DATA COMMUNICATIONS STRATEGIC 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 strategic plan for satisfying internal (as opposed to customer) data communications requirements.

(b) Sufficiently structuring data communications strategic planning in the OTCs to allow for systemwide analysis by AT&T while meeting each Company's individual planning needs.

(c) Providing a means of ensuring that an OTC's corporate data communications plan supports corporate goals and objectives.

(d) Documenting the interrelationship of data communications planning with Department/Segment operations planning (e.g., TNOP), information systems planning (Section 007-110-300), and various resource planning activities (e.g., hardware, software, data center deployment).

1.02 Whenever this section is reissued, the reason(s) for reissue will be stated 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 section is applicable to all Operating Telephone Companies and Long Lines.

SCOPE

1.04 These procedures can be used in the strategic planning for deployment of data communications hardware, software, and other equipment, regardless of vendor.

1.05 This practice is a methodology on HOW to plan; it is not a plan.

1.06 The intended audience for this practice includes:

(a) Corporate data communications planners

(b) All other planners who impact or are impacted by the corporate data communications plan

(c) Managers of data communications projects

(d) Managers of projects that use data communications

(e) Approval authorities for data communications projects and plans.

ASSUMPTIONS

1.07 This methodology assumes the following:

(a) ***One internal data communications plan*** for the corporation is produced.

(b) The Information Systems Organization (ISO), as defined in the ISO Study (August 1979), is responsible for developing and managing the corporate data communications plan.

(c) The approval authority for the corporate data communications plan will be an entity composed of individuals representing all Departments/Segments in the company. This Interdepartmental/Segment entity also approves the corporate information systems plan.

(d) Each OTC will have to develop detailed procedures to implement the concepts contained in this section.

(e) Procedures exist which allow all OTC Departments/Segments to input requirements to the corporate data communications plan.

(f) Corporate goals exist which are tangible, relevant to ISO functions, and widely distributed.

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

(h) Separate but interrelated Bell System Practices exist addressing the development of corporate strategic plans for information systems (Section 007-110-300), hardware, software, data center deployment, force, and information systems deployment.

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

(j) The planning process drives the budgeting process.

(k) A standard data communications operating environment has been defined by AT&T (Section 007-400-100).

(l) AT&T has published a Bell System strategic plan for data communications spanning the planning period and reflecting the needs of Operating Companies.

(m) A standard methodology for conducting an economic analysis of data communications projects has been published by AT&T, and standard costs for use in such analyses have been developed by each Operating Company.

BENEFITS

1.08 Approval procedures help ensure that all data communications projects compete for scarce resources and are in concert with the corporate data communications strategic plan.

1.09 Justification for data communications strategies and plans can be linked to specific corporate goals thereby increasing both the acceptability of related expenditures and the likelihood of approval.

1.10 Planning for internal data communications needs is given a degree of structure which should facilitate the process and ensure some consistency both within specific OTCs and across the Bell System.

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

ORGANIZATION OF THIS PRACTICE

1.12 This practice is divided into the following three parts:

(1) ***The Prerequisites for the Planning Process:*** Addresses those elements which must exist before a corporate data communications plan can be developed.

(2) ***The Planning Process:*** Addresses those activities which result in the development of a corporate data communications strategic plan.

(3) ***The Enabling Functions:*** Addresses those functions necessary for the implementation of an approved corporate data communications strategic plan.

2. PREREQUISITES FOR THE PLANNING PROCESS

ORGANIZING FOR PLANNING

2.01 Before corporate Data Communications strategic planning can begin, organizations must exist to develop, approve, and manage the plan.

2.02 Developing the plan is one of the responsibilities of the ***Corporate Data Communications Planning Organization,*** a work group within ISO); this group will be referred to as CDCPO. CDCPO is a technically oriented planning group which works with other organizations to identify data communications requirements. This is accomplished through participation in their respective planning processes. Data communications solutions will be developed by the CDCPO to meet User needs and contribute to the achievement of corporate goals.

2.03 To meet its plan development responsibility, CDCPO develops various alternatives that satisfy individual User requirements. Each alternative is evaluated both economically and technically. CDCPO then combines various alternatives into an overall corporate data communications plan.

2.04 CDCPO is also responsible for recommending, to the approval authority, changes to the OTC's internal data communications policy.

2.05 An ***approval authority*** must exist to approve proceeding with the corporate plan. Based on the assumption that there will be only one plan to satisfy all internal data communications needs of the OTC, the plan ***approval authority*** must be a corporate entity made up of representatives from User Departments/Segments within the corporation. It should be the same entity that approves the corporate information systems plan (Section 007-110-300).

2.06 The functions performed by the approval authority include:

(a) Establishing corporate policy for internal data communications

(b) Approving the corporate data communications plan and ensuring that it fully supports the corporate information systems plan and related resource plans

(c) Ensuring that plans support corporate goals

(d) Approving plan priorities

(e) Assuring proper funding of the approved plan

(f) Reviewing progress of the plan.

2.07 Once a corporate data communications plan is approved for implementation, an organization must be responsible for managing implementation of the plan; CDCPO has this ***Plan Management*** responsibility.

2.08 The functions performed by the CDCPO to meet its Plan Management responsibility are:

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

(b) Participating in development of data communications tactical (implementation) plans

(c) Tracking progress and evaluating deviations to determine affect on the corporate plan

(d) Working with tactical (implementation) planners to resolve problems

(e) Reporting significant deviations to the approval authority with recommended courses of action.

DIVIDING THE PLANNING UNIVERSE

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

2.10 Planning Clusters are generic groupings within the overall data communications area. The planning universe must be segmented in a fashion which allows the establishment of ***natural boundaries*** for each Planning Cluster, even if they do not coincide with organizational boundaries.

2.11 Various criteria exist for accomplishing the necessary segmentation. No best way exists for all companies under all circumstances. Following are suggested criteria for identifying Planning Clusters:

(a) Network components (e.g., hardware, software)

(b) Traffic type (e.g., bulk, telemetry, store and forward, inquiry response)

(c) Function performed (e.g., data switching, data transport, communications processing)

(d) Application (e.g., BOSS, TIRKS, LMOS)

(e) Network functionality (e.g., shared, dedicated).

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

DEFINING THE CURRENT ENVIRONMENT

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

2.14 The ***Planning Base*** for data communications planning is an inventory of data which defines current User requirements, planned changes to User requirements, existing networks, and planned changes to them.

2.15 Specific kinds of data to be collected are outlined below:

(a) Work center locations

(b) Host computer locations

(c) Numbers, types, and locations of terminals

(d) Network hardware and software

(e) Applications and interfaces

(f) Traffic type (e.g., bulk)

(g) Protocols used

(h) Specifications (e.g., response time requirements)

(i) Host control systems and access methods (e.g., CICS, IMS, BTAM)

(j) Data communications operations organization (e.g., CCTAC).

GOALS

2.16 Data communications goals and objectives must be developed, and they must support overall corporate goals of the OTC.

2.17 Data communications planning must meet User needs in a manner which also supports attainment of the data communications goals.

2.18 If data communications goals cannot be readily linked to OTC corporate goals, new data communications goals must be identified or the OTC's corporate goals revised.

3. THE PLANNING PROCESS

IDENTIFYING REQUIREMENTS

3.01 Requirements which impact the corporate data communications plan can originate from many sources in the OTC. CDCPO planners should participate in the strategic planning activities of other organizations to identify their requirements. This also allows CDCPO planners to assist other organizations with planning decisions by presenting the full range of data communications capabilities, both available and planned.

3.02 Requirements which impact the OTC's corporate data communications plan can be identified in the corporate information systems plan, various Department/Segment plans (e.g., TNOP), Service Agreements, OTC hardware and data center deployment plans, the Bell System strategic plan for data communications, and in AT&T Planning Guidelines for the Integrated Planning Process.

3.03 CDCPO planners should become involved with information systems development projects in the Feasibility phase of the Total Systems Development (TSD) process (BSP series 007-200).

CLUSTER PLANNING

3.04 As requirements are identified, CDCPO planners can begin developing ***Cluster plans*** which address them. Several alternatives will be developed for each Planning Cluster.

3.05 Cluster plans are intermediate working documents. They become the primary input to the iterative process that results in development of the corporate data communications strategic plan.

3.06 In addition to the requirements identified from sources listed in paragraph 3.02, other inputs are required for Cluster Planning:

(a) Corporate data communications goals and objectives

(b) Technological changes (new and anticipated)

(c) Legal constraints

(d) Existing OTC data communications plans

(e) Vendor offerings and lead times to delivery.

3.07 As Cluster Plans are being developed, CDCPO planners must continue to interact with Users and others who impact or are impacted by the corporate data communications plan; this will help ensure that realistic alternatives are developed.

3.08 Each Cluster Plan alternative must be evaluated in order to determine the best one. This evaluation is based upon both economic and noneconomic considerations.

3.09 Refer to paragraphs 2.09 through 2.12 for information on establishing Planning Clusters.

A. Economic Considerations

3.10 One of the most valuable pieces of information that can be provided about a Cluster Plan alternative is its financial impact on the OTC. This information is valuable from two perspectives:

(a) What is the ***economic impact*** in terms of Rate of Return, Discounted Payback, and other such indicators?

(b) Can the OTC support the ***level of expenditures*** required, from a budgeting standpoint, to implement the plan?

3.11 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.

3.12 To help ensure comparability of results, each Operating Company must select one method

for generating the indicators. Appendix 1 provides additional guidance about economic selection studies.

3.13 To help determine an OTC's ability to support the level of expenditures required from a budgeting standpoint, capital and expense requirements for the planning period must be developed. The following items normally comprise the bulk of such costs:

(a) Hardware

(b) Software

(c) Building Space

(d) Facilities

(e) Force

(f) Maintenance

(g) Training

(h) Miscellaneous Equipment.

B. Noneconomic Considerations

3.14 There are many compelling reasons, for selecting a Cluster Plan alternative, which are not readily quantifiable. These noneconomic considerations must be part of the decision-making process when applicable:

(a) Legal/Regulatory Requirements

(b) Technical Feasibility

(c) Security and Disaster Recovery Considerations

(d) AT&T and OTC Policies

(e) Risk

(f) Operation and Maintenance Aspects

(g) Flexibility

(h) Management Prerogative

(i) User Acceptance.

C. Prioritization

3.15 Prioritizing components of the corporate data communications strategic plan is complicated; the reason for this is that many components already carry a priority because of their relationship to prioritized User projects (e.g., information systems development work). It is not appropriate to reprioritize these components in the data communications prioritization process; however, they must be incorporated in the final priority list so that resources can be allocated.

3.16 All components (projects) in the data communications strategic plan that do not already carry a priority, as discussed in paragraph 3.15, will be prioritized by the CDCPO.

3.17 Following is a list of questions that can be used as criteria for prioritizing data communications projects:

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

(b) Is the proposed project in concert with other data communications projects either being implemented or planned?

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

(d) How economically attractive is the project?

(e) How important is the project to the successful implementation of other plan components with higher priorities?

3.18 The output of the prioritization process is a rank-ordered list of all projects. This list becomes the basis for resource allocation and scheduling decisions.

3.19 See the information systems planning Section 007-110-300, Appendix 3, which describes a prioritization process that may be adapted for use in prioritizing data communications projects.

CORPORATE PLAN DEVELOPMENT

3.20 Once the viable alternatives have been identified for each Planning Cluster, CDCPO can

begin integration of the Cluster plans into the corporate data communications plan.

3.21 Development of the corporate data communications plan precedes the budget process for ***next year;*** this occurs at least annually. The plan is developed simultaneously with the corporate information systems plan and various other plans which impact or are impacted by data communications planning.

3.22 Planning Cluster alternatives are combined horizontally and then vertically to produce a corporate plan (see Figure 1). This is not a purely mechanical process; various factors must be considered at each step of this process. Adjustments are made to individual Cluster Plans and other related plans (e.g., corporate information systems plan) as necessary.

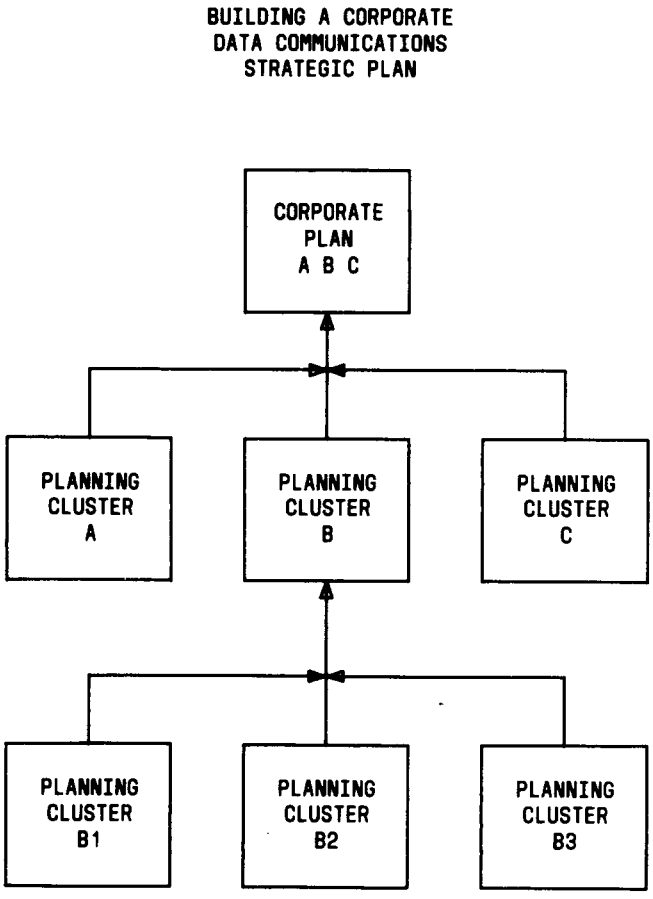

Fig. 1—Building a Corporate Data Communication Strategic Plan

3.23 Factors to be considered when combining Cluster Plans into a corporate plan are:

(a) Organizational impact

(b) Financial impact

(c) Affect on force

(d) Vendor support capabilities

(e) Information systems project priorities.

3.24 One or more Cluster Plans may require revision during the corporate plan building phase.

APPROVAL

3.25 Responsibility for approving the corporate data communications plan resides with the approval authority.

3.26 Approval signifies that the plan is supportive of corporate goals and data communications goals, that it supports the requirements of the corporate information systems plan and related resource plans, and that the level of financial commitment necessary to implement the plan is acceptable.

3.27 The approved plan becomes the basis for budget inputs.

4. ENABLING FUNCTIONS

IMPLEMENTATION AND RESOURCE PLANNING

4.01 After the corporate data communications strategic plan is approved, it is distributed to various impacted organizations so that plans and budgets can be adjusted accordingly.

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

A. Tactical Data Communications Planning

4.03 The detailed design and implementation of networks described in the strategic plan are accomplished by data communications tactical planners.

4.04 Tactical planners produce 2-year plans in sufficient detail for ordering equipment, ordering software, defining network generations, and the like.

4.05 Tactical plans address, in detail, items such as:

- Network configuration
- Schedules
- Security
- Equipment options
- Log-ons
- Function key usage.

4.06 Normally, the tactical planner should become involved with information systems development projects in the Preliminary Design Phase of the TSD process.

4.07 A close working relationship must exist between the strategic planners and the tactical planners to ensure that situations or events, with potentially significant impact on the strategic plan, are discussed with the strategic planners. It will also ensure that solutions to problems, identified during detailed planning, are formulated in the context of the strategic plan and approved accordingly.

4.08 Tactical plans, requiring significant changes to the strategic plan, cannot be implemented until strategic plan changes are approved by the approval authority.

4.09 Data communications strategic and tactical planners may reside within the same organization, but responsibility for both should not be given to the same individuals.

B. Resource Planning

4.10 The following types of resources are required to implement the corporate data communications strategic plan. Where appropriate, specific examples are provided:

(1) ***Force***

- Communications hardware/software support
- Site planners
- Trouble and analysis center.

(2) ***Communications Hardware***

- Concentrators
- Data switchers
- Front-end processors
- Store and forward processors
- Terminal handling processors.

(3) ***Software***

- Access methods
- Measurement packages
- Operating systems
- Test and simulation packages.

(4) ***Terminal and Circuit Equipment***

- Cluster controllers
- Data patch equipment
- Diagnostic equipment
- Line monitors
- Modems
- Multiplexors
- Response time monitors
- Terminals
- Terminal simulators.

(5) ***Facilities***

(6) ***Space and Environment***

4.11 CDCPO planners must maintain an ongoing relationship with resource planners to ensure that changes to the corporate data communications strategic plan are properly reflected, in a timely manner, in affected resource plans.

4.12 Vendors must also be kept apprised of requirements as they relate to products and services vendors will provide in implementing the plan.

SUPPORT ACTIVITIES

4.13 Several activities can help to ensure that the corporate data communications network evolves as envisioned in the strategic plan. They afford a degree of control over how the network is built and operated. The activities are:

(a) Standards development and maintenance

(b) Personnel subsystem development

(c) Training.

A. Standards Development and Maintenance

4.14 While planners provide the direction, development and maintenance of both standards and procedures are the responsibility of data communications standards developers.

4.15 Planners and data communications standards developers may reside within the same organization, but the same individuals should not have both responsibilities.

4.16 Strategic and tactical planners must work closely with standards developers to ensure that standards properly reflect the intent of their respective plans.

4.17 Following is a list of areas where standards and procedures need to be developed:

(a) Protocols (e.g., line, terminal, host interface)

(b) Security

(c) Function-key usage

(d) Log-ons

(e) Trouble and analysis center.(Section 007-450-200).

B. Personnel Subsystem Development

4.18 Development of personnel subsystems, which complement on-line information systems, is the responsibility of the project development team.

4.19 CDCPO planners must participate in project development team activities to ensure that the personnel subsystem and the computer subsystem have an interface compatible with User requirements.

C. Training

4.20 Strategic and tactical planners must identify those implementation and operation functions that may require training.

ADMINISTRATION, MANAGEMENT, AND CONTROL

4.21 Several activities have been identified as necessary to administer, manage, and control implementation of the corporate data communications strategic plan.

A. Budget Process

4.22 Existing OTC processes are used to budget for ***next year*** and to allocate dollars in subsequent years for financial planning purposes.

4.23 Budget submissions are based on the approved corporate data communications strategic plan. Budget decisions which impair the ability to support the approved plan must be communicated to CDCPO. Necessary adjustments will be made to the plan and approved by the approval authority.

4.24 CDCPO must communicate all plan changes to impacted organizations so their respective plans and budgets can be adjusted.

B. Vendor Selection and Contract Negotiation

4.25 Once budgets and plans receive final approval, specifications must be provided to outside vendors and bids taken for products and services to be supplied by them.

4.26 Vendor selection is the responsibility of data communications tactical planners; in cases where the vendor selected can significantly impact the corporate data communications strategic plan (e.g., data switcher), the strategic planner must be included in the decision-making process.

4.27 Contract negotiations should be conducted with the assistance of both strategic and tactical planners.

C. Plan Distribution

4.28 Approved plans must be distributed to all organizations that impact or are impacted by

them. While outside vendors cannot receive a copy of the plans because of their proprietary nature, details calling for certain products and services to be supplied by outside vendors must be communicated to them.

D. Plan Management

4.29 Plan management refers to a set of activities whose purpose is to determine progress being made against the corporate data communications strategic plan, to coordinate the varied activities called for by the plan, and to ensure that significant deviations from the plan are brought to the attention of the approval authority.

4.30 This function resides in CDCPO and should be the responsibility of the strategic planners.

4.31 Plan management activities include:

(a) Tracking progress against plan goals (e.g., fully shared network)

(b) Tracking progress against various projections (e.g., dates, dollars, force)

(c) Tracking significant plan-to-plan changes for years common to the old and new plan

(d) Coordinating explanations of deviations from the plan

(e) Identifying and resolving problems which could impact progress toward achieving plan goals

(f) Coordinating implementation of interrelated parts of the plan.

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 Cluster Plan alternatives. The preparation of such studies, and the interpretation of study results, requires a highly skilled person who has been trained in these functions.

1.02 It is recommended that a specialized group be established within the Information Systems Organization (ISO) 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 Data Communications network

(b) When comparing various alternatives to the null (no Data Communications network currently exists).

3. ECONOMIC INDICATORS

3.01 Economic selection studies are undertaken to identify the best economic alternative by identifying which alternative has the greatest affect on increasing cash inflows or decreasing cash outflows. Various indicators are 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 measure of 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 an alternative 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 alternative 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 also available, or the calculations can be accomplished using one of the more sophisticated hand-held calculators.