Chapter 10

PEP&PM (Political Enterprise Planning and Project Management) and PSP&PM (Political System Planning and Project Management)

10.1- Prologue - In order to define project management, we first need to define the term **project.** Reducing the hundreds of definitions of **project** to a generic statement, we can say that a project is "a group of tasks performed in a definable time period in order to meet a specific set of objectives." A project exhibits most of the following conditions:

- It is likely to be a unique, one-time program.
- It has a life cycle, with a specific start and end.
- It has a work scope that can be categorized into definable tasks.
- It has a budget.
- It may require the use of multiple resources. Many of these resources may be in short supply and may have to be shared with other projects.

Polit-project management provides a polit-organization with powerful tools that improve the organization's ability to plan, organize, implement, and control its activities, people und resources.
Project management is the creation and delivery of something that did not previously exist, on an ad hoc basis, so that the project meets cost and schedule objectives. Project are building blocks in the strategic management of organizations, which when conceptualized, designed, produced, and put into a user's CIPSEnterprise facilities that organization's growth an survival.
More broadly, a polit-project is something that brings about change in a polit-organization and has:

- Time, cost, and technical performance requirements (or objectives).
- Complexity, scope, or innovation beyond the operational work of the CIPS-Enterprise.
- A key role in preparing the organization for its future.
- Significant contributions by two or more functional units of the organization.
- A direct contribution to the success or failure of the CIPS-Enterprise.

The dichotomy between traditional planning work and project management can be viewed from two perspectives:

- Project management can be seen as a subset of planning, with relaxed timing constraints and working at a higher level of abstraction.
- Planning can be seen as a detailed sub tasking level within the overall context of a project management system.

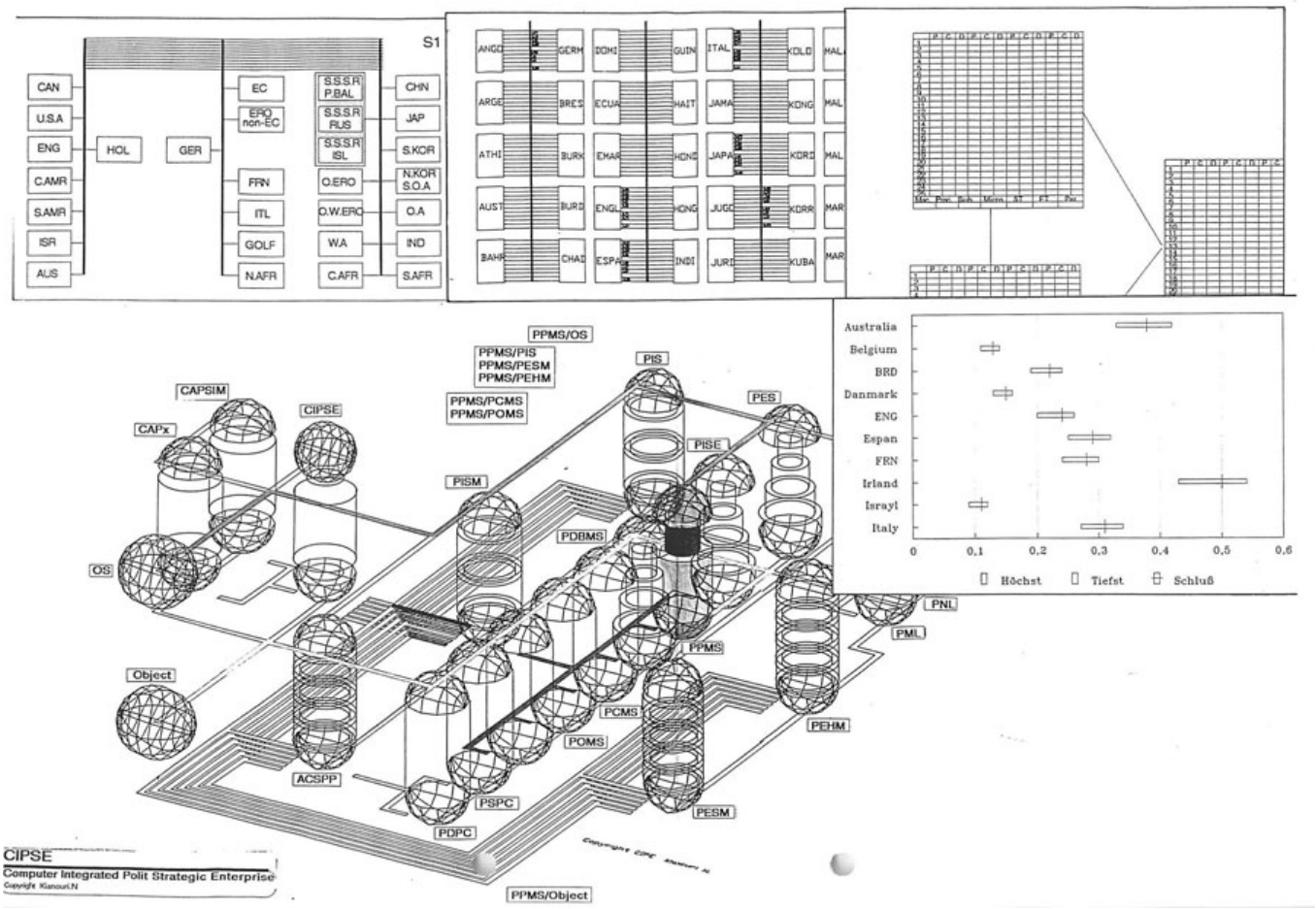

Fig.10.2. is a PPMS Station and Interfaces between CIPSE stations. The possibility of this station list as:
- Strategic table demo
- Political plan chart demo
- Operation research and control planning.

Project - management , on the other hand, can be defined as the "planning, organizing, directing, and controlling" of resources for a specific time period to meet a specific set of one-time objectives."
Project management is a multifaceted process in which many different things get managed simultaneously according to a definition developed by the Project Management Institute, in the managing of projects, we are normally involved in the following types of management:

- Polit-knowledge management
- Scope management
- Time management
- political resource management
- Cost management
- Quality management.

For each of these functions it is necessary to plan, organize, and control.
Every project must have a **plan,** and it is this plan that becomes the basis for control.
Project management vendors refer to a project as any job that can be segmented into a series of smaller activities, or "tasks".

10.2- List of Functions of PEP&PKS List as: The following is a list of the typical functions involved in planning and controlling projects:

- Establishing the polit-project objectives
- Defining the political activities
- Defining polit-project overview
- Defining polit-project goal
- Defining polit-project elements, blocks, structure
- Defining polit-project procedures
- Defining project standards
- Model of polit-object structure

- Definition polit-strategy of systems
- Definition polit-tactics of systems
- Define polit-strategy algorithms
- Define polit-strategy model
- Define polit-strategy functions
- Building strategic demonstration tables
- Determining the work timing
- Establishing the resource availability and requirements, assigning resources (people and equipment)
- Establishing a cost baseline
- Evaluating the baseline plan
- Optimizing the baseline plan
- Freezing the baseline plan Tracking the work progress
- Building polit-operation research model
- Developing a schedule for these tasks and specifying deadlines
- Tracking the actual costs
- Comparing the progress and costs to the baseline plan
- Evaluating the performance
- Forecasting, analyzing, and recommending corrective action.

10.3- Basic Definitions of PEP&PMS List as:

Political Activity - Any work or single job that must be done in order to complete a polit-project; synonymous with task.
Political activity is the atom of a polit-project. Activities are generally smaller than tasks. In a detailed analysis of a project, an activity can be viewed as the smallest practically indivisible work element of the project. Such as minute details of a project can become very in identifying project bottlenecks.

Polit-Task - The elemental content of a polit-project. A polit project is normally composed of arrays of tasks that all contribute to the overall project goal.

Activity Coding - Attaching identifiers to tasks to simplify sorting or selecting specific information; often used in conjunction with Work Breakdown Structures.

Polit-Critical Success Factors - A new method of eliciting polit-information requirements, especially useful for systems saving higher management. Managers are interviewed to determine the "critical success factors" for themselves and the organization as a whole.
In the short timescale recommended for a strategy study, it is vital to use every means possible to gain understanding of the policy. These include:

- Active participation of key executives, opinion managers, and others who collectively understand what is needed.
- Early correction of opinion, ideas and the policy model.
- A higher successful, through feedback session.

Polit-Plan Goals - Are broad statements of the ends the organization intends to accomplish in order to fulfil its mission.
The success of polit-systems design depends on achieving a clear understanding of the needs of the polit-user organization, and the environment in which it operates. An understanding of the needs can only be acquired by a distinct separation of analysis (what is to be done) from design (how it is to be done).

Organizational Mission - An organizations mission is the most general strategic choice that must be made by its managers. An organizations mission tells what it is, why it exists, and the unique contribution it can make. The organizations mission answers the basic question: "What policy are we in?"

Polit-Plan Objectives - Are more specific, measurable elements of a polit-goal. An end target state that is achieved by accomplishing all polit critical success factors related to it. Objectives are short-term targets (12 to 24 months or less) with defined achievement measures.
The objectives of the strategy stage is to produce, with polituser management, a set of polit-models,a

set of recommendations an agreed plan for information systems development, which will serve the organization's current and future needs, while taking account of organizational, financial and technical constraints.

Polit-Plan Description - A complete, detailed analysis of a politorganization would be an excellent basis for evolving a plan for polit-information systems development, but would be uneconomic to prepare. Instead, a polit-staretgy is derived by doing complete, but not detailed, analysis from which a broadly-based polit-model is built. Time scales are kept short, to maintain momentum and avoid results becoming out of date.

Calendar - A feature that enables users to modify and customize a working schedule on a monthly basis to show working and nonworking days.

Polit-Planning Phase - A phase of polit-information engineering. A high-level study of an polit-organization that identifies polit-information needs, accesses existing information system's capabilities, identifies appropriate technologies and architectures, and defines policy areas. A corporate information model, information needs report, existing information systems profile report, and information systems plan (which includes a tactical IS plan and a long-term information systems plan) are produced.

Polit-Strategies - Are general approaches that show how goals should be achieved.

Lange-range planning - Usually involves looking three to five years (or more) into the future.

Polit-Tactics - Are more specific guides to actions that would implement strategies.

Polit-Tactical-planning - Involves the design of tactics, the setting of objectives, and the development of procedures, rules, schedules, and budgets.

Operational Planning - Is planning done on a short-term basis to implement and control day-to-day operations.

Operational Control Decisions - These are concerned with the detailed implementation of tactical plans.

Preplanning - The first component of Strategic Information Planning is a stage called scope definition and organization.

Dependency - The logical relationship between tasks; a dependent task is one that cannot be started until its predecessor has been completed.

Interdependencies - Polit-projects often interact with other political projects being carried out simultaneously by their parent organization; but projects always interact with the parent's standard, ongoing operations. While the functional departments of a polit-organization interact with one another in regular, patterned ways, the patterns of interaction between projects and these departments tend to be changing.

Solution Ability Engineering and Planning (SEP) - The term "solution ability engineering and planning" is identical to the term "solution planning". SPE includes all those design activities and disciplines necessary to design a polit-solution, design the processes and tooling, set up the enterprising facility, and prove the processes and facilities, before entering solution.

Deadline - Refers to the final date by which a project is scheduled to be completed.

Duration - The amount of time required completing a task; in most programs, task duration is expressed in terms of hours, days, or weeks.

Milestone - A starting or stopping point for a group of tasks within a project, representing a checkoff point or short-term goal.

Network diagram - A chart that displays all the project tasks and how they are related to one another; a **PERT** chart.

Program Evaluation and Review Technique (PERT) - One of the two popular project management

principles; a **PERT** chart graphically illustrate the relationships and dependencies between tasks means of boxes and adjoining lines.

Resource - Anything that works on a task; usually a person/ a group of person, a group of persons, materials, or equipment.

Schedule - The design of a project's course in terms of a proposed sequence of events.

Sequential Tasks - Tasks which follow one another in a project schedule.

Task - An activity (a job or work) that must be done to complete a project. A project comprises a series of tasks.

Workday - A day that the program considers when calculating a project's schedule: it will ignore weekends, holidays, and other user specified nonworkdays.

10.4- Polit-Project Management System - Polit-project is a related group of work activities, organized under the direction of a project manager using a project plan, which when carried out will allow the project goal(s) to be achieved.
A polit-project is usually a one-time polit-activity with a well-defined set of desired end results. It can be divided into subtasks that must be accomplished in order to achieve the project goals. The project is complex enough that the subtasks require careful coordination and control in terms of timing, precedence, cost, and performance. The project itself must often be coordinated with other projects being carried out by the same parent organization.
Projects are characterized by a singleness of purposes I a define life cycle, complex interdependencies, some or all unique elements, and an environment of a polit-purpose or -objective.

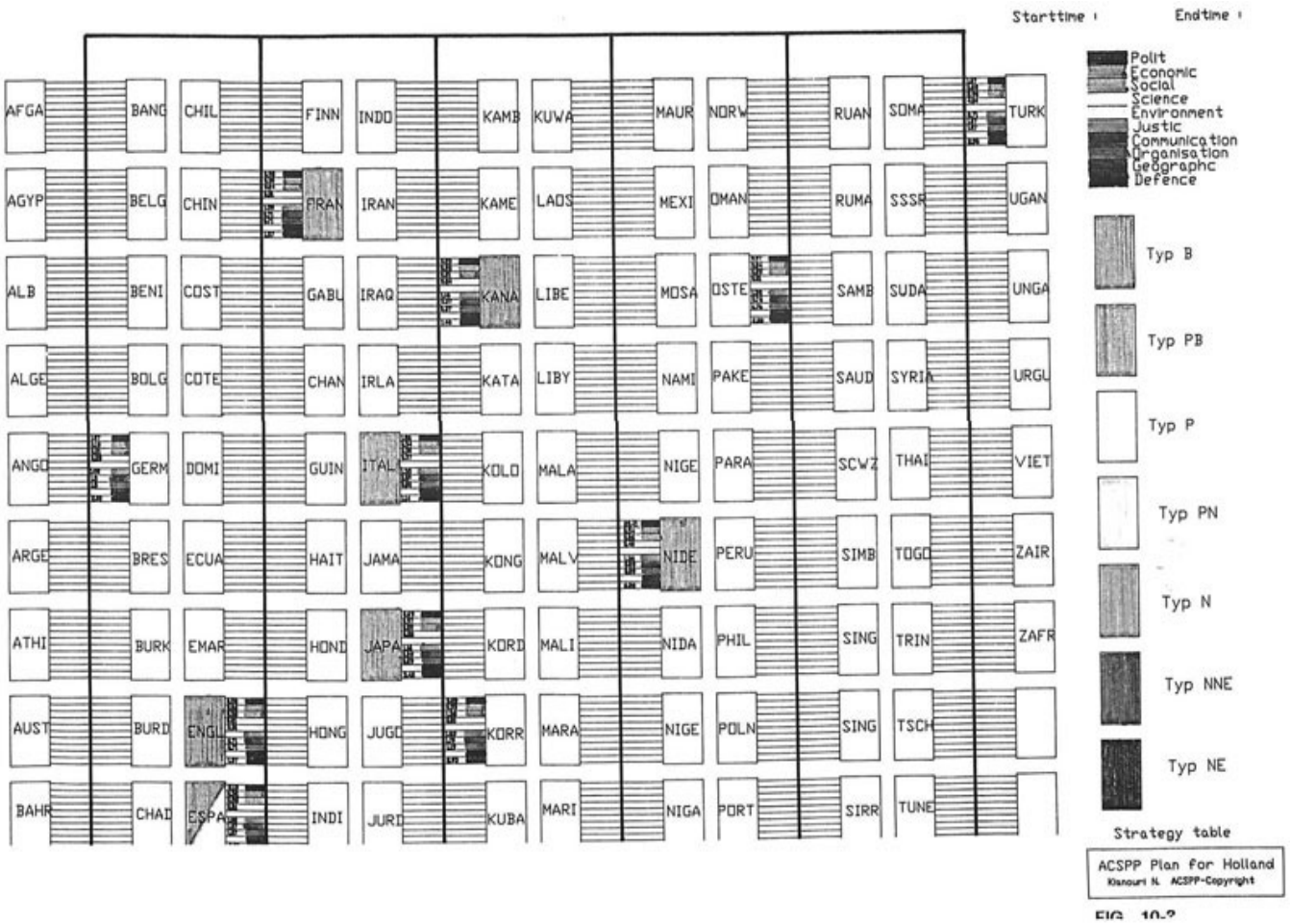

Fig.10.2. is a strategic table for coalitions; the legend of colour shows the level of coalition and non-coalition, and also the political relation between coalitions.

10.5- Principles of PPMIS - In the design, development, and operation of a project management information system, a few principles can be applied. There are:

- Information is needed to manage the polit-project, and organize, evaluate, and control the use of resources on the project.
- The project work breakdown structure establishes the common denominator for information for management of the project.
- Information is needed to manage the project during its life cycle as well as during the pre-initiation and post initiation phase of the project.
- Information is the medium to integrate and synchronize the varied systems that are found in a project.
- Information to manage a project comes from a wide variety of sources including formal reports, informal sources, observation, project review meetings, questioning aided by formal evaluation and analysis as well as intuition as to what the information says about the status of the project.
- Information provides the basis for informed decision making by the project stakeholders.
- Information systems must reflect the user's management needs for making and executing decisions in the management of the project resources.
- The PPMS should interface with larger organizational information systems so that the status of the project as a building block in the design and execution of organizational startegies is easily discerned.

In addition the PPMS should:

- Be adaptable to differing polit-user requirement.
- Be consistent with organizational and project policies, procedures, and guidelines.
- Reduce to a minimum the changes of the managers being
- Surprised by project development.
- Provide essential information on the cost-time performance parameters of a project and on the interrelationships of these parameters, as well as the strategic fit of the project.
- Provide information in standardized form to enhance its usefulness to all managers.
- Be decision-oriented, in standardized form to enhance its usefulness to all managers.
- Be decision-oriented, in that it focuses the manager's attention on those critical areas and requiring the managers to devote attention to each.
- Be a collaborative effort between users and analysts.
- Be done by a multidisciplinary team who views the design, development and implementation of the information system as a project itself, meanable to project management approaches.

10.6- Polit-Project Planning - Is a important operational planning function. It involves the development of plans, procedures, and schedules for the analysis, design, training, testing, acquisition, and installation of an information systems development project.
Project planning is an important part of a project management effort. A politplanning system is a special-purpose, problem oriented software system intended for the easy representation and manipulation of politmodels and data appropriate to politstrategic planning decisions.

Polit-planning is deciding what to do before you do it. If you spend time and effort thinking about the best way to reach a polit-goal before you begin to reach for it, you are planning, and your changes of accomplishing your goal should be enhanced. That's why polit-organizations and their managers plan. They go through a polit-organizational planning process of:

- Evaluating what they have accomplished and the resources they have acquired
- Analyzing their environment
- Anticipating future developments
- Deciding on what goals they want to achieve
- Deciding what actions to take to achieve their goals.

The result of this polit-planning process is called a **political plan,** which formally articulates the actions we fell are necessary to achieve our polit-goals.
Polit-Planning, in a project management context, refers to the processes of establishing courses of action within the prevailing environment to achieve predetermined goals. Planning is needed to:

- Minimize uncertainties
- Clarify project objectives
- Provide basis for evaluating project progress

- Establish performance standard for operations
- Notify personnel of responsibilities.

The standard elements of project planning should include the following:

- **Project Overview;** An enumeration of the objectives of the project.
- **Project Goal; A** detailed description of the overall project goal.
- **Project Policy;** The general guideline for personnel actions and managerial making. The project policy, in effect, dictates how the project plan will be executed.
- **Project Procedures;** The detailed of abiding by the project policy. An example is the requirement for written documentations for all approvals.
- **Project Resources;** The manpower and equipment required for the project.
- **Project Budget.**
- **Project Performance standards.**
- **Project Organization;** The correlation of duties, people, responsibilities, and interactions of the project personnel. The project-organization shelves as the coordination model for the overall project.
- **Work Breakdown Structure (WBS);** The partitioning a project into convenient small work packages. This method facilities a more efficient and logical analysis of the required events and activities involved in the project.
- **Potential Bottlenecks;** The areas or phases of the project that could cause the project to be slowed down or stopped.

10.7- Polit-strategic Planning – A plan is a connected and related set of actions. A **Strategy Plan** is a connected set of actions concerned with an organization's essential internal and external relationship and processes. Is the term commonly given to consideration of high-level, one-of-kind, long term, complex decisions about different alternative course of action which face the entire polit-computer-enterprise.

Polit-strategic planning deals with the development of a polit-organization's mission, goals, strategies, and policies.

A strategy is a series of prescriptions that provide the means, through the allocation of resources, for accomplishing organizational goals, objectives, and mission. In addition to allocation and committing resources for the future, a strategy also provides the gerleral direction for the organization to purse in reaching desired purposes. A strategy stipulates what resources are required, why they are required, when they are required, where they are need, and how they will be used to accomplish ends. Resource include participated expenditure for people, fixed assets, equipment, polit-facts, supplies, working capital, info 'I'm lllllat i01'l , and lll inageIllent systems.

Strategy is the planned means for taking an organizational from its present state to a desired future state. The purpose of a strategy is to provide the means to create something that does not currently-y exist.

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- Polit-project scope
- Polit-otije-c-tive-s- su-c.-'1r as- puliti-Gttl events-, t'ac tors, other
- Technical and management approach
- Deliverables
- End item specifications
- Schedule s
- Resources
- Contributions
- Finances Risk -areas.

Polit-Strategic Information Systems Planning (PSISP); process involves a study of how the information systems function can contribute to the achievement of the goals contained in the strategic plan for the entire organization.

The PSIS plan formulates policies, objectives, and strategies for delivering politinformation services and allocating information of systems resources.

The process of polit-strategic information systems planning can help a politorganization achieve

significant advantages. Polit-enterprise have found that strategic planning helps achieve benefits as the following:

- Investigate how better use of technology can enable an enterprise to gain competitive advantage.
- Establish polit-goals, -targets, and -strategies for the enterprise.
- Establish critical success factors.
- Use critical success factor analysis for steering the enterprise to enable it to better achieve its goals.
- Determine what information can enable management to perform its work better.
- Prioritize the building of information systems in term of their overall effect on the bottom line.
- Create an overview model of the enterprise, its processes, and information.
- Subdivide the overview model into polit-areas ready for polit-area analysis.
- Determine which polit-area to first.
- Enable top management to view its enterprise in terms of goals, functions, information, critical success factors, and organization structure.

Strategic management is concerned with the design of the organizational mission, objectives, and goals and the implementation strategy whereby enterprise purpose are attained.

Strategic Planner is capable of anticipating (some of j the consequences of its actions and using such anticipated consequences to choose between possible course of action. Strategic planning techniques have primarily been concerned with representing the world in enough detail to allow prediction and efficiently earring out predictions in order to support decision making.

10.8- Tactical planning - This is concerned with a timescale extending a few months into the future and deals with the following:

- Demand forecasting and development of a master schedule for individual solution and replacement parts,
- Establishing individual shop- and purchase-order release dates, and making solution resource reservations with due regard to capacity constraints,
- Planning routine maintenance activities,
- Planning distribution requirements for delivery of
- polit-solutions to intermediate storage locations and thence to the polit-user,
- Quoting and estimating delivery times and costs of one off or custom built polit-solutions with due regard for current work backlog and capacity limitations.

Again, all of these areas will need to be closely integrated, and should all represent the outputs of a single tactical plan developed for each polit-solution group.

Many situations exist in which accurate predictions is either impossible because of a lack of information or useless because of a lack of time.

A **Tactical Planner** is primarily concerned with deciding what to do *in* situations *in* which the available information *is* limited and uncertain.

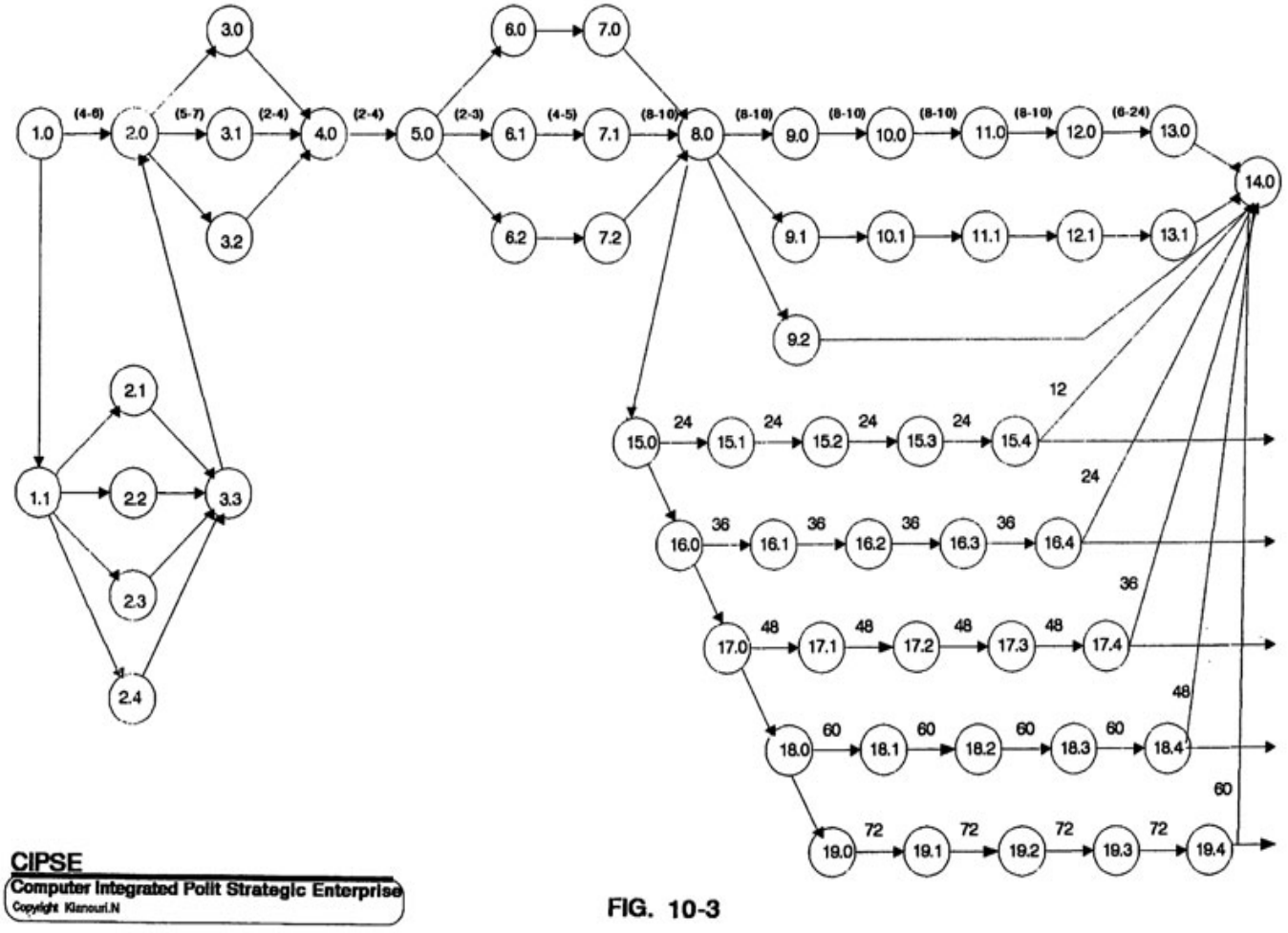

FIG. 10-3

FIG.10.3. IS A DEMONSTRATION OF PROJECT PLANNING DIAGRAM FOR BUILDING A CIPSE CENTRE. THE PLAN HAD DONE IN A NETWORK MODEL.

- TO 4.0 INTRODUCTION TO CIPSE
- 5.0 TO 8.0 ORGANIZATIONS AND COMMUNICATIONS WITH OTHER INSTITUTE, ORGANIZATION AND GOVERNMENT.
- 9.0 TO 13.0 STEPS OF ENGINEERING OF CIPSE. (STRATEGY PLAN, ANALYSIS, DESIGN, IMPLEMENTATION, AND ETC.)
- 15.0 TO 15.4 CIPSE COGNITIVE SCIENTIFIC PROGRAMS.
- 16.0 TO 19.4 ENGINEERING OTHER SCIENTIFIC PLANS.

10.9- Polit-Operation Research - Is a set of programs for analysing polit-data using the tools of operation research. POR programs are can be used with retrieval data, data management, reporting, analysis, and other capabilities of all programs.

Polit-operations research tools are directed toward the solution of polit-management problems. Each problem *is* formalized with the construction of a mathematical model to represent it.

Polit-operations control, *in* installation polit-administration and work flow, includes instructions from and to the computer, administrative records, logs of system operation, and the control over polit-library programs.

The first significant application of operations research was the use of the simplex method of linear programming to war operation problems. Since then there have been a number of operations research models which have found their use in polit-solution management. These models can be broadly classified into:

- Deterministic models
- Probablis CAPSx tic models.

In deterministic models, the input data are treated as being invariable, whereas in probabilistic models the input data are variable.

Although a number of such models are available, only a few of them are frequently used.

One way of summarizing the usual phases of an operations research study is the following:

- Formulating the problem.

- Constructing mathematical model to represent the system under study.
- Deriving a solution from the model.
- Testing the model and the solution derived from it.
- Establishing controls over the solution.
- Putting the solution to work implementation.

10.10- Scheduling - Project scheduling is a major function in the project management process. It is usually a source of problems and controversies for organizations. The project schedule shows the timing of the efforts of the project personnel.

A schedule is the conversion of a project action plan into an operating timetable. As such, it serves as a fundamental basis for monitoring and controlling project activity and, taken together with the plan itself, is probably the major tool for the management of projects. In a project environment, the scheduling function is more important than it would be in an ongoing operation because projects lack the continuity of day-to-day operations and often present much more· complex problems of coordination. Scheduling is particularly important to projects because of their complex coordination problems.

The basic approach of all scheduling techniques is to form an actual or implied network of activity and event relationships that graphically portrays the sequential relations between the tasks in a project. Tasks that must precede or follow other tasks are then clearly identified, in time as well as function. Such as network is "a powerful tool for planning and controlling a project and has the following benefits:

- It is consistent framework for planning, scheduling, monitoring, and controlling the project.
- It illustrates the interdependence of all tasks, work packages, and work units.
- It aids in ensuring that the proper communications take place between departments and functions.
- It determines an expected project completion date.
- It identifies so-called critical activities which if delayed, will delay the project completion time.
- It also identifies activities with slack which can be delayed for special periods without penalty, or form which resources may be temporarily borrowed without harm.
- It determines the dates on which tasks may be started or must be started if the project is to stay on schedule.
- It illustrates which tasks must be carefully coordinated to avoid resource or timing conflicts.
- It also illustrates which tasks may be run, or must be run, in parallel to achieve the predetermined project completion date.
- It may, depending on the network form used, allow an estimate of the probability of project completion by various dates.

A Gantt schedule technique shows a schedule of events with start and stop times plotted along the time axis of the project. Another popular scheduling method is PERT /CPM, or project evaluation reporting technique/critical path method. This technique shows the relationships between all project tasks. Each activity or event is described by its maximum (pessimistic) time, its minimum (optimistic) time, its expected time, and its relationship to predecessor and, successor tasks. Once the PERT is developed, the critical path, which shows the longest path through the network, can be established. Management can then take action to shorten that path if possible or to monitor path events to ensure that the schedule is being met.

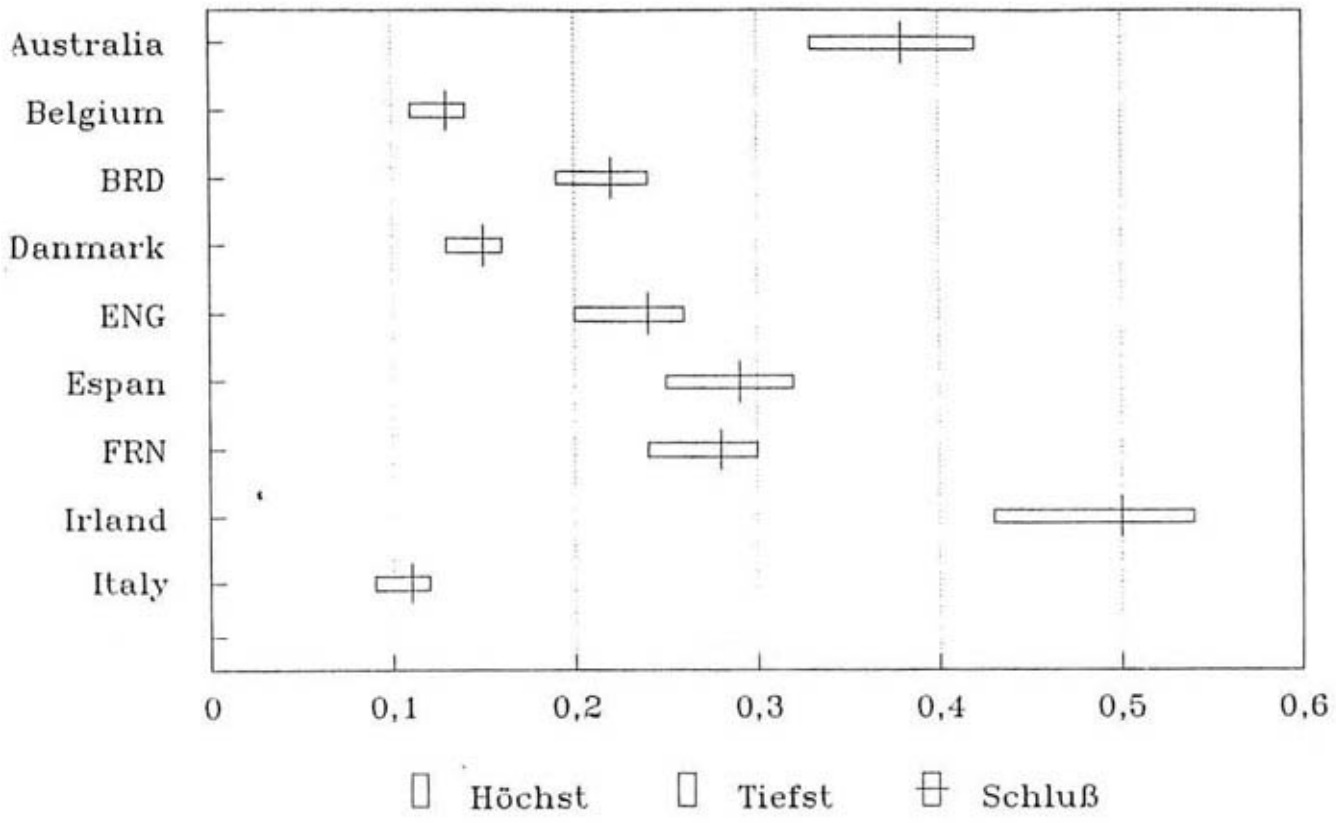

FIG. 10-4

FIG.10.4. IS AN EXAMPLE FOR SCHEDULING.

Master Polit-solution Schedule (MPSS) - The master polit-solution schedule transforms the polit-enterprising objectives of quantity an due date for the final polit-solution, which are assigned by the no engineering functions of the organizations, into an engineering polit-solution plan. The decisions in this phase depend either on -the forecast or on confirmed polit-user orders, and the optimization criteria are meeting due dates, minimum level of work-in-process, and plant load balance. These criteria are subject to the constraint of plant capacity to the constraints set in the routing phase. The master polit-solution schedule is a long-range plan. Decisions concerning lot *size,* make or buy, addition or facilities, overtime work and shifts, and confirm or change due dates are made until the objectives can be met.

10.11- Project Planning and Control Techniques - Project management involves the coordination of group activity wherein the manager plans, organizes staffs, directs, and controls, to achieve an objective with constraints on time, cost, and performance of the end polit-solution. Planning is the process of preparing for the commitment of resources in the most economical fashion. Controlling is the process of making events conform according to the plan established for attaining the objective.

Critical path methods represent a modern tool to aid the project manager. But they are only models of the dynamic real world interplay of money, people, materials, and machines, directed in time to accomplish a stated goal. Starting with the simple logic of the deterministic arrow diagram, they can be embellished to chapter the stochastic elements of the problem, the random duration of the activity times by PERT, and the random nature of the network by GERT. More recently, precedence diagramming has been added to this array of models to depict more closely how many projects are actually conducted, without the proliferation of project activities.

There are literally hundreds of project management microcomputer software packages on the market today. As mentioned above, PERT probabilities and CPM time-cost trade-off techniques are not often used today.

Project planning and control techniques are many and varied. For example, in one survey, project planning techniques included:

- Work breakdown structure (WBS)

- Network (Arrow Schema, Node Scheme, Precedence
- Diagrams)
- Bar Chart (with precedence, without precedence)
- Critical Path Method (CPM)
- Pert-Statistics
- GERT Simulation
- Time/cost Analysis
- Computer Assistance
- Linear Responsibility Chart (LRC).
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10.11.1- Network Analysis - A relatively extensive terminology has been developed to describe the various kinds of networks and their components.
A network consists of a set of points and a set of lines connecting certain pairs of the points. The points are called **nodes** (or vertices).
The arcs of a network may have a flow of some type through them. If flow through an arc is allowed in only one direction, the arc is said LO be a **directed arc.** The direction by adding an arrowhead at the end of the line representing the arc. If the flow through an arc is allowed in both directions, the arc is said to be an **undirected arc.** To help you distinguish between the two kinds of arcs, we shall frequently to undirected arcs by the suggestive alternative name of links.
A network that has only directed arcs is called a **directed network.** Similarly, if all of its arcs are directed, the network is said to be an **undirected network.** A network with a mixture of directed and undirected arcs (or even all undirected arcs) can be converted into a directed network, if desired, by replacing each undirected arc by pair of directed arcs in opposite directions.

When two nodes are not connected by an arc, a natural question is whether they are connected by a series of arcs. A **path** between two nodes is a sequence of distinct arcs connecting these nodes. A directed path from node ***i*** to node ***j*** is a sequence of connecting arcs whose direction (if any) is toward node ***j,*** so that flow from node ***i*** to node ***j*** along this path is feasible. An **undirected path** from node ***i*** to node ***j*** is a sequence of connecting arcs whose direction (if any) can be either toward or away from node ***j***.
A path that begins and ends at the same node is called a cycle. In a directed network, a cycle is either a directed or an undirected cycle, depending on whether the path involved is a directed or an undirected path. Each new arc creates a larger tree, which is a connected network that contains no undirected cycles.

10.11.2- Work Breakdown Structure - Is a hierarchical method of scheduling that divides a project into sections consisting of related tasks; usually constructed in either an outline form or as a flow diagram.
The WBS helps in organizing and planning all phases of a project. Project management requires effective, precise information throughout all phases of the project and between all personnel involved with the project. A well-designed WBS provides the basis for the design of these project control information systems. The common WBS with PCs at different locations allows for easy data coordination.
Work Breakdown Structure is a polit-solution oriented family tree division of hardware, software, services, and other work tasks which organizes, defines, and graphically displays the polit-solution to be produced, as well as the work to be accomplished to achieve the specified polit-solution.

10.11.3- PERT and CPM - Critical Path Method (CPH) is a project management principle that leads the user through the scheduling process with the emphasis on time and how each task corresponds with the deadline. The “critical path” is the task sequence that consumes the most time; if a task on this path is delayed, it jeopardizes the completion of the entire project.

Program Evaluation and Review Technique (PERT) is one of the two popular project management principles; PERT charts graphically illustrate the relationships and dependencies between tasks means of boxes and adjoining lines.

The two methods are quite similar and are 'often combined for educational presentation. We will write “PERT /GFM” whenever the distinction is not 'important. Originally, however , 'PERT was strictly oriented

to the time element of projects and used probalistic activity' time estimates' to aid in determining the probability that a project could be completed by some given date. DPM on the other hand, used deterministic activity time e8timates and was designed to control both the time and cost aspects of a project, in particular, time/cost trade-offs. Both' techniques identified a project critical path whose activities could not be delayed, and also indicated slack activities' that could be somewhat delayed without lengthening the project completion time.

Activity; A specific task or set of tasks that are required by the project, use up resources, and take time to complete.

Event; The result of completing one or more activities. An identifiable end sates occurring at a particular point in time.

Network; The combination of all activities (usually drawn as arcs) and events (usually drawn as nodes at the beginning and end of each arc) define the project and the activity precedence relationships.
Networks are usually drawn starting on the left and proceeding to the right. Arrowheads placed on the arcs are used to indicate the direction of flow - that is, to show the proper precedence. Before an event can be realized, that is, achieved, all activities that immediately precede it must be completed. These are called its predecessors. Thus, an event represents an instant in time when each and every predecessor activity has been finished. ~vents themselves have no time duration and use no resources. They are merely points on the network, conditions of the system that can be recognized.

Path; The series of connected activities (or intermediate events) between any two events in a network.

Critical; Activities, events, or paths which, if delayed, will delay the completion of the project. A project's critical path is understood to mean that sequence of critical activities (and critical events) that connect the project's start to its finish event.
A network is constructed by linking arc (activity) to node (event) as specified by relationships and shows the interrelationships between the activities and events.
The choice between the PERT three-estimate approach and the GPM method of time cost trade-offs depends primarily upon the type of project and the managerial objectives. PERT is particularly appropriate when there is considerable uncertainly in predicting activity times and when it is important to effectively control the project schedule.

Calculating Activity Times; These expected completion times are found by using the three estimates (optimistic, pessimistic, and most likely) in the table.

10.11.4- Network Techniques: Gantt Charts - The GANTT chart shows planned and actual progress for a number of tasks displayed against a horizontal time scale. GANTT charts, a monitoring technique, are closely related to network diagrams, but are more easily understood and provide a clearer picture of the current state of the project.

10.11.5- GERT - The Graphical Evaluation and Review Technique (GERT) is a network model that was developed to deal with more complex modelling situations than can be handled by HEHT/GPM. GEHT combines signal flow graph theory, probabilistic networks, PEHT/GPM, and decision trees all in a single framework. its components consist of logical nodes and directed arcs (orbranches) with two parameters; the probability that a given arc is taken and the distribution function describing the time required by the activity. Evaluation of a GERT network yields the probability of each node being realized and the elapsed time between all nodes.

10.12- Different-sized Projects - In essence is no difference between a large project and a small one, other than the degree to which things are done and the emphasis on project control, quality, integration and other such issues.

Large Project - For every large projects *I* say fifteen to five thundered people in a team (possibly with

multiple sub-contracts), the key to success is to break the project down into smaller more manageable sub-projects.

Small Project - With small projects of say less than five people and a timescale of around three to six months the emphasis changes.

As the project is small, each team member may need to play more than one role. But these should be clearly visible and played carefully to ensure that things do not get missed. The roles may include:

- Project leader
- Technical leader
- Devil's advocate
- Cross-project integrator
- Analyst
- Designer.

10.13- Planning and Projecting of CIPSE Research Centre and Its Polit-Systems - Every project or system development is unique. Planning for each should be treated as a mini-project in its own right, with clearly understood objectives.

The starting point of polit-project is, therefore, to thoroughly analyze the requirement and explicitly state the project overview, objectives, aims, constraints, priori ties and those factors critical to its success.·

Project objectives are the things that the project must achieve and for which the achievement can be measured. These may include the delivery and acceptance of a certain component by a specific date.

The objective of the project is to develop a CASE tool-based support system which brings within one methodology three previously separate functions:

- Developing the specification of enterprising system,
- Automatically creating simulation models of the enterprising system, at any stage during the specification process.
- Developing the control software to manage the system once commissioned.

The CIPSE project mentioned earlier has the objective to develop an open CIPSE architecture together with CIPSE standards valid for all kinds of polit-enterprises.
The CIPSE modelling approach is more differentiated, in that there are three modelling levels:

- The first level is the degree of commonality, from generic to enterprise-specific. Generic CIPSE building blocks which can be used to build CIPSE models. The practical models correspond basically to the generic enterprise model, and the particular models correspond to the enterprise-specific CIPSE model. The process to proceed from generic to particular is called "instantiation"'.
- The second level is the degree of realisation from conceptual to implementation (i.e., from logical to reality). The process to proceed from conceptual to implementation is called “derivation”.
- The third level describes the CIPSE policy process, enterprise functions and activities, the Information View all the enterprise-wide data, the Resource View all resources of the enterprise, and the organization View personal responsibilities in the enterprise. The process to proceed from the functional to the organizational view is called "generation".

It will surely take still some time, until complete CIPSE deliverables will be available to the order place. Nevertheless, it is strongly recommended to follow the concepts and standards developed so far already today, because these are well designed and provide a safe strategy of CIPSE development and implementation.

10.13.1- First Stage, Organizing CIPSE Management and Understanding of CIPSE Project: The first step in establishing CIPSE is to organize a management group. **Management** is the process of achieving organizational goals through engaging in the four major functions of planning, organizing, leading, and controlling.
Planning is the management function that involves setting goals and deciding how best to achieve them. This function also includes considering what must be done to encourage necessary levels of change and innovation.

The CIPSE management in period of six months will prepare its strategic and tactical plans. **Strategic planning** generally refers to long-range, enterprise-level planning activities take place at the highest levels of the organization. strategic planners look at the "big-picture" view of what is currently happening within their organizations and outside of them. Then, the planners chart a course representing what should be done.

In **Tactical planning** means charted to support implementation of the strategic plan and achievement of tactical goals. Tactical planning is the job of determining how strategic objectives will be accomplished.
CIPSE management in current of first six months will answer to following strategic lines:

- Identify major ways that information technology has affected CIPSE managers.
- Explain how CIPSE can support either the centralization or decentralization of information systems, management, and political operations.
- Identify the major dimensions of the information resource management concept and explain their impact on the management of CIPSE information-system resources.
- Explain how problems of information system performance can be solved by CIPSE management involvement in integration, planning and control.
- Identify the major managerial responsibilities in each of the basic functions of an CIPSE organization, i. e. , systems development, operations, and technical support.
- Outline several types of information system controls, procedural controls, and physical facility controls that can be used to assure the quality and security of information systems.
- Discuss ways to control end user computing systems and CIPSE costs.
- Discuss the impact of CIPSE in terms of their major beneficial and adverse effects on policy.
- Identify major types of computer crime and explain their effect on the development of information system controls.

The other functions of CIPSE management in first stage of establishing of CIPSE are:
Organizing is the management function that focuses on allocating and arranging polit-user and nonhuman resources so the plans can be carried out successfully. It is through the organizing function that managers determine which tasks are to be done, how tasks can best be combined into specific jobs, and how jobs can be grouped into various units that make up the structure of the organization.

Leading is the management function that involves influencing others to engage in the work behaviours necessary to reach CIPSE organizational goals. Leading includes communicating with others, helping to outline a vision of what can be accomplished, providing direction, and motivating organization members to put forth the substantial effort required.

Controlling is the management function that is aimed at regulating organizational activities so that actual performance conforms to expected organizational standards and goals. To do necessary regulating, managers need to monitor ongoing activities, compare the results with expected standards or progress toward goals, and take corrective action as needed.
The result of first stage or mini-plan would typically include:

- description
- Objectives
- Aims
- Key deliverables
- Critical success factors * major milestones
- Key personnel
- Priorities
- Specific exclusions
- Major issues
- Plans, including
- Estimate
- Assumptions
- Dependency networks/Gantt charts
- milestones
- Task definitions and deliverables
- Budget and costs incurred

- Quality assurance
- Project members and timesheets
- Physical resources and availability
- Project and management reports
- Minutes of meetings
- Risks
- Change control documents
- Ideas
- Unresolved issues
- Problems
- Key actions
- Dependencies
- Contents List.

For example, if you are building a small computer system, the category Availability might well apply to:
- Hardware:
- Development machine
- Operational machine
- Terminals
- Air conditioning
- Network
- Printers, plotters

System software:
- Operating system
- Editors
- Network software
- System monitors
- Back-up/recovery

Development software:
- Database management system
- CASE
- Project control system
- Compilers
- de-bugging aids * monitors
- Electronic mail
- storyboard facilities
- Word processors/desktop publishing packages

Development environment:
- Chairs, desks, filing carbines
- lighting
- Power and computer points * air conditioning
- Photocopiers
- Telephones, facsimile machines

People:
- Users
- Team members
- Quality assurance experts
- industry experts
- Consultants
- Contractors
- Trainers
- Operators
- Management
- Key players for any specific task

Financial resources:
- budget

- Cash
- Executives for 'sign-off'.

This method is designed to give the project leader maximum opportunity to identify and solve problems early.

10.14- PEPMS Interfaces with other CIPE Stations:

10.14.1- CAPSx/PPMS (Use of Projecting Management in projecting of CAPSx) - A complete understanding of how the organization uses geographic information in performing its functions is necessary in order to identify the potential benefits of a PGIS (Polit Geographic Information System)and ensure that its use will be consistent with the long-term goals of the organization. This effort is most valuable when the analysis includes all aspects of the organization so that information-sharing opportunities can be investigated and so future expansion in later phases of the project can be properly planned.
A comprehensive long-term plan that analyzes the needs of the organization over 5-10 year time period will ensure that the use of the CAPGIS (Computer Aided Polit Geographic Information System) will be consistent with the goals of polit-organization and thus prevent unrealized expectations and disappointment. The long-range plan allows decision-makers to evaluate the applicability of the system to the appropriate resources are available at the time they are needed during the course of its development.
A good long-range plan meets the following objectives:

- Obtain high-level support; Not only does the long-range plan bring opportunities for improving government to the attention of decision makers, but it also gives them confidence that those who advocate the new CAPGIS technology are competent and can make the project succeed.

- Identify all potential applications; A comprehensive long-range plan considers all of the geographic information needs of the organization and thus ensures that no improvement opportunities are omitted from consideration. This is especially important with geographic information systems because many local government officials are not aware of the full capabilities of the technology and may tend to assume that their needs cannot be satisfied by using a CAPGIS.

- Prioritize applications for orderly implementation; If a long-range plan is successful at identifying all potential applications and is related to the strategic and tactical plans of the city or country as a whole, then it is possible to schedule or prioritize the implementation of applications in the order that will be most beneficial to the polit-organization. It also ensures that those applications or data bases that are needed to be in place prior to others that need them are, in fact, completed prior to continuing development or expansion.

- Obtain maximum benefits polit-organization-wide; Since one of the major features of a GIS is its ability to integrate information from a number of different sources, the long-range plan can identify information-sharing opportunities that had never before been known, or had never been possible without a CAPGIS. Separate functions that had never shared information before can realize improvements through geographic data integration. This assures a city- or country-wide benefit analysis and prevents specialized interests from impending full benefit realization.

- Identify resource requirements;

Above all, a long-range plan for a geographic information system must relate directly to the long-range plans of the local government it serves.
The CAPSx system will automate the mapping and related geographic activities required to support the census and survey programs of the CIPSE project.
The CAPSx functions defined as:

Topologically; Topology is the scientific explanation of how points and lines on a map relate to each other to define a geographic area. The design of the CAPSx system computer database adapts the theories of topology, graph theory, and associated fields of mathematics to provide a disciplined, mathematical description for the geographic structure of United States and World •.

Integrated; The CAPSx file is the computer database at the core of the CAP x system that relates, or integrates, the automates description of the earth's surface and boundary features. The topological structure of the CAPSx file defines the location and relationship of streets, rivers, and railroads to each other and to the numerous geographic area for which the Census Bureau tabulates data from its censuses and surveys. This essential geographic information no longer will exist only on separate, independent maps and lists; rather, it will be a single computer database.

Geographic; The CAPSx file is the repository for storing the automated description of the geographic structure the Census Bureau uses to conduct its censuses and surveys. This computer database will include all census-relevant information regarding the earth's surface as described above. A major goal of the CAPSx system is to assure no duplication or mission of these features or areas.

Encoding; Encoding is the process of representing the essential United States geographic information in computer-readable form. The process of building the CAPSx file involve adapting a variety of encoding techniques such as automated map scanning, manual map 'digitizing,' standard data keying, and sophisticated computer file matching.

Referencing; Both the CIPSE project benefit from the effort involved in developing the CAPSx system. Having automated access to and retrieval of the census-relevant geographic information about the United States and World assures consistency of results and will prevent much of the confusion that CIPSE project staff and data users experienced in dealing with maps and geographic classification in the 1990s Decennial Census.
At this point in the development of the CAPSx system much remains to be done, especially in the area of design for the map products the CIPSE project will prepare for use by its data collection staff and census data users. Current plans call for using computer-driven electrostatic plotters to produce the one or two map copies required for each of the expected 30000 field assignment areas. In that way, each field person has an original map sheet at a large scale covering the assignment area rather than a ' cut-out copy' of a larger map sheet as was the case in earlier censuses. The Census Bureau also is looking at new types of no tearing paper stocks, various paper finishes, and so forth, to increase the durability and legibility of these much-abused field assignment maps.
For the data user, the formats of the map products are less well defined. Certainly, there is a strong demand for maps showing only the boundaries for selected key geographic areas, such as the census tract outline maps, country/minor civil division/place boundary outline maps, and urbanized area outline maps included in past Census Bureau reports. In addition, there appears to be a continuing need for maps showing the full set of detailed features (street, rivers, railroads) that form the boundaries for the data collection and presentation processes. Data users also are requesting more 'custom area' map products.
The new CAPSx system technology will permit including more 'background' information, such as major highway and rivers, along with boundaries for reference and orientation purposes. It certainly will permit developing polit-solution that is custom tailored to polit-data user needs, but at a cost. Recent technology, such as video disks and laser optical disks, offers potential new methods for distributing the microfilm, and standard printed paper maps offer potential for the various boundary outline maps where the data volumes are significantly lower. The CIPSE project will explore all of these options and media during the coming years so that it can offer polit-data users the most versatile and dependable mix of geographic data polit-solutions possible.

10.14.2 - CIPSE-CAPSIM .Project - In CAPSIM, a system is a collection of interrelated elements that work together to achieve a stated objectives. A CIPSE system, for example consists of people, machines, spaces, procedures, information, and data that interact with the objective of building quality solutions in timely fashion and at acceptable rates. Similarly, *a* health care system consists of elements that can be described with such words as people, machines, spaces, procedures, information, and data, where the objective is to acceptable and/or restore the health of individuals at acceptable cost level. The system being simulated may only be in the design stage, or it may already exist.
In a CIPSE system, units of traffic might be units of work- in process, and the scarce (limited) resources

for which units of work process compete include people, machines, space in waiting area at machines, and the equipment used to transport work-in process from point to point in the system.

CAPSIM is used for discrete event simulation. A discrete-event simulation is one in which the state of a model (or of the system being modelled) changes at only a discrete, but possibly random. Set of time points, known as event times. For example, a polit-order arrives at an order-filling system. The arrival of the polit-order beings are an event. It occurs at a point in time.

A CAPSIM model takes the form of a series of statements (or initially and on paper, diagrams representative of these statements). The results of simulating with such a model are provided as information describing the current state of' the model as it operates over time, and/or detailing the time ordered set of states through which the model has moved in teaching its present 'state, and/or' summarizing the models performance in aggregate terms at the end of a simulation.

The example program that had down in GPSS/H program language and is a example of polit-enterprise simulation. The most important question in this program is the right divide of time between enterprise stations, definition of queue and etc.

10.14.3 – CIPSE / ACSPP Project - The structure of a UIMS (User Interface Management System) is heavily dependent on the underlying user interface model. In our tool Seeheim model was adopted. It splits a user interface into three components:
Dialogue model can be graphically represented. This notation is based on the concept of user interface state and consists of a set of states and transactions from one state to another, where:

- State is a static situation in the dialogue between the end-user and the application package;
- Transaction describes how the dialogue moves from one state to another.

In order to give a complete dialogue description a set of specific information has been associated to each elements of the Automatic Petri Net notation. The information associated to the state is:

- State name (unambiguous identifier),
- Screen layout, set of objects defining the graphical appearance of the user interface corresponding· to the state.

Information associated to a transaction refers to the corresponding rules action performed at user and application level; these actions represent links towards Presentation Techniques and Application Interface components. This information is:

- Transaction name (unambiguous identifier).
- Event rule: 3-tuple of value which identifies the expected event (action at user level), the logical identifier associated to the graphical object on which must occur the event, and the name of interface routine corresponding to specific application routine (action at application level),
- Conditional function is a function attached to each transition which determines if the transaction can be performed; this allows definition of context sensitive dialogues.
- Output rule, couple of values which identifies the logical identifier associated to the object where the output data will be displayed, and the function to display output data.

10.14.4– CIPSE / PSPC Project – The SCPP programming is Statistic module between CIPSE modules. SCPP is a statistical analysis system, and many of the characteristics of the SCPP can be track back to its statistical background.
Scientists observe nature and attempt to draw conclusions. One way they do that is by making numerical measurements and looking for patterns in the numbers. The latter part of that process is what we call statistical.
In one kind of experiment, the same measuring process is done many, different times. Each instance of measuring is called an observation, and each different quality that is measured is called a variable. That’s the source of those two SCPP terms and of the form of a SCPP dataset.
Ideally, statistic observations are independent - that is, the different observations do not affect or depend each other. This simplifies statistical analysis: the data from each observation can be processed separately, without reference to data from the other observations, and the order in which the observations are processed does not affect the conclusions. When the processing is done in a computer program, it makes possible the observation loop, a repeated process of reading one observation at a time into memory and extracting the information needed from it. The observation loop became a central

part of the design of the SCPP System, and it was subsequently found to be useful in all kinds of application.

Modularity - From the start, the SCPP system had a modular design. Instead of being one monolithic program, or a small group of related programs that run at different times, it was a large collection of several types of programs that are coordinated by a central program called the supervisor. The specifications for each type of program were published, so that it was possible for anyone with the requisite programming skill to expand the system.
Even the SCPP systems reading and writing' routines were modular, and that made it easy for the system to read data in almost any format in use. The SCPP language is input and output capabilities are still among the most powerful and flexible of any programming language.

Simplicity - The' original SCPP System did not have most of the features of the PSP€ System of today. Features like screen support and macro language were added gradually, in patchwork fashion, and the language syntax itself was expanded. Each new addition has gone off in its own direction, but the core of the system still embodies much of the elegance of the original SCPP System.

What Kind of Language is SCPP- Although SCPP programs look much like programs written in other programming languages, there are several things that distinguish SCPP.

1-Interpreter - A programming language is usually' implemented either as an interpreter or as a compiler. An interpreter runs a program by determining the meaning of each program statement, then caring it out. A compiler translates an entire program into machine language in a separate file, which can then be executed. Compiled programs run faster, but you have to take the time to compile them. Interpreted programs provide more immediate feedback when an error occurs, but they run more slowly and can only be run when 'the interpreter is present.

PSPC is an interpreted language, but it also has some of the characteristics of a compiler. Some parts of SCPP programs are compiled. And most SAS statements, rather than being interpreted and executed one at a time, are grouped into segments called steps before being executed.

2- Step-structured - In a sense, the SCPP language is structured each step is isolated from every other step in the program - but in another sense, it isn't, because it does not allow traditional techniques of structured programming. Structured programming involves a top-down design in which program units nest inside other program units, but the SCPP language only allows steps to run one a time, one after another. It seems fair to cal SCPP a step-structured language.

3- Library - You expect a programming language to come with a library of functions. In a addition to a few hundred functions, the SCPP System contains information and formats, specialized routines that are mainly used for input and output; which do some small useful things; and, of course, Procs. Procs, known formally as procedures, are the specialized application programs that to most SAS users are the main attraction of the SAS System.

4- Shell - Older programming languages were designed with teletype-style terminals in mind. In the highest form of interaction possible with those terminals, the user would type something, and then the computer would type something. Al thought the SCPP System still supports that kind of user interface, it has several special features for more advanced forms of input and output.
It automatically creates two special output files. The log file contains the SCPP supervisor's step-by-step account of the execution of the program, including the program statements, notes, warnings, and error messages. The standard print file, sometimes called the output file or the print file, contains page of results from programs. Both files are suitable for viewing on screen, printing, or storing.
The SCPP System also provides you with temporary storage space for data, primarily in the WORK library, that you can use freely without having to plan it in advance or arise anything afterward.
The SCPP System includes a full-screen user interface, the SCPP Display Manager System, which includes a command line, a text editor, and separate windows for the log, the standard print file, and other information related to the SCPP System. The display manager interface is designed primarily for an interactive programming approach, but it can used in other ways too, For program development, or as an operations centre.

10.14.6- CIPSE / DCPP Project - DCPP is a highly integrated and interactive suite of programs for

designing and simulating single input/single output control systems. CIPSE program has been developing a software system DCPP, (Polit-Dynamic Process Control), to provide sophisticated graphical interfaces for the modelling of dynamic systems together with links to foreign numerical simulation, analysis and controller implementation tools. DCPP contains several graphical editors and an operation editor for defining mathematical tools. CIPSE contains several graphical editors and an operation editor for defining mathematical relationships represented by the blocks in a block diagram. In addition, rule-based tools for the automatic transformation and aesthic layout of diagrams, the symbolic manipulation of signal flow graphs and the translation of discrete event systems have been added to the system. At the moment, DCPP has links to several simulation languages and to the computer algebra system CIPSE.

DCPP comprises a time domain, a frequency domain and a root locus design environment, whereas DCPP additionally features a non-linear domain, and extends the design and simulation facilities to discrete-time/sampled-data systems and non-unity feedback systems.

Systems are described by an overall gain constant, and two linear transfer functions. One transfer function describes the "plant" dynamics and the other describes an optional compensator (controller). Transfer functions can be defined in polynomial or "pole/zero" form or a mixture of both. In addition to a rational transfer function, the plant model may include a transport delay. Transfer functions are entered by typing them into the package in "free format" as they would appear on the written page. Editing of transfer functions is facilitated by a built-in editor. The data describing the system and associated parameter settings can be stored and recalled from disk as named files.

In the time domain environment, the transient response of either the open-loop or the closed loop system may be obtained. In the root-locus environment, the locus is automatically drawn using a branch following method. The frequency domain environment allows the frequency response of either the open-loop or the closed-loop system to be drawn as a Nyquist diagram (direct or inverse), a Nichols plot or a Bode gain and phase plot. In all cases a hard copy of the screen can be obtained, and the results filed if desired.

The emergence of powerful graphical workstations has brought about the possibility of implementing sophisticated graphics based user interfaces (GUI's). We discuss aspects of the design and specification of a generic graphical user interface for control). Systems design and the emerging standards for user interface implementation that underlie it, with special reference to the DCPP· standards. The use of these interface standards in future design environments should enable the rapid development of novel design methods and at the same time enforce a consistent 'look and feel' across applications. We discuss the problems faced by the implementer in developing applications for different interface standards and also comment on the effects these different GUI standards have on the user's view.

10.14.7– CIPSE / MPIS - Project the basic systems engineering process applicable to any development process regardless of size complexity. A PISM is prepared to accomplish systems engineering as part of development projects. A PISH is a concise top-level management plan for the integration of all system activities. Its purpose is to make visible the organization, direction and control mechanisms, and personnel for attainment of cost, performance, and schedule objectives. Additionally, the SEMP identifies, defines, and integrates the systems engineering efforts to fully define the system concept provides a basis for directing and monitoring the systems engineering and integration tasks; develops the planning necessary to monitor and use the results from various experiments and disciplines; and establishes traceability.

The systems engineering decision making process should be fully described in the PISMO. The PISMO contains the process to be used, including the specific tailoring of the process to the requirements of the system and projects, the procedures to be utilized in implementing the process, in-house documentation, the trade-off study methodology, and the types of mathematical and/or simulation models to be used for system and cost-effectiveness evaluations.

10.14.8- PE.PKS / PISE (Managing Project of PISE, and Project Life Cycle) - Like organic entities, projects have a life cycle. From a slow beginning they progress to a build-up of size then peak, begin a decline, and finally must be terminated. Some projects end by being, phased into the normal, ongoing operations of the parent organization.

Projects start slowly, concentrating on performance, start to build up speed while using considerable resources, and then slow down as completion nears, just when expediency is all-important.

The birth and death process of any project covers the following steps. Note that the computer can play a significant role in each step:

Project conceptualization; The stage at which a need for the project is identified, defined, and

justified.

Project definition; The phase at which the specifications of the design elements are developed. The specifications converge on the overall project goal.

Project development; The operational aspects of" getting the· project on track in accordance with specified goals. Project development covers items such as activity definitions, resource procurement and allocation, personnel organization, and scheduling.

Project monitoring; The diagnostic process or clicking whether or, not project results conform to plans and specifications.

Project controlling; The corrective actions implemented to steer the project in the proper direction based on established objectives.

Project termination; The phase-out stage of the project. A crucial component of terminating a project is the need to communicate with those who will be affected by the termination.

Actual design, development, and implementation of an integrated system should follow a well-defined project methodology. The first step in this process involves making a comprehensive analysis of what is required in process involves making a comprehensive analysis of what is required in the way of information resources and control procedures to make project management function successfully within a particular organization environment. Once this analysis is completed, the actual design and development of the system(s) can be initiated. Design and development involves procurement of specialized software packages and/or design of new packages, as well as the development of the procedures for management action. The eventual success of the new systems will depend to a large degree on how accurately they meet the requirements specifications, how well the systems have been documented, and how adequately the using organizations have been trained to apply these systems to the actual project environment.

The true value of a project information and control system will be realized only when it enables a relatively small project management organization to successfully plan, direct, and control a complex, expensive, high-risk undertaking.
Strategic planning involves developing plans which extended a year or more into the future, typically covering the following areas:

- Forecasting aggregate demand and developing of an aggregate production plan for polit-solution groups over the planning period,
- Setting aggregate polit-solution resource capacity levels, target inventory levels and target lead times over the planning period that are consistent with the company's overall strategic policy plan,
- Negotiating contracts with vendors for the supply of bulk or long lead-time raw materials of appropriate quality and favourable price, at times required by the more detailed tactical plan.
- Although these are shown as three separate activities, in practice they should be closely integrated and might be better regarded as a single activity with each being a distinct output of that activity.

Polit-enterprise project management is a social process of working with people through the application of the key management functions of planning, organizing, motivating, directing, and controlling.
Project management is an approach for responding to the dynamic nature of the flow of projects in a polit-organization. Since complex projects are part of strategies to deal with complex problems of organizations, there is a real need to develop management techniques and devices which address themselves to the dynamic nature of projects.
Polit-project life cycle consisting of" these five phases:

1- The conceptual phase; During this phase, the technical, military, and economic bases are established, and the management approach is formulated. The tasks list as:

- Determine that a project is needed
- Establish goals
- Estimate the resources the organization

- Make key personnel appointments.

2- The validation phase; During this phase, major program characteristics are validated and refined, and program risks and costs are assessed, resolved, or minimized. An affirmative decision concerning further work is sough when the success and cost realism become sufficient to warrant progression to the next phase. The tasks list as:

- Define the project organization approach
- Define project targets
- Prepare schedule for execution phase
- Define and allocate tasks and resources
- Build the project team.

3- The full-scale development phase; In the third phase, the design, fabrication, and testing are completed. (design, construction, production, site activation, etc.)

4- The production phase; In this period, the system is produced and delivered as an effective, economical, and supportable system. Tasks list as:

- Assist in transfer of project product
- Transfer human and nonhuman resources to other organizations
- Transfer or complete commitments
- Terminate project
- Reward personnel.

10.14.9- PPMS / PEDBMS (Managing Project of PEDBMS) - There are now several automated project management tools on the market that seek to aid in the development of systems and indirectly in the management of data. Project management tools are used in the following areas:

- Project planning
- Project duration
- Costing
- Personal scheduling
- Personnel allocation
- Project reporting.

Planning for the data resources is done at three levels: strategic, tactical, and operational.

Strategic Planning; Defines the data' environment's mission and' objective in achieving the goals of the future of the organization. The strategic plan is driven by the current and future information needs of the policy. Strategic planning helps policy share the data resources.
The strategic data plan defines the organization's data requirements and states the benefits of data resources management and its difference from database technology management. The strategic plan serves as the baseline for data resource management and directs all subsequent data-related activities. It also defines the target toward which all subsequent data-related activity is directed.

Tactical planning; Identifies a resource and directs the way in which it will be managed to achieve goals set in the strategic plan. Because each resource is to be managed in its own life cycle, each should ideally be governed by its own plan. The tactical planning window is 12 to 18 months, with a review cycle of 9 to 12 months.

Operational planning; Describes the details of the tactical plan and identifies the tasks to be carried out in a scheduled time frame, the expected deliverables, and the assigned responsibilities. The operational planning window is 3 to 9 months, depending on the size of the project.

10.14.10- PPMS / PECMS (Managing Project of PECMS) - A project manager uses communication more than any other force in the project environment to assure that the team members are working together on project problems and opportunities. The means and channels of information include:

- Plans
- Policies
- Procedures

- Objectives
- Goals
- Strategies
- Organizational structure
- Linear responsibility charts
- Leader and follower style
- Meetings
- Letters
- Telephone calls
- Small group interaction
- Example set by the project manager

The above listing strongly suggests that an important function of the project manager is to manage the process of communications with the project stakeholders. However, in order to manage the communication process one must understand the nature of that process.
Good communication and good project management are matched pairs in the successful completion of a project. A project manager gets the project done through the people. To this effective communication is a must.
Communication can significantly enhance project management communication needs. However, careful planning must be done for the installation of the network. The planning for communication covers the following six evaluations:

1- Why communication needed:
   - Determine communication scope
   - Evaluate type and number of connections needed
   - Evaluate geographic coverage.

2- Technology Evaluation
   - Determine currently available technology
   - Evaluate available commercial products
   - Establish maintenance procedures.

3- Site planning
   - Determine hardware needs
   - Determine cabling requirements
   - Specify whether network is integrated with phone system or not.

4- Software planning
   - Determine which network software to use
   - Establish network applications
   - Evaluate user interface.

5- Operating planning
   - Arrange how the network will be managed
   - Establish network responsibilities.

6- Vendor selection
   - Establish vendor selection criteria
   - Determine service support needs.

The vendor selection criteria should cover such things as functionality (interface supported and capabilities provided), performance (speed, error rate, and delay), maintainability (network control), extensibility (upper limits on growth and granularity of growth), vendor stability (reputation, length of service, and support structure), and price.
A project communication network should be managed by ongoing several iterative steps which may be summarized as follow:

- Evaluate the overall network in view of desired performance and personnel productivity.
- Evaluate each component of the network based on level of management and control.
- Compute the maintenance cost of each network element.
- Identify and minimize idle times at critical communication links.
- Review the configuration of the network for efficient node proximity.
- Review the capability of current equipment on project communication needs.
- Review the capability and cost of new equipment available in the market.
- Estimate the benefit-cost ratio for any proposed addition to the communication network.
- Develop a forecast of future project communication requirements
- Integrate the network hardware and software with the human functions in the project environment.

10.14.11- PEPMS / PEOMS (Managing Organization of PEPMS) Organizational phase: development of organizational strategy. The root and operating strategies determine organizational requirements and should be the major factors which shape the structure of the term.
The project office supports the project manager in earring out his responsibilities. Thus his basic charter, Organizational relationship, and the nature of the project itself will influence the makeup of the project office. The presence or absence of other projects, and of a central project planning office, will also affect the organization of the project office.
The project team includes all functional contributors to the project, as well as the members of the project office. the general functions to be carried out during completion of the overall project by members of the project team are the following:

- Project and task management
- Solution design and development
- Solution enterprising
- Purchasing and subcontracting
- Solution installation and test.

As a general rule, it is recommended that the number of persons assigned to a project office under the supervision of the project manager be kept as small as possible.
The recommended assignment location of each of the key people on key project team follows:

Project Manager; The individual who oversees the execution of the project plans. He is most likely person to need computer tools for performing his project management functions.
The project manager is always considered the manager of the project office (which could be a one-man office).
Project managers are also responsible for overall planning and control of the work. The project manager is concerned with several key elements of the project activities:

- Organizing the people and other resources to support the project objectives, goals, and strategies.
- Planning for what resources are required to support the project objectives, goals, and strategy.
- Identifying and using relevant information to manage the project.
- Providing leadership for the project team members.
- Conducting periodic evaluation of project results and redirecting or reprogramming resources as required to keep the project moving towards its goals and objectives.
- Using modern tools and techniques to facilitate the project moving towards its goals and objectives.
- Maintaining an awareness of the influence of the organizational cultural ambience in which the project exists.

Project Engineer; The project engineer may be assigned to the project office in charge of polit-solution design and development where the polit-solution is new to the company or where several divisions are involved, as discussed earlier.

Project controller; the project controller should always be assigned to the project office, except where he is not full time where a centralized planning and control function adequately serves the project manager.

Enterprise Coordinator; The enterprise coordinator should remain a member of the enterprise organization, preferably on the staff of the enterprising manager or solution control. When more than one division is to contribute substantially to solution enterprise, it may be necessary to assign him to the project office to enable effective coordination of all contributors.

Project Team; Whether a person is assigned to the project office or remains in a functional department or staff, all persons holding identifiable responsibilities for direct contributions to the project are considered to be members of the project team.
Top management of the organization responsible for a project has the responsibility for establishing an organizational structure which is conductive to maintaining the balance between schedule, cost, and quality. To accomplish this, it is necessary for top management to have a clear understanding of the scope and magnitude of the project and the role of each project organization. Top management should document the organizational and supervisors responsible for quality-affecting activities and managing

the project, and the major contractors for the project. The organization charts identify the project organizational elements and their basic functions. Certain functions ,however, should be considered for any project organization:

- Project management
- Engineering
- Configuration management
- Test
- Training
- Quality assurance
- Contract administration
- Program control
- Data management
- Interface management
- Logistics support.

The project management office can include from one person to as many as a hundred people. The size of the office normally depends on the size and complexity of the acquisition and the user brings to the project.

A traditional organizational chart is of the pyramidal variety; it represents or models the organization as it supposed to exist at a given point in time. At best, such a chart is an oversimplification of the organization and its underlying concepts which may be used as an aid in grasping the concept of the organization.

10.14.12- PEPMS / PIS (Intelligence PEPMS, planning and AI) - The topic of planning has been inextricably linked with that of computer-based artificial intelligence (AI), ever since the early attempts to produce computer programs capable of performing as general-purpose problem solves.

Work on planning has involved research into many areas which are of direct relevance to AI. These include:

- Search and search space control,
- Knowledge representation,
- Knowledge elicitation,
- Machine learning,
- Non-monotonic reasoning
- Explanation and justification of conclusions.

The field of project management differs in certain substantial respects to that of planning in general, although the two overlap to a certain extent. Some confusion between the two types of system has been caused by attempts to use traditional AI-planners to solve complex project management tasks. The dichotomy traditional planning work and project management can be viewed from two perspectives.

1- Project management can be seen as a subset of planning, with relaxed timing constraints and working at a higher level of abstractions; and

2- Planning can be seen as a detailed sub tasking level within the overall context of a project management system.

Engineering project management is currently carried out in the real world, using a combination of 'paper-based' and computer aided techniques. The most commonly employed methods are:

- Gantt charts, or bar charts,
- Critical Path Method (CPM) or Critical Path Analysis (CPA)
- Project Evaluation and Review Technique (PERT)
- Scheduling tools, and
- Financial tools.

Current research into the application of AI techniques to address this problem is centred around the use of knowledge-based techniques to facilities the process of project plan generation, and the monitoring and preplanning of projects , once they are under way.

Planning systems have been a major research topic within the field of AI ever since the inception of computer-based AI some thirty years ago. However, when the subject is assessed in greater detail, a continuum emerges with regard to the response time which is required of a planning system and the

reliability of information on which the system is required to act.
A major research topic in Polit-intelligence System (AI) is the development of systems that can autonomously generate and reason about plans. Within this research community, a polit-plan is defined as a specified ordering of actions over time.
Planning and rule-based inference share a number of similarities. Several significant differences also exist, namely:

- The representation for planning is often different and more complex.
- Planning almost always requires a control strategy due to a no commutative polit-solution creating system.
- The strong possibility of producing conflicting sub goals due to operator interaction exists.

Planning is also closely related to a number of other topics, most significantly polit-solution creating systems, control, temporal reasoning, the frame problem, and search. Planning involves a series of local actions with the objective of achieving some global objective.
In planning systems, the order in which applicable polit-solutions are invoked is usually critical to the outcome of the system.

10.14.13- PEPMS / PES (Expert PEPMS) - A process of figuring out ahead of time a sequence of actions that need to be executed in order to achieve some effect. The term can also refer to the formulation of a strategy for solving a problem, without going into enough detail to actually solve it. A planner may use abstractions that only approximate the actual problem data, in order to save time.
Project is a more determine kind of planning. In project we have the determine time and termins. In project level we have definition for our tactical goals. A project is a group of tasks, to be performed in a definable time period, to meet a specific set of objectives. In general, a project will exhibit most of the following conditions:

- It is likely to be a unique, one-time program.
- It will have a life cycle, with a specific start and end.
- It will have a work scope that can be broken up into definable tasks.
- It will have a budget for its execution.
- It may require the utilization of multiple resources. Many of these resources may be in short and have to be shared with other projects.
- It may require the establishment of a special organization for its execution or require the crossing of traditional organizational boundaries.

An expert system can increase the probability and frequency of making good project and planning decisions.
Planning is a problem-solving technique that involves determining a course (or sequence) of actions that takes a system from an initial state to a desired or goal state.

10.14.14- PEPMS / PESM (Managing Project of PESM) - Project management software supports the planning and control of such elements as the work scope, or contents, of a project; the project timing; human and nonhuman resources; budgeting and costs, and communications.
Project management is not a phase of the software development life cycle, but is a set of activities that span all phases. The software development life cycle represents a process. Like all processes, it should be managed effectively. The configuration management activities are included in project management. The following activities are involved with project management:

- Project estimation (staffing and cost)
- Project planning (scheduling, critical path analysis, and resource allocation)
- Status reporting and progress tracking
- Resources used and cost tracking
- Information collection and data management
- Communications (within and between projects)
- Risk analysis
- Standard verification
- Productivity measurement.
-

The tools generally used in this phase are:

- Pert chart
- Gantt chart
- Documentation (spread sheets, tables, statics diagrams, graphs, text).

Use of SAS as Political Operation Research (POR) Program - The model of polit-project or polit-strategic plan can defined as data in SAS data sets and then analyzed by SAS/OR procedures. Since they are SAS data sets, models can be saved and easily changed or reanalyzed. Many SAS/OR procedures also output SAS data sets containing the results of the analysis. SAS/OR software contain following procedures:

- ASSIGN; assignment problems
- CPM; project planning
- GANTT;
- Network analysis;
- Transportation problems
- Linear, integer, and mixed-integer programming models.

10.14.15- PEMS / PEHM (Managing Hardware of PEPMS) – Polit-project management can be a very involved process, requiring a great deal of expertise in many disciplines. It requires that these processes be very structured and organized. It requires the development and processing of large volumes of data. It requires frequent reporting of plans and progress.
It has generally found that the discipline of a computer based project planning and control system leads to more cohesive and supportable project management and reporting. The general acknowledgement of this condition has helped project managers to be more respected and, in turn, to get better support from their contributors and management.

PPMS / PS (Planning of Polit-Knowledge or -System hierarchy and its Subsystems) - Polit-system strategic planning and management attempts to integrate the CIPSE with its external political environments. This integration is a way of establishing an CIPSE's overall role. As an important institution of the societies in which it operates, an CIPSE should fulfil its role in the every day affairs of each society as well as the global community.
The major method for planning of political factors in polit-system strategic planning will be the **Hierarchical Planning.** The hierarchical planning is a term used to describe the development of an aggregate production plan and then passing the same plan on the more detailed master production schedule. A group of political factors for a hierarchical planning list as:

- General political stability
- Ideologically based Cold War
- U.S. dominance in international political economy
- North-South gap
- Form of government
- Prospects of border warfare
- Geographical tension
- Regional political alliances
- Threat of large scale war
- Diplomatic crises
- Governments crisis
- Political strikes
- Terrorism
- etc.

Economical factors:

- Ready availability of low-cost energy
- Ready access to raw materials
- Reconstruction in Europe and Japan
- Economic growth objectives
- Closing international gaps
- GATT: promising free international trade
- IMS: offering monetary stability
- International banking and financial markets
- Eurodollars, Eurobonds, Eurocurrencies

- EEC, EFTA, LAFTA, COMECON, ANCOM
- Open host environments welcoming direct investment as means to close gaps
- Home country tolerance for export of capital, technology, and management
- Emphasis on short-term benefits, discounting long-term costs
- Percentage growth in per capital GNP
- Per capita income
- Income distribution
- Economic crisis
- Balance of payments situation
- Exchange regulations
- National debt
- Etc.

A global strategic management of polit-knowledge or -system is a set of decision-making activities. There are seven distinct, but interrelated, decision-making processes. The total process determines whether an CIPSE excels, survives, or dies. The job of the strategists is to make the best use of a CIPSE's resources in a changing and turbulent international environment. The global strategic management process results in the formulation and implementation of global strategic designed to achieve the objectives of a CIPSE. While it is convenient to order the seven decision-making processes sequentially, these activities are interactive, cyclical, continuously repetitive, and do not move forward in a neat sequently. They list as:

- **Defining the CIPSE's Purposes and mission;** The starting point in setting a direction for an CIPSE is developing an internal concept of the organization' scope and makeup. This point will define the CIPSE identity, character, makeup, image, and scope of activities.
- **Determining the Root Strategy;** Designing a political hierarchy and development of basic overall guiding policies which determine the economic, social, science, legal, industrial, and geographic setting of the organization. The character of the CIPSE unit is modelled through the deliberations of the formulation (or reformulation) phase.
- **Forming the basic CIPSE strategy;**
    - What is the extent of the firm's skills and resources?
    - How does the firm intend to commit its skills and resources?
    - What are the practical alternatives?
    - What are the practical alternatives?
    - What specific policy will the CIPSE purpose?

- **Global polit-knowledge or -system assessment;** A process through which an CIPSE evaluates the actual (present) and potential (future) conditions that it may face in domestic, foreign, and international systems.
- **Global objective formulation;** The CIPSE must first formulate long-term objectives and then translate them into short-term annual objectives.
- Generation of alternative global strategies; In generating alternative strategies for the achievement of global objectives, the primary concern is to take advantage of the polit-system opportunities and to face polit-system threats by using a CIPSE' s internal capabilities and strengths.
- **Choice of global strategy;** at the end of this phase a global political strategy and various CIPSE strategies have been formulated.
- **Implementation**; Means putting the selected political strategy into action.
- Development of operating strategy; the loose overall framework of the formulation phase should be the determining factor in developing the operating strategy of the firm. Functional strategies and policies are developed in this phase to guide the short-range planning and day-to-day operations of the enterprise. Marketing, production, and personnel plans are coordinated with overall firm objectives through the formulation of coordinating subjective.
- **Interpretative phase;** development of the control strategy. Interpretation of results must flow through the CIPSE and must be based on responsibility and performance of individuals strategically placed in the organizational structure. The feedback mechanism is a function of the organizational structure and the intangible factors of organizational behaviour. Factors to be considered in the development of control strategies:
    - Selection of key control variables
    - Coordination of control measures

- Qualitative versus quantitative control measures
- Use of systems analysis in structuring a control system
- External monitoring system
- Evaluation and control; Are accomplished through feedback and by determining whether or not the strategy is working.