INFORMATION SYSTEMS PLANNING

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1. GENERAL INFORMATION

INTRODUCTION

1.01 This document was developed for the purpose of:

(a) Providing a methodology for use by Operating Telephone Companies (OTCs) in developing a corporate plan for the deployment of computer-based information systems.

(b) Providing a means of ensuring an OTC's information systems plan supports corporate goals and objectives.

(c) Documenting the interrelationship of information systems planning with Department/Segment Operations planning (e.g., TNOP), and resource planning activities such as hardware planning, data communications planning (Section 007-110-350), and force planning.

(d) Sufficiently structuring information systems planning in the OTCs to allow for systemwide analysis by AT&T while meeting each company's individual planning needs.

1.02 Whenever this section is reissued, the reason(s) for reissue will be listed in this paragraph.

1.03 A multicompany task force developed this guideline under the direction of the AT&T Information Systems Organization planning group. This practice is applicable to all Operating Telephone Companies and Long Lines.

SCOPE

1.04 This practice is intended for use by OTCs as a guide in developing a corporate information systems plan. It is not a plan; it is a methodology on how to plan.

1.05 The procedures in this practice can be used in planning installation of centrally developed systems, OTC developed systems, and vendor developed systems, as well as systems designed to run on either large-scale or small-scale computers.

1.06 The intended audience for this practice includes:

(a) Information Systems Organization (ISO) planning personnel

(b) Planners in organizations using information systems

(c) Integrated Planning Process (IPP) planners

(d) Managers responsible for information systems development work

(e) Approval authorities for information systems development work.

1.07 These procedures can be applied to planning for all development work, including nontrouble maintenance changes, irrespective of the information system's position in its life cycle.

ASSUMPTIONS

1.08 This methodology assumes the following:

(a) Each Operating Company will develop an information systems plan as indicated in the Information Systems Organization (ISO) Study (August 1979).

(b) One Long Range Information Systems Planning Organization (LRISPO) is responsible for developing and managing the corporate information systems plan. LRISPO is part of the ISO.

(c) The term project refers to information systems development work necessary to build an entire system, to install a centrally developed or vendor developed system, or to make significant changes to an existing system.

(d) An Interdepartmental/Segment approval authority exists for approving the corporate in-

formation systems plan; the support staff for this group resides in the ISO.

(e) Each Department/Segment is responsible for identifying its information requirements, preparing Proposal and Feasibility phase documentation as specified by ISO, approving its projects for development, and prioritizing its projects.

(f) Data is a corporate resource to be shared by all organizations with a need for such data.

(g) Procedures are in place so all organizations can input to the corporate information systems plan.

(h) Corporate goals exist that are tangible, relevant, and widely distributed for use in setting Department/Segment goals and objectives.

(i) Separate but interrelated Bell System Practices exist addressing the development of strategic plans for areas of responsibility such as hardware, data communications, force, data center deployment, software, and information systems deployment.

(j) The corporate information systems plan is developed concurrently with Department/Segment Operations plans and various resource plans (e.g., hardware, data communications, force). The final product is the result of a series of iterative interactions among the various planners.

(k) The planning period is 6 years (current year plus 5).

(l) AT&T has published a Bell System development plan for information systems covering the planning period.

(m) Resources needed to develop information systems are corporate in nature.

BENEFITS

1.09 Approval procedures help to ensure that all projects compete for scarce resources.

1.10 Responding to external requests for planning information will be simplified.

1.11 Justification for information systems projects can be linked directly to specific corporate goals thereby increasing both the acceptability of the expenditures and the likelihood of approval.

1.12 Planning is given a degree of structure which should facilitate the process and ensure some consistency both within specific OTCs and across the Bell System.

ORGANIZATION OF THIS PRACTICE

1.13 This practice is divided into three parts—Prerequisites for The Planning Process, The Planning Process, and Enabling Functions.

1.14 ***Prerequisites for The Planning Process:*** Discusses the need to have the proper organization, a structure to get plans approved, and a set of corporate goals. These elements must be in place before effective information systems planning can begin. The activities in this part are considered one-time activities.

1.15 ***The Planning Process:*** Discusses various on-going activities which result in the development of a corporate information systems plan.

1.16 ***Enabling Functions:*** Discusses those functions necessary to implement the approved plan.

2. PREREQUISITES FOR THE PLANNING PROCESS

ORGANIZING FOR PLANNING

2.01 Before planning can begin, an organization(s) must exist to carry out the functions of developing, approving, and managing the plan.

2.02 Developing the plan is the responsibility of a ***Long Range Information Systems Planning Organization.*** LRISPO also serves as a consulting group to Departments/Segments; it assists in developing solutions which meet identifiable information needs while contributing to the achievement of corporate goals and objectives. These solutions may require the installation of centrally developed systems, locally developed systems, vendor packages, modification of existing systems, or a combination of the four.

2.03 To meet its plan development responsibility, LRISPO performs the following functions:

(a) Establishes schedules for the planning cycle

(b) Develops and maintains procedures for evaluation of individual project alternatives

(c) Develops and evaluates the corporate plan and alternatives.

2.04 An ***approval authority*** must exist to approve proceeding with the corporate plan. Based on the assumption that resources needed to implement information systems projects are primarily corporate in nature, the approval authority is a corporate entity made up of representatives from various Departments/Segments.

2.05 The functions performed by the approval authority include:

(a) Establishing corporate policy regarding information systems development and deployment

(b) Approving allocation of ISO development resources to individual projects

(c) Approving the ***corporate information systems plan*** and ensuring it is in concert with related resource plans

(d) Assuring proper funding of the approved plan

(e) Reviewing progress against the plan.

2.06 Each Department/Segment will have to establish the necessary ***machinery*** to approve its projects for development and to produce a rank-ordered list of projects. The corporate approval authority will use this list to allocate resources for the corporate information systems plan.

2.07 After a corporate information systems plan is approved for implementation, an organization must be responsible for managing implementation of the plan; LRISPO has this ***Plan Management*** responsibility.

2.08 The functions performed by LRISPO to meet this responsibility are:

(a) Setting the criteria against which progress will be measured

(b) Tracking progress and evaluating deviations (those with significant impact are reported to the approval authority with a recommended alternate course of action)

(c) Identifying problems and working with project managers to resolve them

(d) Coordinating implementation of interrelated systems.

DIVIDING THE PLANNING UNIVERSE

2.09 Effective information systems planning requires an organized, systematic approach; to achieve this, the first step is to divide the universe into logical ***Planning Clusters.***

2.10 Planning Clusters are generic groupings of systems/projects established in a fashion which results in ***natural boundaries,*** even if they do not coincide with the organizational boundaries of users.

2.11 Natural boundaries are more conducive to data sharing, allow for easier detection of duplication in functions or data, and tend to be stable over time.

2.12 Various criteria exist for accomplishing the necessary Clustering. No one ***best*** way exists for all companies under all circumstances. Following are some suggested criteria for identifying Planning Clusters:

(a) Function performed (e.g., Billing, Installation, Testing)

(b) Source of input (e.g., Service Order, Time Sheet, Voucher)

(c) Data processed (e.g., Payroll, Personnel, Equipment).

2.13 A Planning Cluster may require further division if it is too large to be studied as a single entity.

2.14 Appendix 1 is an example of how the planning universe can be divided into Clusters. It is only an example, not a recommendation.

2.15 When discussing the information systems plan of an individual Department/Segment, projects must be grouped organizationally. This need to group projects differently for different purposes (i.e., planning versus user interface) can best be met by a mechanized data base.

DEFINING THE CURRENT SITUATION

2.16 Before a corporation can rationally decide where it wants to be at the end of the planning period, or how it will reach this goal, it must establish its starting point; it needs to build a base from which to begin planning.

2.17 The ***Planning Base*** for information systems planning is an inventory of production information systems, information systems under development, and planned information systems. This data is used to make decisions about future information needs and how they can best be addressed.

2.18 Some specific types of information collected for each system are outlined below:

(a) Types of records maintained (e.g., billing, address) and coding used (e.g., Bell System Common Language)

(b) Users of the output

(c) Types of output produced (e.g., paychecks, bills)

(d) Interfacing systems (inputting to, receiving input from)

(e) System characteristics (e.g., on-line, batch)

(f) Operating requirements (e.g., security, priority)

(g) Operating environment (e.g., Standard Operating Environment)

(h) Processing requirements (e.g., frequency, availability)

(i) Hardware configuration (e.g., centralized, decentralized, IBM, UNIVAC).

2.19 This information may be found in data catalogs for the various systems. If data catalogs do not exist, consideration should be given to developing them (see Section 007-310-203).

2.20 Planning Bases are also required for resource planning (e.g., hardware, data communications, force). Specific contents will be addressed in the guidelines developed for each of these planning areas of responsibility.

GOALS

2.21 Support of corporate goals is the basic criteria for including projects in the corporate information systems plan.

2.22 Corporate goals and related objectives must be specific, tangible, and measurable to be used effectively as a standard against which projects will be measured.

2.23 Specific business objectives, which link directly to corporate goals, must be identified for each project.

2.24 Corporate goals are one of the inputs used to determine relative priority of projects.

3. THE PLANNING PROCESS

IDENTIFYING REQUIREMENTS

3.01 Each Operating Company Department/Segment is responsible for identifying its information systems requirements. These requirements may be generated via planning documents received from AT&T (e.g., Operations plans, project plans) or as the result of internal studies. Identified requirements must support corporate goals as discussed in paragraphs 2.21 through 2.24.

3.02 LRISPO will make consultant services available to the Departments/Segments to assist in planning for information systems. This assistance will focus on areas such as data sharing, system integration, system interface requirements, etc. Consultant services will be aligned to serve each Department/Segment on a dedicated basis.

3.03 The Total Systems Development series of practices describe the type of documentation (Proposal phase or Feasibility phase) which must be prepared for new projects to be included in the corporate information systems plan. The approval authority may require supplementary information.

EVALUATING PROJECTS

3.04 Ultimate responsibility for objective evaluation of projects rests with the sponsoring Department/Segment. LRISPO establishes the necessary procedures; it can also assist with the evaluation process by providing the expertise to help en-

sure that a consistent approach is used by all Departments/Segments.

3.05 Project evaluation compares alternatives for accomplishing the same objective (e.g., paperless environment) to attempt to identify the best solution. Care must be taken to ensure that evaluations are accomplished well in advance of planned system development; when functional interfaces exist between proposed information systems, evaluations must be coordinated.

3.06 The justification for undertaking specific projects can be economic, noneconomic, or a combination. Therefore, evaluations should address both categories.

A. Economic Considerations

3.07 One of the most valuable pieces of information that can be provided about project alternatives is their financial impact. This information is valuable from two standpoints:

(a) Will the expenditure have a beneficial ***economic affect*** upon the corporation?

(b) Can the corporation support the ***level of expenditures*** required to achieve the desired benefits in the stated time-frame?

3.08 To answer the question concerning economic impact, a study must be conducted using techniques described in the current edition of the AT&T green book ***Engineering Economy.*** Several mechanized models exist which calculate the various economic indicators discussed, or they may be derived manually.

3.09 To help ensure comparability of results, each Operating Company must select one method for generating the indicators. Appendix 2 provides some additional guidance about economic selection studies.

3.10 To help determine a corporation's ability to support the level of expenditure required, develop the following one-time cost data for project alternatives:

(1) System Development

- Programming personnel
- Other personnel
- Machine costs
- Other.

(2) Installation and Conversion

- Programming personnel
- Other personnel
- Training costs
- Machine costs
- Network costs
- Building costs
- Other.

3.11 Ongoing costs can be significant and should not be overlooked when evaluating project alternatives. The following items normally comprise the bulk of information systems ongoing costs:

(a) Information Systems Organization personnel

(b) Machine time

(c) Other organizations' personnel.

3.12 Economic factors are inputs to both the prioritization and the classification process discussed later in the section.

B. Noneconomic Considerations

3.13 There are many compelling reasons for undertaking projects which are not readily quantifiable. These noneconomic considerations must be part of the decision-making process where applicable. Listed below are some of the more common ones:

(a) Regulatory requirements

(b) Contractual obligations

(c) Organizational requirements

(d) Management prerogatives.

3.14 Noneconomic considerations are inputs to both the prioritization and the classification process discussed in this practice.

C. Classification

3.15 One output of the project evaluation process is project classification. This refers to the grouping of projects based on a set of predefined characteristics. Classification is a ***preliminary step*** to project prioritization.

3.16 Six categories have been identified for use in grouping projects. See Appendix 3, for a definition of these categories.

3.17 Figure 1 is a sample output form for displaying projects in the various classes.

PRIORITIZING

3.18 Projects are prioritized for the purpose of allocating resources, based on the premise that resources are not available to do all the work in the time-frames desired by the User Departments/ Segments.

3.19 Following are questions that can be used as criteria when attempting to rank projects:

(a) How well does it support efforts to achieve specific corporate goals and objectives?

(b) Does the proposed system mesh with other projects either under development or planned?

(c) How much discretion does the corporation have in determining if and when it wants to implement the system?

(d) How economically attractive is the project?

(e) How important is this project to the successful implementation of high priority projects in the information systems plan?

3.20 The output of the prioritization process is a rank-ordered list of projects, by category. This list becomes the basis for scheduling decisions which determine when projects will be starting and completing. Priority and classification are two inputs to the scheduling decision.

3.21 Appendix 3 is a detailed procedure for prioritizing information systems development work. When implementing the procedure, OTCs may find it necessary to make modifications to meet local requirements.

SEQUENCING

3.22 Sequencing refers to the order in which projects are implemented and is usually associated with interrelated systems.

3.23 There are several other factors besides functional interdependence which should be considered when determining in what sequence to implement systems:

(a) Organizational impact of this and other systems cutting over about the same time

(b) Economic impact of accelerating implementation of economically attractive systems or of deferring high-cost systems

(c) Imposed time constraints

(d) Synergistic effects.

3.24 Sequencing considerations are part of the evaluation of alternatives when they materially impact results.

3.25 Sequencing considerations become critical when several projects are being considered for a particular Planning Cluster or user organization.

3.26 The outcome of an economic evaluation for a series of system implementations may be significantly impacted by sequencing.

THE CORPORATE PLAN

3.27 Development of the corporate information systems plan precedes the budget process for ***next year;*** while this may occur annually or semiannually, the planning horizon should be the current year plus 5 years to give the approval authority a complete picture and to mesh with the Integrated Planning Process. Systems in various stages of active development or implementation, as well as systems in the Proposal and Feasibility phases, are included.

3.28 Corporate plan construction ***begins*** at the Department/Segment level; projects are scheduled for development and implementation based on available data. Both approved and unap-

proved projects may be included. (See Figure 2 for a project development schedule sample form.)

3.29 Estimated start and complete dates must be determined for each project. Various factors must be considered when developing the Department/Segment plan; the following lists some of the more pertinent:

(a) Project classification

(b) Project priority

(c) Sequencing considerations

(d) Organizational impact

(e) Financial impact

(f) Competing requirements

(g) Affect on force.

3.30 Each Department/Segment approves its plan for inclusion in the corporate information systems plan.

3.31 LRISPO combines Department/Segment plans to produce a corporate plan. This is not a mechanical process; the factors outlined in paragraph 3.29 must be considered at each step of this iterative process, and adjustments made to individual plans ***with the assistance*** of the Departments/Segments involved. The approval authority has ultimate responsibility for resolving issues and approving the final product of this process.

3.32 Alternative versions of a corporate plan are produced to give the approval authority a full range of possibilities. Each version of the corporate plan is evaluated from both an economic and noneconomic perspective.

3.33 Figure 3 is a sample form for use in displaying the information systems plan.

APPROVAL

3.34 Approval takes place at various stages of the planning process. Individual projects are approved, Department/Segment plans are approved and the corporate plan is approved.

A. Project Approval

3.35 Project approval by the Department/Segment approval authority signifies several things:

(a) The project is one that should be implemented based on an evaluation of both its own merits and its contribution to the goals of the organization

(b) The classification and priority are appropriate

(c) Money is available to develop the project.

3.36 The decision to approve or not to approve each project is based on the results of a detailed investigation; the following types of information should be presented to the ***Department/Segment*** approval authority for each system:

(a) Specific corporate goals and objectives supported

(b) Specific measurable business objectives the system will meet

(c) Specific measurable information systems objectives the system must meet

(d) Business problems solved or business opportunities the system will allow the OTC to take advantage of

(e) Scope of project in terms of its corporate impact and the time required to fully implement it

(f) Assumptions and constraints that could materially impact the project's outcome

(g) An economic analysis.

B. Plan Approval

3.37 Individual Department/Segment plans must be approved prior to development of the corporate plan. This process ensures that the needs of individual Departments/Segments are properly reflected in the total corporate plan. This will expedite the decision-making process if conflicts arise during resource allocation.

3.38 Approval of the corporate plan by the ***Interdepartmental/Segment*** approval authority signifies approval of the:

(a) Direction indicated by the plan

(b) Support provided by the plan to corporate goals and objectives

(c) Level of financial commitment the plan represents.

3.39 The approved corporate plan becomes the ***basis for budgeting.***

4. ENABLING FUNCTIONS

IMPLEMENTATION AND RESOURCE PLANNING

4.01 The final version of the approved corporate information systems plan is distributed to various impacted organizations so that related plans and budgets can be adjusted accordingly.

4.02 This process ensures that resources necessary to implement the plan will be available when needed.

A. Hardware Planning

4.03 Existing hardware plans may have to be altered as a result of the newly approved information systems plan. For the purposes of this discussion, hardware planning encompasses planning for:

(a) Computers, related equipment, and environment

(b) System software

(c) Data center deployment

(d) Information systems deployment.

4.04 There is an ***ongoing*** exchange of information between hardware planners and information systems planners. For example, hardware planners provide the information systems planners with cost data to be used as input to project evaluations. They also recommend changes to the information systems plan to coincide better with hardware planning.

4.05 The specific data required by hardware planners from information systems planners and others will be detailed in hardware planning guidelines (Section 007-110-XXX). Project-related data from information systems planners is combined with similar data for information systems in operation, gathered from other sources, to develop a corporate hardware plan.

B. Data Communications Planning

4.06 Existing data communications plans may have to be altered as a result of the newly approved information systems plan. For the purposes of this discussion, data communications planning encompasses planning for:

(a) Terminals

(b) Equipment

(c) Network facilities.

4.07 There is an ***ongoing*** exchange of information between data communications planners and information systems planners. For example, the data communications planners provide the information systems planners with cost data to be used as input to project evaluations. They also recommend changes to the information systems plan to coincide better with data communications planning.

4.08 The specific data required by data communications planners, from information systems planners and others, is detailed in data communications planning guidelines (Section 007-110-350). Project-related data from information systems planners is combined with similar data for existing communications networks, gathered from other sources, to develop a corporate data communications plan.

C. Force Planning

4.09 Existing force plans may have to be altered as a result of the newly approved information systems plan. For the purposes of this discussion, force planning refers to planning for all personnel necessary to plan, develop, install, operate, and maintain information systems in the plan.

4.10 There is an ***ongoing*** exchange of information between force planners and information systems planners. For example, the force planners provide the information systems planners with cost data to be used as input to project evaluations. They also recommend changes to the information systems plan to coincide better with force planning.

4.11 The specific data required by force planners, from information systems planners and oth-

ers, will be detailed in force planning guidelines (Section 007-110-XXX). Project-related data from information systems planners is combined with similar data for information systems in operation, gathered from other sources, to develop a force plan in support of computer-based systems.

SUPPORT ACTIVITIES

4.12 Two activities can help to ensure that projects are accurately reflected in the corporate information systems plan in a consistent manner:

(a) Standards development and maintenance

(b) Standards enforcement.

A. Standards Development and Maintenance

4.13 ISO is responsible for developing and maintaining procedures for the Departments/Segments to use in:

(a) Documenting information systems requirements

(b) Obtaining resources to build and/or install information systems.

4.14 The Interdepartmental/Segment approval authority will specify the content of these standards.

4.15 ISO standards developers may reside within *LRISPO, but the same individuals should not* have both planning and standards development responsibilities.

B. Standards Enforcement

4.16 The approval authority is responsible for ensuring the standards referred to in paragraph 4.13 are enforced.

4.17 To help meet this responsibility, ISO will provide the necessary staff support.

4.18 The approval authority support staff may reside within LRISPO, but the same individuals should not have both planning and standards enforcement responsibilities.

ADMINISTRATION, MANAGEMENT, AND CONTROL

4.19 Various activities have been identified as necessary to administrater, manage, and control implementation of the corporate information systems plan.

A. Budget Process

4.20 The existing budget process is used to obtain spending authority for approved projects in the plan; spending authority is normally just for ***next year.*** However, dollars may be budgeted in subsequent years for financial planning purposes, for both approved and unapproved projects.

4.21 Budget submissions are based on the approved corporate information systems plan; corporate budget decisions which impair the ability to support the approved plan must be communicated to LRISPO. Necessary adjustments will be made to the plan and approved by the approval authority.

4.22 Plan changes must be communicated to all impacted organizations so their respective plans and budgets can be adjusted.

4.23 Once plans and budgets are approved for all impacted organizations, the data bases discussed in paragraphs 2.16 through 2.20 of this practice must be updated and plan implementation begun.

B. Plan Mangement

4.24 Plan Management refers to a set of activities whose purpose is to determine progress being made against the information systems plan, to coordinate the activities of project managers, to help meet plan goals and objectives, and to ensure that significant deviations from the plan are brought to the attention of the approval authority.

4.25 Responsibility for Plan Management resides in LRISPO, but not in the same work groups responsible for planning.

4.26 The ***Plan Manager*** is responsible for either keeping the plan on-track or for identifying the reason(s) why he cannot do so. Two main concerns are the quality and economic success of the plan; LRISPO planners are responsible for the former and project managers for the latter.

C. Tracking The Plan

4.27 The overall information systems plan is not tracked as an entity. Rather, the plan is bro-

ken into components (e.g., Planning Clusters) and tracked on that basis.

4.28 The Plan Manager is responsible for determining what is to be tracked and the actual tracking.

4.29 Some factors that have been identified as candidates for tracking by Plan Managers are:

(a) Planning goals (e.g., eliminate the paper-intensive environment in work centers)

(b) Major milestones on ***key*** projects (e.g., systems development phases, conversion progress)

(c) Plan-to-plan changes for years common to the old and new plan (e.g., capital requirements, force levels, savings, ***key*** project schedules).

D. Other Plan Manager Responsibilities

4.30 Following is a list of activities that are the responsibility of the Plan Manager:

(a) Coordinating explanations of deviations from the plan based on input from information systems planners and project managers

(b) Identifying and resolving problems which could impact progress toward achieving plan objectives

(c) Coordinating implementation of interrelated information systems.

CATEGORY X (7)

Description of Category

Acronym	Name	Economic Indicators LTEE	Economic Indicators DPB	Sponsoring Department/Segment	Priority
(1)	(2)	(3)		(4)	(5)

(1) Project acronym

(2) Full project name

(3) Long term economic evaluator and discounted payback for each project (see Appendix 2)

(4) Department/Segment sponsoring the project

(5) An indicator of the importance of this project to the corporation

(6) Date table was prepared

(7) Classification categories (A, B, C, D, E, F)

Date: (6)

Fig. 1—Classification Process Sample Output Form

PROJECT DEVELOPMENT SCHEDULE

19XX 19X1 19X2 19X3 19X4 19X5

(1)

Planning Cluster A

Project 1 ——————————— (2)

Project 2 ————————

Project 3 ———————————————

Planning Cluster B

Project 1

Project 2

Project 3

Planning Cluster C

(1) Groupings of projects (e.g., Planning Cluster, Department/Segment).

(2) Plot projects' development for a planning horizon of at least base year plus 5 years.

(3) Date schedule was prepared.

Date: (3)

Fig. 2—Project Development Schedule Sample Form

CORPORATE INFORMATION SYSTEMS PLAN

		Personnel			Development Cost			Dates			
Name	Phase	Information Systems	Sponsor	Other	This Year	To Date	Total	Start	End	Project Sponsor	Category/Priority
(1)	(2)		(3)			(4)		(5)		(6)	(7)

(1) Project name

(2) Phase of project development (e.g., Design)

(3) Number of people working on the project

(4) Project development expenditures for the current year, accumulated to the current year, for the total project

(5) Date project started, date project completes

(6) Department/Segment sponsoring the project

(7) Project classification category/project priority

(8) Date plan prepared

Date: (8)

Fig. 3—Corporate Plan Sample Form

ILLUSTRATIVE PLANNING CLUSTERS

1. GENERAL

1.01 This is an example of how clustering for mechanization planning can be accomplished; many more possibilities exist. OTCs should thoroughly investigate the alternatives before firmly establishing their Planning Clusters.

(a) ***Customer Records Systems*** deal with all activities related to direct customer/company contact, customer usage, customer needs, and desires. Some systems which typify this Cluster are CRIS, BOSS, AIS, COIN/CTOCS.

(b) ***Network Records Systems*** are related to the provisioning and administration of local plant, equipment, and facilities for all services. Some systems which typify this Cluster are TIRKS, PICS, TNDS.

(c) ***Capital Expense and Financial Management Systems*** deal with processes and recordkeeping functions related to capital investment, corporate bookkeeping, regulatory reporting, budget development, and control. Some systems which typify this Cluster are ICIS/FA, CAMIS, DRP, BOCAP, BSDOPAC.

(d) ***Maintenance Systems*** are related to the provision and restoration of service. Some systems which typify this Cluster are LMOS, MLT, SARTS, TCAS, No. 2 SCCS.

(e) ***Support Systems*** deal with personnel, legal, public relations, and public affairs functions. Some systems which typify this Cluster are HRIS, BOMIS, IFAMS.

ECONOMIC SELECTION STUDIES

1. GENERAL

1.01 Economic selection studies are a tool to assist in the decision-making process when attempting to select among project alternatives. The preparation of such studies, and the interpretation of study results,requires a highly skilled person who has been trained in these areas.

1.02 It is recommended that a specialized group be established within the Long Range Information Systems Planning Organization (LRISPO) to conduct these studies. This will help ensure that all studies are prepared in a manner consistent with the principles of good study technique, that results are properly interpreted, and that all studies are prepared on a comparable basis.

2. STUDY SITUATIONS

2.01 There are two general cases where economic selection studies can be used effectively:

(a) When comparing various alternatives to the existing system (manual or mechanical)

(b) When comparing various alternatives to the null (no system, manual or mechanical, currently exists).

3. ECONOMIC INDICATORS

3.01 Economic selection studies are undertaken to determine the "best" economic alternative by identifying which alternative has the greatest affect on increasing cash inflows or decreasing cash outflows. There are various indicators discussed in the current edition of ***Engineering Economy***; listed below are five which may be helpful. You are cautioned to receive proper training before attempting to develop and use these or similar indicators in the decision-making process.

(1) ***Rate of Return (ROR)*** is a breakeven cost of capital. For conventional cash flows, it is the highest cost of capital a project can tolerate and still breakeven.

(2) ***Discounted Payback (DPB)*** is a crude measure of risk which indicates the number of years it takes for a project to breakeven, taking into account the time value of money.

(3) ***Net Present Value (NPV)*** is the present worth of annual cash flows; a positive number indicates that the project recovers all costs (capital, taxes, etc.) and contributes dollars to the corporate treasury.

(4) ***Present Worth of Expenditures (PWE)*** is a measure of how attractive an alternative is from a revenue requirements viewpoint. It indicates how much money the firm must spend to support each alternative.

(5) ***Long Term Economic Evaluator (LTEE)*** is a relative measure of costs and benefits. It is calculated by dividing the present worth of negative net cash flows into the present worth of positive net cash flows.

3.02 CUCRIT (Capital Utilization Criteria) is one automated system that generates these economic indicators. It is an AT&T time-share system. Other such systems are available, or the calculations can be accomplished using one of the more sophisticated hand-held calculators.

DEVELOPING PRIORITIES FOR COMPUTER-BASED INFORMATION SYSTEMS

1. GENERAL

1.01 The purpose of this procedure is to provide the Operating Telephone Companies with a methodology for use in prioritizing all information systems work to be included in the corporate information systems plan. In addition, it defines the criteria and documentation necessary to ensure that all information systems work is prioritized in a consistent, objective manner.

1.02 This procedure assumes the following:

(a) ***Resources are limited.*** As a result, it is not possible to meet all information systems development demands in the time-frame requested by users.

(b) Prioritization is based on evaluation of the quantitative and qualitative merits of projects.

(c) All projects are planned, organized, managed, and documented in compliance with Total Systems Development (TSD) practices and procedures described in BSP series 007-200.

(d) Each Department/Segment is responsible for prioritizing ***its own*** projects. A Department/Segment approval authority exists for approving these priorities.

(e) Each Department/Segment approval authority provides an Interdepartmental/Segment approval authority with a rank-ordered list of projects in advance of both the budget cycle and the development of the corporate information systems plan. These lists are used to allocate ISO development resources and to facilitate the project scheduling process.

(f) Coordination of prioritization activities is the responsibility of the support staff group for the Interdepartmental/Segment approval authority.

(g) Once resources have been allocated to a project and development begins, they will not normally be withdrawn.

2. INPUTS TO THE PROCESS

2.01 Prioritization is normally done after Feasibility Reports are evaluated and approved by the Department/Segment approval authority. For these projects, the following information, broadly defined in the TSD practices, is reviewed to derive input to the process.

(a) System Overview:

(1) Rationale—most significant reason for undertaking the development work

(2) Statement of problem(s)/opportunity(ies)

(3) Business objectives

(4) Constraints—describe all known constraints (economic, environmental, technological)

(5) Development time-frame

(6) Impact statement—consequences of not undertaking the project.

(b) Service and Operating Considerations:

(1) Expected useful life of the system

(2) Noneconomic benefits

(3) Interfaces with other operational systems

(4) Sequencing constraints (interfaces with other planned systems which may impact priority or implementation schedules)

(5) Impact of the system on:

- Customers
- Other Departments/Segments
- General trade
- Planning efforts (e.g., TNOP, 6-year plans).

(c) Economic Information (see Appendix 2):

(1) Discounted Payback Period (DPB)

(2) Net Present Value (NPV)

(3) Rate of Return (ROR)

(4) Long Term Economic Evaluator (LTEE).

(d) Costs:

(1) One-Time Development Costs by year

(2) Recurring Costs

(3) Capital Costs.

(e) System Development Resource Estimates

(f) System Operating Resource Estimates

(g) Glossary (definition of unique terminology).

2.02 When it becomes necessary to reprioritize active projects (see paragraph 3.02), or when initializing the prioritization process, TSD End-of-Phase Reports and Feasibility Reports must be used in combination.

2.03 All of the information needed to prioritize a project can be captured on a ***1-page*** Project Data Sheet (PDS). The PDS reduces the need to page through project documentation, referenced in paragraph 2.01, during prioritization activities. Figure I is a sample PDS form.

2.04 Preparation of a PDS requires detailed review of project documentation to identify quantitative and qualitative factors upon which priorities are based.

3. PRIORITIZATION ACTIVITIES

3.01 Prioritization is accomplished in the following four steps:

(1) Review previously prioritized projects

(2) Classify projects

(3) Establish priorities

(4) Approve priorities.

A. Review Previously Prioritized Projects

3.02 Previously prioritized projects, where development work is in process, are considered active and are ***not*** normally reprioritized. This is based on the premise that it is both inefficient and costly to withdraw previously committed resources from such projects simply to accommodate new projects. However, when current documentation (e.g., End-of-Phase report) for a project causes it to be reclassified into another category, the project is reprioritized. Paragraph 3.07 describes project classification in detail.

3.03 Projects on hold where development activity is not expected to resume within 6 months ***lose*** their priority and are reclassified so that resources can be allocated to other work.

3.04 If resources were not allocated to a previously prioritized project, the project is reprioritized.

3.05 If a project has been canceled, it is dropped from the process.

B. Classify Projects

3.06 Classification involves categorizing projects according to predetermined characteristics; this is normally accomplished during project evaluation. Classification ***is not*** a prioritization. Rather, it is a way of organizing projects that ***facilitates*** prioritization in the following manner:

(a) Categories communicate specific information about each project because a project must meet certain criteria to be included in a particular category.

(b) Classification makes the prioritization process more manageable by reducing the number of projects which must be reviewed and analyzed (i.e., certain categories are not prioritized).

3.07 Six categories have been established for use in classifying projects. The criteria used to group

projects includes economics, risk, degree of discretion associated with each, and development resource requirements. Classification categories are defined as follows:

(1) ***Category A—Mandatory*** development which must be undertaken for the following reasons:

(a) To meet externally imposed legal, regulatory, or contractual requirements

(b) Development mandated by the chief executive officer

(c) Maintenance required to get or keep a system operational

(d) Developments/enhancements to update interdependent systems where approval for updating one (or more) has already been secured (e.g., systems impacted by ESS generic updates)

(e) Developments/enhancements impacting product offerings.

(2) ***Category B***—All ***previously prioritized discretionary*** projects currently in a TSD development phase (Definition through and including Conversion), regardless of original category assignment.

(3) ***Category C—New discretionary*** projects that are ***economically attractive*** with relatively ***low risk*** involved in attaining benefits. Economically attractive projects are those with a Long Term Economic Evaluator of 1.15 or higher. Low risk projects are those where the Discounted Payback Period does not exceed 3 years. (LTEE and Discounted Payback standards may be adjusted to reflect the preferences of local Operating Company management).

(4) ***Category D—New discretionary*** projects that are ***economically attractive*** (LTEE is 1.15 or higher) with relatively ***high risk*** involved in attaining benefits (Discounted Payback Period exceeds 3 years).

(5) ***Category E—New discretionary*** projects that are desirable for ***other*** than economic reasons. This category includes projects where the LTEE is less than 1.15 or negative. These projects are undertaken to support corporate goals and objectives or at the discretion of management, to meet other business needs.

(6) ***Category F***—All other projects that do not fall into one of the preceding categories. These include the following:

(a) Projects not expected to require commitment of development resources in the near term (budget period)

(b) Inactive projects

(c) Projects in the Proposal and Feasibility Phases

(d) Projects for which Conversion End-of-Phase reports have been received.

3.08 Based on classification criteria, projects in categories C, D, and E are prioritized. Projects in the remaining categories are normally not prioritized for the following reasons:

(a) Category A projects are top priority by definition, therefore, assigning a priority ranking to these projects is of little or no value. All such projects will be listed in alphabetical order at the top of the final priority list.

(b) Category B projects are those to which resources have already been committed based on a previously assigned priority. These projects are labeled ***active projects*** and appear on the final priority list, in alphabetical order, after category A projects.

(c) Category F projects are not prioritized because detailed information is unavailable or because they require little or no development resources. Although these projects do not appear on the priority list for resource allocation purposes, they are considered when developing the corporate information systems plan.

3.09 In extreme situations, resource availability may dictate that Category A and B projects be prioritized (reprioritized) with those in C, D, and E. These procedures can be adapted for this purpose.

C. Establish Priorities

3.10 Projects in categories C, D, and E will be prioritized with the aid of an information sys-

tems prioritization model. AT&T Corporate Planning developed this mechanized model using the Operating Company Integrated Planning System (OCIPS) Flexible Output Report Model (FORM); the model runs in the General Electric time-share system.

3.11 Utilizing manually developed input, the prioritization model will calculate the value of a project to the corporation in terms of both economic and noneconomic benefits. User input consists of the following:

(a) Weighted Benefit Categories—The value of a project is based on the beneficial impact it is expected to have in each of several areas referred to as benefit categories. A numeric weight is assigned to each benefit category to represent its relative value to the corporation. Weights are assigned to the following benefit categories on a scale from 1 to 100 with the most important benefit category weighted 100.

(1) Economic

(2) Customer service

(3) Management control

(4) Work force

(5) Company impact.

(b) Project Score—Each project's expected contribution to the corporation is evaluated in terms of benefit category criteria (see paragraph 3.19). A numeric value is assigned to each project, in each category, to represent its relative contribution to the corporation. Project scores are assigned on a scale of 0.01 to 100.00 with the most beneficial project scored 100.00.

3.12 The prioritization model mathematically combines benefit weights and project scores for each project. The result is an overall priority score which is converted to a priority rank. Part 5 provides detailed information regarding benefit category weights, project scoring, and operation of the mechanized model.

3.13 The method employed to assign project scores for input to the prioritization model varies depending on the benefit category.

3.14 Project scores in the economic benefit category are assigned on the basis of the LTEE. The project with the highest LTEE is assigned the highest project score. The project with the next highest LTEE is assigned the next lowest score, and so on, until all projects with an LTEE of 1.0 or higher are scored.

3.15 Project scores in the noneconomic benefit categories are established using a review, discussion, and balloting procedure. Addressing one benefit category at a time, each project is reviewed individually to assess its contribution to the well-being of the corporation when measured against the criteria (see paragraph 3.19) for that particular category.

3.16 When all of the beneficial aspects of a project are discussed, rating ballots are prepared to rate projects on a scale from 1 to 10. A rating of 1 indicates that a project provides little or no benefits in a category. A rating of 10 indicates that a project is of high value to the corporation in terms of benefits it provides in a category. A rating of 5 is considered average. Once the voting process begins, there is no further discussion until all ballots are collected and a total project rating is calculated and recorded.

3.17 When all of the projects are reviewed and rated in a benefit category, project scores are assigned on the basis of total ratings. The highest rated project is assigned the highest score, the next highest rated project is assigned the next lowest score, etc., until all projects are scored.

3.18 This balloting, rating, and scoring process is repeated for each benefit category until all projects have been assigned scores in all categories. The Priority Analysis Work Sheet (Figure 2) is used to record project scores and as a source document for input to the prioritization model.

3.19 Following are the benefit categories and related factors used to develop project scores.

(a) Regarding ***Customer Service***, does the project:

(1) Improve accuracy of information given to customers (billing, billing records)

(2) Improve service in the form of more timely responses to customer inquiries and the ability to provide more personalized service as a result of more detailed records and/or improved accessibility of data

(3) Improve ability to respond to emergency conditions

(4) Increase ability to offer extended hours of service

(5) Enhance ability to plan more effectively through the provision of more detailed and/or more accessible customer related data

(6) Increase ability to offer new services to the customer?

(b) Regarding ***Work Force***, does the project:

(1) Affect force requirements positively or negatively

(2) Improve utilization of existing force (distribution, levels, elimination or addition of shifts, reduced/increased need for supervision, affect on requirement for technical personnel, the need for specialized training, etc.)

(3) Improve planning and management of force?

(c) Regarding ***Management Control***, does the project:

(1) Impact measurement techniques

(2) Impact ability to respond, in a timely fashion, to changes/problems through provision of more readily accessible data

(3) Improve presentation of data permitting ease of analysis

(4) Increase flexibility in terms of the ability to generate special management reports when they are required

(5) Provide for specific management information needs

(6) Impact financial or operations planning?

(d) Regarding ***Company Impact***, does the project:

(1) Contribute to efforts to attain the corporate and/or Segment/Department goals and objectives (especially those aimed at the ability to meet growth and competitive pressures)

(2) Allow the company to exploit new opportunities that would otherwise be unattainable

(3) Help solve major problems

(4) Impact other systems in use or planned?

3.20 Priority rankings, generated by the prioritization model, are reviewed to ensure that no identified sequencing constraints are violated. These priorities are tentative; they must be reviewed by the approval authority, revised as required, and then given final approval.

D. Approve Priorities

3.21 Once tentative priorities are established, a Master Priority List is prepared (Figure 3); it identifies all projects in the following sequence:

(a) Mandatory Projects (in alphabetical order)

(b) Active Projects (in alphabetical order)

(c) New Discretionary Projects (in rank order and numbered).

Note: Project Data Sheets are updated to reflect priority rank, sorted in rank order and attached to the Master Priority List which is forwarded to the Department/Segment approval authority.

3.22 The Department/Segment approval authority reviews the Master Priority List, resolves any conflicts, and revises the list as appropriate.

3.23 Approval signifies that project priorities properly represent the relative value of the projects, that development resources may be allocated on the basis of priority rankings, and that priorities may be utilized to establish project development schedules.

3.24 Once priorities are approved, the Master Priority List is forwarded to the Interdepartmental/Segment approval authority to be used as the basis for resource allocation.

4. REALLOCATION OF RESOURCES

4.01 All available development resources are committed based on approved priorities. Therefore, projects approved for development between annual planning cycles are ordinarily prioritized in the next cycle.

4.02 If circumstances preclude a Department/Segment from waiting until the next cycle for

resources, it must notify the Interdepartmental/ Segment approval authority of the need for a reallocation of resources and provide a list of its active projects from which to draw resources.

4.03 Once the approval authority reallocates resources, project development can begin. The project will be classified Category B (Active).

5. INFORMATION SYSTEMS PRIORITIZATION MODEL

A. General

5.01 The prioritization model operates in a central ***time-shared*** computer facility (leased from the General Electric Company) that is accessed telephonically at a standard acoustical terminal. Using project scores and benefit weights for each category, the model calculates a total priority score; project rankings are assigned based on this score.

5.02 Model users provide project scores for each project in up to six user defined and weighted benefit categories. The model computes a raw score for each project. The raw score is the sum of the products obtained by multiplying the benefit category weight by the project score in that category. Raw scores are then factored to normalize them on a scale of 1 to 100.

5.03 Priority rankings are based on normalized scores; the project with the highest score is assigned a rank of 1. If two projects have the same score, they are assigned the same rank and a subsequent rank is omitted (Example: If two projects with the same score are assigned rank 3, the next lower scored project is assigned rank 5).

B. Benefit Category Weights

5.04 Benefit categories are defined in terms of five common indicators of worth. Benefit category weights are assigned to represent the relative value of each category to the corporation. These weights may be adjusted to reflect the preferences of local Operating Company management:

(1) Customer service—100.00

(2) Economic—95.00

(3) Management control—88.00

(4) Work force—92.00

(5) Company impact—85.00.

C. Calculating Project Scoring Intervals

5.05 Project scores are manually assigned; they range from 0.01 to 100.00. The first step is to compute the interval between scores. This is accomplished by dividing 100.00 by the total number of projects to be prioritized. For example, if there are 100 projects, the interval is 1. The project judged the most beneficial is assigned a score of 100.00; the next most beneficial is scored 99.00, and so on.

D. Assigning Project Benefit Scores

5.06 Project scores for input to the prioritization model are assigned in accordance with the following:

(a) ***Economic***—Projects are listed in order beginning with the highest positive LTEE through the highest negative LTEE. The first project is assigned a score of 100.00; the next project, 99.00, etc., (assumes 100 projects). Projects with the same LTEE are assigned the same score and intervals are adjusted (the next lower score is not assigned). Projects with an LTEE of 1.0 (breakeven) are assigned a score of 1.00. Projects with an LTEE of less than 1.0, or negative, are assigned a score of 0.00.

(b) Project scores in the remaining benefit categories (customer service, management control, work force, and company impact) are assigned on the basis of project ratings established by the balloting procedure described in paragraphs 3.15 through 3.18. The project with the highest total rating in a category is assigned a score of 100.00; the next highest rated, 99.00, etc., (assumes 100 projects).

E. Prioritization Model Output

5.07 The prioritization model provides an output report which displays the input data (i.e., benefit category weights and project scores), total raw scores, normalized scores, and project rankings. (See Figure 4, Model Output—Information Systems Priorities.)

F. Accessing the Prioritization Model

5.08 In order to access the prioritization model, prospective users must first obtain an OCIPS

user identification number. This is accomplished by contacting the local time-share coordinator who is responsible for processing the request. Prioritization Model user documentation will be provided by ***AT&T Corporate Planning*** when the user identification number is assigned.

DATE_____

PROJECT DATA SHEET

PROJECT ACRONYM_____ CURRENT TSD PHASE _____

PROJECT NAME_____

SPONSORING ORGANIZATION _____

CATEGORY CODE _____ (Classification Category Code — A, B, C, D, E, or F)

PRIORITY _____ (Numeric rank — Ex. 3 of 64 or NA if not applicable)

RATIONALE FOR PRIORITY (Brief statement of the most significant factors influencing the priority ranking including impact if resources are not allocated)

ECONOMIC DATA

Net Present Value: _____

Rate of Return: _____

Discounted Payback Period: (If applicable) _____

Total One time Costs: _____

Total Recurring Costs: _____

Development Personnel Requirements: (By TSD Phase for current and subsequent phases/whole personnel only)

Net Estimated Benefits: _____

Long Term Economic Evaluator: _____

Expected Useful Life of System: _____

Development Schedule: (Feasibility Approved = Start
Conversion Report = Complete,
Use Actual and or Estimated Dates)

SIGNIFICANT NONECONOMIC FACTORS

(Management Commitments, Sequencing Considerations, Service Considerations, Specific Corporate Goals and Objectives Supported, Constraints, Affect on: Customers, Other Organizations, Work Force, Other Systems, etc.)

Fig. 1—Project Data Sheet

PRIORITY ANALYSIS WORK SHEET

	BENEFIT CATEGORIES					
	CUSTOMER SERVICE	ECONOMICS	MANAGEMENT CONTROL	WORK FORCE	COMPANY IMPACT	OPEN
BENEFIT CATEGORY WEIGHTS						
PROJECT						
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						

Fig. 2—Priority Analysis Work Sheet

INFORMATION SYSTEMS PROJECT PRIORITIES FOR BUDGET YEAR (19XX)

(DEPARTMENT/SEGMENT)

DATE: _____

VERSION: (1) _____

MANDATORY PROJECTS: (2) _____

ACTIVE PROJECTS: (2) _____

DISCRETIONARY PROJECTS

Rank (3) _____ Project Name (4) _____ Category (5) _____.

(1) Tentative or Final; Final only after approval.

(2) Full Project Name, Projects are Listed in Alphabetical order.

(3) Rank is Shown as 1 of N, 2 of N, etc.

(4) Full Project Name, Projects are Listed in Rank Order.

(5) Category Code C, D, or E.

Fig. 3—Information Systems Project Priorities for Budget Year (19XX)

MODEL OUTPUT

INFORMATION SYSTEMS PROJECT PRIORITIES

BENEFIT CATEGORIES

	CUSTOMER SERVICE	ECONOMICS	MANAGEMENT CONTROL	WORK FORCE	COMPANY IMPACT	UNUSED
BENEFIT WTS.	100.00	95.00	88.00	92.00	85.00	0.
FIX CO	70.00	1.00	10.00	30.00	40.00	0.
TECH	60.00	1.00	50.00	70.00	20.00	0.
HELP OS	40.00	40.00	60.00	50.00	80.00	0.
LEXI	20.00	40.00	20.00	50.00	50.00	0.
MECH CO	90.00	100.00	80.00	20.00	60.00	0.
KOKE	80.00	90.00	90.00	40.00	10.00	0.

The following output indicates the relative worth of the programs
to your area based on the benefit weights
and project scores used for input.

PROJECT	RAW SCORE	NORM 100	RANK
MECH CO	10000.00	100.00	1
KOKE	9000.00	90.00	2
HELP OS	4000.00	40.00	3
LEXI	4000.00	40.00	3
FIX CO	1000.00	1.00	5
TECH	1000.00	1.00	5

Fig. 4—Model Output—Information Systems Project Priorities