characteristics involves adding software to the network. This allows for increased features in the computer communications network or in the office automation capabilities. We have managed to create an infrastructure for data networks, interconnection of data networks and information processing capabilities that will be made available to the users shortly. There will be competition in this area which should result in decreased costs in the shared data services on a government-wide basis.

Develop own systems

There are certain challenges to be met by different central government agencies, and I would like to point some of these out from GTA's point of view. There is an increasing capacity in our networks. But, at the same time, users within most government departments will demand more and more flexibility to develop their own systems and to exercise a better control over their systems. They need personalized, private systems, answering their own needs, while taking advantage of large scale reductions provided by shared systems, and the suppliers will have to meet this challenge.

Competitive process

Another point that I would like to make is the use of the competitive process. The competitive process does not just have advantages. It also creates challenges among which is the prime ability of being able to specify and define your needs so as not to use imprecise specifications. So that, in effect, there is an evaluation process and a decision-making process that will determine the system's quality.

Training

Finally, I would also like to mention the human aspect of the technological question, including some of the more important functions, the first being the training of managers and users in order to make maximum use of the new technology.

Fine-tuning of the
planning process

Second, fine-tuning of the planning process. We must integrate the rhythm of change into the planning process and fine tune it to make it more open to change, to enable reaction to changes, and to modify the course of action.

So, if we take a look at this Study Session program, I think that we are on the right track.



GOVERNMENT TELECOMMUNICATIONS POLICY

Telecommunications policy is required to ensure that everyone in the government, in spite of differences in personal or corporate perceptions, works under the same rules. Uniformity in understanding the policy and wisdom in its application are important prerequisites to the achievement of a coordinated yet flexible approach to telecommunications services in the government.

Mr. Jacques Therrien, who is directly responsible for telecommunications policy development in TBS, addresses its past, present and future.

Government policy on telecommunications

First, an overview of the policy - it is important to recognize how far we have come over the last few years - pointers for change, the approach to change and finally the changes to come.

Administrative
Policy Manual

The TB policy on telecommunications is contained in Chapters 435 and 436 of the Administrative Policy Manual. Chapter 435 describes the policy itself, the major directives and guidelines. Chapter 436 contains administrative practices and standards. These have been in effect for a long time, but they have been supplemented by other documents. We will briefly run through the policy itself.

Telecommunications
Policy

The main policy states that:

- Telecommunications resources must be acquired and administered effectively and economically;
- Telecommunications are used to support government programs;
- Departments have the primary responsibility for needs definition, funding and for deciding the best means of satisfying their needs. This is the key. This is a decentralized policy. Departments have the last word.

Types of systems

There are three types of systems that are recognized:

- shared systems;
- customized systems; and
- departmental systems.

The first two are systems offered by GTA. The government telephone system is an example of a shared system. Customized systems are designed to meet the needs of a couple of government departments, or of a specific client.

The departmental systems are completely under the direction of the department.

The government will meet its telecommunications needs from the private sector first, before creating its own system.

Guidelines

- Use the tender process (standard government policy).
- Use communal facilities for transmission.
- Ensure that rival telecommunications services which make the best use of available resources and facilities are considered.
- Provide an environment where telecommunications will be properly managed.
- Ensure the economic acquisition of equipment, facilities and services.
- Relate the government telecommunications services and plans to the needs of Canada.
- Promote the sharing and support of government-wide systems and prevent unnecessary duplication.
- Ensure that telecommunications costs are really visible. This is the most important part. Departments should know how much they spend on telecommunications and pay more attention to telecommunications.
- Foster the sharing of telecommunications expertise and staff. What we are doing in this Study Session is a good example of sharing.

Short- and long-term plans (ITSP)

Departments are asked to have short- and long-term plans and to work on their own plans. TB is asking departments to prepare Information Technology and Systems Plans (ITSP).

- Short- and long-term plans (ITSP) Departments are asked to have short- and long-term plans and to work on their own plans. TB is asking departments to prepare Information Technology and Systems Plans (ITSP).
- The coordinator must take part in this process.
- Procurement Procurement is achieved through DOC/GTA and SSC for different types of equipment and services.
- Financial records On the financial side, in the departments there should be records of how much telecommunications are being used.
- Security There are a lot of problems on the security side. How do we move into this civilian type of security. The definition we have in our policy for COMSEC is the discipline developed to protect classified information being processed by telecommunications systems. This is an area that will require a lot of work in the future.

Practices and standards

Chapters 435 and 436 contain detailed standards and practices of the APM.

- Decentralization A major point is that we are talking of decentralization. Departments are responsible for their own thing. The key player is the telecommunications coordinator. Coordination is being decentralized. However, in the department, there should be some centralization of coordination. There should be some coordination, and somebody should be responsible for that.
- Evaluation Finally, the question of evaluation. Departments should have their own internal policies on how they should handle communications. That is part of the decentralization. Instead of TB writing all the policies in great detail, we write the major points and then ask departments to write their own policies which are presumably tailored to their specific requirements and situation.

Policy history

- Policies should cover all telecommunications The first government policy was called MIQ-66 (Management Improvement Branch) and dealt with administrative telecommunications and did not include operational communications for the Armed Forces and Transport. I think we have made our point that policies should cover all telecommunications.

Study of
telecommunications

In 1974, TB began a study of telecommunications. The Guide on EDP Administration had just been finished and the idea was that we should have a similar guide for telecommunications. There had never been a comprehensive approach to telecommunications before. When the study started, a few departments were appalled at the fact that TB had got involved in telecommunications.

MOU

In arriving at a definition of telecommunications in Chapter 435, it was difficult to define telecommunications and reach a consensus on what should be included and what should not. The first step was to get DOC and SSC to agree. This went fairly smoothly. This Memorandum of Understanding (MOU) is really the start of the new telecommunications policy in government.

Background

Purpose of policy

TB put out a paper in April 1975, which stated that the main objective of telecommunications policy is not to resolve telecommunications issues, but to set up mechanisms for their resolution. To fully appreciate that the whole area of policy development is dynamic, and will continue to be so, one only has to look at the last decade to see how we got to where we are today. The following milestones marked the development of telecommunications policy.

Historical
milestones

In May 1975, we have a draft of directives and guidelines, and in August 1975 we have a new draft. In September 1975, we have a statement of objectives and principles. Then the work is suspended until, in June 1976, we get the security section endorsement by the Security Advisory Committee (SAC). Finally, in November 1976, the draft is approved by Treasury Board.

A major event in March 1977 is the establishment of the Telecommunications Advisory Committee which in a way was the start of the telecommunications community in the government as a body. (Before TAC there was no forum for telecommunications people to get together and to discuss all their problems.)

- . First reports and plans in June 1977.
- . First Annual Review in April 1978.
- . Telecommunications Guide is evaluated in December 1978.
- . Chapters 435 and 436 of the Administrative Policy Manual (APM) are published in March 1981.
- . Common Services Policy states that the Government Telecommunications Agency offers a telecommunications service which is mandatory.

- . October 1982 - the Information Technology and Systems Plan combines the EDP Plan and the Telecommunications Plan, having a significant influence on some departments.
- . In August 1984, we combined the inventory report for telecommunications and EDP in order to get away from the usual questions of "Is this Telecom?" or "Is this EDP?", because, as you well know, these areas are all coming together and they are inseparable. The microcomputer policy mentions the telecommunications aspects of putting microcomputers in the departments.

Moratorium on
year-end purchases

There is a moratorium on year-end purchases whereby, if you do not put in your orders to SSC before December 20, you cannot purchase equipment at the end of the year. This is to get around the year-end spending spree.

There are two provisos:

- a. If you have it in your plan, i.e. the ITSP which was approved by Treasury Board, then it's OK.
- b. If it is not in the ITSP, you have to come to Treasury Board and ask for approval to buy something at the end of the year, and this is usually frowned upon.

This serves as an incentive for departments to put more and more of what they are doing in the plan and to try to get departments to coordinate this better.

Conclusion

So, in résumé, it is obvious that in 1974 we had no forum at all on telecommunications, no overall policies, etc., while today, we are talking of merging EDP and telecommunications. Departments have come a long way in putting in policies and trying to coordinate telecommunications and EDP in their own environments.

Further developments in the area of policy are likely to stem from the various pressures for change that are being felt now.

Pressures for change

Regulatory changes

Regulation of such things as tariffs was absolutely essential when there was only one supplier.

With the competition available today, obviously a lot of things are going to happen in the regulatory area. However, regulatory changes are not happening very quickly, so this increases problems from an administrative point of view.

Technological changes

Changes in the industry are more immediately relevant because there are many new products and new firms. Eighty-five to ninety per cent of those firms will be out of business within five years, and this creates some rather interesting problems in terms of picking the right products.

There are also a lot of consultants who, like prophets, have their own buzzwords in order to sell. It is very difficult, even for people who are in telecommunications on a full-time basis, to figure out exactly what is happening. That is why departments will need to have people who are really knowledgeable about what is happening in order to coordinate everything.

Evolution of user perception

There is an increasing demand on EDP and telecommunications organizations these days, in part because of the explosion of information. Almost every magazine has an article on computers, telecommunications, etc. And it becomes increasingly hard to sift through this information because, very often, an unreal perception of how easily technological changes can be managed is created. In practice, there is a lot more to it than what appears in the literature.

Productivity pull and technology push

People see their human resources being reduced and they see the new technology as the way to getting things done; therefore, they want it.

Long term integration of services

In the long term it looks as if the carriers are offering, or are about to offer, completely new services, in the sense that they want to bring office automation right to your desk, as a service, like the telephone, (e.g. the Meridian line). It is obviously an integration of services which displaces not just certain companies, but which displaces people internally in departments.

Infrastructures in departments

There are all kinds of battles going on in departments about who is responsible for what. People are afraid that they are going to be phased out if they do not have their microcomputers.

Convergence and collision

The two words which describe the actual situation are "convergence" and "collision". We talk about the merging of technologies which sounds like a nice process that happens automatically. But, in effect, it is more of a collision most of the time.

Importance of information technology

Dependence on
technology

It is becoming vital for departments to have good systems. And the more systems they acquire, the more dependent they become on technology, and they will need more people, not just to put it in, but to keep it going at a reasonable price, in view of the decreasing budgets in government.

There is a need to manage these changes, to cope. I use this word consciously, because this is the way a number of people feel about technological changes, especially senior people in departments. They see this onslaught and they wonder "How do I cope with this - what do we do?". So there are pressures for things to change. Again, many promises and few successes. The results are not always visible, perhaps more so in the long term.

Telecommunications
bottleneck

The way things are happening now in the office, there are microcomputers everywhere, but this does not solve the problem. I call this the telecommunications bottleneck, because there is a shortage of expertise in this area of data communications and, at the same time, communication is a very vital thing in any organization. And as we use more and more information technology, it becomes even more vital. And this brings up the questions of how much the government should do and how much should be provided by the private sector.

Treasury Board approach

No change in basic
approach

First of all, there will not be any major change in attitude from Treasury Board. The areas of decentralized policy, coordination of departments, policies in departments are going to remain the same, because they have worked well so far and they are still going to do so in the future. What might or should increase is the degree of consultation with departments and among departments, and with centralized agencies. Also, we should make better use of the committees, such as the Advisory Committee on Information Management and the Telecommunications Advisory Committee.

Need for more
consultation

Use of committees

Although we have always had a presence in these committees, we should be more active in improving the amount of consultation in the government.

Policies must
reflect reality

Treasury Board policy should be tailored to the real situation. What is happening now is that people are saying that technologies are merging and, therefore, we should have only one policy. In fact, Treasury Board believes that the government policies should reflect the reality of what is in fact happening in the departments. We must help departments

do the integration on the planning level and we can only go as far as it is happening in reality. This is a major point in terms of attitude from TB - the realization that there are uncertainties in what is happening. In other words, we want a considerable amount of flexibility to be able to adjust these policies in the future.

Two technologies:
Telecommunications
and EDP

Also, we want to recognize two basic technologies. It is really the computer and telecommunications that are coming together. Office automation is an application of this merging of technologies and even though there is a lot of activity, it is still relatively small, accounting for 15 per cent of our total telecommunications/EDP costs. This is reflected in the industry by the AT&T and IBM battle. There is no giant for office automation. It is AT&T and IBM.

Strategic planning
in the government

There should be more direction from the centre without specifying in great detail what departments should be doing - because decentralized policy is going to be made - but more in terms of providing guidance to departments.

Departmental
responsibility

Departments are responsible for what they are doing and this will remain. Of course, there are still going to be policies about tendering and other items. But in the future, as we see technology still growing at a really fast rate (EDP right now is growing at the rate of 17 - 18 per cent, in real terms, for equipment), and with the government trying to size down, there will be more and more pressure to show results from the point of view of doing more with the same people or doing the same job with fewer people.

Personnel

The question of people concern has already started. This cannot be ignored.

Competition

Promote competition in order to get the best deals and to achieve the greatest productivity.

Buy or make

Promote buying versus making. This means getting more services out of the private sector, and I think there will be more and more emphasis on that as the government is talking of privatization. Presently, there is a big squeeze on person-years and there will be more and more pressure to go to the private sector and, simultaneously, the private sector will gear up to lobby more and more to get the government services.

Policy review

We must review all our policies, because most of them have been there for quite a while. We need to say more about the global approach. We have to talk about information technology in general in our policies to give departments a feel for what might happen in the future and, in order to do that, we might have to change the policies slightly. The policies might not change but the packaging of the policies might change.

Policy packaging

We might have a policy on information technology. We still have a policy on telecommunications and EDP, because, in real terms, we recognize that they both exist separately in most departments and will continue to do so for years to come.

Information management

In essence, we will keep structures similar to the present ones, but we will add new things and try to provide a broad framework, perhaps beyond the technology area. Some people call it information management or information resource management. The idea is to look at some of the general aspects of information.

Improved planning

Every Auditor General's report talks of improved planning. This is difficult as there are not many planning resources in the government. We will put out a few administrative practices to help people get organized.

Training

Emphasize training; it is recognized by everyone that there should be more training. As information technology becomes more and more vital, we will have to train senior people on the meaning of information technology and its implications.

Administrative practices and standards

Perhaps in TB we will get around to authorizing the Publication of the Telecommunications Management Manual as a government practice to replace APM 436. We should recognize the input we have received from the community, because we know it is practical. The community has had to work with it.

Budgetary control

We have to find some way of controlling the expenditures in information technology. We have to rationalize the growth in terms that the DMs and the Ministers will understand, because this is an investment in the future.

It might be possible to think of having information technology budgets in the same way that we have project budgets. There would be an envelope defined for each organization and TB, having agreed on the growth of that envelope, would leave departments free to do a lot more things within that boundary. This would give departments a lot more leeway and freedom while maintaining some overall control on what is happening in information technology.

Benefits

The question of benefits is really crucial. In the future, there will be more pressure to talk of benefits in concrete terms in government. If we are talking of spending hundreds of millions of dollars in technology, you cannot just tell the Minister that it has been dissipated in the bureaucracy.



REGULATORY ENVIRONMENT

Having one policy for telecommunications management does not mean that the rules for acquiring telecommunications services are identical across the country - there is the additional set of limitations imposed by the regulatory environment. Since different kinds of regulatory bodies are involved (federal, provincial and municipal) in regulating the same types of activities, the limitations are not uniform in all places.

Mr. Terrance Rochefort, an expert in the area of regulatory policies in DOC, unravels the organizational mysteries of the regulatory bodies and provides an insight into the regulatory trends in Canada, including some comparison to events in the U.S.

Types of regulation

Terminology

To begin, I would like to define the terms and talk about the different kinds of regulation and the areas that are regulated within the telecommunications field.

Basically, there are three areas within the regulated sector:

- a. radio apparatus;
- b. terminal attachment equipment; and
- c. rate regulation, i.e. the general regulation such as the CRTC regulating Bell Canada.

Radio regulation. First of all, radio regulation is undertaken by the Department of Communications. The Minister of Communications has the responsibility of issuing radio licences under the Radio Act. Essentially, the department is responsible for the licensing of radio apparatus, the assignment of frequencies, and the monitoring and enforcement of behavior of licensees under the Radio Act. For example, the Department has people, mainly in the regional offices, who ensure that users of the radio frequency spectrum stay within the confines of the piece of spectrum that they have been assigned. They also investigate complaints of misbehavior under the Act.

Radio Act

It was the Radio Act that enabled the Minister of Communications to put out the policy on cellular mobile radio service and implement it. It is also under the Radio Act that the Department does its work on microwave licensing and we have a policy group that works on that as well.

Terminal attachment regulation. The second area is terminal attachment regulation. At the outset, I would like to make a distinction among the following terms:

- a. terminal attachment;
- b. systems interconnection; and
- c. interconnection/interconnect.

Definitions:

1. "Terminal attachment" "Terminal attachment" and "systems interconnection" are two terms that we tend to use in Canada, whereas in the U.S. they use the term "interconnection" to refer to both concepts. Terminal attachment is a reference to the attachment of customer-owned telecommunications devices (single-line sets, multi-line sets, PBXs, data communications equipment, etc.) to the networks of the carriers.
2. "Systems interconnection" Systems interconnection is the interconnection of two carrier networks; for example, CNCP and Bell Canada. Essentially, it is the interconnection of networks which allows the customers to mix and match network services to suit their needs, for example a private line between Ottawa and Quebec City, where half could be on telephone company facilities and the other half on CNCP facilities. Another kind of network interconnection is where CNCP has the ability to use the telephone company's local switched network in order to deliver its competitive services to customers. So, there is a distinction, in Canada at least, between terminal attachment and systems interconnection.
3. "Interconnect/interconnection" The term, "interconnect/interconnection" tends to be used more generally in the U.S. As you probably know, a competitive environment came about much more quickly and evolved further in the U.S. than it has in Canada. So, in the U.S. "interconnection" tends to mean either terminal attachment or systems interconnection, or both.

Role of the regulator

The rules for terminal attachment are set by the regulator. So, in the case of Bell Canada, the attachment regulations would be set by the CRTC.

Essentially, the regulator decides what kind of devices are attachable to the networks of the carriers that it regulates. There is also a technical component to terminal attachment.

Because a device is being attached to a network, there are certain standards that need to be met. The regulator normally determines what kinds of standards the equipment attached to the networks must meet. The actual drawing up of the standards, and the certification of equipment, may or may not be a function of the regulator. For instance, in territories served by federally-regulated carriers, the devices that are attached must meet TAPAC (Terminal Attachment Program Advisory Committee) standards.

Rate regulation

Principles of rate regulation:

There are several regulatory jurisdictions in Canada. However, the principles which cover rate regulation are generally common. There are three that I would like to point out to you.

1. Rate of return

The carriers are generally regulated on a rate-of-return basis. The regulator decides what is reasonable, in terms of rate of return on investment, and accordingly how rates should be set.

2. Value of service pricing

Essentially, this means that the prices are established with reference to a perceived value of service, rather than to the cost of the service. For example, business versus residence pricing. For a regular single line telephone set, a business often pays three times what a residential subscriber would, although the cost to the telephone company is no different. The rate is based on the perceived value of the service to the business subscriber as compared to the residential subscriber.

3. System-wide pricing

Historically, the regulators have encouraged the carriers to price their service the same throughout the system, no matter what the cost of providing the service within one part of the system might be, compared to that in another part of the system. The price should be the same whether you are providing service in the boondocks or in an urban area. This has been historically true, but things are changing, particularly with respect to optional services. Depending on what it costs to put a service in, it may not be necessary for certain services to be provided right across the country. For example, the packet-switched networks, (Datapac, Dataroute, Infodat, Infoswitch) tend to be put in where it is economically feasible to do so and we see the evolution as they are moving into smaller and smaller centres.

Quality of service criteria The rate regulator also sets the terms and conditions of service, such as quality of service criteria. This is one of the aspects that they also consider when they are looking at rate applications by the carrier.

Railway Act The relevant federal legislation here is the Railway Act; the provincial regulators operate under their own acts.

Process of rate regulation The regulators, in determining rates, go through a fairly complex process. It is not really a step-by-step process, but for simplicity we can describe it that way. Essentially, the regulators have to calculate the expenses that the carriers are incurring in doing business. There are two components:

- a. operating expenses (salaries, equipment, other expenses, etc.); and
- b. cost of capital which includes debt financing, interest, and the cost of equity financing (i.e. how much of a return on investment investors will demand in order to put their money into the carrier operation).

Revenue requirement The expense components together make up the revenue requirement, which is the bundle of money that the carriers have to get in order to cover their expenses, including the return on investment that the regulator decides is appropriate.

Then, in an iterative process, the revenues from individual services are juggled around so that they equal the revenue requirement. This is all done in respect to a base-year, based on expenses of a particular year or on the forecasts for the next year. The rates will be set to meet the perceived revenue requirement.

Regulatory jurisdiction

Regulatory bodies:

1. Federal (CRTC)

Before going into detail about the terminal attachment regulations, I would like to outline the regulatory responsibilities in Canada. The regulatory system in Canada is a complex one, and one which has evolved, rather than the kind of system which a rational mind would design at the outset. But, the important thing is that the system works, and works quite well. The federal regulator is the CRTC and it regulates a number of carriers, Bell Canada and BCTel being the two largest.

In terms of number, there are few carriers regulated by the CRTC. However, in terms of relative size, compared to the rest of the industry, the CRTC regulates a good-sized proportion (about 70%) of the telecommunications operations in Canada.

The cable companies are also regulated by the CRTC and they are regulated under the Broadcasting Act, because back in the 1950s, they were established to provide American broadcasting signals into Canada. It became obvious that they could do more and more in telecommunications. But they are still regulated as broadcasting undertakings, and as such, the cable companies are not regulated on a rate-of-return basis. They are regulated as broadcasters, which involves what we term "oversight regulation", or regulation of the overall operation of the firm, including the content carried by it.

2. Provincial

Some of the major provincially-regulated companies include Alberta Government Telephones, Saskatchewan Telecommunications and Manitoba Telephone System which are provincial Crown Corporations. Then there are Maritime Telegraph and Telephone, New Brunswick Telephone, Island Telephone and Newfoundland Telephone, plus some smaller independent companies.

There are regulatory bodies in Ontario and Quebec that regulate the smaller companies, such as Quebec Telephone, Telebec and Ontario Northland Communications. Generally, the provincial regulatory bodies are called "Public Utilities Boards". They follow essentially the same regulatory process as the CRTC.

3. Municipal

There are also municipally-regulated telephone companies, one of the best known being Edmonton Telephones. It is a department of a corporation of the City of Edmonton.

Non-regulated companies

The following types of companies are not regulated:

- Radio common carriers . Radio common carriers, which are licensed by DOC under the Radio Act. They operate radio paging and dispatch services.
- Cantel/Bell Cellular . Cantel/Bell Cellular, Cantel being the national cellular provider and Bell Cellular being a subsidiary of BCSI, Bell Communications Systems, which will be providing Bell's cellular service.
- Teleglobe Canada . Teleglobe Canada, the international carrier which is a Crown Corporation, is not regulated because of an accident of history. Around 1910, Parliament intended the international carrier to be regulated. However, the operative part of the relevant legislation was not proclaimed. As a result, Teleglobe is not regulated like the other carriers. Teleglobe reports through Parliament to the government, but it is not regulated.
- Telecom Canada . Telecom Canada, which is an unincorporated consortium made up of the largest telephone company in each province (nine telephone companies) plus Telesat Canada, is not regulated as an entity in itself. Each of the individual companies is regulated, but Telecom Canada is not.

Terminal attachment regulations

History

Terminal attachment in Canada started in the early 1970s with TAP (Terminal Attachment Program) created by DOC to look after the orderly development and implementation of terminal attachment. At that time, it was limited to network non-addressing devices, passive devices that do not dial into the network.

TAPAC

TAP spawned TAPAC (Terminal Attachment Program Advisory Committee) in the mid-1970s. TAPAC was established as a voluntary cooperative organization made up of federally-regulated carriers, user groups, manufacturers and some provinces, to establish standards and procedures. In 1979, a decision was made to start working on standards for network addressing devices. The timing was good because of a landmark decision by the CRTC in 1980 on Interim Requirements for Terminal Attachment and, after a public hearing, the final decision came out in 1982.

For federally-regulated companies

- . All classes of equipment can be attached.

DOC certification

- . Certification by DOC. DOC issues labels indicating that equipment meets TAPAC standards and is therefore attachable to the networks. Testing is done by DOC or by independent laboratories approved by DOC. These laboratories can even be located on the manufacturer's own premises.

CSA certification

- . CSA certification is possible in the future. There have been some discussions with respect to seeing the responsibility for TAPAC standards and certification transferred to the Canadian Standards Association, but it is still in the preliminary stages and no decision has been made yet. It is a possibility at this point in time.

For non-federally-regulated territories:

Moving towards liberalization

The rules for non-federally-regulated companies are approaching the level of liberalization that has existed in federally-regulated territories. They are still a bit restrictive in Manitoba, Saskatchewan, New Brunswick, Nova Scotia and Newfoundland. There is some consensus starting to form around DOC certification and TAPAC standards. It is important that the standards, if at all possible, be national. We need national standards for terminal attachment and some kind of national approach to it.

In the final analysis, the thing that is going to move terminal attachment forward across the country is market pressures. If users want terminal attachment and they make that known to the telephone companies and the regulators, it will happen sooner or later.

Systems
interconnection

Systems interconnection is a little bit easier to handle because there is not very much of it. The only place it exists is in federally-regulated companies. The landmark decision was in 1979 with CNCP getting the right to connect its network to that of Bell Canada. This right was extended to BCTel in 1981.

Although the recent CNCP bid to obtain CRTC approval to compete with Bell Canada and BCTel for message toll (public long-distance) services was not successful, this issue remains a controversial one in the country.

Enhanced services

Applying only to
federally-regulated
concerns

There was a CRTC decision in July 1984 that made a distinction between basic services and enhanced services. (Enhanced services are those services that involve some kind of computer processing or similar techniques such as database retrieval, electronic mail etc.).

The CRTC also said that it is not going to regulate enhanced service providers other than the ordinary regulated companies that happen to provide enhanced services as well as other services. Carriers regulated by the CRTC must provide the basic service in order to permit enhanced service providers to operate. So the federally-regulated carriers have to provide a company wanting to offer enhanced services with the kind of basic service it needs to offer that service.

Cellular mobile

Definition

Cellular mobile, which comes under the Radio Act, is a new radio-telephone technology that provides spectrum-efficient high-quality communications. The policy states that there will be two providers of cellular service per market area. 23 areas have been defined by the Department as the 23 largest metropolitan areas in Canada. With the conventional radio telephone systems, the radio frequency spectrum, especially in large metropolitan areas, was very congested. It was hard to get a frequency in mobile telephone service in Toronto or Montreal and the quality of service was not very good.

Requirements for
cellular mobile

One of the requirements for cellular mobile is the inter-connection to the public switched network. The requirement of DOC is that a telephone company provide interconnection facilities to Cantel, which is the non-telephone company cellular provider, before the telephone company can get a cellular licence itself. This is not a problem in federally-regulated areas. However, in provincially-regulated areas, there might be a problem in such places as Winnipeg and Calgary because Cantel cannot offer services, since it cannot get interconnection; the telephone company may not be able to offer services because it is not giving Cantel interconnection. The important thing to remember is that in the two metropolitan areas where the congestion was the greatest, Toronto and Montreal, everything was set to begin in July 1, 1985.

Assessment

I would like to leave you with my own personal evaluation of the situation.

Future of regulation/
deregulation

Where is regulation/deregulation going?

Are we going to have deregulation as they have it in the U.S.? My answer is no. Deregulation as such is an American phenomenon and, of course, in the U.S. it is coupled with a move towards more competition; it is coupled with the divestiture or break-up of AT&T. I do not think we are going towards that in Canada. However, I believe that we are going towards an environment of more competition, towards cost-based pricing, because our rates, particularly our long-distance rates, are out of line with those in the U.S.A. A Canadian company using long distance services, and competing with U.S. companies, is being penalized. A call from Toronto to Vancouver costs much more than a call from New-York to Los Angeles.

We have to get our rates in line with those in the U.S. The challenge, given the constraints we have on the federal-provincial scene, would be to do that in a way that would achieve a Canadian consensus and not jeopardize the provision of basic services at reasonable rates.

Realignment of
jurisdictions

What about realignment of jurisdictions? Maybe. The last serious talk was in 1980 with the constitutional discussions. There is a court case in Alberta right now, involving CNCP and Alberta Government Telephones, with CNCP attempting to establish through the courts that AGT is subject to CRTC regulation. There has not been a ruling yet, but we will see where it leaves us in terms of jurisdiction.

ACQUISITION OPTIONS - GOVERNMENT DEPARTMENTS

Given the existing policy and regulatory constraints, what options does a department have for acquiring the necessary telecommunications services?

One way of looking at these options is in terms of whether the services are provided by GTA or by the department itself. To give some perspective on the available choices, this presentation offers an overview of GTA services (including the nature and scope of the Agency's operations) by Mr. Al Keddy; and some insights by Mr. Tony Ramunas and Mike Billows into what is involved when a department undertakes to acquire its own system to meet unique requirements.

Al Keddy, Director of Systems Design and Management in GTA:

Introduction

Telecommunications Acquisition Options. Options usually spell more work; cutting down on options means less work. I know as people responsible for ensuring your departments are equipped with the best possible communications facilities, despite the work, you would like your freedom to make decisions to be as unfiltered as possible. However, there are many constraints on this freedom.

Limiting factors

Not only do you have to be concerned with government procurement policy, government telecommunications policy and the existing and variable regulatory environment as described by the previous speakers, but there are all kinds of other constraints such as availability and kind of money you can get your hands on, what claims the suppliers are making that really cannot be delivered, at least the way you understood that they would be delivered, or in the year that you thought they said they would be delivered. Also, you should already know that the requirement you thought your department had will not be the same by the time you get a system in place to satisfy it as it was when you first started.

Awareness of factors

To be aware that there are many factors and limitations that must be taken into consideration in choosing a way to satisfy your department's needs is the first step in ensuring they get satisfied correctly, despite all of these considerations. You are lucky to be in a position to influence the direction of your department in this very fast-changing and exciting world of telecommunications, data processing, office communications or informatics - whatever terms you choose to describe your area of concern.

Outline

Briefing Outline

Part I

GTA Approach

- . Acquisition Options
- . GTA Mandate
- . GTA Resources
- . GTA Services
- . GTA Future

Part II

Non-GTA Approach

- . Review of RCT Experience

GTA in perspective

What we hope to do in this session is indicate to you that you do have some choices in this complex field and that there are many places where you can seek help and information. In part one, I will talk about choice and try to put the Government Telecommunications Agency (GTA) in its proper perspective as an agency created both to further government policy and to be there to help you satisfy your telecommunications needs as they arise. I will have time to touch only briefly on each of the listed subjects in part one, but hopefully it will be sufficient for you to get a feel for what is available from GTA to assist you.

Departmental options

However, not all of your telecommunications needs can be satisfied by GTA. At times it may be more appropriate for you to satisfy your needs some other way. In part two, my companions will give you an insight into some of the considerations you will face if you should have to install a complex system on your own.

Choices

Despite the number of constraints and factors which must be considered in choosing a method of satisfying your department's needs, you do have a considerable range of choices.

Departmental acquisition choices - non-competitive environment	RENT	LEASE	LEASE/BUY	BUY
GTA Common	X	X		
Customized	X	X		
Telco Customized	X	X		
Other Suppliers Customized				
Mixed Suppliers				

Even where a competitive environment does not yet exist, you have several options using GTA as a vehicle to satisfy these needs and, where GTA cannot satisfy the need, there are at least two choices from the telephone company. Where a totally private and isolated system is required, other choices are available. But, for the purposes of this session, I will confine my remarks to systems which must be interconnected to public networks.

Where a competitive environment exists, the range of options is considerably expanded as shown here.

Departmental acquisition choices - competitive environment	RENT	LEASE	LEASE/BUY	BUY
GTA Common	X	X	X	X
Customized	X	X	X	X
Telco Customized	X	X	X	X
Other Suppliers Customized	X	X	X	X
Mixed Suppliers	X	X	X	X

I draw your attention to the range of possibilities available through GTA. While we have standard services, anything that suppliers will provide can be obtained through the resources of GTA. Essentially, GTA will consider passing on to a department any arrangement that can be obtained commercially and, even where the choice available from suppliers is not suitable, GTA can make other financial arrangements with the client departments to satisfy their needs.

GTA

Mandate

So what is the Government Telecommunications Agency? To better appreciate the function of GTA in supplying government telecommunications, it's worth recalling the mandate of the agency. In theory, GTA's function as an instrument of government policy is simple. By creating an organization that can amass the common needs of government departments and agencies into one procurement strategy, and by creating a critical mass of expertise, the agency should be able to realize the savings of bulk procurement and prevent excessive duplication of resources, thereby saving the government money. But in order for it to work, it is necessary that departments use the Agency to obtain their common telecommunications needs. Common need is defined as a need common to more than one government department or agency. But the new technology permits common systems to be tailored to individual needs to a much greater extent than ever before.

APM Chapter 303

The common service policy is designed to ensure "that needs are met" by obliging departments to collaborate with GTA in satisfying their common needs, as this extract from the Administrative Policy Manual (APM) Chapter 303 indicates:

"Departments and agencies shall obtain their goods and services from common service organizations only...".

One of your first criteria in choosing a method of supplying your needs, then, is whether or not the service can be obtained through GTA.

GTA resources

For its part, GTA can amass considerable resources to satisfy government telecommunications needs. To help ensure these resources are available where needed, we now have twelve offices across the country which can be contacted for assistance and which in turn can solicit the assistance of specialists in several disciplines to address a wide range of telecommunications problems. The size of the agency is perhaps best revealed by the annual cash flow which this year should reach \$144 million. Real growth has been at the rate of about 4% in recent years.

GOVERNMENT TELECOMMUNICATIONS AGENCY
85/86 DIMENSIONS

Authorized Person Years	218
No. of Offices	12
Annual Revenues	\$144M
Annual Growth (Real)	4%

GTA services

In its current service portfolio, GTA offers several services. They are:

- . Shared Intercity Service
- . Shared Local Service
- . Customized Voice or Data
- . Consulting Services
- . Directory Services

The first two services involve only telephone service at this time. Also, we have a consultant service, but the bulk of our efforts in this area would be better described as providing service representatives who are capable of assisting you in determining the applicability of GTA's other services to satisfying your needs. These services I will describe in a bit more detail.

Telephone service

Historically, the mainstay of GTA service has been the telephone network. The government telephone network now includes 30 local telephone service areas across the country, interconnected by some 1.5 million miles of intercity circuits.

On average, this system provides long-distance service at about half the cost of commercial long-distance, while ensuring that local service is delivered at rates competitive with other arrangements available in the local area. Some dimensions of the network are shown here:

VOICE NETWORK DIMENSIONS

Circuit Miles	1,500,000
Intercity Calls/Yr	\$35,400,000
Consolidations	30
Annual Revenue (Shared Voice)	\$75,700,000

Because of the availability of this plant, GTA is in an excellent position to help you satisfy your local and long-distance telephone needs economically and should be consulted before any other arrangements are undertaken. Even where other arrangements are being considered for local service, economical interconnection to the long-distance network can only be assured if you work in cooperation with the Agency. Because of the existence of this plant, GTA can offer a wide range of "value-added" services such as teleconferencing, call authorization code service, directory service and so on.

Data services

At the moment, GTA data services are somewhat limited but nonetheless useful.

GTA DATA SERVICES

- . Government Data Network Services
- . Government Electronic Messaging Services
- . GEMS-ENVOY 100
- . GEMS-EOS
- . Government Text Communications Service

For several years, GTA has operated a narrative message system comparable to telex. Access to this system is provided by more than a thousand message centers in various departments. An average of 16,000 messages are sent on the network daily.

In addition to GDNS, we provide a government electronic message system (GEMS) based on the ENVOY 100 service which is growing very rapidly and which provides a modest saving over direct ENVOY 100 service. We now have just under 2,000 subscribers on this system. GTA also makes available an electronic message and information service based on CNCP's Electronic Office Service. This latter service is useful in that it can send and receive messages allowing for a gradual transition to a personal messaging system from a message centre based system.

The last "common" GTA data service is our text communications service which permits dissimilar word processing machines to communicate with each other. We have a capability to interface machines from the five most popular word processing manufacturers used by the government: Micom, AES, Xerox, IBM, and Wang.

Directory services

It may seem a bit strange that I would single out Directory Services as a special topic to discuss when there are in fact many more things I could say about the more glamorous and technologically oriented services. However, directories turn out to be the lubricant which permits efficient use of the other services. Poor directories will almost certainly lead to frustrated users, high complaint levels, customer dissatisfaction, overworked operators and inefficient use of the networks or other facilities. Here is an overview of the government directory operation but, in addition, GTA coordinates Government of Canada listings in public telephone and telex directories as well as publishing GDNS directories, directories for word processors which have a communications capability and GEMS directories.

DIRECTORY SERVICES

No. of Directories	7
No. of Line Records	150,000
Annual Transactions	107,000
Copies per year	200,000
Total Direct Costs	\$831,000

We devote about 5.5 person-years to this endeavour and strive for a zero error rate: a difficult goal because it is not unusual to have 40% of the entries changed one way or the other from one issue to the next. Directories consume a lot of time, and have potential for a lot of problems, which are factors you may want to consider when contemplating the most efficient way to provide a service requiring directory support.

GTA plans

So far, I have covered briefly the basic services offered by GTA. But what about the future? Tomorrow you will hear about the planning process. The end result of that process indicates the kind of needs government departments will have to have satisfied in the future. In general terms, the future looks something like this.

GTA BUSINESS PROJECTIONS

1984/85

1989/90

Voice 89%

Voice 65%

Data 10%

Data 31%

1% Office
Communications

4% Office
Communications

Office automation

There will be growth in the three areas GTA is now involved with, although one might argue that we are not really involved in office automation. Electronic messaging systems are, however, generally considered to be an office automation feature and we are supplying that value-added service today. Based only on growth trends at the present time and assuming no major change in government policy which would alter the general course of events, it appears that by 1989/90 office automation services offered by GTA will have at least quadrupled over today's effort, even if we don't add any new services. If some of the trials we are planning turn out as predicted, this number could increase dramatically.

GTA DEVELOPMENT PLANS

Voice Network
Office Automation
Satellite Services
Shared Data Network

Modernization

As most of you know, GTA is well into a modernization project for the voice network. In terms of the number of switches, we are about half finished modernizing the consolidations; in terms of the number of customers now being served by a digital switch, we are over 85% finished. But the modernization project is not just concerned with modernizing the consolidation switches. The real benefits are yet to come as we begin to take advantage of the intelligence of this technology to efficiently route traffic by the most economical means available. Automatic route selection features have been under test between Charlottetown and Ottawa for the past six months and have dramatically reduced the cost of providing adequate facilities on this route.

Automatic Route Selection (ARS)

Voice/data integration

Finally, this modernization program will also allow us to take advantage of circuit-switched digital network features for economically hauling relatively high speed data across the country. Also, GTA will be testing the Northern Telecom Meridian workstations in conjunction with Transport Canada and RC-Customs and Excise this winter. These office automation systems are designed to work off existing building telephone wiring, a significant advantage in some locations. If the price is right and the systems live up to expectations, this could result in a very easy way to introduce office automation.

Satellite communications

Over the past year, a number of trials of satellite communication systems have been conducted. Today I would like to comment on just one of these systems, the so called Single Channel Per Carrier or SCPC technology, which appears to offer relatively inexpensive voice and data services to small isolated users. We are examining the feasibility of using this technology to extend our voice and data services to remote parts of the country.

Shared Data Network

The most important development in the immediate future, however, is probably the predicted growth in GTA data communications services. To cater to that prediction, GTA is planning for a shared data network service based on packet switching technology. This network should cater to about 50% of the government's data communications needs in the long run. In the foreseeable future, we envisage a network with about six nodes, capable of being interfaced with most of the mainframe computers now in service with the government, as well as just about any terminal arrangement.

Potential savings

Based on our studies and industry surveys, we expect that we can save in the order of \$25 million over a five-year period compared to the cost of obtaining the same service at predicted rates directly from the common carriers.

RESULTS

- Economically and technically viable
- Break-even point: 2.5 years
- Estimated savings \$25 million/5 years

Future developments

In addition, and perhaps further in the future, there is interest and study going on in cellular radio, smart buildings, fibre optic cable, directory automation, etc.

If for some reason you cannot take advantage of GTA's services, the next speaker will tell you what you will have to do.

CASE STUDY
INTERCONNECT OPTION AS EXERCISED BY RCT

While the services provided by GTA may meet most of the common requirements in the government, there are situations which do not lend themselves to centralized acquisition or control. These situations may have to do with specialized requirements, absence of benefits in bulk acquisition, or urgency of requirement which would cause unacceptable delays if left to development as a shared service.

In this portion of the presentation, a case study of a departmental acquisition carried out at Revenue Canada, Taxation will be reviewed.

Of particular interest are the numerous factors which must be addressed in such an acquisition, and the advice, based on the experience in this project, which is offered.

*Tony Ramunas, Chief of Office
Communications Systems Division,
RCT:*

Background

I would like to share our experiences to date in the exercise of the interconnect option. RCT subscribes to the common services policy. However, RCT has an uncommon telephone requirement that is not in the basket of services available through public services. The foremost of these is for our Public Inquiries Program.

Public Inquiries Program

The Public Inquiries Program is the most telephone-intensive program in the department. We have some 600 call regions, spread over 28 district offices, that handle over 7 million taxpayer phone calls a year. These are heavily peaked, the majority of them occurring in the February to May period. We vary in our call regions from 4 in our very smallest offices such as Sydney, Nova Scotia to 110 in Toronto, our largest district. The automated telephony function we are talking about for public inquiries is, of course, automatic call distribution. There are half a dozen features which I will describe briefly:

Automatic call distribution features

- incoming call queuing;
- recorded message delivery;
- first-in, first-out call handling;
- even distribution of calls to agents;
- management statistics for current queue sizes and up-to-the-minute service levels, but also day-by-day and week-by-week reporting.

The department has recently come under close inspection from the current government, and we are placing a premium on measured service to the public. The automated call distribution equipment allows us to supply that service, to measure it and to balance the cost and the service.

Pilot project

RCT has been in the interconnect business since 1981. In 1981, with the collaboration of GTA, we set up a pilot project in our district office in St. Catherines. We took one small district office with less than one hundred phones, to blaze a trail as to how interconnect can be done. So, we were trying, not only to establish the policies and practices that should govern interconnect, but also to determine through first-hand experience just how practical it is to buy, acquire and maintain your own telephone system. That pilot was successful. As a result, we then, year by year, have made more of these acquisitions. We have covered twelve of our offices with interconnect systems.

Reasons for
interconnect

The fundamental reason for exercising the interconnect option is the supply of an automatic call distribution function. However, we also have offices - for instance, Jonquière and Shawinigan - in locations which do not have a GTA consolidation and, in order to provide greater telephone service, we have the choice of either a business rate lease/buy arrangement or a purchase.

We have determined through previous cost benefit analyses that purchase is effective in those areas. So, that basically is the rationale behind the decision that has been made to go to interconnect to meet our operational needs.

*Mike Billows, Project Manager in
Revenue Canada - Taxation:*

Conduct of project

Acquisition plan

We had no documented formal procedure for acquisition, outside of the guidelines in the telecommunications manual. So we created a 56-step acquisition plan for acquiring, installing and cutting over a PABX. (The 56-step plan is outlined in Appendix I.) This PABX was for automatic call distribution. It was to support around 110 agents and the contracted value was in the area of half a million dollars. It takes about 175 days from the moment you get the approval to the time when you have to pay the bill. The plan breaks down into 4 phases:

1. up to the issuance of the specification;
2. up to the signing of the contract;
3. up to the system cutover;
4. post implementation review and features.

Participants

The first question that comes to mind is who do you involve in this project:

- ourselves (telecommunications officer and staff);
- clients;
- use the services of SSC to make sure it's legal and they are responsible for the contracting;
- use two parts of GTA: we get support from NCR on philosophies and approaches, as well as regional support where you do the installing;
- material management people (handling contracts);
- consultants;
- supplier.

I would now like to address the 56 steps.

Phase 1: Up to the issuance of the tender specification

This is the phase where all parties concerned do fact-finding, justification to proceed, and lobbying with the client to position him into functionality.

Specifications

There are things that you can put into your specifications and contracts to minimize problems.

- . Identify the current configuration and function.
- . Identify additions, improvements, and changes.
- . Require mandatory attendance at bidders' conference.
- . Commit to a set cutover date.
- . Ensure bidder has an office and support in the city the system is to be installed in.
- . Provide statistics. (How available are they? Are they online, offline, etc).
- . Ask bidders to specify a growth path for the next 5 years to determine what hardware will be needed to support it. (Use a 5 to 10% growth rate). Will they be able to accommodate my needs in a few years?
- . Make sure of certifications - is the system allowed to attach to Bell Network? Does it have DOC approval?
- . Look for availability levels (99%) and what happens if these are not met. The way in which we measure these is one point that we did leave for negotiation.
- . Ensure spare parts availability for at least 10 years.
- . Are there special installation considerations such as air conditioning? It is not sufficient to say that it operates in a "normal office" environment. What is a "normal office"?
- . Responses to outages (major and minor - define also).
- . A percentage of overwiring (if required).
- . Support needs (on site, response times - penalties).
- . Training plan is an important aspect (class sizes, materials, locations, etc.).

- . Training for supervisors, controllers, agents/users.
- . Training not done properly will be redone at vendor's expense (we put this in as a rider).

HINTS

- . If you can make an item mandatory in the specifications, it takes some of the negotiating power out of the hands of the proposed vendor.
- . Penalties - I think they are required, but to ask a vendor to pull out his system and not affect the operation of the Department's business is impossible.
- . Ask for agreement to do System Acceptance Testing (to be described later).
- . Ensure that all specifications are identified and explained as clearly as possible. Eliminate ambiguity.
- . Unless looking for leading-edge technology, demand evidence of installation on other sites and performance of similar systems on other sites.
- . Ask for references (up to 10) - and call them up.
- . This phase is important to lay out exactly what the client needs.
- . Ensure the client signs off the specification before proceeding.
- . There are several sign-off and approval steps to be followed within the Department.
- . Deliver the specification to SSC (OASIS) to be legalized and distributed.

Phase 2: Up to the signing of the contract

This phase requires stamina, as in this phase your decision has to be made, and probably defended, not only as per SSC procedure, but to your management and your client. It also probably requires putting up with the annoying calls from unsuccessful bidders.

HINTS

- . Ensure as many people as possible are at the bidders' conference (PWC, GTA, client, consultant). Make sure you have sufficient copies of floor plans, layouts and other material that may help the bidder.
- . Ensure enough time is allocated for responses to questions asked at the conference.
- . Ensure all questions and responses are written up and distributed to the bidders as soon as possible after the conference.
- . Evaluate your proposals in 2 parts:
 1. Mandatory items: if the mandatory items are not met by the bidder's response, or subsequent investigation, eliminate the bidder.
 2. Desirable items: these are not necessary for the project to be complete, but they are "nice to have".

Effectively, mandatories determine which bidders stay in the competitive process, and the desirables break the ties.

- . Use a numerical system for desirables, using weighting to place importance on the most important aspects.
- . If mandatories are not clearly spelled out, the statement that the successful bidder must meet all mandatories will create a lot more grief than the few minutes it might take to write them at specification time.

Types of evaluation

- . Two types of evaluation should take place - a technical evaluation to ensure you get all the things that you asked for, and a financial evaluation that will tell you which is the best value. It is best if different people do the evaluations. But later, discuss the proposals to determine the best overall cost-effective solution.
- . Evaluations are a lot easier if they are set up to use a spreadsheet program on a microcomputer.
- . Tell the bidder what format you want his proposal to be presented in.

At this point, the contract has been awarded to the successful vendor.

Phase 3: Up to the system cutover

Coordination and
lines of
communication

Now it is time to get to work. Activities between you, your client, and the vendor have to be coordinated. If you are trying to install the system in one city and you are controlling from another city, coordination and lines of communication are extremely important. If you do not maintain a single path for information flow into your supplier, you are asking for confusion, and at a very bad time. This phase also covers site preparation, installation, training and acceptance testing.

Systems acceptance
testing

Training is an important part of acceptance testing. The acceptance test is sequential: do not advance to phase 2 before phase 1 is signed off, or until agreement has been reached and documented on what action has to take place, and when it is to take place. The sign off should be done by yourself, and your client.

Acceptance test

The acceptance test consists of:

1. Functional testing

Ensure the basic functions of the system are operative - dial tone, busy, call transfer, etc.

2. Training

Have your system administrator trained, followed by the supervisors and/or attendants, the agents and/or users. It is important to get feedback on the quality of training, for retraining purposes.

3. Pseudo production mode

Through the use of scripts, have staff members act as callers and agents to simulate the real life environment. Lease extra lines, if required, for a one-month period. This is the time to introduce error reporting forms - to the users, so they can become familiar with the rules and procedures for completion, etc; and to the support staff for your system, so that they will become familiar with the mechanisms for receiving trouble reports. Generally, trouble reports state who observed a problem, when, where, what was happening, etc.

Error reporting
forms

4. Production cutover

Use your system for a period of time in a real life environment.

Your contract should include a clause to the effect that payment will be made X number of days after the final acceptance has been signed off.

Phase 4: Post-implementation review and features

- . It is important to do a review as soon as possible after final cutover to determine the differences between what was contracted for and what was delivered and installed.
- . Expand upon the error reporting system exercised in the acceptance testing phase - you will need a way of being able to track problems, and the vendor's track record at repairing the problems.
- . Develop a method for including the switch and all components into the Department's material management inventory systems. You will have to determine whether the system in total is one entity, or whether an entry is required for each component.
- . Keep records - you will have to keep more in-depth records to determine when it is no longer cost effective to repair equipment, but rather to replace it.
- . Establish dates at sign off time for maintenance contracts, etc. It is always a problem a year later to construct all the events and the times at which they took place to determine a start date for a maintenance contract.
- . Establish standing offers for equipment upgrades in handsets, cards, frames, and cabinets - contract amendments have a way of taking a lot of time.

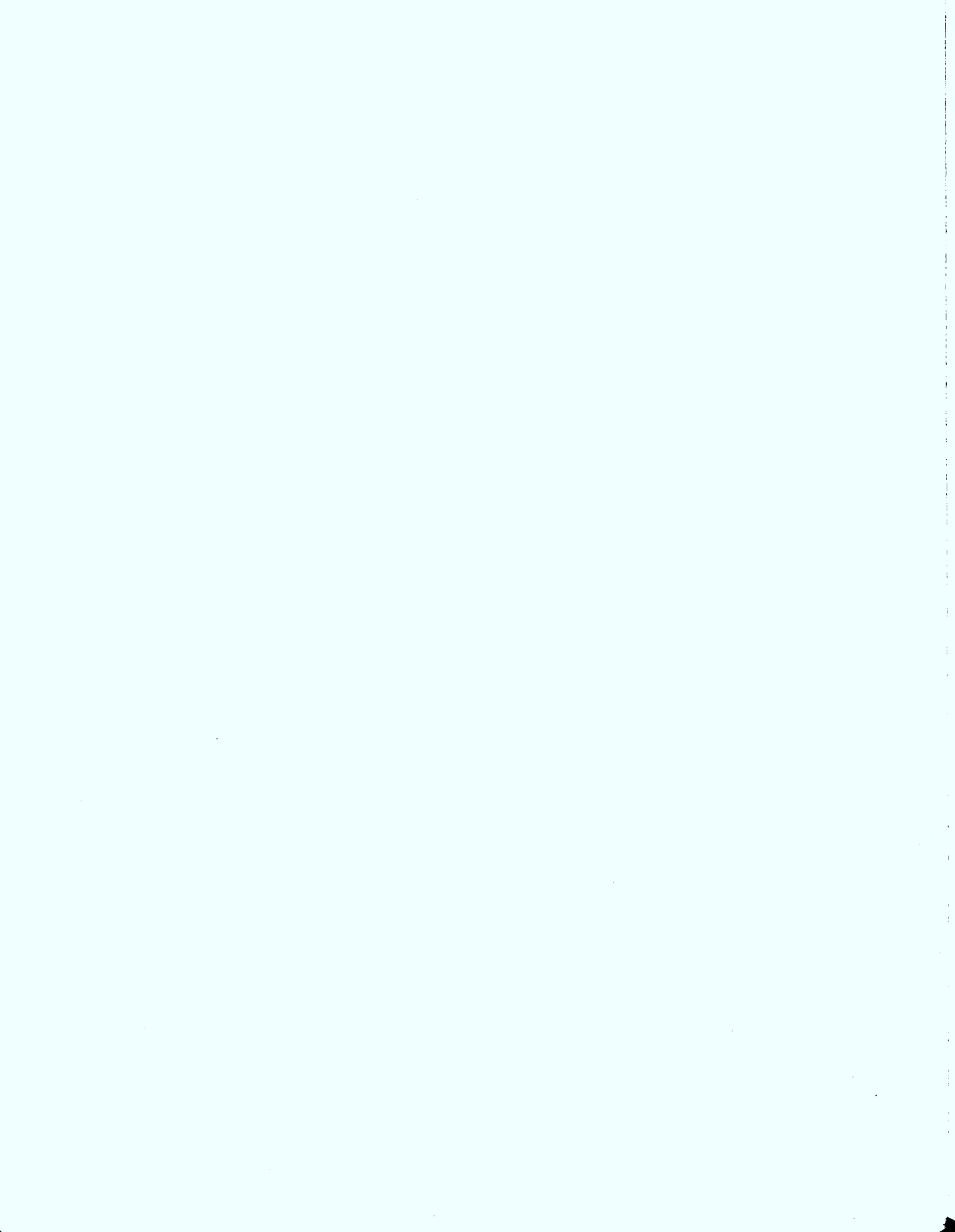
HINT

- . Office automation products are now being integrated into the telecommunications environment. Ensure you plan for accommodating the move to this technology when required.

Summary

- . I have done a quick review of the highlights of an acquisition.
- . Remember that the more work done in preparing the specifications as precisely as possible, the easier the rest of the project becomes.
- . There are still several opportunities to use the skills developed by a seasoned telecommunications officer.
- . In contrast to traditional telecommunications roles, it may be better to spend a little more money, rather than taking the cost cutting route.

- . Interconnect also requires that the telecommunications officer keep future expansion in mind at all times, as what happens later will be the result of the decision made today.
- . Ask around, there are people that have done this, find them and ask them for help.



Project: _____

Release #: _____

Project Manager: _____

Date: _____

Activity #	Activity	Deliverables	Responsibility	Completion Date
1	Request to proceed with acquisition	Core Group minutes	Core Group	
2	Identify current side configuration	Config. chart, floor plans, conduit plans	Client	
3	Identify additions, improvements, reconfiguration	Letter to OCS	Client	
4	Drafting specification document	Draft specification	OCS	
5	OCS draft review	Revised draft specification	OCS	
6	Review draft with client	Revised draft specification	OCS	
7	Approval of specification by Management Services	Sign off on specification cover sheet	Director, Mngt Services	
8	Approval of specification by client	Sign off on specification cover sheet	Director, Client site	
9	Approval of specification by Senior Management	Sign off on specification cover sheet	Regional ADM	
10	Preparation of TF288	Completed TF288	OCS	
11	Authorization of TF288	Sign off on TF288 (Section 25 Authority)	\$-level dependent	
12	Preparation of DSS 10440	Completed DSS 10440	Material Mngt	
13	Sign off on recommendation of DSS 10440	Sign off on DSS 10440	Chief, OCS	
14	Sign off on spending authority of DSS 10440	Sign off on DSS 10440	Material Mngt	
15	Certification of DSS 10440	Sign off on DSS 10440 (Section 25 Authority)	\$-level dependent	

Project: _____

Release #: _____

Project Manager: _____

Date: _____

Activity #	Activity	Deliverables	Responsibility	Completion Date
16	Submission of specification to DSS (1010 Somerset Street)	Messenger delivery receipt	Material management	
17	Establish date of bidder's conference	Committed date published in RFP	OCS/client/DSS (P.O.)	
18	Preparation of bidder's conference	All material and facilities for conference	Client	
19	Issue RFP to sourcelist	Publish RFP	DSS (Procurement Officer)	
20	Clarification/answers to bidder questions in writing	Formal response to all bidders	DSS/OCS	
21	Bidder's conference	Minutes of conference	DSS	
22	Clarification/answers to questions at conference	Formal response to all bidders	DSS/OCS	
23	Close of tender	RFP responses delivered to DSS	Bidders	
24	Process bidder response through DSS	Legally accepted responses	DSS	
25	Establish evaluation team (OCS, client, GTA, consultant)	A named formal evaluation team	OCS	
26	Establish evaluation criteria and weighting	Evaluation forms	OCS	
27	Establish evaluation methodology	Paper describing methodology	OCS	
28	Preparation for evaluation of proposals	All materials and facilities required for evaluation	OCS	

Project: _____

Release #: _____

Project Manager: _____

Date: _____

Activity #	Activity	Deliverables	Responsibility	Completion Date
29	Release of responses to OCS	Responses picked up by OCS	DSS	
30	Technical evaluation of responses	Technical evaluation report	Evaluation team	
31	Financial evaluation of responses	Internal DSS documentation		
32	Report to Director, Management Services	Sign off request for DSS to enter into contract (Sec.25)	\$-level dependent	
33	CAB approval (\$-level dependent)	CAB minutes	DSS	
34	Contract negotiations	Signed contract	DSS/OCS	
35	Establish Steering Committee (OCS, client, vendor)	Initial committee meeting	OCS	
36	Steering Committee meetings	Minutes of meetings and associated activities	OCS	
37	Establish guidelines for acceptance test plan	Paper describing guidelines	OCS	
38	Establish final configuration	Updated configuration plan - sign off	OCS/client vendor	
39	Proposed vendor implementation plan	Sign off on plan	OCS/client	
40	Delivery of system documentation as per contract	Receipt of materials	Vendor	
41	Develop limited maintenance training package	Training package	Steering Committee	
42	Develop supervisor/attendant training package	Training package	Steering Committee	
43	Develop supervisor/attendant training package	Training package	Steering Committee	

Project: _____

Release #: _____

Project Manager: _____

Date: _____

Activity #	Activity	Deliverables	Responsibility	Completion Date
44	Schedule training	Published schedules	Client/vendor	
45	Installation of environmental and site requirements	Prepared site - ready for installation	Client	
46	Installation of system	All hardware installed	Vendor	
47	Review of system Acceptance Test plan	Approval of plan	OCS/client	
48	Phase I - Acceptance - Functional Testing	Sign off on phase report	OCS/client	
49	Phase II - Acceptance - Limited Maintenance Training	Educated users	Vendor	
50	Phase II - Acceptance - Supervisor/Attendant Training	Educated users	Vendor	
51	Phase II - Acceptance - User/Agent Training	Educated users	Vendor	
52	Identify "weakness" training (Phase II)	Documentation signed off phase report	OCS/client	
53	Phase III - Acceptance - Pseudo Production Testing	Sign off on phase report	OCS/client	
54	Phase IV - Acceptance - Production Cutover	Final sign off and outorders of old equipment	OCS/client (Director)	
55	Develop in-house training package	Training package	Vendor	
56	Postsystem implementation evaluation	Management report	OCS/client	

GOVERNMENT TELECOMMUNICATIONS PLANNING SYSTEM

While the underlying principle in the acquisition of telecommunications services is clear - getting the required services most economically and in a way that will benefit Canada - the process by which this can be achieved is more complex. At the core of this process is the government telecommunications planning system.

The evolving planning system consists of concepts and mechanisms which, when properly applied, should facilitate the development of appropriate shared services to meet aggregate needs in the government and identification of special needs in departments.

Speakers for this presentation are Mr. Ed Acheson, Information Management Division, Administrative Policy Branch, TBS; and Mr. Roger Beauparlant, GTA, Secretary of the TAC Working Group on Telecommunications Planning.

(Ed Acheson:)

Introduction

Our task here is to pull the various components of the planning system into a coherent whole. We have heard a lot about planning in the past days and the question is why plan? What kinds of plans are there? What is included in these plans? We will try to touch on all those questions.

The question why plan? I think the numbers speak for themselves: \$500 million for telecommunications, \$500 million for EDP. This constitutes a very large expenditure. The problem is that this expenditure is buried in many different budgets and it is difficult to find it in some cases.

The planning process we will talk about today is one attempt to identify telecommunications expenditures and it does it quite well. We can get into the benefits of how the planning process as it exists is a good cornerstone and foundation for any future evolutions.

First, we will look at the kinds of planning which occur in the government, especially in the telecommunications area.

Then, we will have a look at some of the policies that affect the telecommunications planning system. I intend to get into more detail about the specific planning directives in APM Chapter 435 and I will talk about the other policies which are related to 435 and how this can indeed be called a system. This will be leading up to the fundamental document called the Information Technology and Systems Plan (ITSP). I will cover such points as what is involved in the document, what it looks like, and why we try to get the information we do.

Then, we will get into the actual planning process which will show the timing dimensions and the other components of the planning system which are not document-oriented but rather committee-oriented: they are related to the TAC Committee; they are related to some of GTA's planning efforts.

Aspects of planning

Technical	There are three aspects to planning. We can plan in a technical sense. We try to do capacity planning for PBXs or computers.
Financial	We can plan in a financial sense within the budgetary constraints. We have to get the money to do all those things.
Management	And we can plan in the management sense. We in TBS are betting on the various departments. We have a decentralized policy and we are looking for credibility in the management operations "out there". To obtain credibility, you need a good set of policies predicated on the general ones in APM 435 and 440, and management committees with user representation which do the evaluation. The various technologies for which we get requests to provide money are user-driven, not driven by EDP or telecommunications groups. This is a benchmark, if these things occur in your department, as far as the Board is concerned, your credibility is rising high. At TB we push for documents to come to the Board in the form of a submission because this also gets your senior management involved and they have to agree that this is something that they will fully support.
Levels at which this occurs	And all this planning occurs at departmental and central agency, as well as common service agency levels.

Government telecommunications planning (Overview)

. At the departmental level, planning includes:

- Multi-Year Operational Plans (MYOPs);
- Information Technology and Systems Plans (ITSPs);
- On-going Management:
 - Maintaining inventories
 - Have the policies in place
 - Traffic Management
 - User needs identification, evaluation
 - Coordination of EDP/Telecommunications plans
(make sure that there is no overlap)
 - etc.

. At the common service agency level
(using GTA as an example) planning includes:

- MYOPs;
- ITSPs;
- Ongoing management of the Revolving Fund - exactly how much money will be available to meet the cash-flow requirements, and also the need to end up within the limit of the Revolving Fund;
- Inter-departmental planning:
 - This is where we are betting on common service agencies. We recognize the needs for departments to be responsible for networking. However GTA, is responsible for shared networks, so there is a strong requirement for inter-departmental planning, especially in the telephone area and now the challenge lies in the data area. Again GTA has the network management responsibility, which is no simple task. They have different kinds of planning requirements and all of these are very important.

- Procurement management;
- Network management (Voice/Data - Shared/Customized);
- New service development;
- etc.

. At the central agency level, planning includes:

- Reviewing/approving and advising Ministers on the MYOPs.
(We also do the same with the ITSPs).

When these documents arrive, each officer decides whether it is something that can be handled in a routine manner. Is it something that has to be passed on to the Ministers as an appendix case? Or is it something very difficult? If it's a routine case, it means that good liaison has occurred between our side and the officers in the department and that they have not contravened any of the government contract regulations and policies.

Appendix cases

Appendix cases are those where there is a contravention of some kind, but there were extenuating circumstances or some good reason for it and the department has supplied the supporting information which is acceptable. This becomes an appendix case and nine times out of ten it is not a problem.

Considered cases

Considered cases are more complex. The department wants to do something but the TB Secretariat does not support them, so there is a confrontation situation which requires that the departmental Minister speak about his particular case at TB.

- Keeping ministers informed of trends; providing an annual report; the telecommunications portion is based heavily on GTA's Annual Review; the EDP portion we work on ourselves;
- Updating policies/management practices.

Policy documents

APM

- Administrative Policy Manual: following are the relevant chapters:

Chapters 435/436	Telecommunications
Chapter 440	EDP
Chapter 303	Common Services
Chapter 310	Contracting

When we talk of evolution of policies, we do not plan to introduce a new system. However, we now have a close link with our program colleagues and before they agree to any MYOP additional dollars, they check with us to find out if the requirement is in the ITSP. In previous years you used to be able to get things approved in MYOPs without any references in the ITSP; that loophole is being closed now.

TB Circulars

- TB Circulars:

The following TB Circulars have been issued since the publication of the relevant APM chapters:

TB 1983-36 Approval of EDP systems development projects
TB 1985-8 Policy on microcomputers
TB 1985-24 Year-end restraint on purchases

The last update was 1981 for telecommunications and 1978 for EDP. The common services policy states that there are mandatory requirements for GTA. And if you read that very broadly, everything has to go through GTA. That is not the way it is working in practice. We essentially have come to an agreement that Chapter 435 is the dominant document in terms of the allocation of responsibilities and, gradually, any inconsistency with 303 will be resolved.

TMM

- Telecommunications Management Manual (TMM):

Finally, there is the Telecommunications Management Manual (TMM) which, although not officially sanctioned, has the support of TBS, and we are looking to give it a more official status.

Planning directives

In Chapter 435, these are the relevant planning directives:

Short- and long-term plans

1. "Departments shall determine their telecommunications requirements and develop short- and long-term plans in support of departmental programs, consulting as necessary with other departments".

For telecommunications purposes, you have to do some planning.

Inventory

2. "Departments and agencies shall maintain an inventory of telecommunications facilities and equipment to ensure that adequate information is available to authorize payments, to support planning and analysis requirements and to meet reporting requirements. DOC is available to assist departments and agencies in establishing such an inventory".

It has also been pointed out that we must know what we are buying and managing. That is the inventory requirement, the second directive.

Identification of telecommunications requirements

3. "Departments shall identify their telecommunications requirements during the preparation of the planning document used during their budgetary process".

That was put in to indicate that during your MYOP you should have a correlation between the things that are telecommunications-oriented, so that they can be identified and are not buried in some corner. This is not used too strongly.

Annual report by departments

4. "Each Department shall provide TB with an annual telecommunications report and plan at a time and in the detail and form specified and periodically revised by TB. TB will provide instructions for the completion of this document requesting information on departmental plans to satisfy their future requirements and for resources to support five-year approved programs and long range plans beyond five-years. This document should also be used to identify early opportunities for sharing resources, i.e., owned, non-classified telecommunications equipment being released by one department which may meet the requirements of another department".

This is the first clue as to what has been happening in the evolution of policy in Chapter 435. We started out on day one with a statistical report. Unfortunately, some departments have not progressed beyond that type of report. That's all we get - a series of numbers.

However, some have evolved beyond the statistical report to a real planning report. TBS will provide instructions for the completion of this document requesting information on departmental plans. These instructions are the way in which policy is being promulgated at this stage. We do this in consultation with TAC members; last year, we cut back on a lot of extraneous data. Think in terms of the instructions being a vehicle to modify things in the planning area.

Adaptability of reports

5. "TB shall adapt the general reporting instructions in article .3.2.4 to suit the individual departments. Consultations shall be held in the case of large users or where this is warranted to increase the usefulness of the reports or to substantially reduce the burden to the department".

This was a constraint on the Board at the time it was written.

Ian Angus spoke of the five stages of telecommunications management. As we view the 60 different departments, we see them ranging across the various extremes. We have none in the "chaos" area. But we do have some that do strictly reporting rather than managing and then we have people who are just getting to the point where they are planning integrated activities. This reporting requirement is a two-fold issue. Most large departments get a lot of their funding through MYOPs and, rather than disrupting this process, we have accommodated them. So we do have the capability of negotiating some flexibility.

Annual Review

6. "DOC, in consultation with the Telecommunications Advisory Committee, shall prepare an Annual Review of telecommunications for presentation to TB in the manner prescribed by the Administrative Policy Branch".

In due consultation with the TAC, the Annual Review is produced by DOC.

Role of telecommunications coordinator in the production of ITSP

7. "Annual telecommunications reports and plans shall be considered by the telecommunications coordinator(s) and be approved by senior departmental management before being forwarded to TB".

And then there are the annual telecommunications reports and plans which will be coordinated by the telecommunications coordinator. I should point out that we inserted a clause in there, requiring each department to appoint, at a senior level, a telecommunications coordinator. One of his key responsibilities is coordinating this ITSP, and we hope to give you a little later on an indication of the leverage that responsibility provides him.

Guidelines

Among the guidelines in APM 435, particular attention should be paid to the following one:

"Departments should contact DOC early in the planning of projects requiring telecommunications support in order to:

- (a) identify services that have potential for consolidation with existing or planned shared networks and where better prices or conditions could be obtained through central procurement;
- (b) ensure compatibility with national telecommunications objectives; and

- (c) support DOC in the improvement of government-wide planning and coordination of shared and customized telecommunications services for departments".

This guideline is important because it supports our thrust for having coordination with GTA early on. GTA has a tough load; sometimes it is considered an impediment, but I believe that they do bring some solid expertise to the marketplace, especially in the area of interconnect negotiations. SSC will be discussing the importance and problems of contracting the specification. This is a very competitive and cutthroat business and it is good to have some expertise. This was valid when APM 435 was written and it is even more valid today that there should be some coordination between central agencies, such as SSC and GTA, to use the available expertise.

In the spirit of guidelines, Chapter 440 - EDP Management Responsibilities is also relevant because, since we merged the telecommunications report with the EDP submission instructions and called this the ITSP, it is now part of the process.

The EDP people had to administer and control in accordance with the plans developed jointly with departmental providers and users.

They also had the requirement to prepare short-term plans and the ITSP is probably the most significant manifestation of that. But this is always in response to users' needs and in sufficient detail so that there can be on-going evaluation of EDP activities. We do not have a directive that specific in APM 435, but telecommunications people have the same responsibility.

ITSP

Here is the basic cornerstone for the ITSP:

- 1) Approval in principle should be obtained each year for an overall departmental plan detailing the approach to the development and use of EDP in support of the program and the expected new resources, if any.
- 2) Any significant new acquisition of EDP works and equipment and any new projects utilizing EDP of a value of over \$1 million should be noted.

The development dollars are what Treasury Board is most interested in. The approval in principle really means sufficient authority for departments and agencies to proceed with the implementation of these plans, and to acquire the equipment, goods and services specified therein. There are a few conditions however:

- a. You must have the funds and person-years.
- b. Any conditions in the decision letter must be met.
- c. Supporting documentation must be available for review by TB.
- d. Government contract regulations must be met.
- e. You must comply with TB policies and directives.
- f. Departments must acquire significant acquisitions through the specification of these acquisitions in the annual EDP plan.
- g. You have to list other projects application in the ITSP.

Planning references in TB Circular 1983-36 - "Approval of EDP Systems Development Projects"

This describes the information required in submissions to obtain preliminary and effective project approval of EDP system development projects.

There is a requirement now to come in for two levels of approval. We are going to liken EDP system development activity to the same kind of capital project associated with a multi-million dollar building project. So TB circular 1983-36 was issued. Get a copy and take a close look at this policy, specifically Annex B, because it speaks of the information required in the TB Submissions to obtain preliminary and effective project approval of EDP systems development projects.

Preliminary project approval

Preliminary project approval means you are giving us an order of magnitude and they are called Class C estimates.

Effective project approval

Effective project approval virtually becomes a contract: you have given us Class B estimates and you say we are going to spend this money and give you back these kinds of savings.

Approval mechanisms

There are three mechanisms by which Treasury Board may approve these projects:

- a. the ITSP, when no additional resources are being requested;
- b. the MYOP, when additional resources are being requested;
- c. separate submissions to the Treasury Board.

Planning references in TB Circular 1985-8 - "Policy on microcomputers"

This contains some interesting definitions. Word processors are being recognized. There are some interesting general principles as well as a basic policy outline for microcomputers. This item should be well known by everyone in the telecommunications field because it is an extension of their telecommunications approval process.

Directive 6.2

- TB approval is needed prior to the acquisition during a fiscal year of several microcomputers for a single purpose (e.g. part of a network or to be used for similar functions in many offices) with an aggregate hardware purchase value exceeding \$100,000.

Directive 6.3

- Departments shall maintain a microcomputer inventory and via their ITSP provide the Treasury Board with annual acquisition plans and summary statistics on actual acquisitions and applications per TBS reporting instructions.

Planning references in TB Circular 1985-24 - "Year-end restraint on purchase of EDP, Telecom"

This was a requirement because tremendous expenditures were made with the money at year-end. We must control this. Try to plan. If you do not have the requirement, do not waste the money.

The way to get around some of these inhibitions is to put it in your ITSP; that again indicates that we are putting a lot of stock in the items in the ITSP tables.

Directives 4.0

Until further direction from Treasury Board, there will continue to be a prohibition on the purchase of EDP, Telecommunications and electronic office equipment during the last three months of each fiscal year unless the purchase is contained in a department's or agency's ITSP which has been approved by Treasury Board.

SSC will not process any requisitions received after December 20 unless the requisition identifies by number and date the specific Treasury Board decision (i.e. the approved ITSP or other specific approval).

Summary of Government Telecommunications Planning System

. Information Technology and Systems Plans

Completion
instructions

- Flow from directives in Chapter 440 and 435 of the Administrative Policy Manual (EDP and Telecommunications).
- Since 1982, combined EDP and telecommunications.
- Instructions updated annually. What we are trying to do in the ITSP is ask for the basic fundamental information you need to do your job well as a manager of either EDP or telecommunications. We are asking for inventory items, justifications to prove that the investments you are making make sense, as well as some form of dollar allocation so that you know what you are spending your money on. We are finding, in most cases, that the information is valid and not that hard to obtain.
- Recognized in TB 1983-36 as a tool for approval of EDP systems development projects.
- Recognized in TB 1985-8 - policy on microcomputers.
- Recognized in TB 1985-24 - year-end restraint on the purchase of EDP/Telecommunications and electronic office equipment.

ITSP organization

The ITSP is presented in four parts:

PART I: The submission section

- Sent through usual channels for all TB submissions
- Signed by Minister, DM
- Notes specific items for which approvals are requested in both EDP, telecommunications and systems development, etc.

PART II: EDP Section

- Former EDP annual plan
(Reference Chapter 440.2)

PART III: Telecommunications Section

- Former annual telecommunications report and plan (Reference Chapter 435)

PART IV: Inventory Section combined EDP and Telecommunications

These documents are evaluated prior to TB's response.

TB decision instruments

TB response: - Decision letter/Treasury Board number
- TBS letter

Uses

What can these be used for? They can be used to obtain TB approvals for:

- . MANAGEMENT DIRECTION
 - Departmental strategies, policies, application strategies
- . TECHNOLOGICAL DIRECTION
 - Centralized vs. decentralized
 - Data management strategies
 - Hardware strategies
- . SYSTEMS
 - Preliminary project approval
 - Effective project approval
- . PROCUREMENT
 - Directed, tenders
- . NEW SERVICES FOR COMMON SERVICE AGENCIES

Is the ITSP being used that way? The answer is yes. We spoke of the need for long-range planning and strategic planning, and that is where we will be heading.

(Roger Beuparlant:)

Definition

I would like to define planning simply as being able to identify where you are, that is, what the situation is in terms of telecommunications inventory etc., then establish what plans are in effect now. The next step is to find out where you want to be in five to ten years from now, and then lay out specific plans as to how you are going to get there.

Planning outline
ITSP

I would like to focus on the ITSP, especially on how it can be used to your benefit. ITSP is not a one-time exercise where you sit down once a year and work out a submission for Treasury Board. If you want something that will be useful and effective, the process must be a continual one, interacting with the strategic overview of your department, with the preparation of the MYOP, etc. The ITSP submission is currently used to obtain approval, in principle, for budget year plans. However, it was designed to address longer term (5 years) planning and applying this principle should facilitate the formulation of the following year's submission. The ITSP is in the middle of the overall planning process. It is an effective tool when it is well done and well organized.

Approval in
principle

Planning mechanisms

There are mechanisms and structures, and tools that will assist departments throughout the planning process. I would like to describe some of these. First of all, the Annual Review. I will go into more detail on this further on. But I would like to say now that the content of the 1984 Annual Review and Planning Framework is very relevant and captures all of the issues addressed throughout this whole Study Session.

Planning document

The Government Telecommunications Planning Document was issued by GTA to inform departments on planning from the point of view of the common services agency. It covers the services offered, a summary of the environment, the plans with respect to the networks, the rates, modernization plans (where the nodes are, the status of the technology etc.). It was issued in 1984 and will be issued according to the need. The next issue is being planned for 1986.

Policies for management

TMM

The Telecommunications Management Manual (TMM), distributed to 450 manual holders, has a section on the federal government (Treasury Board's) policies; a section containing the policies, procedures and guidelines issued by GTA for the management of common services, and GTA Circular Letters; and a section reserved for departmental policies. For example, departments need to develop their own policies with respect to microcomputers, accepting collect calls, telephone answering procedures, etc.

Committee structure

- TAC The Telecommunications Advisory Committee (TAC), exists basically to advise DOC about common services needs and recommendations from departments as to how to satisfy user requirements. It also provides a forum for the exchange of plans between the common service agencies and departments, and for recommending policies. It is structured so that the work is carried out by several working groups.
- TAC Working Groups:
- (1) WGTT As a result of the work done by the Working Group on Telecommunications Training (WGTT) and a sub-group addressing short-term requirements, Study Session 85/1 was developed, set up and implemented. Various further initiatives are being planned.
- (2) WGTDEC The Working Group on Telecommunications Definition and Expenditure Coding (WGTDEC) has not been very active lately, but a lot of work has been done in defining the standard objects, eliminating duplication with the EDP and other office communications systems. Through that group we have also developed the approach taken in the development of the Telecommunications Management Manual.
- (3) WGTP The Working Group on Telecommunications Planning (WGTP) addresses the planning issues and endeavours to make interactive and proactive planning more efficient and more effective.
- Regional Consultative Committees The Regional Consultative Committees are quite recent. The Pacific Region, the Toronto Region, Halifax, Moncton and St. John's (Nfld) each have a Consultative Committee. These committees have adopted terms of references based on those of the TAC and concentrate on the regional dimension. There is, however, an interaction between these groups and TAC.
- ACIM The Advisory Committee on Information Management (ACIM) is being set up to advise Treasury Board on the effective application and management of information technology and systems. Recommendations can be made through the Chairman of TAC when its subjects touch on overall government policy issues.
- PTTB We have also established contact with the Professional and Technical Training Board (PTTB) to address telecommunications personnel training issues.
- This covers the overall planning/coordination framework that has evolved in order to effectively support the telecommunications planning process.

Effective
submissions

The shortcoming we are trying to overcome through this framework is the system's inability to react fast enough to make the systems and planning process (figure 1) as effective as it should be. We are trying to cut down on the time required to formulate plans, so that we do not end up with ineffective management. We (WGTP) are currently addressing means such as an enhanced planning cycle (figure 2) which would provide this kind of timely exchange of interdepartmental information. The cycle will start with GTA requesting a call for input to departments. This would include a comprehensive description as to what direction the common services are taking as described in the planning document I mentioned before. The departments will then be able to identify the shortcomings and feed this information back to the central agency along with potential services that can be shared on an economic basis, so that in the end you have something that can be supported by the government telecommunications community. This would add more credibility to your MYOP submission, at least the telecommunications or information technology portion of it.

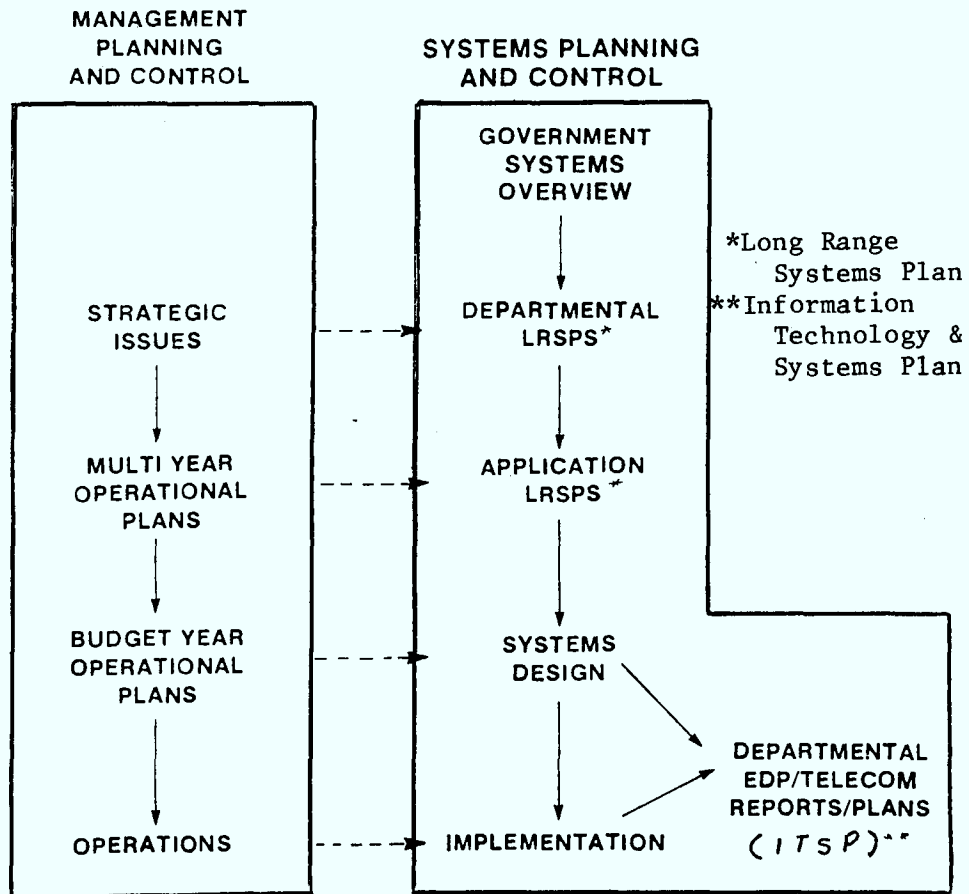


FIGURE 1 The Systems Planning Process

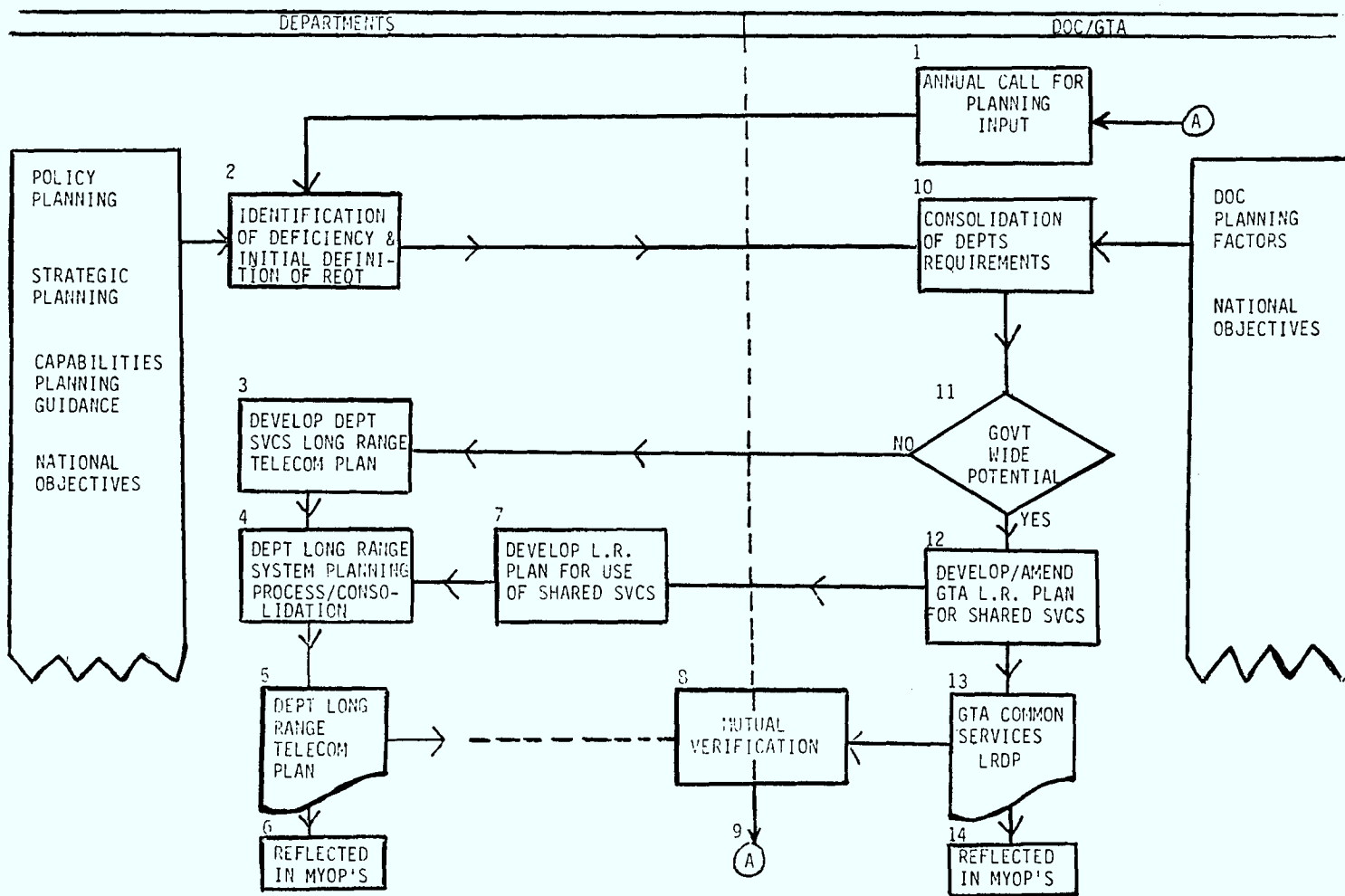


FIGURE 2 DEPARTMENTS/GTA ANNUAL LONG RANGE PLANNING CYCLE

Annual Review

I would now like to go back briefly to the Annual Review and Planning Framework 1984 and highlight some of its content.

Telecommunications projections

From what is reported in the telecommunications portion of the ITSP, we are standing at over half a billion dollars in expenditures for telecommunications (Table 2 of the Annual Review). The projections indicate that in 1990, the expenditure will be way beyond a billion dollars. A billion dollars, even spread out over a number of departments, should be a cause for concern, but, as we heard yesterday and today, using the technology to improve the efficiency and effectiveness is very important and this is the bottom line: proper planning is the key.

TABLE 2
TOTAL TELECOM EXPENDITURES (INCLUDING SALARIES)

DEPARTMENT/AGENCY	1982/1983 TOTAL TELECOM (INCL. SALARIES) (\$'000)	% OF TOTAL	1981/1982 TOTAL TELECOM (INCL. SALARIES) (\$'000)	% CHANGE 1982/1983 COMPARED TO 1981/1982
NATIONAL DEFENCE	161,125	32.5	135,682	18
* RCMP	66,838	13.5	83,687	-20
EMPLOYMENT AND IMMIGRATION	38,762	7.8	29,686	30
TRANSPORT CANADA	32,595	6.6	29,558	10
EXTERNAL AFFAIRS	27,674	5.6	23,269	18
ENVIRONMENT CANADA	22,954	4.6	NR	0
REVENUE CANADA - TAXATION	12,841	2.6	11,673	10
SUPPLY AND SERVICES - SERVICES	8,982	1.8	7,029	27
HEALTH AND WELFARE	8,903	1.8	7,583	17
FISHERIES AND OCEANS	8,695	1.8	6,926	25
INDIAN AND NORTHERN AFFAIRS	6,994	1.4	5,884	18
COMMUNICATIONS	6,945	1.4	6,148	12
* AGRICULTURE CANADA	6,861	1.4	5,849	17
ENERGY, MINES AND RESOURCES	6,299	1.3	4,972	26
REGIONAL INDUSTRIAL EXPANSION	6,188	1.2	5,020	23
REVENUE CANADA - CUSTOMS & EXCISE	6,060	1.2	4,913	23
PUBLIC WORKS	5,644	1.1	NR	0
SUPPLY AND SERVICES - SUPPLY	5,079	1.0	4,800	5
CORRECTIONAL SERVICES	4,099	0.8	4,726	-13
STATISTICS CANADA	3,955	0.8	3,755	5
VETERANS AFFAIRS	3,410	0.7	2,779	22
PUBLIC SERVICE COMMISSION	3,193	0.6	2,891	10
SECRETARY OF STATE	2,917	0.6	2,867	1
CONSUMER AND CORPORATE AFFAIRS	2,283	0.5	1,756	30
NATIONAL RESEARCH COUNCIL	2,064	0.4	1,802	14
NATIONAL MUSEUMS	1,855	0.4	1,704	8
JUSTICE	1,654	0.3	1,567	5
NATIONAL LIBRARY	1,560	0.3	663	135
* ECONOMIC DEVELOPMENT	1,468	0.3	240	511
NATIONAL FILM BOARD	1,461	0.3	1,225	19
CANADIAN INTERNATIONAL DEVELOPMENT AGENCY	1,309	0.3	1,053	24
FINANCE	1,058	0.2	843	25
PRIVY COUNCIL	966	0.2	832	16
LABOUR	885	0.2	801	10
CANADIAN TRANSPORT COMMISSION	877	0.2	810	8
TREASURY BOARD	828	0.2	802	3
NATIONAL PAROLE BOARD	695	0.1	378	83
PUBLIC ARCHIVES	674	0.1	725	-7
AUDITOR GENERAL	605	0.1	498	21
NATIONAL ENERGY BOARD	512	0.1	427	19
SOLICITOR GENERAL	468	0.1	408	14
CANADIAN RADIO-TELEVISION & TELECOMMUNICATIONS COMMISSION	454	0.1	437	3
ATOMIC ENERGY	293	0.1	176	66
MINISTRY OF STATE FOR SOCIAL DEVELOPMENT	227	0	125	81
COMMISSIONER OFFICIAL LANGUAGES	212	0	176	20
* SCIENCE AND TECHNOLOGY	191	0	153	24
NORTHERN PIPELINE AGENCY	168	0	207	-18
PUBLIC SERVICE STAFF RELATIONS BOARD	163	0	140	16
CANADA LABOUR RELATIONS BOARD	144	0	NR	0
CANADIAN HUMAN RIGHTS COMMISSION	143	0	107	37
INSURANCE	142	0	9	44
ECONOMIC COUNCIL OF CANADA	130	0	128	1
CHIEF ELECTORAL OFFICER	116	0	67	73
* SCIENCE COUNCIL OF CANADA	108	0	101	6
SOCIAL SCIENCES & HUMANITIES RESEARCH COUNCIL	107	0	119	-10
IMMIGRATION APPEAL BOARD	105	0	91	15
STATUS OF WOMEN	85	0	53	60
CANADIAN INTERGOVERNMENTAL CONFERENCE BOARD	84	0	84	0
SUPREME COURT OF CANADA	76	0	72	5
TARIFF BOARD	52	0	41	26
COMMISSIONER FOR FEDERAL JUDICIAL AFFAIRS	39	0	NR	0
ADJUSTMENT FOR TOTAL GOVERNMENT REPRESENTATION	14985	3.0	41173	
ADJUSTMENT FOR CHANGES IN REPORTING METHODOLOGY			(22887)	
TOTAL EXPENDITURES	496259	100	426889	16.3

* 1982/83 Expenditures reported by the RCMP cannot be compared with their 1981/82 expenditures. This results from their refinement in identifying telecommunications functions and associated expenditures in the 1984 ITSP.

** 1982/83 Expenditures have been estimated using forecasts provided in the 1982 ITSP.

NOTE: NR in the 1981/82 Total Telecom column indicates that no report was provided.

Cost breakdown
(Table 2, Annual
Review 1984)

From this breakdown by departments and agencies, you will note that there are now 32 departments that have reported over a million dollars in expenditures. As a point of interest, the departments represented on TAC cover more than 85% of this total.

Convergence

The convergence theme that was addressed in the Annual Review of 1984 is very à-propos to the theme of this Study Session. I would like to say a few things about it.

Technology push
(Figure 3)

The convergence of EDP, telecommunications and office equipment, using telecommunications as the binding agent, is pushing down on people, management and organizations. If you do not have something to counter-balance it, the technology push will lead us into some definite problems. One of the effects of technology push is that, for example, you buy a solution, but spend an incredible amount of time trying to figure out what the problem is. In the end, you either do not find a problem or you create others. So, there has to be something to counteract this, such as identification of requirements and putting mechanisms in place for planning and coordination within departments as well as throughout the federal government. Otherwise, this strain can crush departments, the common service agency and the other mechanisms, thereby wasting resources. To deal with this convergence, the Annual Review addressed people, management, and organization issues and supported these by case studies on human issues and organizations and pilot studies and evaluations that can help us establish the balance.

Government objectives and priorities

Share the benefits
of this technology

Simply stated, the government wants to protect Canadians from negative impact on the Canadian technology. The aim is for Canadians to share in the benefits of this technology in the future, and to promote cost effective state-of-the-art technology within the federal government.

Proposed strategy
for planning

A proposed strategy for planning should be to ensure that the various elements interact so that telecommunications services in the government evolve in a coherent and coordinated fashion.

As a last comment, let me say that the Telecommunications Advisory Committee (TAC) is an excellent forum to exchange ideas on improving the overall management of government telecommunications and is very open to suggestions. I encourage people in the regions to familiarize themselves with the committee structure and use it to bring out issues which would lead to the enhancement of the overall planning process.

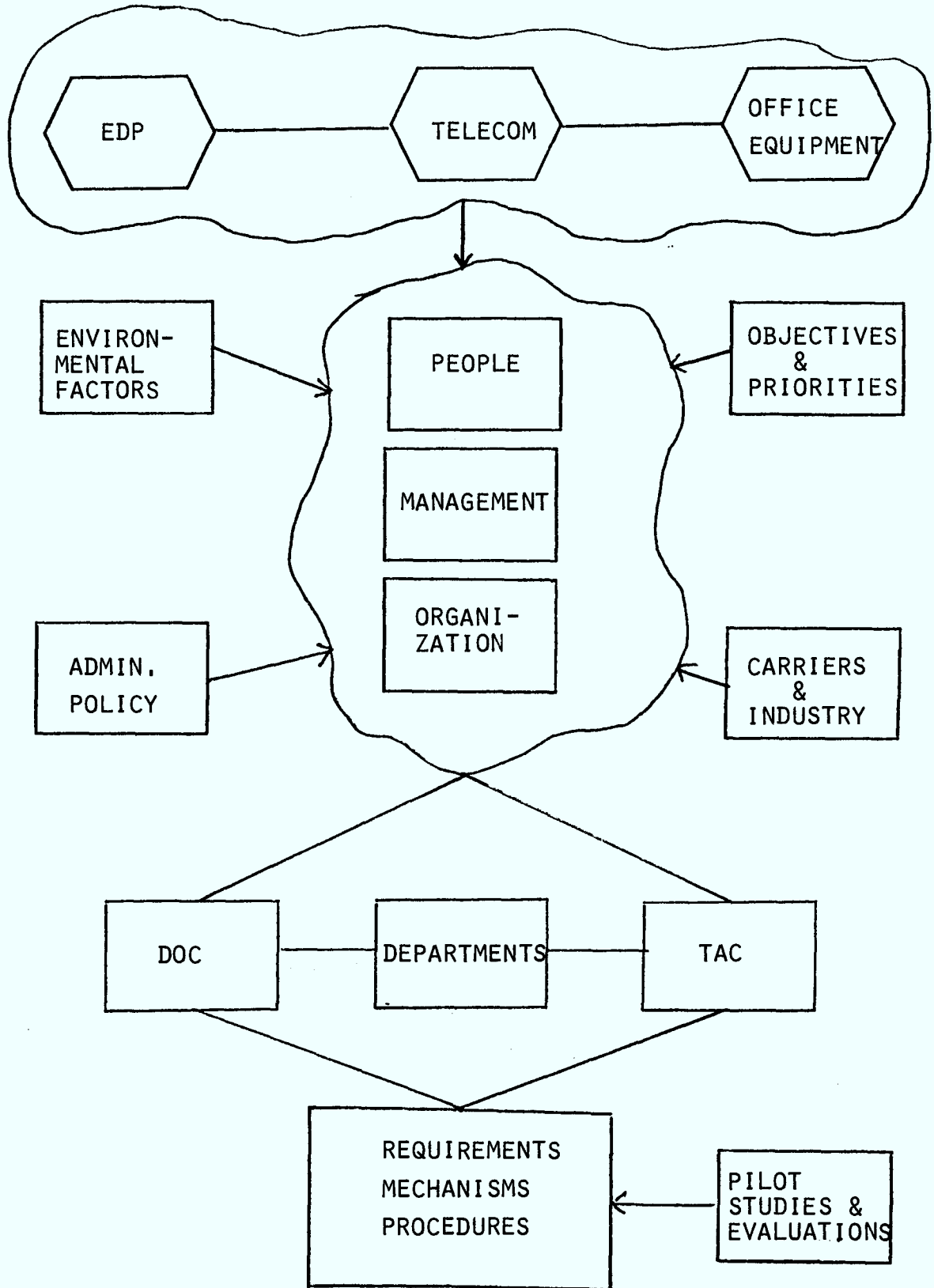
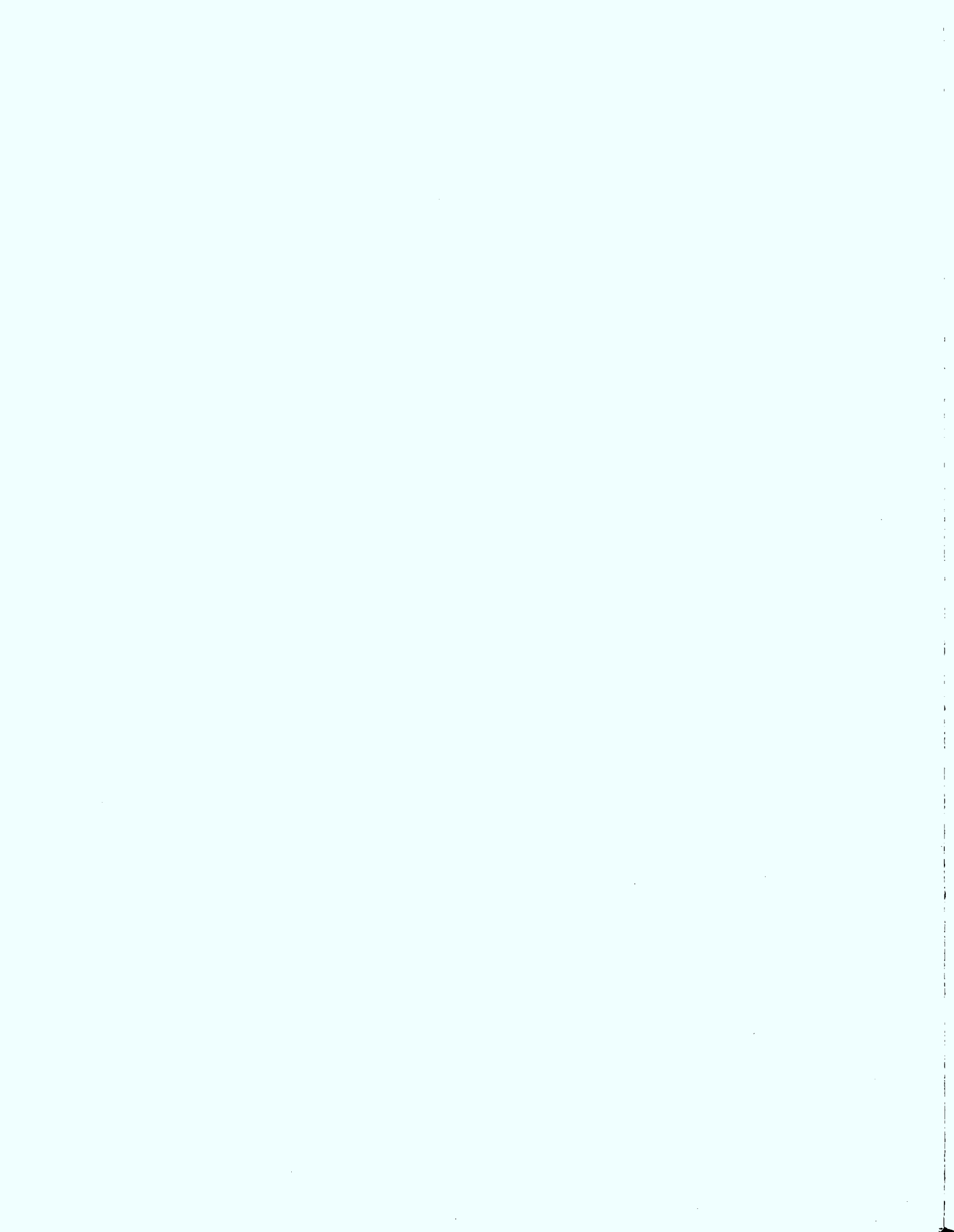


FIGURE 3 PLANNING FRAMEWORK



SYSTEM DEVELOPMENT METHODOLOGY

A decision to seek the acquisition of a telecommunications system or major equipment is the start of a complex process which has to tie together the operational need, system design, budgeting, and implementation. This requires a systematic approach which will ensure that appropriate action is taken, at the right time by the right people, to move the project forward. While there are various systems development or project management systems in existence, the principal elements of those systems are similar.

This subject is addressed in two parts:

- a. the project management system in National Defence, presented by Major Don Hamilton; and*
- b. application of a project management system in the development of the Shared Data Network, presented by John Kealey of GTA.*

PROJECT MANAGEMENT SYSTEM IN NATIONAL DEFENCE (Maj. D. Hamilton)

Need for Project Management

Why bother with a project management approach? Each department is responsible to Parliament for the administration of certain programs in support of the people of Canada. The objectives and functions of these programs are under continuous review and any significant change must be approved by Cabinet. The Policy and Expenditure Management System (PEMS) is an attempt by the government to provide a strategic overview and a fiscal plan which encompasses government revenues and expenditures over a multi-year period. It is an essential element in the overall management of government business. The assignment of Cabinet committees to manage "resource envelopes", or departmental allocations, combines

Policy and
Expenditure
Management System
(PEMS)

strategic policy and priority setting with the most appropriate allocation of government resources. While Cabinet and Treasury Board are involved in determining the apportionment of these resources, departments themselves are responsible for identifying and justifying their requirements and for implementing the decisions made by the committees for the various programs.

Directives and guidelines for administration of programs and projects

Defence Services Program

Within National Defence, we administer a budget and the management of complex projects. National Defence has only one program - the Defence Services Program, and it is a multi-year plan for the utilization and allocation of financial resources. This program is the basis for identifying all of the resources required by the department for evaluating deficiencies, evaluating progress and for monitoring and controlling our own departmental activities. I expect that all government departments have some sort of program or multi-year plan which is similar. The Defence Program Management System (DPMS) allows definition of our goals within DND, analysis of the capabilities required to meet those goals, determination of problem areas and deficiencies, and selection of the most appropriate solution. To help the progress of projects within DND, we have the Defence Program Management System (DPMS) Manual, a dynamic document which tells us how to approach systems development. GTA has recently published a draft booklet called "Guidelines for the Evaluation of Telecommunications Services"; this is an attempt by another government agency to provide program management guidance. Treasury Board has put out many directives and guidelines for the use of all government departments and agencies in administration of various programs and projects. So, within your department somewhere there should be a set of guidelines to help you become familiar with project management. You would be well-advised before venturing into the program management maelstrom to look around your department, see who holds these documents and browse through them to get some ideas and thoughts.

Defence Program Management System (DPMS)

GTA's "Guidelines for the Evaluation of Telecommunications Services"

Project categories

Effort should be directly proportioned to monetary size and importance

The amount of effort spent on a project should be directly proportional to its monetary size, its importance within the department, and the amount of political importance that is put on this project by senior managers. For instance, in our department, my job is to look after requirements for minor capital for non-tactical communications (minor capital is defined as any project under one million dollars which is not used by the fighting force in the field or in a fighting vehicle).

When we get over one million, projects become major capital. At ten million dollars, the project gets closer scrutiny within the department and, therefore, project directors are going to have to spend more time on that project. A hundred million dollar project is called a "major crown project" and is looked at very carefully not only within the department but within Treasury Board and within Cabinet as well, so a corresponding amount of work must be done on that type of project.

Steps in Project Management

Articulate the reasons for the need

As a first step, you must be able to articulate in some fashion what is causing the change in requirement. It is not enough to say "I need". You must be able to say "I need because...".

Statement of requirement

The next step is a statement of requirement. You have seen that you need something and now you must be able to say with a certain amount of clarity what it is that you need, and a statement of requirement is a very general sort of thing. It approaches the need from a philosophic point of view in that a statement of requirement does not invite a detailed solution immediately. I have a need to do something, for instance, a need to communicate from Ottawa to Vancouver on a daily basis at data speeds. That, in simplistic terms, is a statement of requirement. You may want to expand on that; say how often, and by whom it will be used, but do not at this point of time fall into the trap of trying to solve the problem, just state the problem and then go after the solution in the following phases.

Project initiation:

1. Define various possible means

The project initiation phase focuses on the various possible means of achieving the agreed levels of capability, and the planning of the next phase activities, so as to accomplish a valid option analysis. Examination of the issue is superficially and quite quickly done at this stage. A very rough cost estimate is done to see that we in fact will be able to afford the wherewithal to do the project. This cursory analytical work could best be described as a pre-feasibility study, in other words, a quick look to see if what we are thinking about is even remotely possible or is it too far out to be worthwhile extending the effort on. It might happen that this is where the project dies. We want to identify, in general terms at this time, the resources that might be needed to satisfy a proposed capability requirement, to confirm any shortfalls and to very broadly identify any options to be investigated. It may well be that you yourself can commit ten or twenty or a hundred thousand dollars just on your own, so the amount of work that you would do with this project initiation stage is set by that. You are the only one you have to satisfy. On the other hand, it may be

2. Identify the resources

that the project you are looking at is so large that you need to document this project initiation phase and to have it signed off by someone. Again, the magnitude of the project dictates this.

Planning and development:

1. Conduct project studies or investigative analyses as a basis for further documentation
2. Keep an open mind
3. Do a rough cost estimate
4. Narrow down the options

The planning and development stage is a very important function in project management and all too often we tend to gloss over it to get on with the project, but really some form of project development study or investigative analysis should be done, and the information produced by this study should be clear and in very broad terms point toward the preferred course of action. The study will form the basis for the preparation of further documentation and therefore must be relatively clear and concise and it must really provide guidance for subsequent project definition. At this point, it is important to keep your viewpoint wide, keep your mind open to all of the options that are available. Do not discard an option out of hand before you have at least considered it. It may not be as wild as you first thought. Keep your thinking non-restrictive. Do not narrow yourself down too quickly to one option. This is the point in time in project management where you should review your statement of requirement, take another look at it. Is the route that you are taking now in the planning and development stage going to lead you down the path to satisfying the original stated requirement? Do another rough cost estimate, a little more detailed than the previous one. In your assessment of the various options, you are going to be looking at such things as predicted timings, effectiveness of the operation in meeting the aim, the effect on performance and costs, any number of things are going to have to be cranked into these equations.

You are going to have to begin toward the end of this phase to narrow down the options. You will be able to show why you have discarded a number of options. Each department's documentation is going to be different, but we must be prepared to document the rationale that we went through in this planning and development phase and put it forth to senior management for their concurrence, before going on to the next phase of project definition.

Project definition study:

1. Refinement of guidelines
2. Study of options
3. Selection of preferred option
4. Financial feasibility study

The emphasis in the project definition study is on implementation planning. The guidelines which we talked about in planning and definition will now be refined. We will do a very analytical study of the options available and discard all but probably one. We should end up with a preferred option. We will do a financial feasibility study that will tell departmental senior managers what the costs are going to be. At this point in time, you are prepared to go forward and ask for money, therefore you had better be very certain how much it is that you are going to want. A detailed cost

5. Detailed cost estimate
6. Statement of risk

estimate is required. Not only that, but we are honour bound to tell senior management what the risk of the option that we are proposing is. We have to look at the option and, quite frankly, detail the risks and uncertainties that we can see related to the performance, cost and timing of the project. Our emphasis at this phase of project management should be on risk reduction, a detailed analysis of the chosen option, a costing, a scheduling of how the project is to proceed, how the project is to be implemented, and an implementation concept all rolled up into the documentation which is put forward within your department for sign off.

Project implementation

Responsibility shift to the provision of equipment

Once the proposal has been given departmental approval and a Treasury Board submission has been returned authorizing the expenditure of funds, the project enters its final phase, implementation. It is at this point that there is a responsibility shift in the project from the operational aspect or the requirements aspect to the provision of equipment to satisfy the need. During the developmental phases up to the point where approval was sought, the project is highly susceptible to change. Its terms can be changed, the approach to resolving the shortfall or the need can be shifted and, in fact, it could even be cancelled. It might change in scope, in cost or in schedule. But with the implementation approval, the process becomes firm. Changes are viewed with concern and delays in the process must be avoided.

Process becomes firm

Project implementation plan

There arises now a new set of concerns - a completed, approved project implementation plan with socio-economic impact, a selection of suppliers, contracts, the overseeing of manufacturers' activity, developing maintenance schedules, phasing out the old equipment and bringing in the new - a myriad of tasks leading to the final acceptance of a new acquisition. To do this we need a project implementation plan which is a detail of all of the things that I just mentioned and how they are going to happen. It outlines the various components of the project, it identifies individual responsibility within the implementation team, or how it is to be implemented; it identifies the methods by which the various activities are to be achieved; it summarizes past project activities and provides a reference point for the main element of project management at this point. Everyone associated with the project will understand their own role and how it interacts with those of the other participants.

Project considerations

I would like to spend a few moments talking about some considerations that must be given to the fulfilment of any project. The first one is costing.

Costing

The efficient management of resources demands a high degree of accuracy in determining the quantity of resources required when a project is initiated. Costing figures at the various stages of the project will differ markedly in degree of refinement.

One of the principal objectives of the definition phase for instance is to refine the cost data so that it can be used in the final departmental decision document for a Treasury Board submission. It should include such things as direct cost, related costs (will this project drive up costs in another area?) and contingency costs. What are the operational costs going to look like? How much risk is there? How much is it going to cost us if our worst fears come to fruition?

Support of equipment

Another area of concern is support of the equipment. How is your department going to support this equipment? Do you have expertise to maintain it? Are you going to contract the maintenance? How are you going to provide the wherewithal to keep this equipment running once it is in place? How are you going to support it?

Milestone data

In the efficient running of any project we must have milestone data. Although this is dynamic, at least it gives all concerned some idea of the timeframe goals that you see happening. You must be able to set these. These milestones are decision points and should be monitored by senior management. A missed milestone not only affects the project concerned, but it could well affect other departmental projects because of a slippage in funding. Milestones must be carefully chosen because selection of unrealistic or unachievable milestones is akin to quoting costs which are inaccurate, tantamount to lying. Milestones include such things as planning approval date, when it might have been approved in principle within the department; a milestone denoting departmental approval for spending, when Treasury Board is expected to approve a project; when a contract can be expected to be let, initial delivery, and the completion of the project and bringing it on line. Each project will use some or all of these milestones which will be unique to the project. It is important to put forth reliable and accurate milestones because senior managers will be using those milestones to plan other projects and interleave the project in the overall big picture.

Cost updates

We must have some way of keeping accurate cost data on a time-to-time basis within the life of the project. When you are planning, do your costings in current year dollars.

But if your project is large when you come to the actual funding of it, it may be over a two- or three-year period and those dollars have to be identified in "budget year dollars" so that the actual cost to your department for this project is known. You must also keep track somehow of how the dollars are being spent. Perhaps something that you budgeted for came in at less cost than you anticipated and that will allow you to include a frill that you had to discard earlier in the project. That is to say, you must have some method of updating your costs and tracking the spending over the life of the project. Within DND, all of the costings for major projects are in a computer program and you can get a printout at any time of where your dollars fit within the overall budget.

Personnel
allocation

Another aspect or consideration is personnel allocation. Is this project or this requirement when it comes to fruition going to cost your department more in human resources? Is it going to save person-years/hours? You have to be able to show this. This is a consideration that senior managers are very concerned with because, obviously, people can be equated to dollars - the more people required to run a department, the more it costs. Managers are concerned with cutting costs; therefore, you should be able to define how this project will affect personnel allocation within the overall department.

Project people
Assignment of
responsibilities

Another aspect of project consideration is the project people. I want to look at some guidelines for the selection of key project figures and project staff. It is normally the responsibility of the sponsoring group to direct and coordinate a project from its inception as a statement of requirement, through to the decision to commit resources. It is in the best interest of this sponsoring group to ensure that the person tasked with the daily hands-on responsibility for the project is capable of handling it. This person is the project director. The implementation group assumes responsibility for the project, once it has received final departmental approval to implement. The implementation group project person is called the project manager. If it is small enough, the project director and the project manager may be one and the same, and if it is large, there may be a team to do the whole thing. The project director has the primary project responsibility at the working level until the project receives final departmental approval to implement. At that time, the emphasis shifts to implementation and the role of the project officer moves from the sponsoring group principal to the implementation group principal. It follows, then, that the primary project responsibility should also move from the project director to the project manager. Nonetheless, the project director retains an obligation to provide the project manager with ongoing guidance and assistance relating to the fundamental requirement.

Management

You must decide how you are going to manage the project. Will it be matrix managed (i.e. people brought into the project on a part-time basis from their day-to-day work), or will it have a dedicated team who do nothing else, but manage this project from its inception to its completion? The importance and the magnitude and the time of the project will decide this. Both systems work admirably well and it may be that you end up with a mix of the two. A small dedicated project management team with other expertise being called upon and available to the team on an as-required basis is a frequently used approach.

Evaluation of the system

Conduct an evaluation of the system by looking at the statement of requirement

Finally, the system is in. It is running. The opposition to change has been overcome and people are more or less happy with the result. Altogether too often, the file is closed. Everybody heaves a sigh of relief, puts it away and goes on to the next job. However, before we do close the file, an evaluation of the system should be done. Is it doing the job that is required? We sometimes get wrapped up in a project to the point where we have not realized that maybe the requirement changed part-way through or the rules changed part-way through and we missed that. It is unfortunate, but these sorts of things happen. So that is to say that before the file is closed, an evaluation of the system against the statement of requirement should be made to see that the system is doing its job, and to ensure that the statement of requirement, the basis of need, is still valid. Maybe a new project is in the offing, maybe the project that just happened has changed some other factors, changed the way you do business to the point that another project may be required. Have a look now, just before you close the file.

THE DEVELOPMENT OF THE SHARED DATA NETWORK (J. Kealey)

Shared Data
Network Project

After listening to the first part of the presentation on Systems Development Methodology, your initial comment might be that it sounds good from an academic point of view, but how does it actually work out in practice. The answer is that it works out surprisingly well. What has been described is a very realistic approach to the development of a system, be it large or fairly small. I will be describing a fairly large system, the Shared Data Network (SDN). The organization in GTA that is responsible for this project is the Systems Design and Management Group.

Short- and medium-term planning

This is a hybrid group. It has responsibilities for planning in the short and medium range, and development and operational functions in both the voice and data areas. I believe many of the points I make in this presentation will be applicable to your individual requirements, whether they be small and telephony-oriented, whether they be hybrid voice/data-type systems, or whether they be data systems or even data processing-type systems.

Data communications growth

What was the environment of the early '80s? What is the current environment and what is the forecasted environment? You have probably been able to glean from previous speakers their impressions on how things are going to evolve. Data communications has been growing at a fairly rapid rate: 15 to 20 per cent annual growth is not unusual, and in many cases for a number of applications we see 20 to 40 per cent annual growth taking place.

Terminal-type communications

We now have a much broader base of users than we had a few years ago. It is very rare to look into a government organization, whether you are in the finance department, the administrative or the actual operational side, and not see at least one data communications-type terminal. Terminal-type communications has spread throughout every organization. Large databases are being implemented on mainframe computers and distributed accordingly where demand and technology requires. Microcomputers are basically everywhere. Standards are evolving and becoming more rigid. People are paying attention to the question of standards.

Drawbacks of customization

To date, much of the data communications has been handled on a customized basis, i.e. a particular network has evolved to meet a particular application so that any particular agency or department may have quite a number of networks, which are really a series of customized solutions to particular application problems. Customized solutions are expensive by their very nature. They are also very labor-intensive. So basically, to have a benefit and to minimize the negative aspects of customized solutions, shared solutions offer a great deal of promise.

Planning and development guidelines

Basically, planning and development of government telecommunications should be based on the following four statements:

1. Follow a rational and incremental approach.
2. Keep pace with technology and service development.
3. Foster and accommodate total government as well as individual departmental initiatives.
4. Foster and develop shared applications, where shared applications can meet the particular requirements that your users demand.

Management approval

One of the first things in a project is to convince management that this is a project worth doing. Quite often it may take the form of a case preparation. Basically, you must define what you want to do, how you want to do it and what the resource requirements are. This is the bottom line. Obviously you require management approval and depending on the size, the complexity, the nature, and the sensitivity of a particular project, the level of approval and the type of approval will vary.

GTA project objective

One of the most important things to evolve from the statement of requirements is the objective of the project. If you cannot clearly state the objective, you should not have a project. In our particular case the objective is to "provide a shared network to meet the common data communications needs of government departments and agencies".

Keywords define the objectives

That is a brief statement. But there are two important things about that statement. The keywords tell you what the project is and what it is not. First of all, it is a shared solution, not a customized solution, and we are talking about common needs. We are not talking about all the specialized needs that particular organizations may have, but we have a strong feeling that there is a sufficient degree of commonality that exists, that can be addressed, to get a better deal for the government, which benefits everyone.

Test the feasibility

The particular approach that we have used for the Shared Data Network is basically to take it from concept to the RFP stage. First of all, you must test the feasibility of the concept. How does one test the feasibility? We did it with the production of a feasibility study. We went through a request for information. We knew that there was a particular requirement out there, due to the fact that we had been in the business of providing data communications services for a significant number of years. We knew the characteristics of much of the government telecommunications traffic. So, in association with seven government organizations, we reflected their particular requirements in a Request for Information (RFI). I usually describe an RFI as halfway between a pricing availability and a full-blown RFP. That RFI went out to industry and the twenty-three responses that came back were related to a network for transport (that is the typical computer-to-computer type transmission as well as terminal-to-computer type transmission and an enhanced service, such as the messaging service). There were seven organizations, six departments and one Crown Corporation that participated in our feasibility study.

Technological
alternative
examination

Based on those responses received from industry that were related to the technology, the cost, and special considerations in terms of interfacing, we did a technological alternative examination and developed a network. This is a packet-based network consisting of major nodes and access points or concentration points. In addition there is a Network Management Centre. That comes under the Ottawa node.

Cost analysis

Then a comparison was performed based on a network of the type previously described with current and forecast expenditures for those applications of those departments. This is a very important stage which is really the crux of the feasibility study. There is obviously the technological study and there is the essential cost analysis study. In doing the cost analysis there are a number of things that must be taken into account. You must be extremely realistic - things do not stand still. There are inflation rates which have to be applied; certain growth factors that need to be applied - growth rates not only in terms of the actual traffic, but of course that which impacts on the growth of the various bits and pieces in the network. Therefore, it is best in the feasibility study to be extremely careful and to document very well the particular assumptions that you have made. In this feasibility study, the costing was based on twice the amount of traffic that was required. Not only that, but the inflation rates that were chosen were much higher than we are currently experiencing. This analysis must be performed very carefully, because this is often the first reference document that you will use for further project approvals. One should conduct sensitivity analyses in all aspects in a feasibility study, i.e. the "what if" scenarios. If there were major changes, what would be the impact?

Three phases
of project:

This project, as is typical of all medium- or large-scale projects, consists of a number of stages or phases. In this particular case, we are talking of three phases:

1. Feasibility
2. Definition
3. Implementation

1. The feasibility study;
2. The definition phase; (This is the definition study and RFP process, the letting of the document to the industry, the reception of replies and the commencement of analysis of replies.)
3. The implementation phase; (This should consist of two stages, whether they are small or large projects: an initial operational capability (IOC) and then a full service offering. An IOC is less than a total service but it is still representative of the total service. This is a key point: it must

still be representative. If it is totally different, the analysis of the IOC will give you information that would not be particularly applicable. In this particular case you see a number of nodes, concentration points, a network management capability and the potential to add a value-added service such as a messaging service to the network.)

Importance of documentation

Whether they be internal or external audits, or if you want to feel more comfortable in handling a new project, documentation is essential.

Status Reports: This depends on the nature and the complexity of the project. In our particular case, status reports are performed on a weekly, quarterly and on an annual basis and at all major milestones.

Presentations: You must keep organizations informed, whether they are your own management, or organizations that will participate in something that you are offering; or organizations that might be affected by what you are offering. That is absolutely essential. Depending on the size and nature of the process, the other stages require a suitable degree of documentation: T.B. submissions whether preliminary or effective approval; procurement review committee where applicable; and the RFP document itself, which is a major exercise for medium- and large-scale projects.

Organization

How are we organized? We are somewhat of a hybrid organization. We combine what we feel is the best of both worlds as far as this project is concerned in that we have a dedicated project team and we also operate on a matrix management basis. That is, we require certain specialties but for a limited amount of time.

Functions

Here are some of the functions that would be performed by the dedicated project team. These would vary depending on the type of project. Under me as the project manager, the responsibilities of the various members include planning and development, software, interface and coordination, technology and engineering support. Some of the matrix functions might include network management, which is almost a dedicated member of the project team; operations; security; the intelligence of our local switches; procurement, because this is obviously a major procurement exercise; billing, because you must charge back for the service (now is the time to think of billing); and, of course, economic analysis project control.

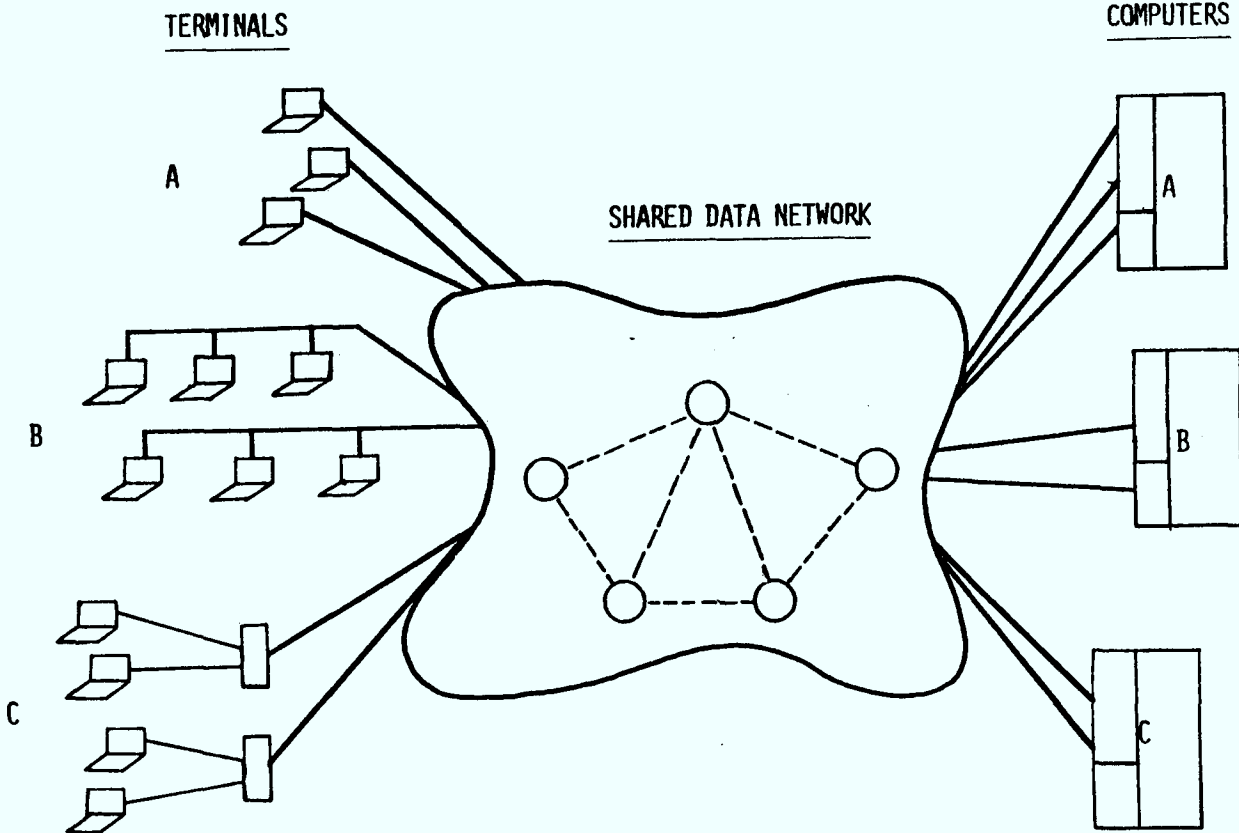
Project control

Every project requires project control. The project control mechanisms that are currently used are microcomputer-based project control systems mainly for the time, activity, planning and expenses portion and a mainframe-based system for our personnel resources side. In the future, we will continue with the MIS system, that is, time accounting; but, for the milestone activities, we will be changing the software package and using a slightly more powerful package.

Become aware of other departmental activities

Lastly, your project does not exist in isolation. I have been talking of a data networking project. Obviously, there are developments which are taking place, both in industry and within organizations such as GTA, and in the departments related to voice and voice/data integration. This project could not exist by itself. I have to make people aware, and I have to be aware, of other developmental activities that may affect my particular project. One of the ways to do that is to have the chief of the voice systems planning, who is responsible for the GTA modernization program, as a matrix member of my organization. There has to be a lot of communication.

The following diagram shows one method by which a network such as the Shared Data Network and our enhanced consolidations can interact with each other.



Emphasis is on
communications

Advantages of
packet-switching

On the left-hand side there are terminals and telephones connected to a digital switch which could be a PBX on departmental premises, a shared consolidation vehicle, DMS or SL-type vehicle. That particular switch has data handling capabilities and voice handling capabilities. The two switches are connected via trunks and other facilities. Those trunks and facilities will be digital in the near future. The data terminals would have the capability of operating on a circuit-switched basis. So, if you wanted to go to a particular department's computer resource or an outside computer resource, you basically input a particular number and achieve access. Packet-switching offers significant economies as far as scale is concerned, and there are many applications in government which are very amenable to the packet-switching solution. In the case of packet-switching, all you have to do is input another address. So this is meant to show one mode of how voice and data are being integrated. They are being integrated at the switch, and the facility which links the various switches together shares both voice and data; they just occupy different channels. There is no difference. They are digital streams, i.e. composite different streams.

TELECOMMUNICATIONS PROCUREMENT

Perhaps the most visible part of the acquisition system is procurement. The real and perceived problems associated with this process in the present environment are, therefore, of particular concern to telecommunications managers.

This presentation was coordinated to cover the main routes to procurement of telecommunications equipment and services available to departments - i.e., through GTA or SSC.

Mr. Tom Bartello, a procurement chief in the Office Automation Services and Information Systems (OASIS) Directorate of SSC, presents the SSC perspective; Mr. Brian Boyden, Chief Telecommunications Acquisition in GTA, the GTA perspective.

(Tom Bartello, SSC:)

ROLE OF SSC

Role of SSC

In the procurement process, the role of Supply and Services Canada (SSC) is to obtain the goods and services that are required, at the best prices and at the time required.

Procurement organization

SSC, on the procurement side, is broken up into various areas, such as aerospace, armament, MEIS (Marine Electronics Industrial Systems). One of these areas, OASIS (Office Automation Service Information Systems), has been reorganized to include telecommunications. OASIS is organized along client department lines. Telecommunications is handled on a commodity basis.

OASIS

Telecommunications as a commodity

Looking after telecommunications as a commodity is something relatively new. It was introduced to improve effectiveness and efficiency in this period of P-Y constraints. This approach gives our staff an opportunity to gather a lot of experience in the marketplace and the pricing structures, and a lot of knowledge in telecommunications from the contract point of view, which will be of assistance to you when you come to see us.

Authoritative documents

Our terms of reference are the Government Reorganization Act of 1969 and we work under the authority and direction of such documents as the Financial Administration Act (FAA), Government Contract Regulations, Defence Production Act and TB Administrative Policy Manual, Chapters 303, 310, 435 and 436.

SSC interface with GTA

In dealing with telecommunications as a commodity, one of the concerns is the dividing line between the responsibilities of SSC and GTA. According to the Memorandum of Understanding (MOU) that exists with GTA, our roles are complementary. A much closer working relationship has evolved in order to better coordinate telecommunications. This MOU shows how we are going to work with one another to optimize the acquisition process in the most efficient and effective manner possible. At the time this was authored, in July 1974, we set out the basic principles which are still very good and workable. If we had to modify the MOU, it would be in terms of the evolving technology only. This is where we realized what was meant by sharing of service, consolidation and the work that GTA actually did. The basic difference between SSC, where you have no choice but to use them, and GTA, where you do have a choice when it comes to telecommunications in certain areas, has to do with competition. The name of the game really is competition. Neither TB nor SSC like to see directed contracts as our sole sources of procurement. It makes our work very much more difficult, because the rationale for directed contracts is very clear and very straightforward; in order to avoid difficulties, you need some good ammunition. Customer departments should have that ammunition before they arrive, because the first step for us is to question the request. In other words, where competition exists, SSC is responsible for acquisition for those departments under Schedules A and B of the FAA and for other departments and agencies who wish to utilize our services. This is the basis of our interface with GTA.

SSC is responsible for departments under Schedules A and B of the FAA

Aspects of procurement

People

Procurement involves dealing with various people. This is what my job entails: working with people and generating contracts. These people include you, the client departments, and suppliers. What you are looking for is 100 per cent compliance in the system, i.e. everything you want, when you want it and at the cost you want to pay.

Cost analysis Most departments have made a thorough analysis of costs and what is involved. When we become involved in the process, we

Competition look at competition, (the more the better!) because the markets really determine what the price is going to be. That is a major concern to us: how high SSC has to go to obtain approval is dependent on the number of dollars. I look for

Evaluation clear-cut evaluation, where there is little or no ambiguity; that is to say, certain mandatory requirements, which must be tested when you get a system, have to be met. So, the

Reliability reliability of the system operation is part of the evaluation process. Where possible, and where cost-effective, try to obtain the maximum social and economic benefits that can be obtained through procurements, particularly in the case of major procurements - items such as the Meridian line, SL-1 type of equipment, etc.

Contracts And, of course, there is the contract. If it is drawn up properly, everybody knows exactly what their obligations and responsibilities are. This ensures that you get what you asked for originally. From the supplier, this ensures excellent contract performance, so that he knows exactly what is required of him and when, in terms of delivery, testing, cut-over point, etc. So this is the basis of the perfect procurement in terms of the partners.

(Brian Boyden, GTA:)

ROLE OF GTA

Introduction In the Government Telecommunications Agency, we strive to ensure that goods and services are acquired by the Agency in accordance with the government contract regulations and the policies and procedures of the Agency.

Competitive process When the Agency was established in 1969, subscribers had only one supplier of telephone services, and competition was only applicable on a limited basis to telex/TWX and data services. Now, with the advent of interconnection and terminal attachment, customers have a whole new series of procurement options available. The competitive process is to be used wherever two or more sources of supply are available. We will be discussing this in further detail during the presentation, both from today's point of view and with regard to the future.

Goals Our principal goals are to ensure value for money and to foster competition in the telecommunications environment through procurement activities. Competition has brought prices down and service up. The reality of government procurement activities is twofold. Because it has a large dimension, it commands a lot of attention from suppliers and can influence production and marketing. Secondly, it must be seen to be fair in the selection process.

Who are the clients As a common service agency, GTA's clients are any departments, agencies or Crown corporations, as set out in APM 435.

Supply of services The Agency is limited to ordering services directly from the common carriers. Where the services are available from more than one supplier, GTA processes its requirements through SSC. The principal source is composed of CNCP Telecommunications and Telecom Canada, representing most of the telephone companies across Canada through their Ottawa offices. When dealing with circuits involving other independent telephone companies such as Edmonton Tel, we provide copies of any RFPs to those companies as well.

As partners in procurement, we wish to lend our assistance to project coordinators in the areas of our specialized expertise.

RFP process GTA has been pursuing the RFP process for data service requirements for government clients for over 10 years. Although each of the major common carriers operates under regulated tariffs, it is not uncommon for the vendors to provide extra services out of competitive necessity. As well, judicious application of existing tariffs and novel special assemblies have resulted in savings to the government.

(Tom Bartello, SSC:)

SSC CONTRACTING

Purchase orders Let me briefly describe the contract types. First of all, there are purchase orders, usually for small dollar value items. The limitation for these is usually \$25,000 and it is usually for a commercial item for which there are many suppliers. This type of activity usually takes place in an area, such as the Capital Region Supply Centre, where they do volume buying and they are working on one- to three-thousand dollar requirements.

Contract
formal agreement

Next, there is a contract, the formal document. Then, there is a formal agreement, where we get the lawyers into the act and we get the company seals. We would go to a formal agreement for those cases where there is something really special we want to emphasize; or it is a very large deal; or it is a very formal document setting out numerous responsibilities such as buying an aircraft or something of that nature.

Standing offers

We also have standing offers, which are negotiated agreements with suppliers in terms of conditions, items involved, delivery dates, etc. The standing offers are set up in such a manner that you, the client departments, can issue a special DSS Form 942 directly to the supplier. This method of supply is cheaper, more effective, and faster for you, the departments, because you can order directly from the suppliers. Our cost recovery on this basis is lower. But we do it because it is usually for items of a repetitive nature. In addition, instead of having a particular maintenance contract with the supplier, you may want the flexibility of extending it also to moves. In order to accomplish this, it might be easier to handle them through a standing offer, where we have negotiated a deal but we have not really specified the task. The task would be defined by you. So you may want to consider this in the future when you are acquiring interconnect equipment, such as PBXs.

Phases of procurement

Procurement itself is broken down into four phases:

1. requirements definition phase;
2. contract phase;
3. contract administration phase;
4. post-contracting phase.

Requirements definition phase

Requirements
definition
activities

The requirements definition phase is probably the most important phase of all. It involves numerous activities that occur prior to a requisition arriving on a desk. If it is DND, for example, I know that they have gone through a rather rigid process, a formal structured process, to arrive at what they want, when they want it and how much they are prepared to spend. Other departments, while less structured, do the same function but, usually being smaller departments, they do not go through such a rigid process. But still, all those activities are rolled up into a requirements definition. It is at that stage, when you are thinking of doing something, that I, as an SSC officer, really like to get involved, even if it is only to sit in and listen to what you are doing or what you propose to do. I think I can contribute to the ultimate success of your project. I can give you information

on the market through pricing availability studies; I can tell you who is out there in terms of sources; (there are new sources coming in every day; they want a shot at our business and we try to give everyone an equal opportunity). Sourcing is only one of the areas I can help you with. I can also assist you with scheduling, for instance, how long it is going to take to get your submission through the system, which depends on the dollar values and who I have to see. That kind of scheduling is of assistance to you.

Timeframe

Once you have a requisition, you should have some indication of how long it is going to take to get the equipment in. Unfortunately, sometimes the timeframe left to SSC is really short. If we are not aware of it, this creates a problem. I try to schedule workloads for various people; who gets what depends on the size of the project.

Early involvement of SSC

The earlier you have SSC involved, the better it is for you. Besides the previously mentioned services, we can also find other alternatives, conduct price and availability (P&A) studies, and issue letters of interest to various suppliers.

Specifications

Another important part of getting requirements definition to the requisition stage is your specifications and how they are written. They should be written in such a manner as to allow maximum competition, rather than channelling to a particular supplier or area of supply. To do this might require extra work on your part, but in the end it gives you what you want. Functional specifications are the way to go.

Competition

The very fact that you come to SSC means that there is competition available. So I try to foster that to the greatest extent possible. Looking at it from a business deal point of view, the maximum competition is the best way to go. I will get what I want when I want it at the best price. Therefore, I want to be involved in the process at the earliest possible stage.

Costs

At the time of requirements definition, you have to make a decision as to how much this is going to cost you. Once that number has been decided, there are a few requirements that enter into the procurement process. If it is larger than two million dollars, it becomes a more formal process, i.e. the socio-economic benefits are formally considered. This is done through the Procurement Review Committee (PRC) at SSC. SSC chairs a committee in which Finance, Treasury Board, DRIE, and the client department meet and discuss what socio-economic benefits can be derived from this procurement.

Record of Review

The Record of Review which is a result of this examination goes along with a request to get the contract approved, and usually is forwarded to Treasury Board. Long before that, you will have included your requirements in your ITSP. When it is a substantial requirement, i.e. in number of dollars, we would like to know that the ITSP has had some approval for that item. It is important that we see the approval number or that we get a copy of the ITSP. The ITSP is a good document in ensuring that the homework has been done and that you have the proper approvals; thus, the ITSP is very important!

ITSP

ITSP - approval
in principle

In small dollar value items, there are no problems. The formal process begins with the PRC and we are in the process of generating a proper procurement plan. Some of the issues that should be in the procurement plan and that TB might want to see include: whether there are any socio-economic benefits; a brief description of the requirement; whether there are any issues - for instance, is this going into an area where unemployment is very high? The ITSP gives you approval in principle and gets the work into motion from SSC's point of view.

Contracting phase

The requirements definition stage is the responsibility of you, the client; we are there only to assist you as much as possible. The contracting phase is the responsibility of SSC.

Requisition

The requisition will provide the specification, delivery, cost. ASAP means as soon as possible for me not for you. So it is better to have a firm date on it.

Sourcing:
(1) Sole source

We will check to see if you have asked for a sole source basis or a "no substitute". The reasons for going through this type of procurement are very stringent, and it means that you have spent a lot of money already and you are just buying an additional piece of equipment from the same supplier.

It is much better and a lot easier to go competitive, because when I get the pricing in, I know pretty well that the pricing is such.

There are three documents that we issue to the trade:

- a. Request for Quotation (RFQ), usually for low dollar values (under \$25,000);
- b. Request for Proposal (RFP); and
- c. Invitation to Tender.

- (2) RFP The RFP allows SSC in concert with you, the client, to negotiate with a supplier and it gives us some flexibility.
- (3) Invitation to Tender An Invitation to Tender has zero flexibility. You say you want a specific type of item and the only consideration is the lowest cost. There are no negotiations, no discussions. There is a public opening. The price is announced and who won. An RFP does not have a public opening. The information is available under the Access To Information Act; however, we do tell the unsuccessful suppliers what the bottom price was. But the RFP allows us to negotiate. There may be certain terms and conditions that the supplier may want to waive - for example, a one-year warranty.
- Pricing basis Are you buying on firm-lock price? firm unit price? paying monthly maintenance? or monthly rental charges? We try to make things as simple and unambiguous as possible for the supplier. We try to get the client to be consistent in terms of mandatories and, if there are some desirables, then they occupy an extremely small portion of the evaluation. We try to price the desirables as early as possible before the bids. It is easy to have a desirable overturn a procurement in terms of who the successful bidder is. What you really want and need is the essence of the procurement rather than what would be nice to have. This is a bit different from the way we used to operate in the past.
- Terms and conditions We have many different types of terms and conditions: e.g., DSS 1278 is terms and conditions for rental and maintenance; DSS 1026 is for purchase; we have some for delivery, warranty, satisfaction, performance of services, equipment, and availability levels.
- Negotiation Negotiation is often the most interesting portion of procurement. Negotiations with the common carrier are very difficult. Arriving at a fair price, when there is only one supplier, is a long and difficult process.
- Legal advice When required, SSC can call upon legal counsel from the Justice Department.
- Those services are also available to you through SSC.
- Rate negotiation We have accountants who do rate negotiations to determine, for instance, consulting fees - whether the prices quoted are fair and reasonable, etc.

Contractor selection Contractor selection is based on the lowest compliant cost. If the supplier met the mandatories and is offering the lowest price, I can go ahead and promote that supplier. Before reorganization, we had a contract approval board who grilled you on your contract. Now, the process is somewhat different. Along with the contract, I must generate a Contract Request Approval Document. The value of the contract determines the levels of authority for approval.

Contract administrative phase

Activities In this phase, we are involved in issue of amendments, various payment schedules based on milestones (based on deliverables) or progress payments (being payments at so much per month). Progress/contractor meetings are a necessity and SSC wants to be involved to ensure that work is going along to your satisfaction.

Progress reports/site visits are necessary and important.

Acceptance procedures in an EDP area are very extensive in order to ensure that what you got is what you wanted.

Termination There are three types of terminations:

- a. Convenience of the Crown: where you may have had a cutting of funds or where a program has been discontinued. In those cases, SSC picks up the balance of the cost.
- b. Mutual consent: both parties agree to terminate.
- c. For default: if the suppliers did not deliver, they are in default.

Post-contract phase

Audit considerations At this stage, we close out the contract. If it is a substantial contract of a capital acquisition, we try to learn from the experience. There might be a need for an audit in the case of a "sole source" procurement.

Finally, we ensure that the contractor has delivered.

Customer service, co-operation and teamwork are the keywords at SSC. We want to give you the best service we can, get you what you want, when you want it and at the price you want. To achieve your goal, we must work closely with you.

(Brian Boyden, GTA:)

GTA SERVICE CONTRACTING

Assumptions

In this session, we are assuming that the needs have been identified in such a manner that a source list can be derived. Decisions within departments concerning the capability to support a "service" or an "equipment purchase" should have already been made or, at least, acknowledged for consideration in the evaluation process.

Common carriers competition

Competition between common carriers today includes a varied array of services. There are those services that are provided in competition with private companies and those which can be provided only by the carriers. In so far as procurement is concerned, we consider all carriers to be equally good, or poor, at providing service. In today's market both analogue and digital voice and data (and here we do not differentiate image etc.) are available.

Network addressing connection

As long as the requirement is not for a network-addressing connection, these types of services are available in all locations on a competitive basis. Where network addressing is involved, terminal attachment regulations come into play.

Types of contracts

Currently, the types of contracts being pursued with common carriers are typically for the following items:

Public switched telephone services - either as a result of a competitive process or because of sole source where competition is not allowed. In many cases the vendor requires a contractual commitment. Even though these services are covered by tariff, there are some key contractual terms I will cover in a moment.

GDNS (Government Data Network) - a contract for this shared data network is maintained and was originally the result of a competitive process.

PABX - These services are a composite of both competitive and non-competitive items. For those items that are competitive, and since competition includes the private domain, the lead department is SSC. For trunks, local loops, long distance, etc., the only suppliers are the common carriers. If PABX specification also includes common carrier facilities, there will probably be an additional and possibly hidden charge. When the Agency conducts a competitive

process through SSC for a PABX, and the successful vendor is the common carrier, our Memorandum of Understanding (MOU) allows that SSC withdraws from the process and the Agency deals directly with the common carrier for the selected service.

For departmental services, unless there are special circumstances, SSC would continue to conduct contracting activities.

GEMS (Government Electronic Messaging Service) - The ENVOY and EOS services are provided under the terms of the general tariffs which permit discounts. By having a single contract for the government, the largest discount is available.

Station Equipment - The availability of telephone and/or EDP-type station equipment is varied. When provided by common carriers, there are contracts such as "Extended term rentals", "Tier A", "Tier B", and "Rate Stability". Most of this equipment is competitive with private companies. Again, if it is not network-addressing, it can be provided anywhere in Canada on a competitive basis. If it is network-addressing, the limits of terminal attachment apply.

Key question

The key question that seems to develop through all of the options is: "What items in the proposed procurement can be obtained only from the common carriers?"

By answering that question in light of the responsibilities of the project officer to adhere to the earlier mentioned objectives, we begin to find a way through the maze.

Agreement clauses

Now let me share some of the key clauses that we insert into common carrier agreements which show the areas in which the customer is vulnerable, if relying only on the tariff. These include provision of advice about new products. Since many new features are only software upgrades, we want some ability to be aware of the changes and to be able to incorporate them.

Best price

The government is a large user and we must ensure that the price being charged is equivalent to the best price available.

Traffic and usage information

GTA requires traffic information from the switches to ensure sufficient trunking is provisioned. In addition, usage information is required for cost allocation of intercity services. It is critical that the terms and conditions of data delivery be set out.

Design responsibility Since we are talking about renting service and not equipment, it is important to ensure the vendor accepts total design responsibility even though acceptance tests may be conducted by the user.

Acceptance and billing dates Some of the key activities that the agreement tries to define are such things as the acceptance date and the billing effective date and the relationship to the installation date.

Procurement cycle - common carrier services

To briefly cover the procurement cycle for common carrier supplied services, the following activities are undertaken:

TSO6 Forms A client submits the service requirement with a TSO6. If the requirement is competitive, an RFP is issued. Bids are evaluated and a recommendation is prepared for the client to review. Upon receipt of an order from the client to proceed, the service is installed.

Final decision Since telecommunications services are listed as technically complex, the final decision on selection of a supplier rests with the client department.

Traffic studies For administration, traffic studies are conducted and services are adjusted to suit the changing needs of the client on an ongoing basis.

Inventories The change in the telecommunications supply structure is necessitating the implementation of comprehensive inventories where, before, we used to rely on the telephone company.

Summary accounts Often, a client's services are composed of many separate bills from telephone companies across Canada. These are collected into summary accounts.

Rebates When the services fail, common carriers are requested to provide rebates.

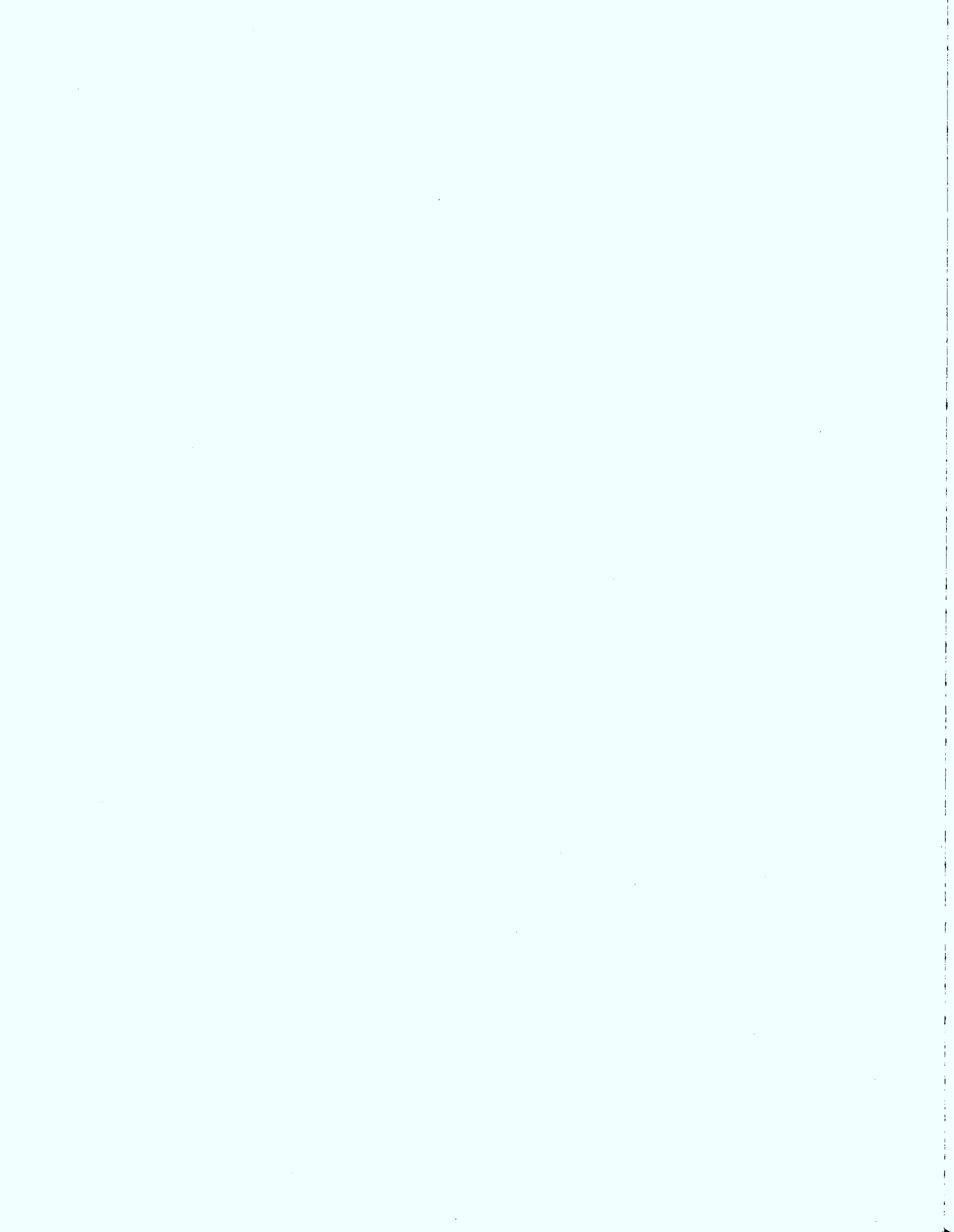
Questions for the future For the future, we will be looking for the unfolding of technology and regulation. Often the questions are half-answered after they have been properly posed. Our questions are quite straightforward:

- (1) Can the common carrier-supplied components be isolated? Before or after the RFP? Are these components available within shared government services?

- (2) If a high-speed, high-volume data transfer capability is required to support new office automation products or to link Meridians, can the cost efficiencies of the new shared digital network be utilized?
- (3) What will the costs to the department be, if the common carrier-supplied services are, or are not, separated? Can the department support the project with the necessary administration resources if the contracting is split between common carrier and private supplier services?
- (4) Does the nature of the project require the selection of an equipment supplier and, then, a communications supplier; or, can they be advanced in parallel?
- (5) What level of service do we want to have provided, including data security and data integrity?

Conclusion

Clearly, the organization that puts itself together in the future will be the beneficiary of the technology. There is no clear path mapped out through the technology and regulatory maze at this time. Procurement is a tool to achieve some of the objectives and is a very powerful and valuable tool, at times. Within our respective domains, our organizations offer assistance, as partners, in meeting your program objectives.



TELECOMMUNICATIONS MANAGEMENT

In this presentation, the focus is on the management and acquisition issues as they are perceived in the "field", at the day-to-day working level, physically remote from the headquarters environment. It is at this level that the effectiveness of policies and procedures can be best tested.

To achieve a balanced perspective, incorporating the common services and the departmental points of view, this presentation was made by a team from the Pacific Region.

Mr. Phil Riddolls is the GTA Regional Manager; Mr. Henk Razenberg is the Telecommunications Officer for the Coast Guard in the Pacific Region.

Introduction

In the region, GTA, as a common service organization, provides shared telecommunications services to user departments. By far the most significant of these services is the long distance network and the switching nodes which act as local concentration points to provide subscriber access to the long distance network. The departmental telecommunications officer is responsible for satisfying the departmental dedicated operational needs and for controlling local access to GTA services. We will describe this process in the regions. We will attempt to relate the evolution of telecommunications services and outline our perception of how we can successfully continue to manage in the future. As we proceed, we will highlight key points as they affect the resources, planning for interconnect, materiel management, training and the technology factors.

Regional viewpoint on trends and impacts

Previous speakers have described such things as policy, long-range planning, systems development, materiel management, office automation, at the national level. It might be worthwhile to review the trends and impacts which are most likely to influence us in the future from the regional viewpoint.

Increase of
telecommunications
budget

The most important trend is the increase in size of the telecommunications budget in the regions. Today telecommunications services account for between 35 and 45 per cent of a regional goods and services budget, not including salaries. Of the 50 million dollars spent today by the government on telecommunications, 20 million are spent outside NCR. This percentage is a significant jump from the 10 to 15 per cent of ten years ago. With the increased reliance on telecommunications to deliver programs to the public and the influx of office automation systems to improve productivity, it would not be unreasonable to predict that, ten years from now, the telecommunications/office automation/informatics converged services will consume between 45 and 55 per cent of the G and S budget in the region.

Decision-making
levels

Because it is consuming more of the budget, it is understandable that higher levels of management would wish to take part in the decision-making process. Typically, ten years ago, it was the administration officer that decided what telecommunications services were required in the region; today, most large departments have a dedicated telecommunications officer who submits proposals to the regional director and to an integrated management committee for a decision. This process is becoming more formally controlled with documented regional policies, directives and guidelines which are linked back to the national and TB policies. In years to come, we can predict that decision-making will take place at much higher levels, particularly when one considers the standardization and the interface requirements of office automation, the cost ramifications and the severe impact of an error.

Long-range planning

Inherent in the increasing costs and controls in large office automation concepts is the increasing need for long-range planning of your telecommunications requirements. Ten years ago, it was necessary to look one year ahead. Now we are looking at five years. As we are getting more dependent on large systems, with life cycle duration of seven to ten years, the planning must deal with their eventual replacement, especially if we are dealing with large capital replacement situations.

We now have terminal attachment and interconnect in some of our regions and this has definitely enhanced our ability to negotiate better prices and better services from the common carriers for local equipment. In some cases where the telco could not provide the prescribed service, we have exercised our new option to go out and to competitively procure switching equipment. Full competition, if it materializes, will present some difficult networking options for us, and the cost of recovering costs on an equitable basis for such eventualities could become a burdensome overhead.

Competition,
more resources

Using the competitive process requires more resources. Once the equipment is procured, it must be taken onto inventory. Just like any other piece of government-owned equipment, it has to be accounted for at least once a year. It has to be maintained; spare parts may be required. Its book value has to be depreciated over its lifetime and then it has to be disposed of. This process will cost more and more in resources if the carriers in the future cannot provide the required services at a competitive price. Also, we could expect more materiel management overheads. As the planning process becomes more sophisticated, there is a growing requirement for more detailed equipment inventories and facilities costs, whether owned or not.

As telecommunications systems have become more complex and telecommunications staff have had to deal with the competitive procurement process and the convergence of technologies, the level of the telecommunications expertise to deal with these situations has increased. Today, as we are looking for new staff, we tend to look for telecommunications officers, analysts, and consultants with a university degree in sciences or a degree from a technical college. The level of required expertise will continue to grow.

More resources
for training

Many of our current telecom staff must be brought up to date before automation systems can be implemented. Most telecommunications officers are weak on the EDP side. Technology will continue to change at a mind-boggling rate. More and more resources will have to be allocated to training. The Government of Canada will have to develop its own resources. More and more non-telecommunications oriented senior executive management will have to be trained or made aware, so they can deal with decision-making aspects and the functionality aspects of office automation.

Distribution of
employees

The distribution of employees has changed. Office automation has increased the number of white-collar workers, including managers. This trend leads us to anticipate a greater demand for more sophisticated work station equipment and more potential data network utilization than we have experienced to date.

Evolution of
management

With these trends in mind, let's examine the management process starting from the past.

Remember how it used to be? Everyone had a single or multi-line telephone on their desk. Most of us had to share one line with two or three others. There was no such thing as call forward, speed call or any of the other fancy bells and whistles that are now available. Maintenance of the phones was carried out by the telephone company, and management of your system, such as it was, was carried out, usually

part-time, by someone in your organization. Most, if not all, of the management was carried out by the carriers on your behalf, without your really knowing what was going on or what could be done to improve the service. As long as we had a telephone that worked, we were happy.

Remember the delays in making long distance calls? Operators not answering for two or three minutes, then finding out that the circuits were busy? Getting bills from GTA with no call details? Having to accept what was billed without knowing who made the calls or when the calls were made?

Training was carried out on the job! No formal training was required as a prerequisite for the position of managing a department's telecommunications needs, and none was available. Departments relied solely on the expertise of the carriers. The only person required was someone to act as a liaison between carrier and department.

The requirement now for faster, more efficient, more accurate communications within the government has forced us to quickly correct and update our telecommunications. We have come a long way over the past couple of years, but are still a long way from managing our telecommunications efficiently, so that the users get the best equipment available to do their jobs most effectively and the government gets the best value for its dollar.

To achieve this, here is how we can plan and manage our telecommunications processes at the local and regional levels:

Telecommunications management processes

- . First establish a telecommunications department strategy and policy guidelines. Remember that the carriers have let us down - they did not plan.
- . Maintain existing systems.
- . Short term planning (1-6 months) - local move or adding one or two new locals.
- . Medium range planning (6-18 months) - major moves within the organization but within the confines of your building.
- . Long range planning (18-60 months) - requirement for new PBX or tying into new GTA shared services.
- . Acquiring equipment and services.

- . Installation, planning and management.
- . Grade of service and cost management - is it acceptable to your users? Are you getting the best value for your dollars?

Establish a departmental telecommunications strategy

- . Assess the importance of telecommunications to your department.
- . What does telecommunications in your department consist of - voice, data, radio, video?
- . Do you want to interconnect them?
- . What do telecommunications costs represent as a percentage of total budget?
- . What is the executive perception of the role of telecommunications?
 - . No opinion/don't know
 - . Of some value
 - . Absolutely vital

If managers do not perceive the need for telecommunications, it is up to you, the telecommunications coordinators and officers, to educate them, to prove to them that it is vital to your organization to do your job more effectively.

- . Once you have gone this far into your strategy make sure you organize everything, especially management.
- . In concert with medium- and long-range planning results, develop a strategy which becomes a blueprint for planning of future requirements. There are publications available. GTA has the Telecommunications Management Manual, GTA circulars and departmental circulars. Everything you need to know is in that manual. You must get that information.
- . Develop a telecommunications policy addressing such issues as:
 - . Interface with Government Telecommunications Agency;
 - . Ordering procedures;
 - . Authorization levels - i.e., who can sign; do you have the authority?

- . Lead times between request and implementation;
Did you allow sufficient time?
- . Accountability guidelines for both equipment and usage.
- . Premium equipment entitlements (e.g. who is entitled to speakerphones, auto dialers, proprietary instruments?).
- . Appeal procedures: Once you have the equipment can you go back to the carrier?
- . Trouble reporting procedures: Try to centralize this, so that the reporting is done by one person.
- . Training: Who can do it - you? The carrier? Go out to contract? What about on-going training?
- . How do telecommunications presently contribute to productivity? Does it help? Do we need more phones, more features? Identify how existing systems (e.g. system features, message systems, teleconferencing, etc.) maximize productivity.
- . Assess present control structure. Make sure you are clear on who has the authority. Is control distributed or centralized? Determine the most appropriate structure considering such things as:
 - . If distributed:
Is each division responsible for its own, or are you the sole contact for productivity performance?
Is headquarters responsive to regional needs?
 - . If centralized:
Headquarters has respected expertise and mandate from senior management; value in service and cost benefits are proven.
- . Assess short- and long-term departmental goals:
 - . New programs or expansion and the impact on telecommunications: make sure that you are informed of any future expansion of staff.
 - . Time frames for implementation, duration of program: allow sufficient time to plan this, get the orders in.
 - . Impact of media on volumes: will office automation increase data flow?

- . Assess the impact of technology and common carrier services:
 - . In what position are we today - installed vs. available (e.g. Step-by-Step installed)?
 - . Do we need this new technology and when should we embrace it?
 - . What is the regulatory environment in our areas of operation? Are we in a province where interconnect does not work very well? Will it have major or minor impact on existing and future directions?
 - . Central Agency Guidelines: Are you centralized or decentralized?

Operating

Maintaining existing systems

- . The day-to-day routine of maintaining existing systems requires two primary attributes:
 - . Organization: Are you the only one? Who does it?
 - . Documentation: Put everything you do on paper. Document everything for possible audit considerations.
- . Activities include:
 - . Assessing user requests to determine needs;
 - . Designing a solution, adhering to departmental policy guidelines;
 - . Preparing orders to suppliers - include floor plans;
 - . Following-up on orders when they are due, making sure supplier is there on time;
 - . Maintaining accurate records for inventory and billing purposes;
 - . Ensuring billing is accurate for both equipment and usage;

- . Tracking monthly costs to ensure they are within budget, or to find out why you are over budget. (There are various ways to do that. If it is a GTA-provided system, you get call detail information. If it is your own system, look at putting in a station detail recording mechanism.)
- . Ensuring usage sensitive and/or private line facilities are being used cost-effectively and reconfiguring if they are not;
- . Training both new and existing personnel as well as telecommunications staff; this is very important;
- . Handling all trouble reports, reporting, following-up and tracking; and
- . Documenting everything.

I would like to describe how we do business in the regions; how the department interfaces with GTA.

Contact with PWC

What we try to do very conscientiously is interface with PWC. We like to know in advance if there are local moves or new buildings being built so that we can plan for these. We have quarterly meetings and we get feedback. We have consultants from GTA who visit departments to find out if everything is up to scratch. GTA assesses the needs and tries to identify the common services which might meet them.

Meetings

GTA consultants

Meanwhile, some user needs are translated into requirements for voice, data and directory facilities. When the time comes, we match the requirements against the services provided by GTA to see if the latter are cost effective, available and, in effect, if they really meet those needs. (Sometimes we have to interface with SSC in the region to develop regional standing offers and to develop our own competitive process for goods and services.) If so, we take GTA services. If not, we have to go for a departmental service. If there are no customized services, we must put in our own dedicated service, go to the common carrier ourselves, or we are forced into some type of terminal attachment or interconnect situation.

Acquiring equipment and services

If GTA cannot provide the service, you might have to go your own route and acquire your own equipment and your own services. If you have the local authority, here are the steps to follow.

- . Day-to-day procedures are part of existing system maintenance.
- . Major acquisitions require specific procedures - determine whether a Request for Proposal (RFP) or a Request for Quotation (RFQ) is appropriate.

RFP

Request for Proposal (RFP)

- . Usually issued to determine what is available from which vendors.
- . Specific requirement details are normally not known.
- . Vendors are given latitude to quote alternatives.
- . Prices quoted are usually "order of magnitude" and are subject to adjustments.

RFQ

Request for Quotation (RFQ)

- . Usually issued to obtain a firm price for a system.
- . Specific requirement details are provided in the RFQ.
- . Vendors may or may not be given latitude to quote alternatives.
- . Prices quoted are accurate for specification and are not normally subject to change within a prescribed period (e.g. 30 - 90 days).
- . Develop evaluation criteria to compare quotations:
 - . Responsiveness to intent of RFP/RFQ
 - . Completeness
 - . Soundness of installation plan
 - . Vendor track record
 - . Cost
- . Are you going to interconnect or are you going to go to the carriers? Depending upon the nature of the department, you might not be able to interconnect, even if it might be to the government's benefit to get a better price for the system. Because of the nature of the business we are in, we cannot afford to have our systems go down.

- . Involve your purchasing department for assistance in the RFP/RFQ preparation.
- . Involve your legal department for contract negotiation.

The competition

Who is going to provide these telecommunications links?

- . The common carrier
- . The intelligent PBX
- . The local area network
- . The value-added carrier
- . The satellite common carrier
- . All of the above
- . Any combination

The key to our success for the management of telecommunications lies in the methods which we have developed to solve our present problems. We just have to take it one step further. If we look at our recent project to modernize the government telephone network in the Pacific Region, GTA and user departments had to form a working group, a regional TAC committee, if you will, to analyze our needs, set priorities and develop short- and medium-range plans. The key to success is to continue this process but, at the same time, to improve the long-range as well as the short- and medium-range planning. I believe that we can predict what our needs are going to be; the functionality of the shared telecommunications services that we are going to require; where we are going to need these services; that we can set priorities in satisfying our needs and that we can estimate the cost of implementing these plans and the resources required to carry them out to maintain or operate the shared services. I do not think we can have good national long-range plans if we do not have good regional long-range plans.

Let us look at how GTA shared services are introduced to a new geographical location and how they might evolve in the next five years. Typically, a new geographic location is already being served by GTA through InWATS and OutWATS from another large consolidation. Once enough traffic to merit a new service has been identified to and from that location, GTA starts to put in foreign exchange lines, either one-way or two-way. Both of these services are expensive because they are operator-intensive to take inward calls. The next step is to put in some form of intercity concentrator - a PABX, a Centrex I or II type service - and convert the Foreign Exchange lines (FXs) to two-way trunks; this also provides local shared service station equipment so that users can have access to the tie trunks, and some kind of call tracking device to measure the usage on the intercity

network. What we have done in Pacific Region is modernize what antiquated switches that were already there. We were able to put an integrated business service package on the inter-city concentrator, we were able to put in automatic route selection, uniform dialing plan, tandeming within the region, direct inward system access; we are capable of doing remote call forwarding to alleviate some of the high costs associated with 800 Service and we can expand our area of coverage through the application of remote line modules.

This takes us up to the present. In the next four to five years, we will see more integrated voice and data added on to our switches, digital trunks and digital terminals. Once we achieve that, the next progression will be to offer office automation through integrated office service packages; there will be a requirement to integrate a shared data network along with the switch. The next step would be to put in some form of integrated services network, and we will be able to allocate and control in a dynamic fashion the allocation of bandwidth.

In Pacific Region, we have at least 15 locations at the district office level which are still back at the WATS stage. In fact, Whitehorse, the territorial capital of the Yukon, does not even have WATS service to Vancouver. Obviously, our priorities have to be to cater to the enhancement of services at our major concentration points of users, but we also have an obligation to look after our district offices, and we must not forget that the functionality of office automation will dictate that any element of a departmental organization must be included, regardless of how remote it is.

Now that we know the types of work activity that we could be involved in over the next several years, let us see how a long-range plan, that identifies needs and proposes implementations, might be developed in the regions.

Vancouver already has an integrated business package and, over the next few years, we are going to put integrated voice and data on the switch, putting in some type of office service, a shared data network capability integrating our network back to Ottawa and over to Victoria.

In Prince-George, in the next couple of years, we will put in some kind of inter-city concentrator and, over the years, build up the packages.

By 1987, we could install a Remote Line Module (RLM) over to North Vancouver. As we go through all our potential locations in the region and begin to build up a game plan, then we can start identifying, year by year, the costs. If we can come up with approximate procurement costs, if we can put a price tag on the project team required to do the implementation, we should be able to identify the total implementation costs, as well as the incremental increase in the cost of running the system. We should be able to identify any increase required in terms of person-years to maintain this expansion, and we had better try to track the actual savings versus the forecasted savings as we go along.

We have dealt adequately with the present, but everybody is talking about the office of the future.

Office of the future

What is it? People's imaginations have gone wild. Anything that can be even remotely associated with information processing or flow - new ways of doing virtually every office function - could be considered.

Why is it?

- . To improve office worker productivity;
- . To improve effectiveness and efficiency;
- . To improve information retrieval and transmittal;
- . To improve service to customers;
- . To improve management decisions;
- . To increase profitability, and this translates into saving money.

What is available today?

- . Word processors
- . Micrographic devices
- . Text processors
- . Graphics terminals
- . Communicating photocopiers
- . Facsimile terminals

- . Integrated display telephones
- . Optical card readers
- . Voice mail systems
- . Teleconferencing
- . Electronic mail - public/private

What is in store for the future?

- . Integration of the preceding technologies into complementary systems;
- . Much greater use of telecommunications as the link tying these technologies.

In summary, the only way that we can achieve the required level of technology to meet the ever-expanding needs of telecommunications is by interdepartmental long-range planning in the regions. Interdepartmental because the ever-expanding networks developed by individual departments should be addressed nationally or, at least, regionally to avoid duplication. We need to look at integrating voice and data networks, high-speed data transfer and expanded local area networks. We must realize the importance of our new role as telecommunications officers in this rapidly expanding area. We must recognize the need for more specialized training so that we can develop and implement viable services for our customers. It is also vitally important to keep our senior management informed; this is the only way of keeping them aware of the possible need to allocate additional resources for telecommunications management. More regional standing offers for maintenance, installation and equipment are required, to ensure greater value and quality for every dollar spent. It is the responsibility of the departmental telecommunications officers to ensure that users receive the best possible equipment to do their jobs faster and more efficiently.



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