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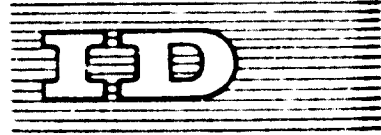UNIDO.

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DEVELOPMENT PROJECT PLANNING
AND ADMINISTRATION[1]/

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I.   INTRODUCTION

This paper presents a multi-dimensional, interdisciplinary perspective of development project planning and administration.   It views the planning and implementation phases and action sequences of the project preparation process in the context of a dynamic socio-cultural environment.   In this environment a variety of factors must be kept in sufficient balance to maintain the capability, viability, and integrity of the development project planning and implementation organization(s).   It is not only "project implementation" that has to be "managed", but "project planning" as well.   This compels concern with the organization for planning and implementation, and with its administration.   The functions, responsibilities, roles, and behaviour relationships of the key participants and agencies involved, and related dimensions, must all be considered.

An underlying hypothesis of this multiple perspective is that the inter-dependent elements of development project planning and administration may be better analyzed and comprehended within a "system framework" in a socio-cultural setting.   The project planning/management "system framework" analyzed in this paper is an experimental and exploratory conceptualization.   It is a way of looking at diverse project planning/implementation "systems" wherever and in whatever form they may be found.   The definition of this framework and study of its elements constitute the first half of the paper.   The administration of an idealized "project planning/management system" and its institutionalization occupies the final half.

II.   PROJECT PLANNING/MANAGEMENT SYSTEM FRAMEWORK: CONCEPT AND ELEMENTS

Notwithstanding development planning theory, few countries identify, select, and prepare development projects according to the "book" or uniformly established rules.   However, each country more or less follows the same iterative process of seeking the "best" solutions to problems associated with a project's identification, conception, definition, development, evaluation and approval, execution, and disposal or transfer.   The process is one of successive approximation as the advantages and disadvantages of alternative arrangements are analyzed.   The process may involve, in addition, different levels of government authority and responsibility.   The events do not occur by themselves –

the planning and execution of each step has to be administered. The entire process may be envisaged as a "project planning/management system".

Unfortunately, the "output" of prevailing project planning/management "systems" has tended to be highly irregular in quality; the production includes "good", "bad", and "half-baked" projects. It is imperative, therefore, to inquire what actually constitutes a "sound" or "good" development project and what are the "system requirements" for turning out "sound" projects? These conceptual questions are of central importance and receive first attention.

A. "Development project" defined

The definition of a development project should imply that if an investment activity has certain specified components or properties, then it may be expected to qualify as a "sound" development project. The definition is in effect an equation comprised of variables. The variables include those of principal interest to development planners (i.e., economic, technical, technological, locational, etc.) but must also include "human behaviour" and "organizational behaviour", since a development project is a "social event" that needs to be perceived as a "whole". A development project is comprised of "sequences of acts" which are understandable in terms of assigned human and organizational goals and purposes rather than simply as trajectories expressed in physically measurable quantities such as costs and benefits. The perception of these "sequences of acts" as a whole permits a better understanding of how the components are integrated and mesh, of how the development project ("social event") is brought into being. A definition of this kind should facilitate not just the realistic planning of a development project, but its implementation and <u>ex post</u> evaluation.

With this operational objective in mind, a development project may be defined as a <u>discrete, development goal-oriented, self-contained action process, having a beginning and an end, and requiring an outlay of social resources, with expectations of resulting in a net social product</u>.

From a management implementation viewpoint the key words in the definition are "self-contained action process". A development project moves through time through a series of steps and decision points involving multiple dimensions. It is the smallest organized and financed action process technically speaking, within

a regional, sectoral, cross-sectoral, or sub-sectoral development programme.
Although it can be part of a larger enterprise, it has to be organized as if it
were an independent unit that can be separately planned, analyzed, budgeted,
administered and evaluated.

Related to the "self-contained" requirement is the property of coherence.
At least in principle, a development project should be designed as a coherent
undertaking, not only in the technical coherence terms of the quantitative
economic planner, but also in terms of administrative and social coherence.
It is recognized, of course, that an optimal or "best" coherence design at the
project level may very well need to be modified when viewed in a regional or
sectoral perspective.

Implicit in the definition, moreover, is the notion of a specific location
in space and time, that is to say an impact location or boundary where direct,
indirect, and side effects of the project may be observed and measured as
feasible.

It follows that projects displaying these properties are "soundly"
conceived and can be ranked for selection in accordance with established
evaluation criteria reflecting development goals and priorities.

As this "self-contained action process" moves through the various phases
of the project preparation and execution life cycle, it may be analyzed from
"technical" and "administrative" viewpoints. The "technical" refers to the
dimensions of the project itself - its design and shape, as initially conceived,
further defined, evaluated, and approved. The "administrative" relates to the
management of the project planning and implementation.

B.   System performance and structure

General systems theory is helpful in arriving at a conceptualization of a
project planning/management system having the capability of producing "sound"
development projects. The concept of a system which "processes" and "transforms"
various inputs into outputs, which controls its processing activities through
feedback, and whose internal structural and performance elements can be
analyzed in relation to the external environment provides an insightful frame-
work for viewing an organization's project planning and implementation
operations.

Constituent elements of the project planning/management system may them-
selves be viewed as sub-systems, such as the planning system, the information
system, the control system, the evaluation system, and so forth.   The project
planning/management system, in addition, is part of larger systems, including at
the national level, for example, the government's development programme and
national budget planning/management systems   Effective administration of the
project planning/management system requires an understanding of the functioning
of the constituent systems and the relationships between each and their linkages
with the larger systems.   Since people are the component parts of these
systems, this understanding must be based on knowledge of their skills, roles,
relationships, interactions, and other behavioural patterns, and not just on
knowledge of the tasks and activities of the systems.

1.   System behaviour and output

To turn out "sound" development projects, a project planning/management
system must be able (with the help of outsiders as may be necessary) to conceive
new ideas or possibilities for development investments deemed worthy of study.
It must be able to shape these proposals into some standard form for critical
review and analysis.   It has to be able to state and delimit the problems and
find needed information and methods for obtaining the "best" solutions.   It
should be able to formulate hypotheses and accept or reject them on the basis of
available evidence and established criteria.   It needs to be able to analyze
the advantages and disadvantages of alternative arrangements, reach conclusions
as to the "best" design, evaluate it, and plan the implementation.

This is another way of describing the system or iterative process of
"successive approximations" referred to earlier.   The problem-solving thrust of
the process needs underscoring.   Problem-solving requires purposeful activity
throughout the project preparation and life cycle, from conception to completion
or disposal.   The solution to a problem may occur suddenly with insight, but
more usually there is a continuous process of posing possible solutions,
eliminating as much guesswork as possible, rejecting, and finally confirming one
as correct or most suitable.

A new development project, by its very nature, poses a series of substantive
or "technical" problems and "administrative" problems, some relatively simple,
others highly complex   Some solutions to existing problems will inevitably

create other problems that did not previously exist, for example, ecological, political, or social problems. Conflict always emerges as part of the development process. The problem is to understand it and pose solutions for dealing with it wisely.

Furthermore, there are always problems of co-ordination which may involve various governmental agencies. Solutions at one level, say a Ministry or a Department, may not be socially optimal ones when viewed at a higher level, such as a national planning board. In addition, it is well to keep in mind that even the best solutions to present problems may eventually outlive their usefulness.

This continuous problem-solving effort represents the "production activity" of the staff (plus outside participation and assistance) of the project planning/management system. A soundly prepared development project is the final product or result. It is a project which has been fully processed and is ready for execution. In the case of an industrial development project, it is ready for construction.

This system definition is in terms of production objectives or function considered as a whole. The system's production capability is determined by the quality or nature of its inputs or resources, including budget, leadership, power, staff competence, organizational arrangements, information, environmental support, and other structural elements.

2. System structure

The organization of the project planning/management system has formal, narrow boundaries and much broader, informal ones. Relatively simple or small projects can, perhaps, be conducted principally within the formal bounds of the appropriate functional department of a Ministry or a semi-public corporation. More complex ones embrace every individual and entity, within and outside the Ministry, having a vital interest in the project that is being identified, studied, planned, evaluated, and implemented. In such cases, the "Organization" or the structured arrangement may be viewed as a mobile system or task force which changes with the changing needs of the project from start to finish. It has no discrete boundaries. In effect, it is "superimposed" on existing functional structures within and outside the Ministry or other development agency and creates unique authority and responsibility patterns and relationships.

In principle, this organizational system provides a structural and authority framework through which all project preparation and implementation efforts can be co-ordinated and integrated. In theory, each person in the "Organization" carries out his assigned tasks and all are inter-related in such a way as to achieve the organizational planning and implementation goals in accordance with time, cost, quality, quantity and other performance objectives.

The "Organization" is thus seen to be a set of flows of capabilities, energies, motivations, perceptions, information and other resources which provide inputs into the project as it is being formulated, evaluated, and implemented. These flows, it is important to remember, are embodied in individuals associated formally or informally in the project and are expressed in the patterns or relationships among them and the roles they perform. In this view, the "Organization" is seen as a structure and a process, which sharply contrasts with the view of an organization as a hierarchical structure.

According to this conception, the "Organization" for planning and implementing an industrial development project for which a Ministry of Industry or an autonomous or semi-autonomous corporation might be responsible would include key members drawn from their functional or operating divisions who would comprise the "central staff" on a full-time basis (returning to their divisions when they are no longer needed). Other talents as required might be "drawn" from other government agencies and institutions and the private sector. In the case of a project being studied or planned or implemented by a private contractor, or contract team, the "Organization" would include "staff" members from these entities. If external aid is involved, the "Organization" would include the foreigners associated with the project. As the sequential phases of the project call for different talents, skills, responses, and methods, the project's complement would change. Specialists whose talents or activities are needed at one stage of project analysis and definition will not necessarily be required in another. Hence, the "Organization" membership would include both tightly interacting participants and individuals who may be relative strangers. Involvement of the latter may have personal purposes or purposes of the entities with whom they are associated, which may not entirely parallel those of the Ministry or semi-public agency.

Different kinds of projects and different phases of the project cycle call for different relationships and role definition. For example, in the case of an industrial development project which processes domestically-produced raw materials, a number of Departments in different Ministries may be involved and they may or may not be closely related functionally. In other situations, multiple donors may be involved, such as international agencies and foundations; or there may be several contractors with both headquarters' and field staff involved. Under these complex situations, the "Organization" assumes the character of a voluntary association or coalition of autonomous entities. Getting this coalition to function as a single entity with a common purpose presents a tremendous organizational challenge.

Clear definition of authority, roles, and relationships can help reduce if not eliminate sources of conflict, confusion, and uncertainty, and lead to greater project preparation and implementation administrative unity. Unfortunately, in many situations the wide spectrums of responsibility involved and the geographical and organizational dispersion of the project preparation and implementation activities may make it difficult to develop clear definitions of roles and relationships and to carry them out. Consequently, relationships must be of a personal-confidence type of alliance. This applies to collaborative client-contractor, and superior-subordinate roles and relationships. Available evidence suggests that peer, collaborative, and co-operative relationships which are built on trust and respect are more likely to result in a healthy and effective "Organization." Productive working relationships between the project planning/management staff and other members of the "Organization" require knowledge on the part of each about itself and about all the other entities with which it is involved.

3. System management

(a) Project manager or director

The assemblage of persons constituting the "Organization" requires a competent leader or manager if the organizational goal of identifying and preparing sound development projects is to be accomplished. The project manager or director is the focal point for providing an over-all view and systematic continuity of administration through all phases of the project. As employed in this paper, the project manager is both the head of the project planning staff and principal administrator of the project planning/implementing "Organization".

The project manager performs traditional and inter-related managerial functions of creating, planning, organizing, motivating, communicating, and controlling and directing the combined efforts of the members of the "Organization". The mix of functions varies from task to task, but all can be conceived as sub-functions of each other; all are necessary to some degree in solving project problems and accomplishing project goals. The nature and extent of managerial involvement by the project manager and his specific responsibilities will vary according to the size, complexity and needs of the project, its phase of development, and other factors. In other words, his functions and responsibilities change in a time-phased manner as the project evolves. Whether or not he accomplishes the management process directly, or through various functional division heads, or through another manager such as the chief of party of a contracting team, he maintains the paramount responsibility for co-ordinating and integrating intra-organizational functional and extra-organizational efforts directed toward the successful development and implementation of a specific project. In all cases, he serves as the unifying agent, the one responsible for seeing the total picture.

The managing responsibilities for project planning and implementation require that the project manager should be conversant with appropriate management principles and practices, and with his government's policies, regulations, and procedures that relate to his work. It is desirable that the project manager's authority and responsibilities be clearly defined and pronounced at the time of his designation in order to reduce ambiguity.

The qualities sought for in a project manager are related to the dynamic nature of the managerial position. The project manager's performance in large measure is a function of his ability to perceive, define, and re-define his job. Evidence on the attributes of successful project managers is scattered, but suggests the importance of "human skills", "conceptual skills", and "technical skills". Different projects require different definitions and mixes of these skills, but it may be useful to describe them in general terms.

(i) Human skills: The project manager needs to be able to establish an enthusiastic team effort. This requires integrity and an ability to work with people, to develop their respect and trust. A wide variety of personal relationships is required between the project manager and other "Organization" members so that the opportunity is available to discover this integrity and to

develop this trust. By being competent in techniques of inter-personal relations, the project manager can avoid undesirable developments. Other human skills include good judgment of people and in utilizing and evaluating the opinions of experts. The ability to communicate ideas effectively is vital. The project manager has to be reasonably decisive, have moral courage - to stand up and be counted. He should have drive and be hard-working, setting high standards of performance for himself, meeting these standards, and providing an example for others in the "Organization".

(ii) Conceptual skills: The above human skills add up to an ability to influence others to behave or act in desired ways. They derive from the project manager's authority, power, position, experience, reputation, as well as his personality and perception of his role. In addition, the project manager must be able to use concepts to co-ordinate all the resources of the "Organization" and to direct them effectively toward accomplishment of the project objectives.

He must have sufficient conceptual skill properly to plan his own work and that of others; to assess and co-ordinate properly the various requirements of different areas of activity; to make timely decisions; to establish suitable balance between thought and action. The required conceptual skills are often referred to as "managerial functions" which may be divided into the major areas mentioned above (e.g., creating, planning, organizing, motivating, communicating, and controlling). Accordingly, the project manager should be able to create (or see that others) create ideas. He should be able to determine the objectives of the project and the "Organization", and the way these objectives are to be accomplished. He has to be able to determine what activities are required to accomplish the objectives and motivate members of "Organization" to accomplish them. He must be able to communicate the desired objectives, what activities are required, how they will be done, who will do what and when - from the birth, or even pre-birth, of the project on through its continuing life. He needs to have the ability to control the project cycle - to reduce the unco-ordinated behaviour of the members of the "Organization", to provide answers for whether or not the current performance should be continued or what corrections might be needed to make the performance satisfactory; to see if what did happen was what was supposed to happen.

These conceptual skills are inter-related and overlap with human skills. They constitute a managerial cycle which the project manager must complete if his project is to be soundly planned and effectively implemented.

(iii) <u>Technical skills</u>: The project manager should have sufficient technical skill in the major field of interest in the project, in addition to having the ability to influence others and use concepts. His technical abilities and background should be sufficiently broad to enable him to be adequately conversant with all the technical disciplines involved in the project. Without technical competence or understanding of the work, he is unable to communicate or control. Without sufficient technical skill, he is not likely to command the respect and confidence of the members of the "Organization".

The importance of technical skills will vary with the requirements of the project and its organization. Some projects may require high technical capacity on the part of the project manager, but moderate conceptual ability; others may require moderate or little technical background, but high conceptual capability; and so forth.

The above frame of reference is merely suggestive and obviously needs to be modified to accommodate the values and norms of different cultures. Qualities such as those listed are considered to be minimum attributes. Specific qualities need to be added to reflect their importance in a given project. The project manager must be able to exist in a world of ambiguity and conflict. He must be willing to take risks, to jeopardize his career by a bad decision. Certain combinations of qualities encourage and permit granting much authority to the project manager; the reverse, of course, is likewise true. The project manager's competence to manage has to be recognized, otherwise his authority will not be accepted.

No man possesses all the qualities that may be desired of a project manager, especially in societies where project planning/management as defined in this paper is a completely alien concept. A compromise of necessity must be achieved. Moreover, further research is needed to establish much more definitively the reasons for successful project planning/management. Such research should indicate the philosophies, principles and practices of successful project managers, the criteria for measuring success, the causes for failure, etc.

Training directed towards the requirements of project planning/management can increase the effectiveness of project managers. However, there is no substitute for experience acquired on the firing line, hopefully under the direction of a competent scarred veteran and with the opprotunity to recover from past errors.

(b) Matrix management

While traditional administrative functions are involved in a project planning/management system, the system's complex organizational inter-relationships and inter-personal linkages require managerial roles, relationships, and organizational arrangements quite different from traditional forms. In the first place, the project activities that need to be planned and implemented may be new or not entirely familiar; they certainly are not routine and may not be fully under the control of the project manager. When assigned the responsibility for meeting time, cost, quantity, and quality objectives, he may find himself dependent on the performance of individuals or groups over whom he has little or no authority. Furthermore, he may be operating in an environment in which conflict and major change may frequently be the order of the day. Under these dynamic conditions, traditional functional and vertical approaches to management, based on the principle that authority and responsibility should be commensurate, becomes highly irrelevant.

The project planning/management system approach rejects the notion of neatly defined areas of effort and jurisdiction and decision-making and communication through chains of command. It accepts cutting across and, in a sense, conflict with traditional organizational patterns which facilitate the accomplishment of ends through the efforts of individuals in different functional departments and outside organizations. As indicated, it visualizes an inter-actional "system" involving persons constituting the project planning/management "Organization" and integrated and led by a project manager, a system that is "super-imposed" on existing functional structures and creates unique authority and responsibility patterns which become a web of relationships.

Obviously, this is not a comfortable position for a project manager, especially in tradition-bound, hierarchical structures. By virtue of his focal position in the project endeavours, the project manager requires broad <u>authority</u> over all elements of the project. His authority should permit him to cut across functional and organizational lines to achieve the required concentrated effort to develop his project and get it implemented on time and within cost and other performance requirements. However, in most cases, he lacks this authority and is likely to be exposed to <u>role conflict</u>, i.e., incompatible behavioural expectations. He may experience role conflict because his position lacks sufficient clarity or because the official guidelines providing direction

and anchorage are ambiguous and nebulous. In such a setting, the project manager may become confused as to what is expected of him. He may find himself in many role relationships, each of which may call for quite different behaviour and may result in demands that may be in conflict.

The image of the position of project manager is likely to have a major impact upon the roles a project manager plays and how others relate to him. His perception and definition of his role will serve to channel and direct his activities; but he has to take account of the perception and definition of his role held by others, if he is to achieve effective working relationships. He becomes more proficient as a manager by effectively implementing the elements of his role.

The elements of the project manager's role will vary from country to country, Ministry to Ministry, and project to project. They will depend, for instance, on whether his influence and responsibilities cut across functional units, or whether he operates principally as a project representative for several functional divisions. As an integrator-generalist, his main job is to integrate functional and extra-organizational efforts directed toward the development and execution of a specific project. Lacking real line authority, he nevertheless must constantly lead, coax, persuade, or energize his peers, collaborators, and others to provide essential project inputs. Since the nature of his job is dynamic, he constantly has to generate new concepts and roles consistent with his job as a "manager of situations". His performance is therefore a function of his ability to perceive, define, and re-define his responsibilities and roles.

To the extent possible, the project manager's role needs to be formulated or shaped in accordance with the consensus of values held by those comprising the project planning/management "Organization". When the project manager behaves in a manner predictable by the others, sustained and productive inter-action is more likely. In the final analysis, his roles have to be related to project objectives and the conduct of the project operations.

It is worth observing that the project manager's authority is a combination of <u>power</u> and <u>influence</u>. The former is attached to the organizational position; the latter may be achieved because of the individual's knowledge and expertise, or by virtue of the reciprocal relationships he develops with peers, associates, and others in the "Organization"

As noted earlier, productive working relationships between the project manager and other members of the "Organization" require knowledge on the part of each about itself and all the other participants in the "Organization". Workable knowledge must be obtained about the goals and objectives of all the participating entities to provide sound foundations for effective relationships. Although it is not feasible to seek to specify adequately the roles of all the entities and persons involved in a project, an effort to reach agreement on the key roles and relationships is likely to enhance the probability of improved project planning and implementation. Too rigid a definition of roles, on the other hand, is liable to leave holes in the "Organization" through which important problems fall. As a general rule, project performance will be facilitated by the existence of peer or collaborative relationships built on mutual trust and respect.

The above discussion is principally descriptive in nature in its concentration on the system elements and some principles of project planning/implementation "system management". The next section attempts to illustrate "system management" in action, as it moves from one project preparation phase to another.

4. System time phasing and action sequences

Project planning/management performance will be facilitated by organizational arrangements reflecting the stages or time phases of a project and geared to the action sequences in each phase. In every phase of the project planning and implementation process and in every step of the way, decisions for action need to be formulated in a prescribed sequence. They need to be critically appraised, taking account of the elements vital for fulfilment, and, when necessary, re-shaped on the basis of changing circumstances and other empirical realities. The decisions have to be made by those who have a key interest in the realization of the project and its impact. These action decisions may be divided into several major sequential time phases or categories. They are interdependent and flow into each other. One source groups the decisions into eight such phases (Conception, Formulation, Analysis and Evaluation, Approval, Implementation, Reporting and Feedback, Transition to Normal Administration, and Evaluation of Results). Another prefers three phases (Opportunity Stage, Feasibility Stage, and Implementation Stage), and still another recommends four (Project Conception, Preliminary Studies and Preliminary Evaluation,

Detailed Studies and Final Decisions, and Final Pre-Execution Action). For the purpose of the present paper, a three-phased breakdown is preferred as a convenient categorization of the project preparation action decisions from the generation of a Project Idea to the start of plant construction. These are referred to below as the Project conception phase, Project feasibility studies phase, and Project implementation phase.

(a) Project conception phase

In many if not most countries, the identification of promising project opportunities is normally carried out under the heading of sectoral and regional planning. Whatever arrangement is used, a sound development project planning/management system should identify potential projects, stimulate the generation of project ideas, and provide or have available to it a mechanism for their capable and expeditious consideration.

Ideally, a development agency should have a project planning staff which not only studies project ideas referred to it from within its own organization, the national planning or regional planning authorities, and other governmental or private sources, but should be busy thinking up its own project ideas and in other ways be engaged in project research and development. The chief of the project planning staff must organize time for the staff alone, and with representatives of departments concerned within his own agency and outside agencies, periodically and systematically to consider and re-examine projects underway, the needs of the country, how to meet the needs through new projects or improvements in existing projects, and other aspects of project generation and development. By being encouraged to think of what is likely to happen in the future at both macro and micro levels, as against what has to be done today, the project planning "Organization" is more likely to generate and develop ideas for essential projects in the present instead of waiting until the need for them becomes pressing in the future.

As this early pre-project-planning stage, the project manager should seek to help create an environment in which originality is encouraged rather than inhibited. Creativity can be stimulated by forming groups that bring together different kinds of people, encouraging individuals to give up standard solutions, and in other ways helping establish a climate that encourages full expression of creative and analytic thought.

At the national level, project identification services are being performed mostly by operating Ministries, although countries are increasingly being assisted by development banks, water and power authorities, industrial and agricultural development boards, tourist boards, investment promotion centres, research institutions, and other national or international agencies. At the regional and local levels, very few government and quasi-governmental institutions of this nature exist and project identification activities are less adequately developed.

To help overcome shortages in competent economists, engineers, agronomists, and other technicians, many countries employ consulting firms or individual consultants to conduct economic surveys, sector analyses, pre-investment or pre-feasibility studies, and special project identification missions. While desirable and understandable, continuing reliance on outside consulting assistance without developing indigenous project identification capabilities does not appear to constitute a sound strategy.

Identifying a project possibility may lead to no further action without effective sponsorship, even though the Project Idea may be sound. Support for the identified project may be lacking in the project planning staff's own agency, or not found in the national planning board, or in other influential sources. It may be difficult to obtain budget funds or qualified personnel for project studies. The project planning staff must early develop strategies and tactics for dealing with this problem.

Before a decision is reached that a Project Idea is worth studying, a preliminary determination must be made of its fundamentals (e.g., its true nature, size, cost, projected benefits, timing, risk, etc.). Associated with initial financing determinations will be preliminary policy decisions on ownership, form of organization, and degree of financing self-sufficiency. The essential inputs during this preliminary "idea" stage (also referred to as the "Opportunity Stage") will vary with the nature of the investment proposal, the experience of the planning staff with the sponsorship source, the viewpoint of the prospective financing source(s), and other factors.

It should be observed that project sponsorship may at times create stubborn and delicate problems. There is always the danger of favourable bias towards self-initiated project proposals. Sponsorship may take the form of

political projects, prestige projects, traditional projects, suppliers' projects, consultants' projects, etc. Internal and external environmental pressures for favourable consideration of these project proposals may be exceedingly strong, although the interests of the sponsors, visible or hidden, may not be in the national interest as defined by an enlightened political leadership. Negative social influences and conflicts of this kind are to formidable obstacles to establishing a sound project planning/implementation system. Well-motivated project planning staffs, aware of these forces, may be able to avoid or reduce the influence of these negative factors by establishing and making known the steps, policies, and criteria they follow in evaluating project ideas — and sticking to them.

The decision that a Project Idea is worth further study, based on a rough assessment of its "fundamentals" and variants, is a critical point in the project planning/implementation process. Where it pertains to a long range project, the decision may constitute a decisive step. This is because, after efforts, time, and money are expanded on market and feasibility studies, it sometimes becomes almost mandatory to proceed further, lest benefits of the first efforts be totally lost. It is therefore important to ask what is the nature of the decision and who makes the decision that the Project Idea is worth studying.

Taking first the nature of the decision, what we seek to know and possibly measure, or at least evaluate, is the rationality of the decision. Has there been a correct statement and delimiting of the problems, at least the major and most critical ones as perceived at this stage? Is it clear what these problems as stated, expressed as questions, really mean in practice? Have the questions been stated in such ways that there is a reasonable opportunity for securing or making progress towards answers? To do these things requires an ability to find needed information and methods. Effective methods must be devised for obtaining key information, bringing the information together, synthesising the relevant information, analyzing and applying it. The information obtained may be diverse, overlap, and contain discrepancies. Somehow, generalized conclusions about solutions have to be obtained from the information on hand.

The decision should at least be based on a rough assessment of the project's "fundamentals" compared with other candidate proposals for study. In other words, is the proposal worth the time, money, manpower, effort and other resources

required compared with other candidate proposals?   The proposals being compared may represent different tentative designs or arrangements for accomplishing the same objective, or may be entirely different proposals competing for the same resources.   In both instances, the alternatives should be considered.   The key questions to be answered are: Why this particular Project Idea and no other?   Why this way?   Why now?   Why at all?

The comparison of candidate proposals for study requires criteria for ranking (by means of choice criteria such as social desirability, feasibility, consistency, and efficiency) which, in principle, help determine the best alternatives, consistent with national priorities, for achieving the ultimate objectives towards which the projects are directed.

Turning next to the question of who makes the decision that the Project Idea merits study, obviously it must be made by the proper authority or delegation of that authority at whatever level it resides.   The decision to go ahead with the study is more than a question of preliminary notions of the project and alternative uses to which the resources can be put.   It may reflect strong environmental pressures and not be in the national interest.   Under certain circumstances, an external source or agency may recommend further study of the Project Idea.   The final decision, however, rests with the country in question.   Its administrators and planners, including those at the project planning level, cannot abdicate their responsibilities.

Several constraints on the decision to proceed with further studies merit further attention.   Money and qualified personnel are naturally essential. If government personnel are available, they may need to be relieved from other duties for the duration of the study assignment, or to be given specially qualified assistants.   When the project planning staff of a Ministry is unable to do the job, it becomes necessary to turn to outsiders for the necessary expertise and experience.   Other agencies may, of course, have the required performance capability and be willing to co-operate   Relationships with individuals or groups outside one's own unit always create new questions, problems, and conflicts, as noted earlier.   A project planning staff with unfavourable experience in working with outside experts may, understandably, prefer not to recommend study of a Project Idea which it cannot handle itself. A decision not to study a Project Idea may also result from heavy dependence by

the interested project planning staff on involvement by other agencies and
entities in the form of specialized expertise, special information and reports,
repeated conferences, etc., which for perceived opportunity costs and other
valid reasons, the other organizations are unwilling or unable to accept.

(b) Project feasibility studies phase

The essential objective in this phase is to provide all the information
necessary to determine whether and how the particular Project Idea can best be
carried out, with sound principles and at a cost which compares favourably with
the contribution it can be expected to make to development. The required
information will vary from case to case. For a capital development projects
with construction components will require market studies, technical requirement
studies, locational studies, and techno-economic feasibility studies for
financial evaluation. A national statistical improvement project, a new export
promotion scheme, and other non-capital investment proposals pose different
kinds of problems and call for different data, although the objective of the
study phase remains the same.

The decision to advance to the "implementation phase" on the basis of the
feasibility studies may be a decision "in principle" or a "final" decision. In
the case of the former, additional "detailed studies" may be called for before
the recommended variant of the Project Idea is finally approved. These
decisions are often made by different individuals. Obviously, the less
ambiguous the definition of decision-making responsibility and decision require-
ments, the greater the probability of a more efficient and effective project
planning/implementation system. The ability to "sense" the formulated project
as a whole and the total situation relevant to it is critical to the success of
the "final" decision. The importance of this conceptual skill on the part of
the project manager or others making the final decisions cannot be overstated.

The feasibility studies test the hypothesis that the Project Idea is
economically, technologically, and technically sound and indicates, in the
opinion of the investigators, the conditions to be met before a feasible project
can be created. The close interdependence between technical and economic
aspects, particularly of capital development aspects, is well understood; not
only are the two aspects closely connected but they have reciprocal effects.
Hence, it is important that economists and engineers work closely together even
though, when their studies are completed, the economic aspects can be separated
from the technical ones.

Less appreciated is the urgent necessity for explicitly considering the administrative aspects of the Project Idea. Treating this dimension under "conditions to be met" is less likely to result in a project whose "administrative feasibility" is assured than a conscious investigation of the advantages and disadvantages of different administrative arrangements.

The Project Idea should not only be feasible on techno-economic and administrative grounds, but in social and ecological terms, too. These are areas neglected too long. The social and ecological aspects of projects require urgent attention and social feasibility and ecological studies should be part of the package. In this connexion, qualified sociologists, political scientists, and ecologists can be of great assistance.

(c) Project implementation phase

No project can be launched as a well-prepared "self-contained action process", if essential organization and management elements are not planned in advance, including all the tasks to be completed before the "go" signal can be given. For example, in the case of new large capital development projects undertaken by a government, typical pre-launch actions would include completion of necessary legislative and other legal steps to create or designate the agency responsible for the project; selection of the chief executive and other key operating officers; recruitment of principal officers and assignment to required training; decisions on the scope of prime contracts and methods of award; completion of tender documents, issuance of invitations to tender and receipt of tenders; selection of prime contractor for project execution; placement of orders with suppliers of machinery and equipment; etc.

These actions would flow from the recommendations in the final feasibility report as set forth in the project plan and implementation schedule. The feasibility report should provide full information on the structure, organization and functions of the organizing authority and the relationships of this authority to other agencies involved. Details should be included on the top management positions and required consultants (qualifications, duties, procedures of appointment, etc.); the number, qualifications, timing, duties of staff, and prospects for staff recruitment; training programmes and training facilities; etc. It should also provide information on the procurement aspects, such as applicable import regulations and procedures, domestic or international bidding, procedures on selecting contractors and

placing orders with suppliers of machinery and equipment, transport and insurance arrangements, etc. It should contain necessary details on the appropriation and budgeting process, on the accounting, reporting, documentation, auditing, and other operating arrangements.

Depending on the project, the "implementation phase" may be of short or long duration and may conveniently be broken into sub-phases, e.g., final version or up-dating of the project plan; final preparation of the implementation scheduled; and completion of all "pre-execution" or "pre-construction" activities.

(i) Project plan

The project plan is the final, formal document spanning the life of the project. It seeks to present as clear a picture as possible of the relationship of the project during its life cycle to the country's goals and plans for their attainment. It spells out the linkages connecting project targets and planned outputs with the nature and utilization of inputs. It provides details on the course of action and on the magnitude and timing of sources and uses of resources. It provides a format for considering all factors essential to a complete understanding of the necessity and justification for the project.

The project plan has been defined as "a combination of objectives, policies, procedures, budgets, and other elements necessary to carry out a predetermined specific objective". It has cost, schedule, technical, economic, social, and other parameters. The specifications of the project plan should provide answers to the following kinds of questions:

a. What action is to be taken and for what reasons?

b. What resources and other inputs are required to support the action?

c. What is the action expected to accomplish and when?

d. What objectives and conditions must be met for the actions to be successful?

e. Apart from expected end results, what other effects is the action likely to have, and have these effects been taken into account?

f. How are the effects of the actions to be evaluated?

Of paramount importance is early definition and clarification of the objective of the project. This requires (a) defining the intent in under-taking the project; (b) outlining the scope of the project involvement, i.e. the agencies, departments, individuals, and other entities involved, their

functions, and approximate degree of involvement; and (c) describing the
project's end results and permanent effects on the country. By defining the
reasons for the project and the motives in undertaking it - its rationale -
the project manager is better able to capitalize on opportunities to improve
the outcome of the project, to weigh cost and other considerations, and to avert
damaging oversights. A clear outline of the scope of the project involvement
facilitates communication and working relationships with those participating in
the project in one form or another. This is especially important since
project administration cuts across functional lines and participating entities
and individuals may have competing and conflicting objectives. Explicit
description of the intended end results, the planned changes or over-all
results and accomplishments provide the project manager and others in the
"Organization" with a clear perspective.

The project plan should be sufficiently specific to be useful as a standard
of control. A good project plan facilitates establishment of performance
standards against which progress can be measured. It is, in fact, the
project manager's primary control device since every plan element has a
corresponding control phase.

(ii) Schedule plan

A schedule plan may be considered part of the project plan. It sets
forth the definable steps towards specified goals. It focuses on the nature
and planned scheduling of inputs and outputs, (i.e., the work that must be
done, when, and by whom) and the anticipated results of that work. The
planned method of implementation and the planned schedule constitute the
"Project implementation plan".

Scheduling should not be confused with planning. Planning determines
the tasks to be done, their necessary sequence, and defines the resource require-
ments to achieve the project goals. The resources, upon which there are
imposed internal and external conditions, determine the schedule, rather than
the other way around. The schedule shows the starting and finishing times of
each task and is produced by allocating the resources up to the limit of
availability, according to the project plan requirements. When the project
plan is scheduled, the project manager discovers whether it is in fact
feasible.

The project manager prepares the project schedules with the assistance of all participants in the "Organization". Since he is responsible for the over-all compatibility and consistency of the participants' roles and schedule requirements, he must participate in the sch duling.

(iii) Planning and scheduling general services

The project planning/implementation staff must be especially concerned during the "implementation phase" with the adequacy of general services in the project area, such as education, health, and other community facilities. Since a project cannot be separated from its physical and social environment, these aspects should have received earlier attention in the "social feasibility" report and should be included in the over-all project plan, even though they may not be part of the project. If new or expanded community facilities are required, it would appear desirable for the staff to participate in the planning and scheduling decisions in order to achieve consistent and co-ordinated action.

5. Project "technical aspects"

As implied in the discussion of the project planning/management system's "processing" activities, the system must have the capability (or obtain outside assistance) to handle the "technical" dimensions involved in the project identification-analysis-evaluation-implementation-preparation process. These dimensions are fairly well covered in the literature under the heading of Project Analysis and include: Market Analysis; Economic Aspects; Technological, Engineering, and Technical Aspects; Locational Aspects; Investment, Financial, and Budget Aspects; Organization and Management Aspects; and ex ante Project Evaluation Aspects. They might well include Ecological Aspects, Social and Political Aspects, and National Security Aspects.

III. ADMINISTERING THE PROJECT PLANNING/MANAGEMENT SYSTEM

As stated previously, the project planning/management system is not self-administering. Someone has to make governing decisions and tell the central staff and "Organization" what has to be done, how, by whom, where, and why. These specifications have to be transmitted and communication channels have to be kept open. Someone has to guide and control the system, see that it is working, take corrective action, and protect it. Management is the pivot in this process.

If the chief of the planning unit is a capable manager or administrator, he will be able to give clear signals on how to plan, how to organize, how to communicate, how to control, and so on. He will accomplish the task of integrating, co-ordinating, and controlling the functional and extra-organizational efforts directed toward the successful evolution and execution of the project. This includes the creation or discovery of ideas for the project or alternatives, and screening and shaping such ideas.

He will perform the required differentiated roles, or delegate some of them to others. As decision-maker, he will be responsible for the choice of paths of action from alternatives. As programmer, he will specify what needs to be done in an organized and co-ordinated manner. As regulator and enforcer, he will see that actions take place within specified tolerances, that needed information is obtained. As animator and sustainer, he will energize his staff and the "Organization", obtain needed resources, get environmental support, moderate conflict, etc. He will have an inward focus in relation to his function and the "Organization", but also an outward focus relative to the external environment, for example, how to time decisions relating to that environment.

He will perform these diverse, over-lapping roles both as manager of project planning staff and "Organization" and as chief project planner. In the former capacity, he selects objectives, sets policies, formulates orderly work programmes, delegates responsibilities, organizes the staff and project participants so as to bring into play specific training, experience, and abilities at those points where they can be put to best advantage. He will also develop a network of information sources, co-ordinate and evaluate, and advance his "Organization" toward the goals established. As chief project planner and implementer, he makes certain that sound planning and administrative principles are followed in each time phase and action sequence of the project's development. In both roles the administrative skills appear to be paramount and he will know, above all, that implementation of even a well-prepared project depends on the skill of a good manager rather than a good planner.

As he seeks to manage the project planning/implementation "Organization", the project manager may find that he may be faced with project goals that may conflict with objectives of functional units within the Ministry, or the objectives of donors, contractors, or third parties. The project manager

who thinks in matrix system terms will deal with such conflicts as natural and seek their resolution in the best interests of the project. He accepts the view that the "Organization" is not an entity in itself and must interface with other groups to survive in its environment.

A.   The management cycle

As stated earlier, in managing the "Organization", the project manager performs traditional identifiable but inter-related functions of creating, planning, organizing, energizing, co-ordinating, and evaluating. Some management theorists prefer to group these major functions into four categories: decision-making, specification or programming, communication, and control or guidance. The cycle of management functions is increasingly referred to as a "system". The management functional system should not be confused with the project planning/management organizational system described previously. It should be noted, moreover, whereas disagreement exists on the functions of managers that should be included in the management process, it is generally agreed that two interdependent major functions are involved: Planning and Implementation (or Execution).

Before considering these two major functions in more detail, it is well to observe that the categorization of key managerial functions has diagnostic utility for improving project planning and implementation administration capabilities. When a project planning operation is working effectively, the above inter-twining management functions are mutually supporting, coherent, in harmony, and consistent. The project planning staff and "Organization" are able to arrive more quickly at an understanding of the problems to be solved. Essential information is secured more rapidly and relevant data are processed more efficiently and effectively. More methods are brought to bear upon the solution of specific problems; more solutions are posed; the solutions are verified with greater reliability; etc. When the project planning system works well, the highest emphasis is placed on the rationality of management decisions and the rationality of projected operational effectiveness, based upon specific choice criteria for arriving at decisions. This is subject to review, of course, by superiors and others in the governmental hierarchical structure - all the way to the top decision-making and power authority - and by those outside the structure who may very well challenge the decisions (e.g. foreign aid agencies, development banks, prospective private domestic and foreign investors, affected communities, and others).

The project manager's decision-making function has many aspects, some of which have already been noted. The over-simplified bare bones of the decision-making process comprehends three steps: (1) Problem definition (i.e., identifying the problem, determining the objectives, and clarifying the problem); (2) Posing the alternatives (i.e., developing the alternatives, considering the criteria of social desirability, feasibility, consistency, and efficiency); and (3) Deciding (i.e., analyzing the consequences of the available alternatives under (a) prospective conditions and (b) contingencies; evaluating and finally selecting from the available alternatives).

The project manager clearly must keep all these dimensions constantly in mind if he, his staff, and "Organization" are to arrive at rational decisions on what is to be done and how in operating the project planning/implementation system. The objective of the "decision-making system" is to end up with the most rational project designs producible in the present environment (in which the project is being prepared) and in the future environment (in which they will be carried out).

The project manager's specification or programming function is the translation of the decisions for action into specifics on what has to be done, how, when, where, etc. The decisions and specifications need to be communicated, i.e., transmitted and understood. The project manager will not be "communicating" with his staff and the "Organization" if there is no personal involvement, if he fails to establish a two-way communicating system and other satisfactory working relationships, if his goals and methods are not accepted, if he is unable to motivate them to act in desired directions. Performance has to be in conformity within tolerable limits with decision standards and specifications, if the objectives of the project planning/ management system are to be accomplished. This requires guidance, evaluation, corrective action, and enforcement. The project manager requires leadership support for the effective exercise of this guidance or control function. All these functions are contained in each other, that is, they are iterative. Similarly, they are contained in the Planning and Implementation functions as will be made evident below.

It has been well stated elsewhere that planning and doing are not separate jobs, but separate parts of the same job. Nevertheless, it is useful to distinguish between the planning and implementation functions.

Planning, the more abstract of the two, concerns what is to be done rather than with getting it done. Planning a project requires a conceptualization of the commitment of resources in the most economical and required sequence to achieve socially desired results. It involves strategic decision-making and consideration of alternative allocations of resources to achieve project goals. It includes both the planning of the project and the planning of how to carry it out. It emphasizes analytical and abstract skills. Implementation concerns the administration of the planning activities and the execution of the plans. The project manager's "management" activities breathe life into the "Organization" and facilitate the planning and execution of the project. Implementation emphasizes administrative and human skills.

B.   Managing the planning

1.   Pre-project planning

The project manager's planning responsibilities may be viewed as falling into two categories (a) activities relating to "Pre-project planning" and (b) those relating to the "Preparation of the Project Plan".

Included under Pre-project planning may be activities that are normally not integral parts of project preparation as such, that is, activities falling outside the "Project conception phase" and usually carried out under the heading of sectoral and regional planning. More frequently, however, they start with activities undertaken as soon as it is decided that pre-planning actions are to be initiated in a particular field which may subsequently lead to the development of a project. The general nature of these activities was covered in the discussion of the "Project conception phase" and the "Project feasibility studies phase".

It should be stressed, in addition, that when the project manager finds it necessary to employ outside consultants to undertake certain studies and other services, he should be able to define as precisely as possible the scope of the work to be done, the sequence, the conditions under which such work should be done, the required reporting and follow-up, and other terms of reference embodied in the call for tenders.

Moreover, the project manager should arrange for the collection of "baseline" data, which shows the situation before the start of a project resulting from pre-project planning efforts. He should plan for the regular

gathering of objective information for measuring changes after the project is under way. This early planning for later _ex post_ project evaluation should result immediately in clearer definition of targets and other improvements in planning and implementation performance.

2. Preparation of the project plan

Activities relating to the Preparation of the project plan are those performed in the project implementation phase, as previously indicated, or implied in the statements on the project plan and schedule plan. In preparing the final project plan the project manager co-ordinates with those in and outside the "Organization" who will be playing important implementation roles, such as contracting, procurement, engineering, legal, training, and other officers.

A characteristic of successful project planning/management is the thoroughness with which the project plan is developed and the attention given to implementation planning. A project planning checklist is an effective method for a thorough review of the factors that should be covered in the project plan, including the administrative requirements. When completed, the checklist should to made a part of the project file.

The checklist should consider, as appropriate, the following general planning factors:

(1) Are the project targets clearly defined and accepted by the government?

(2) To what extent will the project contribute to the achievement of approved national development objectives - economic, social, or political?

(3) Is the proposed timing of the project co-ordinated with related projects and over-all requirements of approved sector/goal plans?

(4) Is the proposed level and quality of resources adequate to achieve the stated project targets?

(5) Does the project take account of the need to establish institutional capacity as part of its design? Are the institutional arrangements adequate to fulfil the long-range needs and desires of the country after termination of project support from foreign sources?

(6) What is the estimated cost of achieving the project goal in relation to quantifiable benefits to be derived directly or indirectly?

(7)   To what extent and to what degree are government contributions
and effective participation in terms of personnel, physical
facilities, services, policies, and programmes either already
available, in effect, or officially planned, approved, and
committed, or likely to be, at the time of implementation of
the project?

(8)   To what extent does the success of the project depend on the
implementation of other related projects? Have related
projects been properly co-ordinated in terms of timing and
implementation requirements?

(9)   Has account been taken of experience in the country and else-
where with similar projects so that techniques, successful
elsewhere, may be considered for use?

(10) Is there adequate information available on the current situation
which the project is designed to change so that progress can be
measured from a baseline?

(11) Have plans for continuing evaluation been incorporated in the
project plan?

Among the more specific planning factors covered in the <u>checklist</u> would
be those pertaining to needed technical expertise, training, procurement of
commodities and equipment, and other administrative aspects, as well as the
planned implementation schedules.

3.   The "Organization" charter

Once a project manager is given responsibility for pre-planning actions in
a particular field which may ultimately lead to a project, he will want to
consider the best organizational arrangements for accomplishing this objective.
In planning the organizational structure, he will seek answers to such questions
as: What is to be accomplished? When is the work to be done and where? What
is the best way of classifying the work? What over-all organizational posture
is likely to provide the best arrangement for the work? What principles
should be used in planning the organizational structure? Who will man the
structure and actually do the work? How will members of the "Organization"
relate to functional groups in the Ministry or semi-public organizations? Is
an informal organization desirable and what role should it play? How is the
organizational structure to be made dynamic and flexible enough to meet the
needs of a constantly changing project planning and implementation environment?
When answers are obtained to these and other policy questions, it is desirable
to record this information in a convenient form for ready reference. One such
form is a loose-leaf manual which might be called the <u>"Organization" charter</u>.

The "Organization" charter can be expected to facilitate project planning/
management, especially in the case of complex projects and those having a long
life cycle. Approved by the appropriate authority at the required highest
level, the Charter would indicate the priority of the work, the goals and
scope of the "Organization", and the authority and responsibilities of the
project manager. It would identify the agencies and individuals participating
in the "Organization" and the interface and operating relationships between
the project manager and these entities. Personnel in liaison offices and
field units associated with or under the management control of the project
manager would be identified The charter would specify the full-time and
part-time manpower to staff the "Organization", and would provide a staffing
schedule. It would indicate the management control techniques and information
systems developed for the "Organization". It would state the progress and
evaluation reports required (oral and written) and the frequency of these
reports. It would indicate the formal meetings to be held and their
frequency. It would state the communication channels between the project
manager and key participants in the "Organization".

The charter elements would vary, of course, with the nature of the pre-
project planning and planning requirements, but many features would be
standard for all "Organizations". The charter would be amended, as required,
to reflect changes in the "Organization" and in the project planning
environment. Kept current and available to all members of the "Organization",
it would serve as a most valuable directional and communication aid.

4. "Organization" charts

Well designed organizational charts portraying authority and functional
relationships between organizational elements and individuals can be most
useful to the project manager in managing the planning and, subsequently, the
implementation. At best, traditional pyramidal organization charts can be no
more than an over-simplification, especially when there is a myriad of
reciprocal and dynamic relationships existing between peers, associates, and
others with a common interest in project planning who constitute the "Organi-
zation". On the other hand, matrix organizational charts come closer to
representing such relationships and have proved to be useful project planning
and management devices. Although they, too, omit lines of informal
authority and control and the nuances of relationships and personality, they

are a more effective vehicle for organizational analysis and charting the inter-relationships between functions, tasks, job positions, and other relationships. The matrix form facilitates the portrayal of organizational patterns which are multi-dimensional in nature.

Many forms of matrix organizational charts are possible, ranging from simple linear responsibility charts to sophisticated systematized ones. The exact structure will depend on the type of project being pre-planned and planned, its requirements, the authority to be assigned to the "Organization", and other aspects. As the project goes through its life cycle, it becomes necessary to make changes in these charts to reflect changes in the organizational structure and relationships.

C. Managing the Implementation

As the term "implementation" is being used in this paper, it applies to the administration of the planning activities, as already indicated. It obviously applies to the execution of the activities in the project implementation phase. Since this paper is more concerned with the "project preparation stages" than the "project implementation stage" (as customarily defined), our observations on the administration of "implementation" activities will be necessarily confined to the execution of the planned 'planning" activities during the project preparation cycle.

How does the administrator of the project planning "Organization" succeed in making activities conform to an established plan of action - to see that they conform to time, quality, and cost schedules? The answer lies in an understanding of management's <u>control</u> function.

1. The control function

Controlling means obtaining performance in conformity with decision standards. It is concerned with: (a) comparing events with plans and (b) making necessary corrections where events deviate from plans. It is the step taken to make certain that planned decisions are properly executed. It is the monitoring and checking-up part of the project manager's job. It is the process by which the project manager sees if what did happen was what was supposed to have happened. If not, he arranges for the necessary adjustments.

Controlling cannot be accomplished without planning, for without planning, the project manager has no predetermined understanding of desired performance. The planning sets the goals or objectives and determines the approach by which these can be accomplished. For example, the contract for a feasibility study contains a budget which sets forth the expenditure targets. The project manager's controlling function requires that he compares actual expenditures against this budget and suggests appropriate ways to correct any deviations. The budget which was a planning tool thus becomes a performance standard.

In performing the planning function, the project manager creates, organizes, motivates, communicates, and controls. Similarly, in performing the controlling function, he creates, plans, organizes, motivates, and communicates. This is likewise true for each of the management functions as previously observed, since the functions are iterative; the lines of demarcation cannot be clear-cut.

In performing the control function, the project manager has to <u>plan</u> for the collection of data required for the controlled execution of planned project preparation activities. He has to <u>organize</u> the data collection methods, <u>motivate</u> the data sources to respond, and <u>open</u> effective, two-way <u>communication lines</u>. Most importantly, he has to plan to see that he has the necessary authority to exercise the control function in every respect — how to act, as well as when and where — and that this authority to act is communicated to the "Organization" participants by means of a <u>charter</u>, as mentioned above, or some other policy or procedural documents.

2. <u>The control system</u>

(a) General

A government or agency's standard documentation system will provide the project manager with certain of the above control elements. Other kinds of project planning documentation, as mentioned later, (e.g., consultation and meetings, inspection and monitoring, orientation of "Organization" participants, etc.), contribute further to project preparation control. Together they constitute an "information system". However, they do not provide integrated, co-ordinated day-to-day involvement of the project manager and effective use of control techniques and tools employing time, cost, and other data in more specific and refined form.

This becomes more apparent when the project planning/management control system is viewed as a four-step cycle or process. First, the project manager must see to it that a framework of realistic standards is established. Second, he must be sure he has an effective system for collecting and analyzing appropriate data, and for observing physical activities and the status of human and non-human resources involved in the project preparation activities. Third, he must have a tracking system for comparing actual performance with expected performance, to see how actual actions conform to the plans or standards, and for evaluating the results. Finally, he must have a system for taking corrective action. The control system should indicate the nature of the corrective action required to bring the project preparation activities back into consonance with the planned activities.

The project manager may encounter conflicting goals among the "Organization" participants as he seeks to control, re-plan, and re-schedule the work. His control system has to be sensitive to these conditions. It has to be feasible in terms of the constituent elements of the project and their working relationships. It has to be sufficiently flexible to remain compatible with the changing environment.

For the control system actually to work, information of the effects of action has to feed back upon the sources in such a way as to assure effective control. The control system cannot work if the project preparation activities are not budgeted and administered as an independent unit, or as if it were one. And of paramount importance, it cannot work without continuous, active personal direction by the project manager.

The sophistication of the control system will depend on the complexity of the project preparation activities and the project manager's ability to administer it. The control system cannot be imposed from above on the "Organization". It must be understood by the participants and related to them. It should be developed, as far as practicable, through their active participation.

The control system should not be confused with "management controls", which are methods and tools for measuring, evaluating, and reporting progress, or the means for regulating the "Organization". Management controls provide the tools for determining and assessing the progress being made. Examples are budgets, management audits, bar charts, status index, etc. They do not constitute a control system.

(b) Control system devices

A sound control system requires a mechanism or device which groups and ties together, over a specified time span, project planning/management implementation responsibilities, decisions, and actions. Some type of combined comprehensive matrix and network or linkage of activities is needed. Some sort of structural system or network is required which identifies and relates each important implementation step and action sequence to each other. The system needs to identify major decision points before major steps are taken.

The GANTT Chart and similar types of bar charts serve this purpose to some extent, but have too many limitations when projects are large and complex. They fail to depict inter-relationships among elements of project preparation tasks. They do not provide sufficient detail to permit timely detection of slippages in schedules They present no indication of the activities and dates that are most critical to the progress of the preparation of the project, etc.

Structural network devices can be more helpful both in creating a plan for project preparation activities and in controlling the activities. Included are PERT/TIME, PERT/COST, CPM and associated network scheduling techniques or variants They provide sophisticated control methods for large or complex project preparation activities. They may be less appropriate for small or less complicated activities which call for more flexible management. The techniques enable the project manager to follow the progress of the project preparation activities and to see to it that they proceed in consonance with established schedules. He is better able to keep informed of potential or actual slippages. The project manager may want to insist that all contractors employ such techniques in developing their bids and in following the progress of the jobs. The danger to avoid is using the devices as a whip to apply pressure where deadlines are threatened.

Structural networks can be developed for each time phase in the project preparation cycle and can show the major action sequences in accordance with functional and operational responsibilities.

It should be emphasized that network scheduling, in common with other planning and control techniques, requires time and cost estimates of a high order of reliability for achieving the required performance (not only technical

but behavioural) of each activity. If the required performance cannot be attained, it becomes necessary to modify the other two variables, time and cost. Cost curves showing times and costs indicate the range of trade-off possibilities. All this presupposes relevant useful prior experience, namely, familiarity with the processes involved, a portion of the map, knowledge of work patterns, and good data. When these conditions are absent, it is still useful to have the network, in one form or another, as a method of visually defining the logical sequence of project preparation activities and their inter-dependencies.

Displays of network schedules are excellent communication devices. They lend themselves to a variety of graphic displays which show the progress of the project preparation activities, targets, trouble areas, etc. They should be set up in a "control centre" and kept up to date. The revision process provides opportunities for a continuous check on accomplishments and re-planning of activities as the work progresses.

Finally, it should be underscored that network scheduling does not show the managerial activities that are required to assure that necessary actions are taken. However, these activities are implicit in the network diagrams. Furthermore, the network schedules do not usually show the stream of activities and events external to the project preparation activities which are activated by the "Organization" as it proceeds with its work. These triggered activities and events may create new demands which need to be planned for in advance. Failure to synchronize the implementation of such demands could adversely affect, directly or indirectly, the project preparation or performance.

(c) Cost, quality and risk control

The project manager seeks to achieve project preparation objectives in the best time and at the least cost and risk. Consequently, just as scheduling has to be controlled within the established constraints, so do costs and quality and risks. This requires adequate cost plans, realistic and authentic standards or performance criteria, and an information system which enables the project manager to follow and compare the project preparation costs and performance quality. The members of the "Organization" should be involved in developing the performance standards.

Human beings working together do not like to look upon themselves as "controlled" via a system of prescribed authority, prescribed roles, prescribed procedures and standards, particularly individuals who are being creative. If they are consulted in developing the standards, they are more likely to be motivated to accept and comply with them. If their perceptions and understanding of the quality criteria agree with those of the project manager, performance expectations will be consistent, and potential sources of conflict will be reduced.

Achievement of quality control is easier with a technical or non-human system than a human one. The two systems complement each other which makes the control function more complex. Nevertheless, the project manager needs some simple yet highly effective system for defining the "quality" variable and for controlling it as far as possible. His information system, for example, should supply him with feedback on the quality of the expert assistance being provided. He needs to review the situation regularly and where he finds departures from expectations he should take corrective action. Not so incidentally, this includes the quality of his own management.

Project managers can achieve more effective control by reducing the possibility that costs will sharply increase budgeted expenditures, that accomplishment of targets will fall behind schedule, and that performance standards will not be met. This requires identifying and evaluating risk elements on a continuous basis. While the project manager may not be able to eliminate certain risks, he might find it possible to balance risks by means of cost-time-technical "trade-offs". For example, he might decide to use outside consultants to review the project design, incorporate more precise specifications in a personal services contract, retain consultants for a longer period, etc. What he does and is able to do will, of course, depend on his budget and its limitations, and on the criticality of the requirements and schedule. Frameworks for identifying and appraising risks appear in management publications. Management practices vary but the usual procedure is to have a checklist of factors affecting the risk elements and an appraisal of the level of risk (high, moderate, minor, low) by the individuals responsible for the performance items.

D.   Managing the evaluation

The project manager's evaluation function necessarily inter-relates with and overlaps the control function.   Furthermore, both depend on the information system for inputs.   As project preparation work progresses, it is necessary that periodic checks are made to see if policies are being followed, if standards are being met, if adjustments should be made.   These are typical questions asked by the project manager in controlling the project preparation activities.   Evaluations should reveal the adjustments that have to be made to bring accomplishments in line with plans, or plans in balance with available resources.   Both in control and evaluation, feedback represents the communication of actual results for comparison and contrast with planned results.

In judging the execution of project preparation activities, the project manager logically has to make a comparison with what might have been.   This comparison is not with some ideal, but in the given environment and with the given options.   Could a different combination or arrangement of activities better fulfil the project preparation objectives?   Could a better method for reconciling different interests be followed?   Would different project planning techniques result in better implementation of required activities?   A large set of glasses is required to discern probable lines of project preparation behaviour under assumptions of altered conditions.   What the project manager sees may not lend itself to precise quantitative analysis.   To a large extent his judgment may ultimately rely most heavily on intuition, experience, and practical sense.

The term "evaluation" is used here in an ex post sense, that is, the appraisal is of actions completed in order both to judge the effectiveness of the project preparation implementation activities and to promote improvements in the planning and delivery of future required implementation.   This meaning is different from that employed in project analysis or project appraisal where the concept is used in an ex ante sense.   The project manager's evaluative responsibilities require him to make predictive judgments, i.e., judgments relating to the future path of project preparation activities and the project as formulated, and evaluative judgments, i.e., assessments of the state of affairs or the progress made in achieving objectives (both project preparation and project execution).

To carry out his evaluative responsibilities, the project manager will need to establish an evaluation system (formal and informal) and explicit evaluation standards for measuring performance (achieved and contemplated). Evaluation is a continuous, inter-related, circular process in which the project preparation activities are reviewed in terms of their effectiveness, significance, efficiency, and other standards. It is not sufficient that the activities be "on schedule". It must also include periodic examination of the implementation methods and techniques employed to insure that the activities are significant and are being conducted as effectively as possible.

In planning and organizing his evaluation system, the project manager should consider the kinds of evaluation that are most desirable, their frequency, and methods of execution. He will have to take account of the requirements of each phase of the project preparation cycle, and of the reports that need to be prepared. Advance planning for evaluation can help integrate the means for evaluation more effectively into the management action process. Such planning should include provision for necessary functional and other supportive inputs.

E. Managing the information and documentation systems

1. Information system

Without an adequate information system, there can be no effective control of project planning and implementation activities. The information system of the "Organization" is a complex of formal and informal networks for the transmission of communications between the participants. The networks vary widely in degree of formality. They range from highly structured methods, such as network schedules, to personal conversations with and between members of the "Organization". The coherence and unity of the "Organization" is intimately related to its information. The project manager has the key responsibility for the efficiency of the information system – for the collection, processing, comparing, and selecting of information required to control the project preparation activities. He should be evaluating its functioning continuously. Is the right information being obtained? Is it useful? Is it actually needed to exercise appropriate control? Is so much information flowing that much of it is not being used? etc.

The information system supplies both data for control purposes at the Ministry operating level and data for a variety of higher government level programme management, evaluation, and technical needs. Hence, the information system must be suitable not only for the purposes of the project preparation activities, but must interface with the government's over-all information system.

Consultation, meetings, inspection, and orientation of "Organization" participants are part of both the control and information systems. They require advance planning with regard to objectives and how best to accomplish them, with account taken of conflicting goals, relationships, and expected inter-personal and inter-group behaviour.

2. Documentation system

Most governments have standard documentation requirements that apply to administrators of project planning and implementation activities. These documents usually call for information on the characteristics of the activities, on expenditures pertaining to these activities, on progress made in implementing the activities, etc. The project manager may find it desirable to supplement the required standard documentation with other forms to facilitate management of the project preparation process. He may require forms covering detailed functional and other elements, but he definitely should be interested in forms of documents that provide over-all control, that tie together all parts of the project preparation activities and involve all members of the "Organization" in their development and maintenance. In project preparation activities of any complexity, the project manager will find that formalized documentation that serves these purposes (e.g., project manual) is to be preferred over mental storage of much information.

A standardized reporting system facilitates project planning management, but will not necessarily keep the project preparation activities or the project out of trouble. If it is a good reporting system, it will keep the project manager from being surprised when trouble comes. Reports are only as good as their inputs. It is the right information that counts, rather than the volume. When reports contain information useful in exercising control at the correct point in the project preparation or the life of a project, they can be sharp tools. Obviously, costs can be reduced and useless work eliminated by avoiding unnecessary reporting.

(a) Project manual

The project manual is a formal document that takes shape as the project preparation activities grow. The "Organization" participants participate in developing and keeping it current. The manual provides general information on the activities (i.e., purposes, scope, objectives, policy framework, priority, schedule, etc.); information on the "Organization" (including organization and schematic charts, authority, key and other participants, interfaces, etc.); information on the internal and external information systems; summaries of major reports covering costs, schedules, and other key factors; reports of observation and inspection trips; reports of meetings; important telephone reports; and other reports as required. The manual provides a technical summary of the project preparation activities, information on programming of these activities, standards, and quality assurance. If security features apply, the manual provides information on security classification, clearance lists and procedures, etc. It should include the checklist referred to earlier.

The contents of the project manual will depend, of course, on the requirements of the project preparation and implementation activities. However, its development, general format, and purpose apply to all projects. The "Organization" participants should work together in preparing and maintaining the manual; this will make them better informed and more apt to support and identify with all phases of the project preparation. Kept in loose-leaf form, the manual is easier to maintain and up-date.

Many of the elements of the "Organization" charter would appear in the project manual. The two documents, of course, have different objectives. The charter has the character of an over-all directive, whereas the latter, in a sense, is the "plan" of the project preparation activities and contains all the key information required to maintain activities in accordance with the "plan".

(b) Project file

The project manager should establish a permanent project file and see that this file is properly maintained, and that it contains the required documentation. The file starts with the decision to start pre-planning project activities. It contains all basic documents and reports relating to that decision and

future decisions during the project preparation cycle.

The scope of possible documentation, apart from officially prescribed requirements, is extensive. Obviously, the project manager has to be selective, so that the documentation is not carried beyond a point of diminishing returns. A guide for selecting the form and amount of documentation is the question: That is likely to be the need to know, and in what degree of detail? Normally the project file will contain: memoranda for the files; records of significant oral agreements and understandings; discussions with key individuals and entities whose activities or responsibilities bear directly on the project preparation activities; reports on field inspections; progress reports submitted by contractors in accordance with terms of contracts and agreements; and other reports as applicable. If an "Organization charter, project manual and checklists are established and maintained, these should be kept in the project file along with organizational charts and other relevant material, as well as standard documents

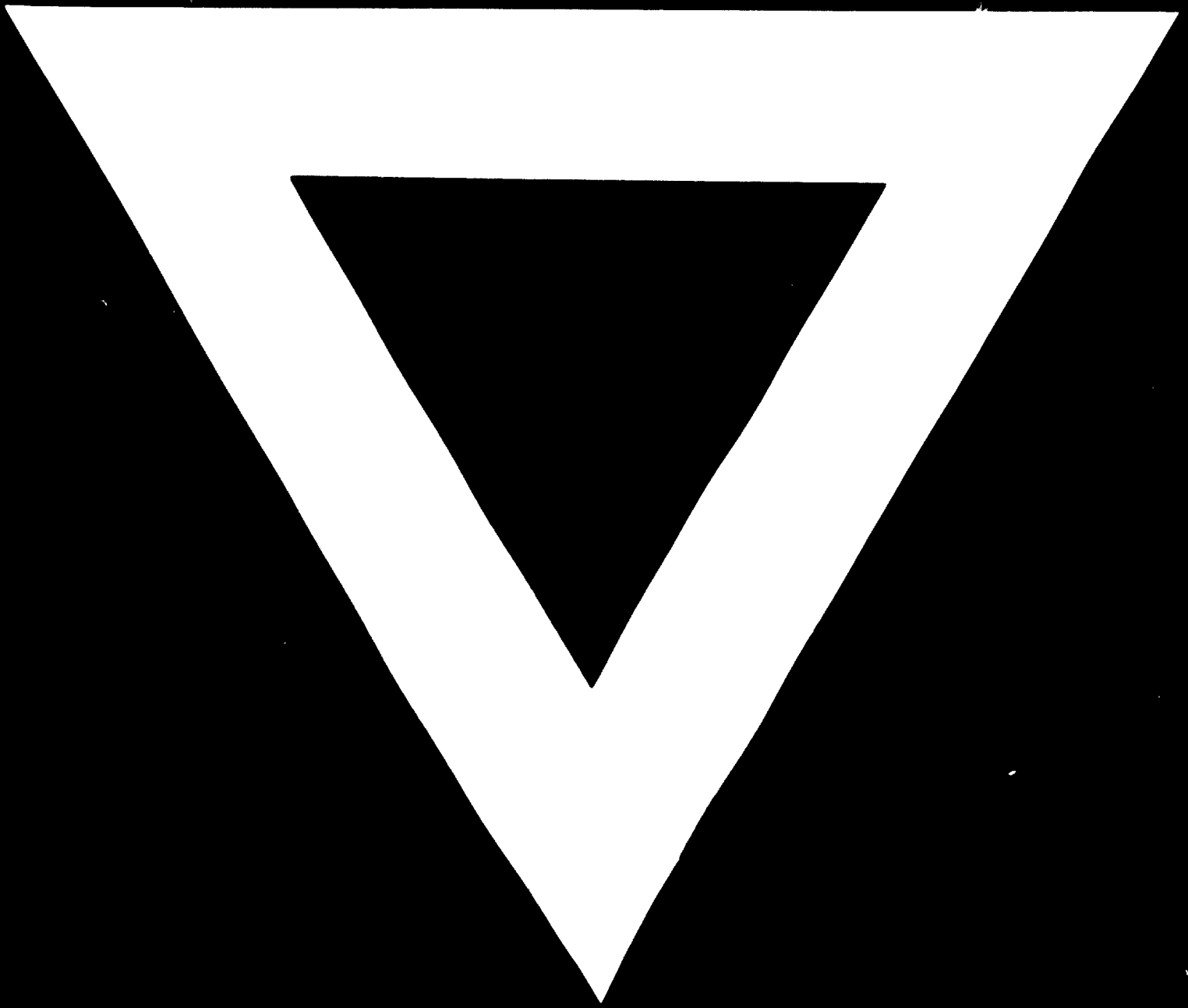## IV. INSTITUTIONALIZING PROJECT PLANNING AND ADMINISTRATION

The project planning management system set forth in this paper is obviously an idealized abstraction and the comments on its administration are only suggestive. How relevant (in whole or in part) the system formulation and the administrative suggestions may be in a given social and administrative setting for administrators and managers of industrial development and other development project preparation activities is undetermined.

It is clear, however, that the project planning administrator has to create a formal or informal organization or "system" with a given structure that will have a sustained capacity to perform certain desired and required activities and roles. His "system" can be viewed as a micro-social sub-system, having its own structural and performance elements and interacting with other sub-systems. This "system" requires inputs for its "technical" and "institutional" development. It provides outputs (well-prepared projects) desired by his society (as perceived by the leadership) and operates within technical, social, and other constraints. It cannot be isolated from the social system. Indeed, it requires institutionalized support from the social system, if desired performance capacity is to be ensured.

The building of social institutional support for a project planning/management system can be seen from different perspectives of varying scope and emphasis. One perspective highlights inputs required in terms of flows of educated and skilled manpower, funds, goods and services, participation by key individuals and groups, decision enforcement by legitimate power and communication of information. A more complex institution-building perspective, more abstract and comprehensive, concentrates on (a) the key variables (leadership, doctrine, programme, resources, and internal structure), (b) system transactions (exchanges of goods and services) and system linkages (enabling, functional, normative, and diffused) associated with building institutional capacity. These and other perspectives look to similar hoped-for socially rational outcomes, such as, first, planning anticipations related to the interests and capabilities of those whose action is essential in carrying out the decisions; second, planning actions predicated on reconciliation of conflicting group interests; and third, project design specifications consistent with the behaviour of groups who are influenced in certain directions, and consistent with the degree of commitment of relevant clientele groups. In other words, the common objective of the different perspectives is a development project planning/management system that is viable, effective, adaptable to change, responsive to social needs and pressures - on considered indispensable by those involved in it, by their clientele, and by the social environment.

When Ministries, autonomous, and semi-autonomous agencies lack this institutionalized capacity, they need to develop appropriate strategies and tactics for advancing in the direction of acquiring the necessary inputs for full "technical" and "institutional" development. As an interim solution, for example, they might advocate some mechanism for centralizing scarce technical personnel. They might seek government support for training institutes where appropriate skills are taught. They might favour project planning centres which would be responsible for certain pre-project planning and project preparation activities until they themselves could take over more of the work. There are many variants of these and related possibilities.

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