

## COORDINATION OF THE CANADIAN REMOTE SENSING PROGRAM

A background paper for discussion at the  
Canadian Advisory Committee on Remote Sensing  
April 8-11, 1980, Arnprior

by

J. Thie, Lands Directorate, Environment Canada

Before we can start reorganizing the Canadian Advisory Committee on Remote Sensing, we should be able to answer the question:

(1) What should be the objectives of CACRS?

This question cannot be adequately answered until we have addressed the following questions:

- (2) What is the role of CACRS in the National Remote Sensing Program?
- (3) What is the National Remote Sensing Program, what are its objectives?
- (4) What or who does the Remote Sensing Program serve?

In the following discussion I will try to answer those questions in reverse order, trying to avoid any preconceived ideas about CACRS that I may have.

### WHAT OR WHO DOES REMOTE SENSING SERVE?

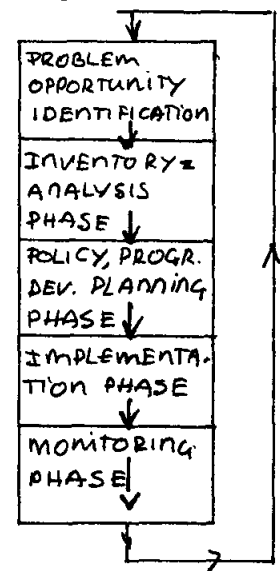
Remote Sensing essentially is in the information supply business. This information primarily serves the resource management process. Secondly as a spin-off benefit, remote sensing provides opportunities for industrial and technological development.

Resource Management in its broadest sense would include natural as well as human resources. However, benefits of remote sensing mainly relate to the physical environment (natural and man-made) and man's interactions with it.

Resource Management includes all functions related to the management of resource, from the problem/opportunity definition phase, to the inventory phase, policy development and planning, and implementation and monitoring phases. Remote Sensing, virtually by definition contributes directly to the inventory and monitoring functions.

Resource Management is carried out by all levels of government, (federal, provincial, regional, local) the public (through public involvement and elections) and many private organizations/industries. The actual or potential user therefore includes all government, public and private organizations (including universities) which deal with supply of information on the bio-physical environment.

### RESOURCE MANAGEMENT PROCESS



To achieve effective use of remote sensing for resource management, practice has shown that considerable technological developments are required in sensors, platforms, receiving stations and data handling and analysis systems. The technological and industrial development created through use or developing use of remote sensing technology is a very important part of remote sensing for resource management. Particularly since this technology can be sold and distributed to improve resource information in Canada and abroad. Through its sales it could support further research and development.

WHAT IS THE NATIONAL REMOTE SENSING PROGRAM, WHAT ARE ITS OBJECTIVES?

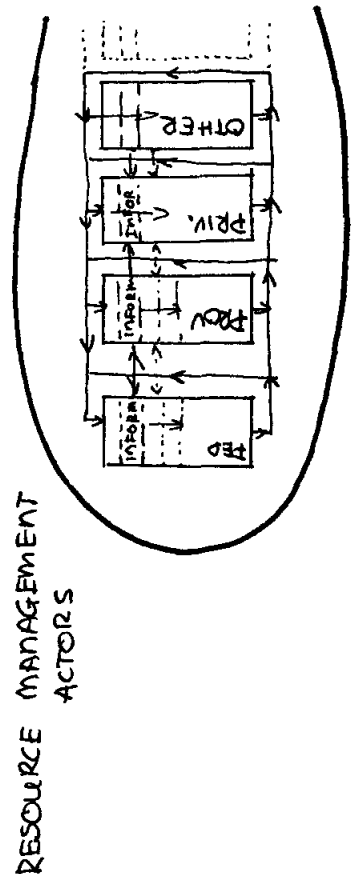
The national program (in my view) consists of all activities related to R&D and use of remote sensing technology for resource management or for sales as industrial products or services by government (federal, provincial, local) private industry, universities and private individuals. Since remote sensing essentially is a tool, the objectives for a program should relate to the use of that tool and it's function i.e. the provision of information on the bio-physical environment. The primary user was identified as the resource management process with as spin-off sales of industrial products and services.

So, objectives could be stated as:

- (1) to support effective management of Canada's resources and environment by assisting in the provision of accurate and timely information on the state of the resources and environment by,
  - (a) increasing the use of existing information technology;
  - (b) sales and export of existing technology;
  - (c) carrying out R&D in new technology with and without specific applications in mind;
  - (d) test, demonstrate and transfer of new technology;

Technology transfer activities play a key role since they form a part of sub-objectives a, b and d.

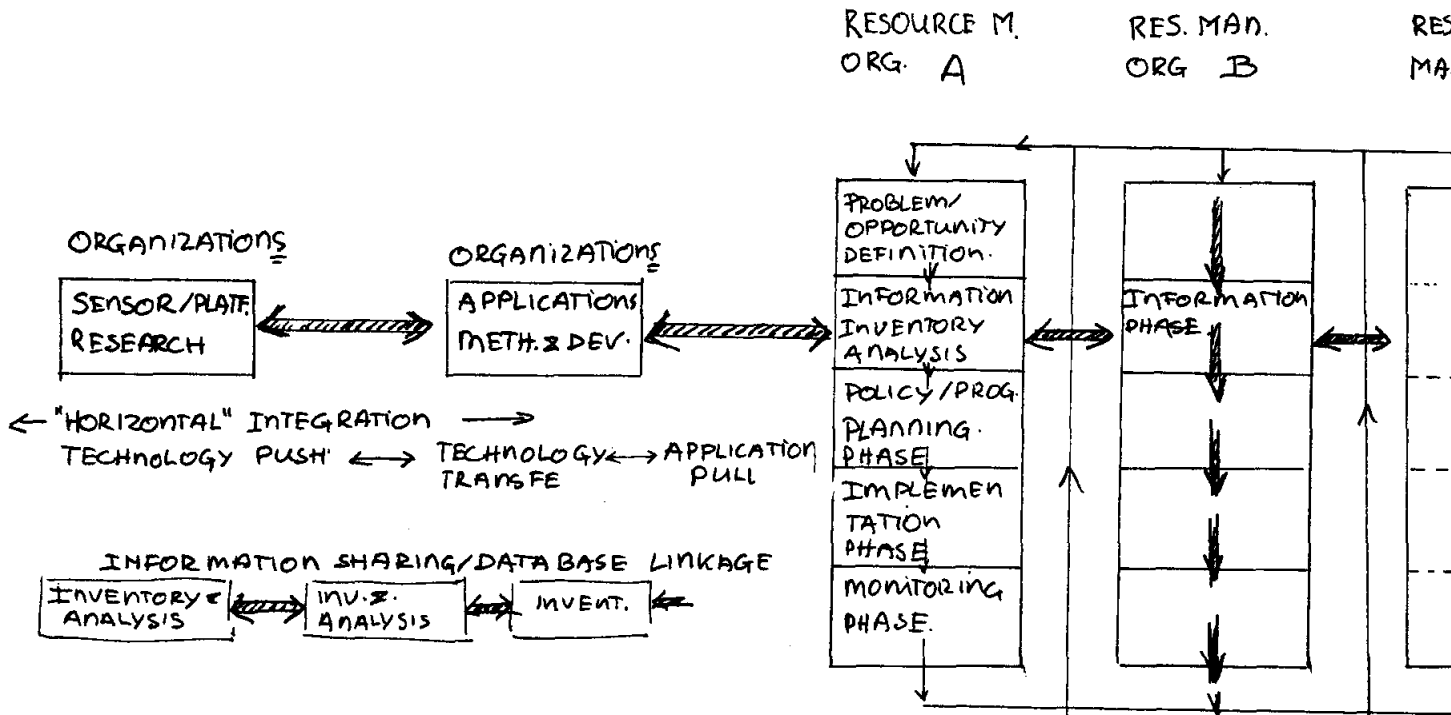
The (actual and potential) users of the remote sensing tools occur at all levels of management (national, provincial, regional and local). As well Remote R&D is carried out in a wide range of organizations. This creates a danger of duplication of effort in R&D and problems with information exchange and particularly technology transfer. Added to this is the fact that R&D in remote sensing, even in applications development is often carried out by institutions outside the



influence sphere (control) of the "users". Sensor development takes place at universities and specialized, federal/provincial and private research institutions. Even applications development work has usually no strong formal ties with the user community i.e. CCRS, provincial centres and are usually physically separated rather than integrated.

Within the resource management organizations, functions are well integrated (usually). The inventory or information gathering function is essential to the process. The weakest link in the situation are those between Research organizations, Applications Development units and the real "doers" (information specialists, inventory specialists) in the resource management organization.

← "VERTICAL" INTEGR.



THIS IS OBVIOUSLY A VERY GROSS SIMPLIFICATION OF REALITY. RES. MAN. ORGANIZATIONS OFTEN HAVE RESEARCH UNIT AS WELL, BUT GENERALLY THESE TEND TO BE SMALL AND MAY NOT GIVE MUCH EMPHASIS TO REMOTE SENSING.

This link is so weak because there is no organizational bridge and no immediate functional need.

To achieve its objectives, the National Remote Sensing program requires mechanisms which would provide for such integration of remote sensing (R&D and information gathering activities). This can be achieved through an organized form of exchange, technical and organizational coordination at probably many levels (national, provincial, regional).

← "HORIZONTAL"

WHAT SHOULD BE THE ROLE AND OBJECTIVES OF CACRS?

In the field of Remote Sensing most activities can be placed in a simple matrix which combines

- A (SENSORS/PLATFORMS) (APPLICATIONS METHOD) (RESOURCE MAN  
INFORMATION SYST.)
- B (FEDERAL) (PROVINCIAL) (PRIVATE IND.) (UNIVERSITY)

Though we want to achieve particularly effective integration of activities under A, the only way that this can be achieved is through the proper coordination and integration of the controlling organizations under B. It seems therefore essential to bring actors of B together to achieve integration of A. This should be done through a national coordinating committee like CACRS. The objective of this Committee would be:

To coordinate remote sensing activities, develop a national strategy and work plans to increase the use and sales of existing technology and develop appropriate new technology by assuring information exchange and technical cooperation between (sensor research), (applications development) and (resource management information activity groups).

The membership of CACRS and its organization and operation should reflect its objectives.

Membership: Each of the provinces and territories should be represented (12); the major federal agencies with a role in remote sensing (10) universities (5), private industry (5-10).

However the size of this Committee as well as the type of representation (likely middle and senior managers rather than scientist or users) will not make it an effective group to achieve the integration of remote sensing R&D and the user community. This type of coordination should be achieved more at a working level through PERMANENT SUB-COMMITTEES on:

- 1) Land Resource Management Information
- 2) Water Resource Management Information
- 3) Atmospheric Information
- 4) Industrial Development and Services

Though technology transfer essentially is a part of all 4, it is such an important part of the remote sensing program that it may warrant a sub-committee. Also the urban environment (where 80% of all Canadians live) may not get the attention it needs and a sub-committee should be considered:

- 5) Technology Transfer
- 6) Urban Environment

Membership of each sub-committee could be partly drawn from the main body of CACRS (to reflect organizational interest) but should emphasize selected specialists in the R&D and Resource Management Information Systems (user). The chairperson would be appointed (by CACRS) for a period of 2-3 years and would be expected to devote 50-100% of his time on this task. It is recommended that executive/technical exchange arrangements are made, by which the chairpersons would work at CCRS facilities, and, are supported by a special secretariat. The CCRS would provide a budget and adequate secretariat support for the operation of sub-committees. The secretariat would include typing support, but most important scientific support seconded for long term assignments. The general objectives of each sub-committee are identical to those of CACRS, but could be modified as appropriate by CACRS. In general they should emphasize information exchange, technical coordination between R&D, Application and User groups to increase the use and sales of existing technology and develop appropriate new technology. Sub-committees would develop, update and implement a 3 year work program which would outline present status in their fields, problems and opportunities and activities planned to address those problems and opportunities. Work plans would be implemented through:

- (1) Workshops to address problems/opportunities.
- (2) If workshops have identified the need, working groups or task forces would be established for the duration of the problem or opportunity.
- (3) Pilot projects would be organized on working group recommendation.

Before working groups would be established the need or opportunities would be explored through workshops. Topical workshops would, in addition to identifying needs, describe a work approach by which those needs can be satisfied. The sub-committee would then consider the recommendations, define a term of reference and organize a working group or task force.

It is quite likely that a large number of working groups would be formed, probably in areas that would reflect the various resource disciplines (Forestry, Agriculture, Geology, etc.) but each of those groups would have specific terms of reference addressing a particular problem or opportunity, within a set time frame.

FINANCIAL CONSIDERATIONS

One of the problems of the present operation of CACRS and its working group is that no chairperson can dedicate a significant amount of his/her time to the task. However, problems and opportunities associated with remote sensing are such that a significant effort is required to coordinate organizational activities and integrate the technology push and user pull.

The resources in man-years, salaries and budgets required to succeed reasonably well are not insignificant. They may be small compared to the benefits derived, but in a time of restraint they are hard to get. CACRS should have a distinct budget to operate. The resources for this budget (MY, salaries and O&M) should come from federal and provincial governments. At present support is provided on an ad hoc basis by individuals participating in working groups. Only small amounts of time and resources are devoted to the operation of working groups. To get results far more significant contribution will have to be made by provincial, federal and other organizations. This could be done through full-time secondments of chairpersons and secretariat staff to CACRS, or through the establishment of Federal-Provincial Agreements.

OBJECTIVES: ORGANIZATIONAL COORINATION (NOT ONLY ADVICE); CHAIRPERSON - CCRS ; MEMBERS FROM PROVINCIAL AGENCIES ; FEDERAL DEPTS, PRIVATE INDUSTRY, UNIVER-SITIES, PLUS CHAIR PERSONS OF SUB-COMMIT.

CACRS SHOULD FIRST OF ALL COORDINATE. SECONDLY IT SHOULD PROVIDE ADVICE TO IACRS AS WELL AS ALL OTHER R.S. MANAGEMENT BODIES AT PROV. UNIVERSITY LEVEL

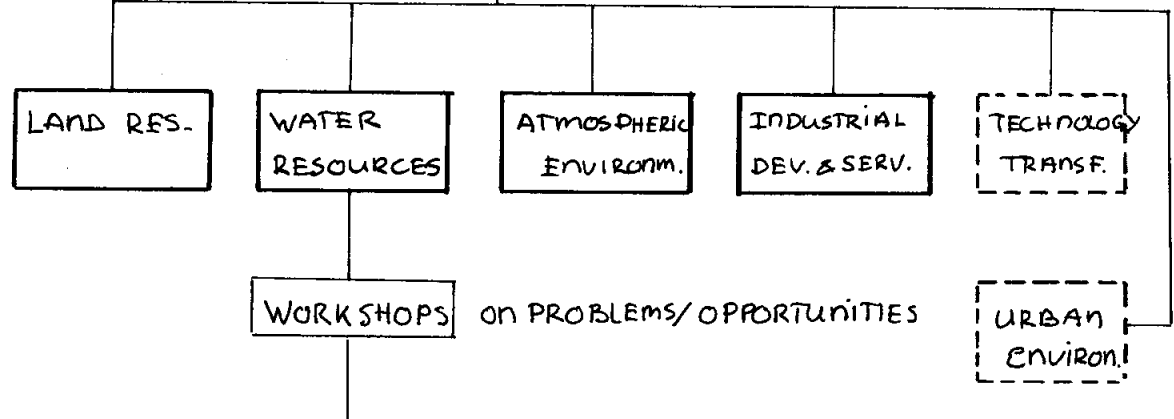
PERMANENT SECRETARIAT WITH SEPARATE BUDGET (FED/PROV. TO SUPPORT CACRS & SUBCOMMITTEES. CHAIR PERSONS OF CACRS & SUBCOMMITTEES ARE PART OF SECRETARIAT. ALSO LONG TERM SECONDED CCRS SCIENTIFIC & CLERICAL STAFF PROPOSED THAT CHAIR PERSONS ARE PHYSICALLY LOCATED AT THE SECRETARIAT FOR 2 YEARS THROUGH INTERCHANGE PROGRAMS

CHAIRMAN WOULD BE APPOINTED FOR 2-3 years. full time - 1/2 TIME ASSIGNM. OBJECTIVE: TO PROVIDE TECHNICAL COORD. BETWEEN R&D, APPLICATIONS DEV. & USERS. TO INCREASE USE OF R.S AND DEVELOP APPROPRIATE NEW TECHNOLOGY. PREPARE & IMPLEMENT 3 YEAR WORK PLAN. IDENTIFY PROBLEMS/OPPORTUNITIES ORGANIZE WORKSHOPS IF RECOMMENDED SET UP TOPICAL WORKING GROUPS WITH SPECIFIC TERMS OF REFERENCE AND LIMITED LIFE SPAN. ORGANIZE PILOT STUDIES/PROJECTS.

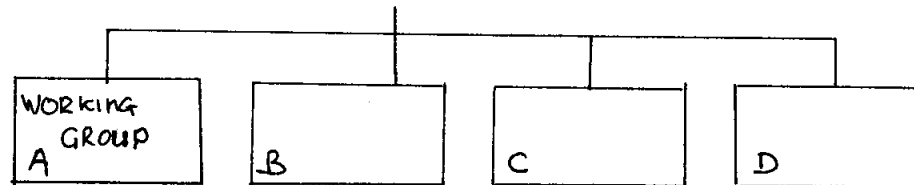
CANADIAN COORD. COMM. ON. REMOTE SENSING [CACRS]

SECRETARIAT

PERMANENT SUB-COMMITTEES



IF RECOMMENDED BY WORKSHOPS ESTABLISH WORKING GROUPS WITH SPECIFIC TERMS OF REFERENCE AND LIMITED DURATION.



TECHNICAL/ORGANIZATIONAL PROBLEM SOLVING; MEMBERSHIP AS REQUIRED BY PROBLEM / OPPORTUNITY. AFTER 3-YEARS OF OPERATION WORKING GROUPS WOULD HAVE TO REJUSTIFY EXISTANCE.