

A GUIDE TO
PERFORMANCE MEASUREMENTS
AND
PROGRAM EVALUATION
IN
M.O.S.S.T.

August 1979

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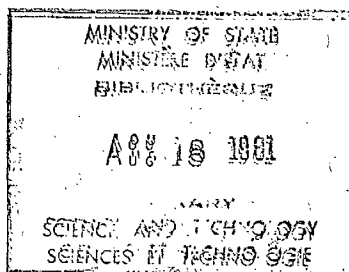


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I. BACKGROUND

1. Introduction

The development of a comprehensive and relevant Performance Measurement and Program Evaluation System (PM&PE) for MOSST requires that we define the key terms, explain their relevance to the Ministry's requirements, develop a series of performance indicators which will measure our degree of success and, finally, design a flexible and pragmatic approach which will be compatible with our Project Management Committee (PMC) structure and which will produce useful management information.

Before embarking on these topics, it would be useful to review the activities and initiatives of the Auditor General over the past few years and the more recently established role of the Comptroller General. This historical perspective will give us a better understanding of the requirement for a PM&PE system for MOSST and of some of the particular difficulties which we shall face in attempting implementation.

2. Studies of Procedures in Cost-Effectiveness (SPICE)

On August 1, 1977 the new Auditor General's Act was promulgated, requiring the Auditor General to report to Parliament in cases where:

"7 (2) (d) money has been expended without due regard to economy or efficiency;

or

(e) satisfactory procedures have not been established to measure and report the effectiveness of programs, where such procedures could appropriately and reasonably be implemented."

Most of the Auditor General's 1977/78 report dealt with the results of his Studies of Procedures in Cost-Effectiveness (SPICE). In it he concluded:

"There is, in my opinion, widespread lack of due regard for economy and efficiency in the operation of the Government and inadequate attention to determining whether programs costing millions of dollars are accomplishing what Parliament intended."

The Auditor General's concern is to ensure that objectives are being achieved (effectiveness) and that they are being achieved at minimum cost (efficiency).

In the particular area of performance measurement, the Auditor General concluded in his 1977/78 report:

"Most of the performance measurement systems reviewed did not play an important part in the program management process. They generally did not satisfy the information needs of the operating manager who must make the day-to-day decisions required to control productivity.

"A review of 23 programs in 18 departments has disclosed few successful attempts to evaluate the effectiveness of programs. Departments and agencies should clearly specify program objectives and effects, identify evaluable outcomes and measure those evaluable outcomes as precisely as possible."

3. MOSST's Proposal for Internal Audit and PM&PE

Among the Auditor General's recommendations was a comprehensive, integrated and coordinated internal auditing function incorporating efficiency and effectiveness evaluation and led by a thoroughly competent professional in each department, responsible directly to the Deputy Head. The Audit Services Bureau of DSS has developed an audit plan for MOSST which has been accepted by the Executive Committee.

MOSST's comprehensive audit should not attempt directly to measure the efficiency or effectiveness of our programs but rather should limit itself to evaluating the success which we achieve with our PM&PE system. It will focus on whether our performance measurement program is actually being used by senior management in day-to-day decision-making to improve the efficiency and effectiveness of our programs.

PMC will provide us with the setting to meet this criterion but we shall have to improve the process in the following key areas:

- i) clear identification of objectives, evaluable outputs and measurement criteria (i.e. performance indicators) prior to approval of projects or continuing activities;
- ii) written evaluation based on (i) by the initiator of the project or continuing activity as part of the project completion report or annual report on continuing activities;

- iii) a discussion of this evaluation by the full PMC with conclusions regarding follow-up activities and a full recording of this in the PMC minutes.

4. The Role of the Comptroller General

The Office of the Comptroller General was established with the basic responsibility of improving financial management in the Public Service. Financial management is the responsibility of every manager, not just financial officers, and can be defined as the efficient use of resources in the achievement of program objectives.

In order to determine the state of financial management in departments, the Comptroller General has instituted a survey entitled "Improvement in Management Practices and Controls (IMPAC)". Based on this survey, the Comptroller General will develop an action plan and time-table for the improvement of financial management practices.

In the meantime, the Efficiency Evaluation Branch of the Comptroller General's Office has already issued policy documents requiring the establishment of PM&PE programs in all departments prior to 1980.

5. MOSST's View: Improved Financial Management

These Internal Audit and PM&PE programs are being introduced because, with them, the Ministry can become more effective and efficient in achieving its objectives. In other words, our policies and advice will be more effective in developing the use of science and technology in support of national goals. They can also assist in the development of our annual work plan and in the substantiation of resource requirements in the context of the annual planning, programming and budgetary cycle.

It is, therefore, important that our PM&PE systems be used by the Ministry's senior management as part of the decision-making process and that improvements in efficiency and effectiveness are actually achieved, measured and recorded as a result of the PM&PE system.

6. Application of PM&PE to MOSST

Because our Ministry's role is to a large degree subjective and not quantifiable, it does not lend itself easily to the application of PM&PE. In order to design a vehicle which will permit a reasonably simple application, it is proposed to use PMC projects and continuing activities* as a basis for our evaluations. Although this is a restrictive definition of our policy development activities and the evaluation link between PMC projects and Ministry programs may be difficult to make, it is considered necessary to ensure a manageable application of PM&PE within the Ministry. With practice, the application of PM&PE will develop to include a broader concept of our progress and management's suggestions in this regard will be appreciated. The following sections of this document provide a development of this application.

Section II provides an explanation of performance measurement by defining the key terms and illustrating their application within our Ministry.

Section III develops some performance indicators for performance measurement. These are criteria which managers can use to determine whether we are achieving our objectives and whether we are doing it efficiently.

Section IV develops a relationship between performance measurement and program evaluation. It also attempts to illustrate the linkage between project-related objectives (Section III) and higher level objectives related to policies, policy instruments and their impact on the health of science and technology.

Section V describes the actual PM&PE system for MOSST and details the action which project directors and the PMC must take.

* The use of the term "PMC Project" throughout this paper is intended to refer also to PMC continuing activities.

II. DEFINITIONS

1. Effectiveness

In its Circular dated July 22, 1976 the Treasury Board Secretariat required all departments and agencies to -

"... wherever feasible, regularly measure the on-going performance of their operations in terms of the effectiveness with which their objectives are being achieved and the efficiency with which they are being administered."

This policy statement implies a series of technical terms and definitions which are listed in Appendix A to this section. It is important to specify clearly the distinctions between each term and its relevance to the application of PM&PE in MOSST.

Effectiveness is defined as the extent to which program objectives are achieved.

Program is defined as a group of related activities (e.g. an action plan) designed to achieve specific objectives and, for our purposes, a program will refer to a PMC project or to a continuing activity.

An objective refers to the effect(s) which a program is intended to have ⁽¹⁾. Therefore, effectiveness can be re-defined as the extent to which a PMC project or a continuing activity has the effects intended.

Program outputs are the direct products of the program which contribute to the program objectives. In our case, a program output is often a report or document resulting from a project or continuing activity; the program objective is normally to provide advice and exert influence or to acquire information which can be used for this purpose. Program objectives can lead to higher level objectives such as policy, legislation, concrete scientific or administrative programs which support science and eventually lead to improved management or support for science and technology and a favourable economic impact. For the purposes of performance measurement, however, priority

(1) Goals normally refer to a more specific or quantitative measurement of the program effects. In this section of the paper, this distinction is not highlighted.

should be placed on program outputs and the first level of program objectives, i.e. the advice provided and influence exerted. Program Evaluation attempts to determine whether the program objective was worthwhile. In order to reach this conclusion, it must trace the impact of the immediate program objective on the higher level objectives. This aspect of Program Evaluation will be looked at in Section IV.

Performance measurement criteria or assessment criteria are referred to as performance indicators and are defined as selected quantifiable or, in our case, identifiable characteristics or results usually 'indicate' the achievement of all or part of an output or objective and therefore serve as indicators of the program's effectiveness.

It is usually too complicated to identify and measure all characteristics or results relating to the achievement of a program's outputs or objectives; therefore a few identifiable characteristics are selected to serve as a sign of overall achievement.

In our case, all performance indicators are not likely to be quantifiable in the sense of numbers of dollars or units of output. Therefore we must also use indicators that are identifiable and which can be evaluated on the basis of a collection of informed but subjective judgements, i.e. by PMC members.

2. Efficiency

Efficiency is defined as the achievement of program objectives at minimum cost, as measured by the ratio of a program's outputs to related inputs. Program inputs are the resources utilized in the production of a program output, e.g. person-weeks, professional services contracts, travel, printing, etc. Therefore, efficiency in MOSST is measured by the ratio of the PMC project or continuing activity costs to the final report or document.

Project performance is defined as the actual resources expended in completing the project, compared to the amount indicated in the project initiation plan.)

3. Application of Efficiency to MOSST

In many organizations, the measurement of efficiency as the ratio of program outputs to related input is established for a base year, i.e. a point of reference, and measured during each successive year so as to illustrate an efficient or inefficient trend. In MOSST, the program outputs (project reports or continuing activity progress reports) are not comparable for the purposes of performance measurement. Such an illustration of efficiency would be meaningless.

In addition to the impossibility of establishing efficiency trends from project to project or from year to year, MOSST will encounter difficulty in controlling project costs. This is due to the outputs and objectives of PMC projects which tend to be open-ended. For example, it is difficult to determine whether a study of energy options should utilize two person-months over a period of one month or six person-months over a period of three months.

However, MOSST must maintain an accurate accounting of PMC project costs in order to ensure efficient management practices. Efficiency in the selection and acquisition of inputs will, of course, depend on the complexity and scope of the objectives. However, within this context, every effort must be made to minimize input costs.

SECTION II - APPENDIX ADEFINITIONS

- Program : a group of related activities designed to achieve specific objectives, i.e. PMC project or continuing activity.
- Activities : alternative or complementary means of achieving program objectives
- Program output : goods or services produced by a program and which contribute to the program objectives, i.e. reports, documents.
- Program input : resources, e.g. labour, material, services, utilized in the production of the project output.
- Objective : the effect(s) which a program is intended to achieve.
- Effectiveness : the extent to which program objectives are achieved.
- Efficiency : the achievement of program objectives at minimum cost as measured by the ratio of outputs to related inputs.
- Project performance : the actual resource utilization compared to the amount indicated in the project initiation plan.
- Clients : any of the organizations involved with S&T to which MOSST supplies advice, policy recommendations or background information: e.g. central agencies, Cabinet, Minister, other federal departments, other organizations, MOSST senior management.
- Performance indicators (measurement criteria/assessment criteria) : selected quantifiable or identifiable characteristics of a project or continuing activity report or of the impact of that report on our clients which serve as signs (indicators) that the project objectives are being met.
- performance measurement : the determination of the extent to which PMC projects and continuing activities achieve their intended effects and the extent to which this is accomplished with minimum resources.

III. PERFORMANCE INDICATORS

1. Efficiency

There are two specific performance indicators for the measurement of the efficiency of PMC projects:

- 1) The actual person-weeks and non-salary dollars utilized, compared to what was planned in the project initiation document. This is referred to as project performance. This will measure the validity of the pre-project planning more than the efficiency of the PMC project itself; however, it will serve as a good accounting control over expenditures. The explanation of variations can contribute to the maintenance of efficient management.
- 2) An analysis of resources utilized (program inputs) in terms of their contribution to the program outputs or program objectives. Which program inputs could have been eliminated or reduced without eliminating or reducing the desired program outputs or objectives?

2. Effectiveness

Performance indicators for the effectiveness of our PMC projects fall into two major categories: indicators which describe certain desirable characteristics of the project output (i.e. the project report or project document) and, secondly, indicators which constitute a direct sign of the achievement of part or all of the project objectives.

3. Effectiveness in Terms of Outputs

The desirable characteristics of project outputs can be divided into three sub-categories.

- 1) Characteristics which are normally desirable for any output, regardless of the project's objectives. Some examples are:
 - adequacy of content
 - comprehensiveness
 - creativity
 - accuracy of data
 - validity of arguments
 - impartiality
 - relevance to project objectives

2) Characteristics which relate to the effectiveness with which we deliver the project output to the client. Some examples are:

- promptness
- clarity of presentation
- conciseness
- persuasive method of presentation

3) Characteristics of the project output which relate directly to the client's concerns. Some examples are:

- relevance to our client's concerns
- timing (i.e. choice of timing which encourages client persuasion)
- practicality (i.e. usefulness of the advice to our clients)
- co-ordination of our advice with opinions and information from other sources.

These desirable characteristics of project outputs are qualities which would normally have a high correlation with the achievement of objectives. However, they are not direct signs of the achievement of objectives.

4. Effectiveness in Terms of Objectives

Performance indicators which do provide a direct indication of our achievement of objectives can also be divided into two sub-categories.

1) Indicators of the achievement of objectives which are the direct result of the project output. Some examples are:

- Increased consideration and discussion of our views.
- Establishment of new contacts and effective working relationships
- Some projects are initiated solely in order to increase our stock of intellectual capital in certain areas. Therefore the subsequent use of this information to provide advice or develop policy would be an indicator of the effectiveness of the initial project.
- Increased demand by other related organizations to co-ordinate their work with us.
- A decrease in client demand for our services in a certain area, indicating that objectives have been met and additional activities are not required at present.
- An increase in client demand for our services in new and related areas.

2) Indicators of achievement of objectives which result from client decisions and which are only indirectly related to the project output. This concept is illustrated in the flow chart of MOSST objectives (Appendix A to Section IV). Some examples of these indicators are:

- Client decisions to formulate government policy and/or legislation on the basis of our initial advice.
- Client decisions to allocate resources and to establish an administrative program as a result of our advice. Such a program would act as a policy instrument and provide the desired policy results.
- The effective establishment of policy instruments.
- The effective implementation of policy instruments.
- The measurement of the impact of policy instruments on the health of certain S&T programs. These would be quantitative measurements such as number of jobs, increase in R&D expenditures, or increase in highly qualified manpower.

The above represents only some examples of the performance indicators and categories of performance indicators which could be used to measure effectiveness in a PM&PE system. Project directors are encouraged to select the most appropriate indicators for their particular project and to add new indicators whenever possible.

IV. PROGRAM EVALUATION

1. What is Program Evaluation?

Performance measurement determines whether or not a program is achieving the effects intended (effectiveness) and whether this is done at minimum cost. Program Evaluation analyses the reasons for the effectiveness and efficiency of the program, as determined through performance measurement, and further analyses the reasons which justify the program objective itself. Program evaluation attempts to determine whether the program should be modified in some way so as to improve its effectiveness or efficiency. It also tries to determine whether the program objective is still worth pursuing in its present form or in a modified form and, if so, what priority should be assigned to it in the future. Program evaluation could result in:

- a) a clarification or modification of program objectives;
- b) changes in the ways in which programs are operated;
- c) reduction or elimination of programs or parts of programs which have become redundant or of low priority;
- d) identification of programs which have increased in priority and which should be expanded.

Program evaluation studies are one method of determining the causes of problems exposed by performance measurement. They can examine carefully the reasons for poor performance and suggest general directions for improvement. They may report on any or all areas that may be covered by performance indicators: project performance, desirable characteristics of project outputs, direct and indirect indicators of achievement of objectives.

The principal characteristic which distinguishes program evaluations from the manager's day-to-day monitoring of programs is that these in-depth reviews are conducted by persons whose objectivity and impartiality in relation to the programs are not open to question. A program evaluation will often examine issues that have not been thoroughly reviewed by the program manager, for most managers tend to be concerned primarily with day-to-day requirements to keep their program operating. Often they have difficulty finding the time to initiate a thorough review outside the context of these pressures.

In MOSST's case, this objective evaluation will be a peer review conducted by the PMC members and based on an initial evaluation report by the project director. An external source for program evaluation would be expensive, lacking in specialist knowledge and not available for the continuing evaluation of PMC projects.

2. Timing

TBS Circular dated September 30, 1977 requires that all departments and agencies evaluate their programs at least once every three to five years. However, for MOSST we recommend a program evaluation following each PMC project. Program evaluation should be part of the continuous PM&PE system because of the varied and non-repetitive nature of MOSST's activities.

3. Scope of Program Evaluation

When applying performance measurement to MOSST, we need to restrict ourselves in most cases to the basic concrete objectives such as completion of project reports, provision of advice or the influencing of decision-making by others. This is necessary in order to isolate quantifiable or at least identifiable performance indicators. However, for program evaluation we can afford to take a broader look at the effects of a project, compare them to other projects with similar objectives and evaluate them, not only in terms of the quality of advice which resulted, but also in terms of higher level objectives such as changes to science programs, levels of funding, transfer of technology and, ultimately, if possible, to the general health of S&T.

It may develop that PMC projects and continuing activities are too specific a level of aggregation at which to conduct program evaluation. It is considered necessary to restrict the definition of the Ministry's programs in order to initiate an approach to program evaluation. Once operational, we may wish to develop the application of program evaluation to cover a broader concept of the Ministry's programs and management's suggestions in this regard will be appreciated.

4. Performance Indicators for Program Evaluation

Questions which could be asked in a program evaluation for MOSST are:

- 1) Should we be making improvements to the internal management of our projects so as to utilize our resources more efficiently?
- 2) To what extent have our PMC projects achieved their objectives?
- 3) Are objectives and performance indicators being clearly described as part of the project initiation and approval process?
- 4) Are these projects generating unanticipated side effects? Are these beneficial or undesirable?
- 5) Is there a clear legislative or administrative basis for our different program (types of projects) thrusts?
- 6) Have our initiatives in certain areas conflicted with or duplicated those of other organizations?
- 7) Are our projects leading to the development of policies and to the implementation of programs which have beneficial effects on S&T and on national issues?
- 8) Have certain types of PMC projects produced greater benefits than others?
- 9) Should priorities be placed on certain types of projects and greater resources assigned? To what areas? What would be the benefits?
- 10) What would be the consequences of substantially reducing or discontinuing certain types of projects?

In summary, the performance indicators for program evaluation are similar to those used for performance measurements. The main difference is in the use which program evaluation makes of these measurements and in the broader scope of the programs and objectives which are considered.

5. Hierarchy of MOSST's Objectives

Appendix A to this section illustrates the causal chain of the Ministry's work from the various sources through the PMC activities, four levels of internal (S&T related) objectives and, finally, to the external objective.

The first level internal objectives deal mainly with developing sound advice and presenting it effectively to our clients so as to influence their decisions. If we are successful, this will result at the second level in the development of formal policies and policy instruments. However these policy instruments will be implemented at the third level by organizations other than MOSST and their success will be affected by the effectiveness with which they are administered.

These policy instruments must be evaluated in terms of their impact on the health of science programs at the fourth level. This will be measured by the adequacy of science in the area affected by the policy instrument and by the impact which it is having on national goals.

If science in this area is healthy and is contributing to national goals, then this contribution can be evaluated theoretically in terms of its contribution to our external objective: National socio-economic well-being.

Performance measurements must focus on the first and second levels of the internal objectives. Performance indicators for these levels are listed on pages 10 and 11 (Section III); these identify the direct impact of the project output on levels one or two of the objectives.

However, program evaluation requires us to trace the direct impact of the project output through to the third and fourth level objectives. In other words, in order to determine the reasons for a project's degree of efficiency and effectiveness and in order to determine whether the project's objectives, or similar objectives, are still worth pursuing, it would help to evaluate the indirect impact of that project on the implementation of policy issues, the adequacy of science in the applicable area and its application to national issues.

Summarizing the difference between performance measurement and program evaluation, we can say that:

- a) the desirable characteristics of our project documents will tell us whether our quality of product is good;
- b) Decisions by our clients to develop policies in accordance with our advice, increasing requests for our services, increasing awareness and

discussion of our views and an increasing number of contacts and effective working relationships will indicate that we are achieving our program objectives in terms of contributing to the formulation of S&T policy.

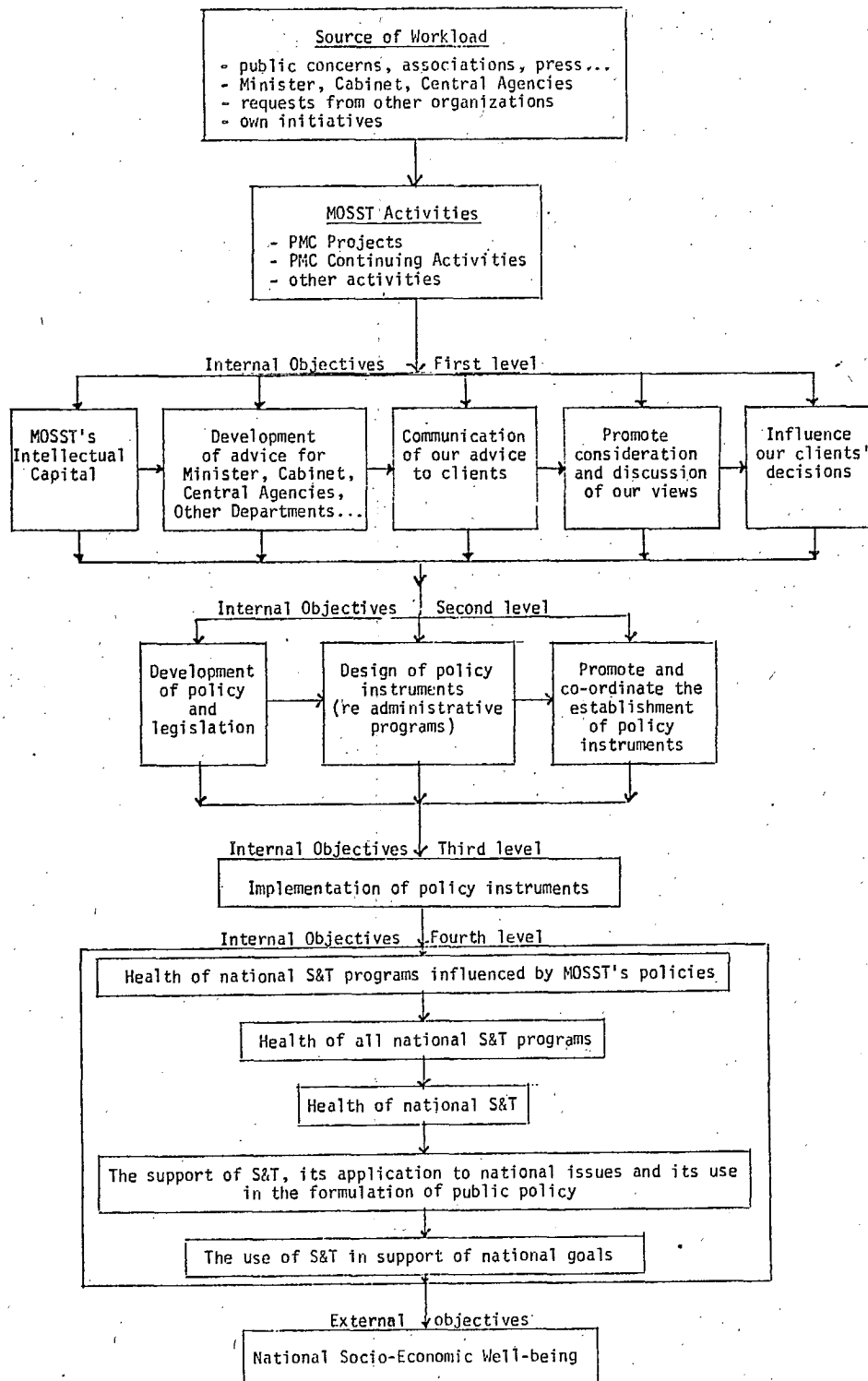
- c) However, in order to decide on the future allocation of resources in similar areas (i.e. program evaluation), we should consider the impact of these policies and policy instruments on the health of S&T (i.e. the adequacy of S&T and its effective management in terms of its application to national goals) and on the national socio-economic well-being.

At the program evaluation stage, PMC projects and continuing activities should be evaluated, not as isolated projects but in terms of their relation to the major Ministry programs.

PMC project directors are encouraged to comment on the potential impact of their project outputs on as many levels of objectives as is feasible. This will enable us to perform program evaluation on a continuing basis and will encourage the PMC to focus on the long-range impact of its decisions as well as on the day-to-day activities of the Ministry.

For many PMC projects such evaluations will not be possible and special projects will be required to perform in-depth evaluation of our programs. Some examples of this are already contained in our 1979/80 work plan: transfer of technology, procurement and tax incentives.

FLOW CHART OF MOSST'S OBJECTIVES



V. MOSST'S PERFORMANCE MEASUREMENT AND PROGRAM EVALUATION SYSTEM

1. Introduction

The purpose of this section is to apply performance measurements and program evaluation to this Ministry. In the preceding sections we have looked at the theoretical nature of PM&PE and at the performance indicators which will enable us to make the necessary measurements. These key ingredients should permit us now to develop the actual working system within MOSST.

This system should include the criteria for a successful operation, the role of the PMC and the PMC Secretariat, the role of the project director and the annual cycle of PM&PE activities, including its relationship to other management activities such as program forecast and development of work plans.

2. Criteria for a Successful PM&PE System

Before looking at the actual system as it can apply to MOSST, we should indicate the criteria that should be observed to ensure a successful operation. These are:

- 1) Usefulness: The system cannot be justified for its own sake; the information gathered must be used in the Ministry's decision-making process.
- 2) Cost-Effective: The system itself must be cost-effective in that the resulting improvements in efficiency and effectiveness must be of greater benefit than the cost of resources required for its operation.
- 3) Visibility: The results of the PM&PE studies should be given wide visibility and distribution to ensure participation by all managers.
- 4) Simplicity: The system must be simple and practical. It should not entail a variety of complex forms, procedures or communication processes. It should be flexible and adaptable to a variety of program requirements. Emphasis must not only be on the precision or accuracy of measurements but also on the relevance of those measurements and the practical conclusions that can be drawn from them.

- 5) Limitations: We should not look to the PM&PE system to perform the analysis for us. The system is limited to an identification of relevant data and information. The subsequent analysis, identification of options, decision-making and implementation must be performed by the manager and reviewed by the PMC.
- 6) Adequacy: Does PM&PE provide adequate and appropriate information for evaluating all the major aspects of the performance of a program? Are there other feasible indicators which would provide for a more complete on-going assessment of program performance?
- 7) Objective: The evaluations must be objective in terms of being made by independent observers, by clientele, senior management or peer review.
- 8) Program Oriented: The system must limit itself to the efficiency and effectiveness of programs and not deal with the individual competence of employees involved in those programs.
- 9) Front-End Procedures: The system should place emphasis on front-end procedures. In other words, PM&PE is not a system which relies only on evaluations or measurements after a program is completed. It requires thorough program planning before the program begins, including the articulation of clear objectives, goals, action plans and performance indicators.

3. Description of MOSST's PM&PE System

In developing a PM&PE system we need to identify the following elements:

- 1) The program: the subject matter of the measurements and evaluation.
- 2) The objectives: the intentions which establish the point of reference against which the measurements and evaluations are made.
- 3) The performance indicators: the units of measurement or identification which allow us to isolate key elements of information.
- 4) An individual responsible for proposing specific project objectives and performance indicators as part of the project initiation process and for developing and proposing the required measurements and evaluation.

- 5) Individuals responsible for reviewing the measurements and evaluation and for making the key decisions regarding the efficiency, effectiveness and future implications of the project.
- 6) The evaluation structure: a formal organization within the department which provides the setting for the implementation of the PM&PE system.
- 7) The format: The form (written report, oral presentation, informal discussion, etc.) in which the report of the measurements and evaluation takes place.

Based on the analysis of the preceding sections and based on the criteria for a successful PM&PE system for MOSST which we have just outlined, the following system is proposed.

For the purposes of PM&PE, programs should be identified as PMC projects and continuing activities. Minor projects would not be cost-effective and activities in Corporate Services will be looked at under a separate PM&PE system. Efforts should be made to increase the proportion of Ministry activities referred to PMC and some activities may be deemed as PMC projects or continuing activities for the purpose of PM&PE.

The level of objectives which would apply to PMC projects and continuing activities has been described in Section IV; the performance indicators were described in Section III.

The person responsible for producing the key measurement and evaluation information should be the project director. He/she should also be responsible for the development of clear objectives and performance indicators as part of the project initiation and approval process.

The members of the PMC will review and approve the project director's evaluation proposals. Thus, when each new project is proposed, the PMC members should consider, among other criteria, whether the project initiator has clearly identified objectives and performance indicators and whether this project is justifiable in the light of past evaluations of similar projects. Further, they should ensure that each project completion report includes a measurement of the efficiency and effectiveness of the project.

As mentioned in the list of criteria for a successful PM&PE system, the format for these measurements and evaluations should be simple and flexible. Therefore the current PMC project form has been amended (attached as Appendix A) to permit the project director to include the objectives and performance indicators at the project initiation stage. On completion of the project, the project director will answer the questions on the back of the PMC form and will attach a memorandum describing the efficiency, effectiveness and overall evaluation of the project. A guide for your comments in these areas is given on the back of the amended form. This information will complement the quantitative data which is already being collected by the PMC Secretariat regarding the actual end results, person-weeks utilized, cost, goals supported and completion dates, in comparison to original plans.

The memorandum format is suggested for the measurement of efficiency and effectiveness and for program evaluation as it is open-ended and flexible. The project director should feel free to consider some, but not necessarily all, of the performance indicators listed on the back of the form. Given the variety and complexity of our PMC projects and given the difficulty which we shall encounter in quantifying our objectives, it would be preferable for the project director not to be restricted to a rigid and lengthy format but rather to focus on a few criteria which relate well to the particular project and to concentrate on developing an analysis in greater depth.

In some cases the PMC project will be sufficiently lengthy and complex to justify an interim evaluation report. This will be particularly useful when the terms of reference or general direction of the project change during its mid-life.

The Project Management Committee will constitute the evaluation structure. It normally meets every week and already performs a project management role for all MOSST projects and continuing activities. The PM&PE reports and the PMC's review will be attached to the PMC minutes. They will also be circulated to all senior managers in the Ministry.

The PMC members' evaluation should provide excellent validity and objectivity to the process because of their qualifications and their different perspectives and responsibilities.

4. The Annual PM&PE Cycle

Although this proposal for MOSST envisages PM&PE as a continuing activity tied to each PMC project, it also has an impact on our annual planning process.

In January or February of each year, Branches are requested to develop a work plan for the coming fiscal year. This work plan includes general objectives for the Branch, a description of the general direction and priorities which should be pursued and general descriptions of the individual projects which will be proposed.

As part of this annual work plan, Branches also prepare a review of their accomplishments during the previous calendar year. This includes a general assessment of results achieved in comparison to the previous year's work plan and also a summary evaluation of the efficiency and effectiveness of the completed PMC projects. This general evaluation is based on the aggregate of individual project evaluations and influences the development of the new work plan.

The new work plan, based on the program evaluation of the previous year, contributes to the preparation of the program forecast and assists the Treasury Board in the resource allocation process.

Individual PMC project initiation documents, interim reports and project completion reports will occur throughout the fiscal year and every six months the PMC Secretariat will continue to provide a narrative and statistical summary analysis of the PM&PE information over that period. This will occur in July and January. The January report will be particularly critical in that it will contribute to the Annual Work Plan and Review occurring in January and February.

The results of the previous year's work plan will be the subject of two comprehensive audits. One will be by the Audit Services Bureau (ASB) of the Department of Supply and Services in early spring, and the second, by the Auditor General, normally takes place in the summer. The ASB audit is referred to as our internal audit and is performed at our request. The Auditor General will base the thoroughness of his audit on the high standard obtained by our PM&PE system and by the ASB internal audit report. This

year, these audits will be comprehensive audits which means that they will look at the efficiency and effectiveness of our PMC projects and continuing activities in addition to the appropriateness of our financial and administrative systems and transactions.

This annual cycle is illustrated in the chart attached as Appendix B.

DATE OF APPROVAL _____ BRANCH _____

PROJECT NUMBER _____ MANAGER _____

TITLE _____

MOSST SUB-OBJECTIVES - GOALS - SUB-GOALS

Policies for the Application of S&T Resources Management of Science 1.1 1.2 1.3 1.4 1.5 1.6 1.7 1.8

Policies for Support of Science Adequacy of Science 2.1 2.2 2.3

Science in Public Policy Science and Society 3.1 3.2 3.3

ORIGIN OF PROPOSAL: Senate/House of Commons. Cabinet Minister/Secretary PCO

TBS Other Departments/Agencies Other Governments/Private Sector MOSST's own initiatives

PROJECT OBJECTIVES:

ACTION PLAN:

PERFORMANCE INDICATORS:

(Events which will indicate the achievement of the project objectives. Select from the list on the back of the form or introduce new indicators as appropriate.)

SECURITY CLASSIFICATION: Unrestricted (available for public access through library) Restricted Confidential Secret

TIME FRAME: Start Date _____ Estimated Finish Date _____ BUDGET: Current Year Forecast PMC Funds _____ Branch Funds _____

STAFFING PLANS:

Officers	Estimated Person-Weeks	Actual Person-Weeks
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

PROJECT ORIGINATOR: _____ DATE _____

BRANCH APPROVAL: _____ DATE _____

TO BE COMPLETED UPON TERMINATION OF PROJECT

SECTION V
APPENDIX A(2)

SECURITY CLASSIFICATION

- Unrestricted
- Restricted
- Confidential
- Secret

AVAILABILITY OF REPORT

- Distribution: MOSST Government Other
 Publication: Number of copies _____
 Public Access: (available through library)
 Yes No

MOSST SUB-OBJECTIVES - GOALS - SUB-GOALS

- Policies for the Application of S&T Resources Management of Science 1.1 1.2 1.3 1.4 1.5 1.6 1.7 1.8
- Policies for Support of Science Adequacy of Science 2.1 2.2 2.3
- Science in Public Policy Science and Society 3.1 3.2 3.3

DESCRIPTION OF PROJECT OUTPUT

ASSESSMENT: Assess the project (or continuing activity where applicable) in accordance with the following performance indicators.

	<u>Exceeded</u>	<u>Met</u>	<u>Not Met</u>
1. Project completed according to original <u>schedule</u> . - - - - -	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Only the originally <u>planned resources</u> were used. - - - - -	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Most of the <u>resources used</u> were essential to the achievement of the project objectives. - - - - -	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. The <u>characteristics of the project report</u> (e.g. creativity, comprehensiveness, incisiveness, practicality, accuracy) significantly contributed to the achievement of objectives. - -	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. The <u>relationship of the project output to our (potential) clients and colleagues</u> (e.g. relevance to client concerns, good timing or coordination with the views of other organizations) significantly contributed to the achievement of objectives. -	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. The project had or is expected to have a <u>significant impact</u> in terms of client decisions to develop policies or policy instruments based on our advice or, at the least, in terms of influence on their decisions and improvement in their understanding of the issues. - - - - -	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. The project provided the <u>basis for further work</u> which could lead to the development of significant policies or policy instruments or to the provision of useful advice. - - - - -	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. The project resulted in <u>improved working relationships</u> such as increased client awareness or demand for our services, increased demand from other organizations to coordinate their work with us. - - - - -	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. <u>In general</u> , the project's objectives have been... - - - - -	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

PROGRAM EVALUATION

Prepare a narrative assessment of the above performance indicators which were most relevant to your project or introduce additional indicators if appropriate. Analyse the main reasons for the project's degree of success in achieving its objectives. Comment, if appropriate, in terms of the project's contribution to the higher level internal objectives such as the establishment of policies and policy instruments, the impact of these instruments on the adequacy of science in the particular area, its application to national issues and its use in the formulation of public policy. If appropriate, relate your evaluation to other recently completed projects which have contributed to objectives in similar policy areas. What priority should we give to the initiation of projects with identical or similar objectives?

SECTION V, APPENDIX BANNUAL PERFORMANCE MEASUREMENTS
AND PROGRAM EVALUATION CYCLE

- | | |
|------------|---|
| January | - PMC Secretariat six-month statistical analysis
- Program Evaluation for previous calendar year |
| February | - Annual Work Plan for the coming fiscal year |
| March | - Program Forecast for coming fiscal year plus 1 |
| May | - Internal Audit of previous fiscal year's work plan |
| July | - PMC Secretariat six-month statistical analysis |
| August | - Auditor General's audit of previous fiscal year's work plan |
| October | - Main Estimates for the coming fiscal year |
| CONTINUING | - Project initiation, including objectives and measurable outputs (performance indicators)

- Interim Project Reports and Project Completion Reports, including measurement of economy, efficiency and effectiveness and also including analysis of reasons for deficiencies and of methods of improvement. |

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