DEVELOPMENTAL DOCUMENTATION SPECIFICATIONS

GENERAL INFORMATION

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PART 1

GENERAL INFORMATION

1. GENERAL

1.01 The purpose of this Bell System Practice is:

(a) To specify the information content of each documentation component defined in Section 007-227-305.

(b) To define the informational dependencies between documentation components.

(c) To define the usage of each documentation component: as input to another component, as input to functional roles outside the development team, and/or as part of a documentation package.

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

1.03 This guideline was developed by a multicompany project team sponsored by the GUARDSMAN Steering Committee and AT&T Technical Support.

2. SCOPE OF APPLICATION

2.01 This section should be used for the following types of system development efforts:

(a) ***Information System Only:*** (The terms "data system" and "system" may be used interchangeably with information system within the 007-227 series.) While some of the developmental documentation described herein could apply in a general fashion to other kinds of development efforts, these standards are not intended for application to noninformation system projects.

(b) ***Systems Developed Locally, Centrally, or by a Group of Operating Companies:*** The documentation requirements are appropriate regardless of mode of development, though some tailoring may be necessary for specific projects.

(c) ***System Development Efforts of All Sizes:*** The documentation requirements are appropriate for development efforts of any size, though the volume and packaging of documentation will obviously vary from project to project.

(d) ***Information Systems of All Types:*** The documentation standards are applicable to all information system development projects, including special studies.

2.02 This section is intended for use by project team members who need a detailed reference for component preparation. For system users and project managers who need an overview description of these components, Section 007-227-305, Developmental Documentation, is recommended.

3. FORMAT OF COMPONENT SPECIFICATIONS

3.01 Specifications for each of the documentation components defined in Section 007-227-305 are contained in Part 2 of this practice.

3.02 The specifications are organized by phase. Each phase section in Part 2 contains:

(a) A Component Network Diagram

(b) A Component Checklist

(c) Component Specifications.

3.03 The component network diagram indicates the general sequence in which the components are produced and their dependencies. Because developmental activities are highly iterative and because each project has unique documentation requirements, the component sequence must be tailored to the individual project.

3.04 The component checklist is provided as a quick reference to the phase components.

3.05 The component specifications contain the following information:

(a) Component number

(b) Component name

(c) Functional role which produces the component

(d) Purpose of the component

(e) Information to be contained in the component

(f) Prerequisite components that contain information needed to produce the component

(g) Using components that, in turn, need the information contained in the component.

3.06 Some components should be produced concurrently with another component or components. Such interdependent components are listed as both ***Prerequisite*** and ***Using Components*** and are highlighted with an asterisk(*).

PART 2

COMPONENT SPECIFICATIONS

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1. PROPOSAL PHASE COMPONENT

COMPONENT NETWORK DIAGRAM

Fig. 1—Proposal Phase Component Network Diagram

COMPONENT CHECKLIST

____ 1.01—Project Initiation Request

COMPONENT SPECIFICATION

1.01 ***Project Initiation Request (Application Expertise):***

(a) ***Purpose:*** This component records the source and reasons for initiating the project, and sets the starting scope and direction of the Feasibility Phase.

(b) ***Specifications:***

(1) Source of request for project initiation (long-range plan, management directive, letters, meeting minutes, etc).

(2) General information about the existing organization, application, system, etc.

(3) The problems and the opportunities seen by those requesting the project.

(4) Potential benefits seen by those requesting the project.

(5) Areas for study, as seen by those requesting the project. Areas to be excluded from analysis, and the reasons for exclusion.

(6) Major studies, task forces, and committees underway or completed in the areas suggested for study. Results of previous related analysis.

(7) Constraints on costs, schedules, etc.

(8) Potential solutions as seen by those requesting the project (no known solution, centrally developed system, reorganization, mechanization, etc). Any available estimates for developing and operating potential solutions should be documented.

(9) Contacts (names, addresses, telephone numbers).

(10) Estimated time, costs, and resources for completing the Feasibility Phase.

(c) ***Prerequisite Components:*** None.

(d) ***Using Components:***

- 2.01—Existing Environment
- 2.02—Problem/Opportunity Statement
- 2.03—User Needs
- 2.04—General Assumptions and Constraints

2. FEASIBILITY PHASE COMPONENTS

COMPONENT NETWORK DIAGRAM

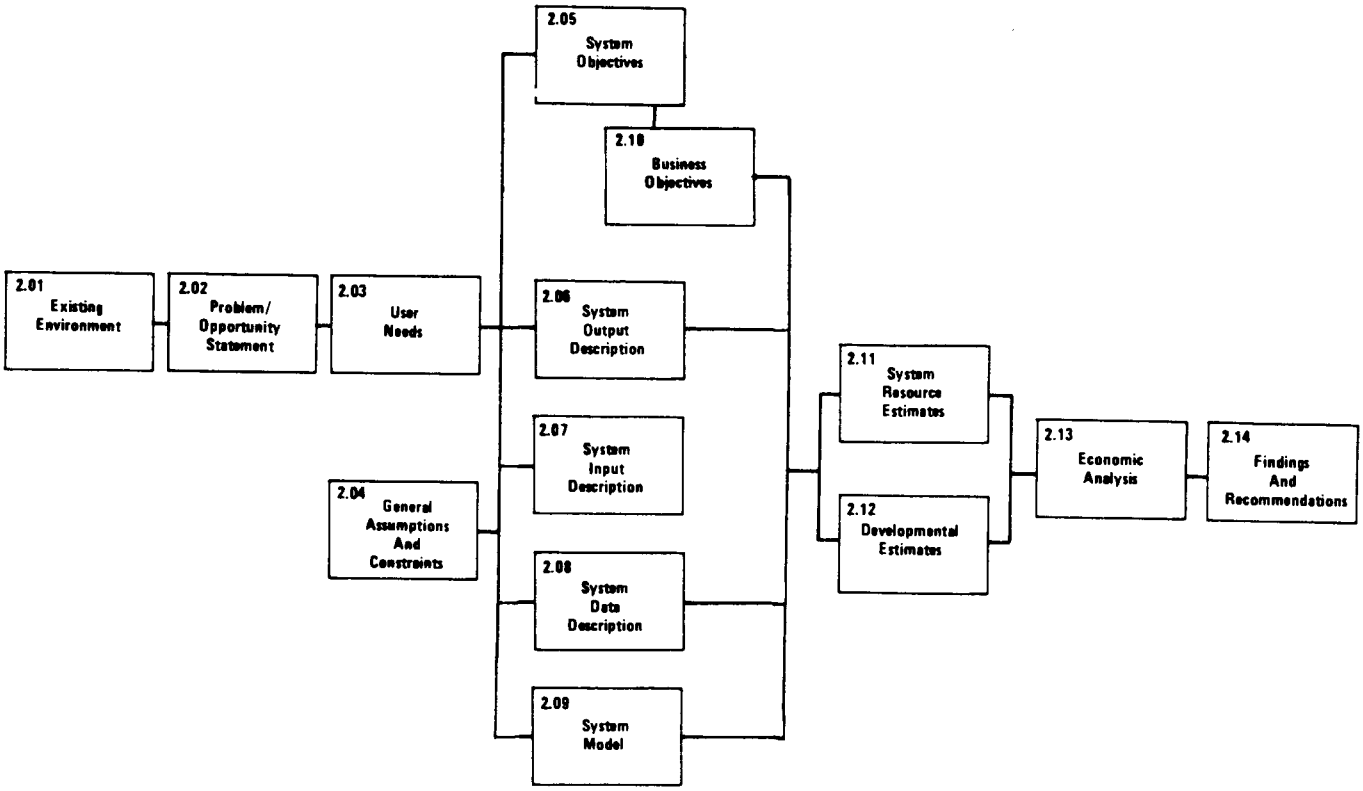

Fig. 2—Feasibility Phase Component Network Diagram

COMPONENT CHECKLIST

____ 2.01—Existing Environment
____ 2.02—Problem/Opportunity Statement
____ 2.03—User Needs
____ 2.04—General Assumptions and Constriants
____ 2.05—System Objectives
____ 2.06—System Output Description
____ 2.07—System Input Description
____ 2.08—System Data Description
____ 2.09—System Model
____ 2.10—Business Objectives
____ 2.11—System Resource Estimates
____ 2.12—Developmental Estimates
____ 2.13—Economic Analysis
____ 2.14—Findings and Recommendations

COMPONENT SPECIFICATIONS

2.01 ***Existing Environment (System Analysis):***

(a) ***Purpose:*** This component documents the existing user environment in sufficient detail to identify user needs and problems/opportunities which exist.

(b) ***Specifications:***

(1) A diagram of the major functions in the user's current environment which are within the scope of the analysis, including:

(a) Major functions, their relationships, and interdepencies.

(b) Identification of outputs, inputs, and data bases for each function.

(c) Organization where each function resides.

(2) A description of how each function is performed and procedures used (manual versus mechanized, etc). If required, detail functions, to a level sufficient to identify user needs and problems/opportunities which exist.

(3) For each function, the people and resources performing the function and an estimate of costs. Identify fixed costs which would not be eliminated or reduced if the function were not performed by that resource:

(a) Labor cost (people, job levels, time).

(b) Material and supply costs (material used, unit cost, rate of use).

(c) Support service costs (services used, service rates, rate of use).

(d) Owned equipment cost (equipment, purchase/lease date and cost, life, amortized cost, maintenance cost).

(e) Leased equipment cost (lease and maintenance fees, payout fees).

(f) Software costs (developmental/purchase cost, maintenance cost, projected life).

(g) Network costs (networks, carrying charges).

(h) General and administrative costs.

(i) A summary of total costs for the function.

(4) A description of existing outputs, inputs, and data bases including:

(a) Name and source/destination.

(b) For each output, the purpose it serves, who needs the output and why. Decisions and actions dependent on the output. Impact of those decisions and actions.

(c) Information content and media. Content is described in sufficient detail to identify user needs and problems/opportunities which exist.

(d) Volume, size, frequency of generation/collection, rate of change/growth.

(e) Organizations which create output, collect and use input, access, and/or update the data base. The organization responsible for the data base.

(5) A statement of the objectives of each major function. Included as appropriate are objectives for producing information (eg, outputs and performance criteria, capacity, resource usage, etc), and objectives for using information (eg, quality of decisions, management of personnel, and materials, etc). For each objective:

(a) How the objective is measured and values which are to be attained.

(b) The benefits of attaining the objective and penalties for not.

(c) The user's view of the significance of the objective and stated performance levels (essential, very important, nice to attain).

(6) Organization charts.

(7) A delineation of major subsystems within the environment.

(c) ***Prerequisite Component:***

- 2.01—Project Initiation Request.

(d) ***Using Components:***

- 2.02—Problem/Opportunity Statement
- 2.03—User Needs
- 2.04—General Assumptions and Constraints
- 2.05—Systems Objectives
- 2.13—Economic Analysis
- 2.14—Findings and Recommendations
- 5.37—System Conversion Plan.

2.02 *Problem/Opportunity Statement (System Analysis):*

(a) ***Purpose:*** This component identifies the significant problems/opportunities and describes their effect on the user's environment. It provides a broad picture of the value of resolving problems and exploiting opportunities. It serves as a basis for setting goals for solutions. It allows the user to prioritize future studies into these areas.

(b) ***Specifications:***

(1) A general narrative describing all the problems/opportunities, their interrelationships, and their effects, as a whole, on effectiveness and efficiency.

(2) A ranking of problems/opportunities and the problem payoff associated with resolution.

(3) For each functional area where problems exist, a statement of desired versus actual results, the causes for deviation between the two (lack of skill or knowledge, unavailable resources, etc), and the realizable value in reducing the deviation.

(4) For each functional area where opportunities exist, a statement of anticipated versus actual results, the reasons for the opportunity presenting itself (new technology, reorganization, etc), and the realizable value in exploiting the opportunity.

(c) ***Prerequisite Components:***

- 1.01—Project Initiation Request
- 2.01—Existing Environment.

(d) ***Using Components:***

- 2.03—User Needs
- 2.10—Business Objectives
- 2.13—Economic Analysis
- 2.14—Findings and Recommendations
- 8.01—System Effectiveness Evaluation.

2.03 ***User Needs (System Analysis):***

(a) ***Purpose:*** This component describes all the informational and operational needs which should be addressed by alternative system solutions. It serves as a basis for formulating alternative system solutions, each of which will satisfy all or a subset of these needs.

(b) ***Specifications:***

(1) A list of user needs, ranked by the value of their associated benefits, including:

(a) Informational needs (eg, new or revised output, improved information accuracy, timeliness, etc).

(b) Operational needs (eg, increased productivity, improved operating efficiency, lower costs, ability to accomodate growth, etc).

(2) A general narrative describing the user's needs, their interrelationships, and the effects on the business of attaining them.

(3) For each user's need, specific and measurable benchmarks, or ranges of performance (for accuracy, timeliness, security, reliability, efficiency, capacity, etc). Included are minimum performance requirements for resolving the problem or exploiting the opportunity, and higher performance levels which would result in greater benefits. Also identified are performance levels beyond which additional benefits would not be significant.

(4) For each need, a statement of any conditions, assumptions, and constraints in effect when the need was established, and which, if changed, could significantly alter the need.

(5) For each user's need, a reference to the problem/opportunity it resolves.

(6) Problems/opportunities not addressed, and why. Functional areas excluded from further analysis, and the reason for exclusion.

(7) Possible means of satisfying the user's needs (eg, training, reorganization, mechanization, procedural changes, etc).

(c) ***Prerequisite Components:***

- 1.01—Project Initiation Request
- 2.01—Existing Environment
- 2.02—Problem/Opportunity Statement.

(d) ***Using Components:***

- 2.04—General Assumptions and Constraints
- 2.05—System Objectives
- 2.06—System Output Description
- 2.09—System Model
- 2.10—Business Objectives
- 2.13—Economic Analysis
- 2.14—Findings and Recommendations.

2.04 *General Assumptions and Constraints (System Analysis):*

(a) ***Purpose:*** This component describes the limits imposed on any proposed solution by either the existing system, by other systems, or by other outside considerations. It serves to limit the type and number of solutions that are feasible.

(b) ***Specifications:***

(1) A description of the existing systems with which the system must interface (eg, existing data bases, predefined inputs or outputs, needs of other related systems which must be met, timing requirements, etc).

(2) A description of legal, regulatory, or contractual restrictions on the system (eg, FCC information requirements, union agreements, federal, state, and municipal laws, etc).

(3) A description of any technical restrictions or assumptions (eg, state-of-the-art).

(4) A description of any environmental restrictions (eg, people/computer/equipment utilization, space and power setups, existing communications networks, etc).

(5) A description of any economic restrictions (development costs, operating costs, development time, etc).

(6) Policies, organization structures, and responsibilities which are not to be changed by any solution.

(c) ***Prerequisite Components:***

- 1.01—Project Initiation Request
- 2.01—Existing Environment
- 2.03—User Needs.

(d) ***Using Components:***

- 2.05—System Objectives
- 2.06—System Output Description
- 2.07—System Input Description
- 2.08—System Data Description
- 2.09—System Model
- 2.10—Business Objectives
- 2.11—System Resource Estimates
- 2.14—Findings and Recommendations
- 3.01—System Constraints.

2.05 ***System Objectives (System Analysis):***

(a) ***Purpose***—This component documents the system objectives which can be attained by each alternative. For the selected alternative, it becomes the basis for refinement during later phases and the standard against which system performance is to be measured.

(b) ***Specifications***—For each alternative solution:

(1) A list of system objectives with specific and measurable performance criteria, including:

(a) Output or classes of output, with performance criteria (accuracy, timeliness, accessibility, quality, schedule, etc).

(b) Quality requirements (security, reliability, flexibility, etc).

(c) Administrative requirements (flexibility maintainability, changeability, etc).

(2) Ranges within which the performance requirements are set, and the anticipated operating conditions (eg, peak and average volumes) for which the objectives apply.

(3) Reference to the user need(s) that each system objective supports.

(c) ***Prerequisite Components:***

- 2.01—Existing Environment
- 2.03—User Needs
- 2.04—General Assumptions and Constraints
- *2.06—System Output Description
- *2.07—System Input Description
- *2.08—System Data Description
- *2.09—System Model.

(d) ***Using Components:***

- *2.06—System Output Description
- *2.07—System Input Description
- *2.08—System Data Description
- *2.09—System Model
- *2.10—Business Objectives
- 2.13—Economic Analysis
- 2.14—Findings and Recommendations
- 3.10—System Control Requirements
- 3.12—System Overview - Definition
- 3.11—System Reliability Requirements
- 4.01—Function Allocation Description
- 4.16—System Test Plan
- 5.35—System Validation Test Plan
- 5.36—System Certification Test Plan
- 8.02—System Performance Evaluation.

2.06 ***System Output Description (System Analysis):***

(a) ***Purpose***—This identifies each system output required by the users and describes the output's characteristics in sufficient detail for conceptual system design, determination of operational acceptability, and estimation of the system's resource requirements.

(b) ***Specifications***—This component defines all system level outputs for each alternative solution. Each output is described in terms of:

(1) Output name, purpose, users, and relationship to system objectives.

(2) Information content, in terms of categories of information contained in the output. If critical to the analysis of operational feasibility, a more detailed description of the output (eg, important group/elements).

(3) Approximate volume and frequency of output.

(4) Performance criteria, including completeness, accuracy, timeliness, confidentiality, etc.

(5) Requirements of other systems using the output [eg, media format(s), encoding].

(6) Descriptions of any changes required in other systems using the output and the name or title of the individual with whom such changes must be negotiated.

(c) ***Prerequisite Components:***

- 2.03—User Needs
- 2.04—General Assumptions and Constraints
- *2.05—System Objectives.

(d) ***Using Components:***

- *2.05—System Objectives
- 2.07—System Input Description
- 2.08—System Data Description
- 2.09—System Model
- 2.11—System Resource Estimates
- 2.12—Developmental Estimates
- 2.14—Findings and Recommendations
- 3.02—System Output Requirements.

2.07 ***System Input Description (System Analysis):***

(a) ***Purpose***—This identifies each input and describes the input's characteristics in sufficient detail for conceptual system design, determination of the system's operational acceptability, and estimation of the system resource requirements.

(b) ***Specifications***—This component defines all system level inputs for each alternative solution. Each input is described in terms of:

(1) Input name, purpose, sources, and relationship to system outputs or the system data base.

(2) Information content in terms of categories of information contained in the input. If critical to the analysis of operational feasibility, a more detailed description of the input (eg, important group/elements).

(3) Approximate volume and frequency of the input.

(4) Performance criteria including completeness, accuracy, timeliness, confidentiality, etc.

(5) Input media and formats, when known.

(6) Descriptions of any changes required in other systems using the input and the name or title of the individual with whom such changes must be negotiated.

(c) ***Prerequisite Components:***

- 2.04—General Assumptions and Constraints
- *2.05—System Objectives
- 2.06—System Output Description
- *2.08—System Data Description
- *2.09—System Model.

(d) ***Using Components:***

- *2.05—System Objectives
- *2.08—System Data Description
- *2.09—System Model
- 2.11—System Resource Estimates
- 2.12—Developmental Estimates
- 2.14—Findings and Recommendations
- 3.03—System Input Requirements.

2.08 ***System Data Description (System Analysis):***

(a) ***Purpose***—This identifies both the transient data and data base which is to be acted upon by the system, and describes the characteristics of this data in sufficient detail to allow conceptual system design, definition of system scope, and estimation of system resource requirements.

(b) ***Specifications***—This component describes, for each alternative solution, all data which is to be processed by and/or stored within the system. The system's data is defined in terms of:

(1) Tentative identification of the functional areas which will access the system data base and the categories of information to be accessed.

(2) A narrative description for each category of information to be processed by the system or contained in the system data base.

(3) Approximate volume, size, volatility, and retention of the system data.

(4) Relationships between the categories of information within the system.

(5) Relationships between this system's data and other systems' data; identification of opportunities for using shared data bases.

(6) A narrative description of the present and future business needs which will be satisfied by the system's data.

(7) Data base conversion considerations, including:

(a) Classes of information to be converted, source, and present media.

(b) Present condition of the data and purification requirements.

(c) ***Prerequisite Components:***

- 2.04—General Assumptions and Constraints
- *2.05—System Objectives
- 2.06—System Output Description
- *2.07—System Input Description
- *2.09—System Model.

(d) ***Using Components:***

- *2.05—System Objectives
- *2.07—System Input Description
- *2.09—System Model
- 2.11—System Resource Estimates
- 2.12—Developmental Estimates
- 2.14—Findings and Recommendations
- 3.04—System Data Requirements.

2.09 *System Model (System Analysis):*

(a) ***Purpose***—This component provides a functional overview of each alternative solution as the basis for the functional comparison of alternatives. For the selected alternative, this component becomes the basis for subsequent definition and design efforts.

(b) ***Specifications***—For each alternative:

(1) A narrative description of the alternative, including a description of the information system solutions (new output, forms design, mechanization, etc) and noninformation system solutions (training, motivation, job engineering, etc) which must be implemented to attain the alternative's objectives.

(2) The rationale for the alternative, and a brief description of how it differs from others.

(3) A diagram of the system's functions, showing:

(a) Major functions, their interrelationships and dependencies.

(b) Identification of system outputs and inputs, flow of data among the major functions, and data bases which are accessed or updated.

(c) Organization(s) and physical location(s) where each function will reside.

(d) Communication networks.

(4) For each major function identified, a brief description of how the function is to be performed and procedures used. Estimates of the resources required to perform each function (eg, personnel, hardware, equipment, etc).

(5) For each function requiring conversion, a brief explanation of the conversion requirements and impact (organization changes, job restructuring, training, etc).

(c) ***Prerequisite Components:***

- 2.03—User Needs
- 2.04—General Assumptions and Constraints
- *2.05—System Objectives
- 2.06—System Output Description
- *2.07—System Input Description
- *2.08—System Data Description.

(d) ***Using Components:***

- *2.05—System Objectives
- *2.07—System Input Description
- *2.08—System Data Description
- 2.11—System Resource Estimates
- 2.12—Developmental Estimates
- 2.14—Findings and Recommendations
- 3.01—System Constraints
- 3.07—Function Structure
- 3.08—Function Description
- 3.12—System Overview - Definition
- 3.13—Findings and Recommendations
- 4.01—Function Allocation Description.

2.10 *Business Objectives (System Analysis):*

(a) ***Purpose:*** This component documents the objectives for each alternative in terms of the operational and economic intent of the alternative on the business. It is one of the key components which provide a basis for selection of an alternative. For the selected alternative, it becomes the standard against which system success is measured.

(b) ***Specifications:***

(1) A list of business objectives, ranked by the value of their associated benefits.

(2) A narrative describing all the objectives, their interrelationships, and the total effect on the business of satisfying them.

(3) For each objective, the specific and measureable effect which the objective will have on the business (new capabilities, index levels, reduced work force, reduced inventory levels, etc), and the time frame over which the objective will be met.

(4) For each business objective, a reference to the problem/opportunity it addresses.

(5) Problems/opportunities identified for resolution that the alternative will not resolve, and the rationale for exclusion.

(c) ***Prerequisite Components:***

- 2.02—Problem/Opportunity Statement
- 2.03—User Needs
- 2.04—General Assumptions and Constraints
- 2.05—System Objectives.

(d) ***Using Components:***

- 2.13—Economic Analysis
- 2.14—Findings and Recommendations
- 8.01—System Effectiveness Evaluation.

2.11 ***System Resource Estimates (System Analysis):***

(a) ***Purpose***—This component provides a gross look at the resources needed for system operation of each alternative. It provides an overall picture of the types and number of resources needed by the user and DPC. It serves as a basis for estimating the costs of system operation.

(b) ***Specifications***—For each alternative:

(1) A general description of the people skills, people quantities, equipment needs, and work space needs for the personnel subsystem.

(2) A general description of the computer resource requirements, software requirements, and any special environmental requirements (eg, space, power, etc) for the computer subsystem.

(3) An estimate of the human skill and quantity needs and computer resource requirements for system maintenance.

(c) ***Prerequisite Components:***

- 2.04—General Assumptions and Constraints
- 2.06—System Output Description
- 2.07—System Input Description
- 2.08—System Data Description
- 2.09—System Model.

(d) ***Using Components:***

- 2.13—Economic Analysis
- 3.01—System Constraints.

2.12 *Developmental Estimates (System Analysis):*

(a) ***Purpose:*** This component provides a gross look at the resources required to develop each alternative. It serves as a basis for estimating gross one-time developmental costs.

(b) ***Specifications:***

(1) A rough schedule for the completion of each phase.

(2) For each phase, a gross estimate of the people, skill, and time requirements by organization.

(3) For each phase, a gross estimate of resource requirements to develop the alternative (facilities, terminals, computer usage, etc).

(4) A summary of estimate costs by phase and for the total project.

(c) ***Prerequisite Components:***

- 2.04—General Assumptions and Constraints
- 2.06—System Output Description
- 2.07—System Input Description
- 2.08—System Data Description
- 2.09—System Model.

(d) ***Using Components:***

- 2.13—Economic Analysis
- 2.14—Findings and Recommendations
- 3.01—System Constraints
- 8.04—Development Effort Evaluation.

2.13 ***Economic Analysis (System Analysis):***

(a) ***Purpose***—This component describes the cost and savings associated with development, operation, and maintenance of each alternative system. It provides a picture of the net economic worth of a proposed system. It serves as a limiting factor on project costs and system operating cost.

(b) ***Specifications***—For each alternative, including the alternative of retention of the existing system, the following is included:

(1) Developmental costs, both total and by phase.

(2) One-time conversion costs.

(3) Operating costs, both total and by functional area.

(4) Maintenance costs.

(5) System benefits, by organization, including:

(a) Tangible economic benefits

(b) Intangible benefits, with any estimated economic impact

(c) Tangible noneconomic benefits, with any estimated economic impact.

(6) A present worth analysis.

(c) ***Prerequisite Components:***

- 2.01—Existing Environment
- 2.02—Problem/Opportunity Statement
- 2.03—User Needs
- 2.05—System Objectives
- 2.10—Business Objectives
- 2.11—System Resource Estimates
- 2.12—Developmental Estimates.

(d) ***Using Components:***

- 2.14—Findings and Recommendations
- 4.25—Refined Economic Analysis
- 8.01—System Effectiveness Evaluation
- 8.03—System Economic Evaluation.

2.14 *Findings and Recommendations (System Analysis):*

(a) ***Purpose:*** This component summarizes the results of the Feasibility Phase for review and approval by appropriate authorities. It presents a broad view of Feasibility Phase activities, costs, and results. It presents a capsule view of the alternative solutions that were investigated. This is the vehicle for formal recommendations.

(b) ***Specifications:***

(1) A report on the actual schedule, costs, project team makeup, and other resources used during the Feasibility Phase. Any significant change in direction from that set in proposal is highlighted.

(2) A summary of each proposed alternative solution, including:

(a) Objectives and brief description

(b) Developmental time and cost

(c) Present worth and benefits

(d) An assessment of the developmental and operational feasibility of the alternative, highlighting critical and high risk areas (unproven technology, critical dependencies, etc).

(3) Recommendations for follow-up on solutions to problems/opportunities not within the scope of the project.

(4) A recommendation as to which, if any, alternate solution should be developed along with the reasons supporting the choice (continue with a recommended solution, defer the development of recommended solution, cancel, do the Feasibility Phase over).

(c) ***Prerequisite Components:***

- 2.01—Existing Environment
- 2.02—Problem/Opportunity Statement
- 2.03—User Needs
- 2.04—General Assumptions and Constraints
- 2.05—System Objectives
- 2.06—System Output Description
- 2.07—System Input Description
- 2.08—System Data Description
- 2.09—System Model
- 2.10—Business Objectives
- 2.12—Developmental Estimates
- 2.13—Economic Analysis.

(d) ***Using Components:***

- 3.13—Findings and Recommendations
- 8.04—Development Effort Evaluation.

3. DEFINITION PHASE COMPONENTS

COMPONENT NETWORK DIAGRAM

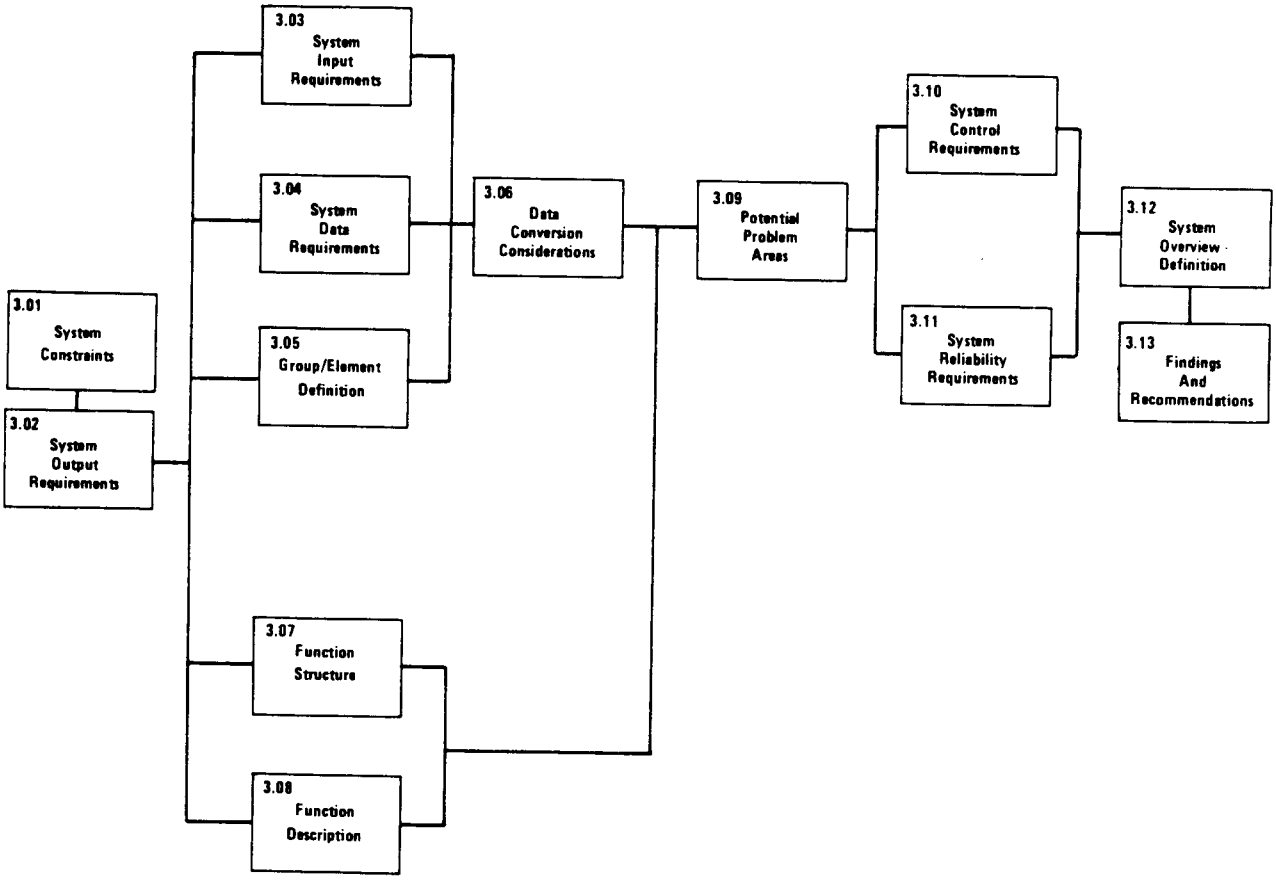

Fig. 3—Definition Phase Component Network Diagram

COMPONENT CHECKLIST

____3.01—System Constraints
____3.02—System Output Requirements
____3.03—System Input Requirements
____3.04—System Data Requirements
____3.05—Group/Element Definition
____3.06—Data Conversion Considerations
____3.07—Function Structure
____3.08—Function Description
____3.09—Potential Problem Areas
____3.10—System Control Requirements
____3.11—System Reliability Requirements
____3.12—System Overview - Definition
____3.13—Findings and Recommendations.

COMPONENT SPECIFICATIONS

3.01 *System Constraints (System Analysis):*

(a) ***Purpose:*** This component identifies the constraints within which the system must be developed, operated, and maintained. These constraints are specific to the solution alternative selected during the Feasibility Phase.

(b) ***Specifications:*** System constraints arise from the following set of factors. Each should be evaluated to determine possible impact on the system under development.

(1) Restrictions imposed by company policy, including standards.

(2) Restrictions imposed from outside of the company.

(3) Organizational restrictions, eg, a hierarchy of management functions that cannot be changed.

(4) Predefinded inputs or outputs, or interfaces with other systems.

(5) Hardware/software availability, capability, and environment.

(6) Minimum and maximum volume restrictions on inputs, outputs, data base, and turnaround requirements.

(7) Operational resource and/or cost restrictions.

(8) Functions which are excluded specifically and the reasons.

(9) Restrictions associated with development, schedules, and resources.

(10) Restrictions about alternative methods of accomplishing certain functions.

(c) ***Prerequisite Components:***

- 2.04—General Assumptions and Constraints
- 2.09—System Model
- 2.11—System Resource Estimates
- 2.12—Development Estimates.

(d) ***Using Components:***

- 3.02—System Output Requirements
- 3.03—System Input Requirements
- 3.04—System Data Requirements
- 3.06—Data Conversion Considerations
- 3.07—Function Structure
- 3.08—Function Description
- 3.13—Findings and Recommendations
- 4.01—Function Allocation Description
- 4.17—Personnel Requirements
- 4.18—Equipment Requirements
- 4.19—Facility Requirements
- 4.20—Transportation Requirements
- 4.21—DPC Hardware Requirements
- 4.22—Software Requirements
- 4.23—Communications Network Requirements
- 8.04—Development Effort Evaluation.

3.02 ***System Output Requirements (System Analysis):***

(a) ***Purpose***—This component establishes requirements for each system output in sufficient detail to support definition of the system functions which must be performed to produce it.

(b) ***Specifications***—For each system output:

(1) Name and/or unique identifier.

(2) Narrative description, including intended purpose and usage, and identification of the output's users (eg, title, organization, location, etc).

(3) Functions outside the system or in other systems using the output, and references to or copies of definition agreements, system change requests, etc, which will provide for any changes required in other systems to accomodate the output.

(4) Volume and frequency.

(5) Volatility of the information represented in the output, how long the output will remain valid and useful, and retention requirements.

(6) Performance criteria (eg, accuracy, timeliness, completeness, security, etc).

(7) A list of group/elements contained in the output.

(c) ***Prerequisite Components:***

- 2.06—System Output Description
- 3.01—System Constraints.

(d) ***Using Components:***

- 3.03—System Input Requirements
- 3.04—System Data Requirements
- 3.05—Group/Element Definition
- 3.07—Function Structure
- 3.08—Function Description
- 3.09—Potential Problem Areas
- 3.10—System Control Requirements
- 3.11—System Reliability Requirements
- 3.12—System Overview - Definitions
- 4.02—System Output Specification.

3.03 ***System Input Requirements (System Analysis):***

(a) ***Purpose***—This component establishes input requirements in sufficient detail to support the definition of system functions which must process it.

(b) ***Specifications***—For each system input:

(1) Name and/or unique identifier.

(2) Narrative description of the input.

(3) Source and quality of the input including:

(a) Source, and the rationale for using this source of information or data versus alternatives.

(b) The system's performance requirements for the input (eg, accuracy, timeliness, completeness, security, etc), and a description of how well the source currently satisfies, or will be changed to satisfy, those needs.

(c) Reference to or copies of definition agreements, system change requests, etc, which will provide for changes or improvements in other systems to produce the input as required.

(4) Volume and frequency.

(5) Volatility of the information represented in the input, and how long the input will remain valid and useful.

(6) A list of group/elements contained in the input.

(c) ***Prerequisite Components:***

- 2.07—System Input Description
- 3.01—System Constraints
- 3.02—System Output Requirements
- *3.07—Function Structure
- *3.08—Function Description.

(d) ***Using Components:***

- 3.04—System Data Requirements
- 3.05—Group/Element Definition
- *3.07—Function Structure
- *3.08—Function Description
- 3.09—Potential Problem Areas
- 3.10—System Control Requirements
- 3.11—System Reliability Requirements
- 3.12—System Overview - Definition
- 4.03—System Input Specification.

3.04 *System Data Requirements (System Analysis):*

(a) ***Purpose***—This component defines the system's static and transient data in sufficient detail to support definition of the system functions which will process it.

(b) ***Specifications***—A definition of the system's data in terms of information sets with the following characteristics:

(1) Name and/or unique identifier.

(2) A description, including the present and future needs it will satisfy.

(3) Functions which process the data.

(4) Performance requirements (eg, accuracy, currency, completeness, security, etc).

(5) Volatility and retention requirements.

(6) Relationships with other system data.

(7) Other system's requirements on the data.

(8) Group/elements contained in the information set.

(c) ***Prerequisite Components:***

- 2.08—System Data Description
- 3.01—System Constraints
- 3.02—System Output Requirements
- 3.03—System Input Requirements
- *3.07—Function Structure
- *3.08—Function Description.

(d) ***Using Components:***

- 3.05—Group/Element Definition
- 3.06—Data Conversion Considerations
- *3.07—Function Structure
- *3.08—Function Description
- 3.09—Potential Problem Areas
- 3.10—System Control Requirements
- 3.11—System Reliability Requirements
- 3.12—System Overview - Definition
- 4.05—Subsystem Function Description
- 4.11—Logical Record Specification
- 4.12—Logical Segment Specification
- 4.13—Logical Data Base Specification.

3.05 *Group/Element Definition (System Analysis):*

(a) ***Purpose***—This component defines the attributes of the group/elements acted upon by the system in sufficient detail to support definition of outputs, inputs, and functions. It is incorporated into the Group/Element Specification during Design Phases, and becomes a data management tool.

(b) ***Specifications***—An ordered list of group/elements, each defined in terms of the following:

(1) Name and/or unique identifier.

(2) For data groups, a list of contained data elements.

(3) A list of synonyms, acronyms, abbreviations, and codes.

(4) A narrative description of the group/element, including:

(a) Present and future needs it will satisfy.

(b) Logical relationships with other group/elements.

(5) Allowable values, ranges, codes, etc.

(6) Most stringent performance requirements (eg, accuracy, security, etc).

(7) Inputs and outputs in which the group/element is contained, and any special role it takes on (eg, identifier, sequencing key, etc).

(8) Information sets in which the group/element is contained, and any special roles it takes on (eg, keys, subsetting criteria, etc).

(9) A list of functions which interact with the group/element, and the nature and frequency of the interaction.

Note: Logical records in which the group/element is contained, and any special roles required (eg, keys, subsetting criteria, etc) is added during Preliminary Design Phase.

(c) ***Prerequisite Components:***

- 3.02—System Output Requirements
- 3.03—System Input Requirements
- 3.04—System Data Requirements.

(d) ***Using Components:***

- 3.08—Function Description
- 4.02—System Output Specification
- 4.03—System Input Specification
- 4.05—Subsystem Function Description
- 4.06—Task Description
- 4.09—Module Description
- 4.11—Logical Record Specification
- 4.12—Logical Segment Specification
- 4.13—Logical Data Base Specification
- 5.07—Form Specification
- 5.09—Physical Record Specification
- 5.11—Physical Segment Specification
- 5.14—Group/Element Specification.

3.06 *Data Conversion Considerations (System Analysis):*

(a) ***Purpose:*** This component defines the source and condition of data which must be converted into the data base before system operation can begin. It serves as a basis for the data portion of the conversion subsystem definition and design.

(b) ***Specifications:***

(1) Identification of data which must be converted into the system's data base.

(2) Source and responsibility for the data.

(3) Present media and formats.

(4) Present condition of the data (eg, accuracy, completeness, quality, etc), and a brief description of how well it meets the performance requirements which have been defined for it within the system.

(5) Identification of functions (either normal system functions or special conversion subsystem functions) which have been defined to convert the data (eg, collect, purify, transform, etc).

(c) ***Prerequisite Components:***

- 3.01—System Constraints
- 3.04—System Data Requirements
- 3.08—Function Description.

(d) ***Using Components:***

- 3.09—Potential Problem Areas
- 3.10—System Control Requirements
- 3.12—System Overview - Definition
- 4.15—System Conversion Requirements.

3.07 *Function Structure (System Analysis):*

(a) ***Purpose***—This component contains a hierarchical representation of the processing functions within the system. It provides a comprehensive picture of all the system's functions, and serves as a basis for allocation of the functions and the design of the system.

(b) ***Specifications***—For each major subsystem (eg, processing area, conversion subsystem, etc):

(1) A hierarchical breakdown of major functions into their subfunctions. Functional analysis continues until enough factual information has been obtained to permit effective allocation and design.

(2) A name and/or unique identifier for each function.

(3) A narrative description of the reasoning behind this particular breakdown and allocation.

(c) ***Prerequisite Components:***

- 2.09—System Model
- 3.01—System Constraints
- 3.02—System Output Requirements
- *3.03—System Input Requirements
- *3.04—System Data Requirements
- *3.08—Function Description.

(d) ***Using Components:***

- *3.03—System Input Requirements
- *3.04—System Data Requirements
- *3.08—Function Description
- 3.09—Potential Problem Areas
- 3.10—System Control Requirements
- 3.11—System Reliability Requirements
- 3.12—System Overview - Definition
- 4.01—Function Allocation Description
- 4.02—System Output Specification
- 4.03—System Input Specification
- 4.04—Subsystem Function Structure
- 4.05—Subsystem Function Description.

3.08 *Function Description (System Analysis):*

(a) ***Purpose***—This component describes what each function in the function structure does. It provides a basis for further functional analysis. For the lower level functions, it is a basis for allocation and design.

(b) ***Specifications***—For each function:

(1) Name and/or unique identifier.

(2) A description of the function, including:

(a) Descriptive statements of subfunctions.

(b) Conditions under which the function and subfunctions are performed.

(c) Formulas, algorithms, decision tables, etc, to be performed by the function or subfunctions.

(d) Identification of the data processed by the function. Specific data is identified (eg, the group/elements within the information set which are processed by the function).

(3) Considerations which affect the allocation of the function and design of the system.

(4) Any constraints or restrictions on the function or its performance.

(c) ***Prerequisite Components:***

- 2.09—System Model
- 3.01—System Constraints
- 3.02—System Output Requirements
- *3.03—System Input Requirements
- *3.04—System Data Requirements
- 3.05—Group/Element Definition
- *3.07—Function Structure.

(d) ***Using Components:***

- *3.03—System Input Requirements
- *3.04—System Data Requirements
- 3.06—Data Conversion Considerations
- *3.07—Function Structure
- 3.09—Potential Problem Areas
- 3.10—System Control Requirements
- 3.11—System Reliability Requirements
- 3.12—System Overview - Definition
- 4.01—Function Allocation Description
- 4.02—System Output Specification
- 4.03—System Input Specification
- 4.04—Subsystem Function Structure
- 4.05—Subsystem Function Description.

3.09 *Potential Problem Areas (System Analysis):*

(a) ***Purpose:*** This component identifies and highlights areas both within the system being defined and beyond the system boundaries which could significantly contribute to product or performance degradation.

(b) ***Specifications:***

(1) Identification and description of the parts of the system most vital to overall system effectiveness and performance.

(2) Identification and description of complex pieces of the system.

(3) Identification of critical parts of the system data base.

(4) Identification and description of key critical dependencies between the system and other systems.

(5) Identification and description of other external problem areas such as inherited error, data sensitivity, etc.

(c) ***Prerequisite Components:***

- 3.02—System Output Requirements
- 3.03—System Input Requirements
- 3.04—System Data Requirements
- 3.06—Data Conversion Considerations
- 3.07—Function Structure
- 3.08—Function Description.

(d) ***Using Components:***

- 3.10—System Control Requirements
- 3.11—System Reliability Requirements
- 4.01—Function Allocation Description
- 4.02—System Output Specification
- 4.03—System Input Specification
- 4.04—Subsystem Function Structure
- 4.15—System Conversion Requirements
- 5.32—System Controls Description
- 5.33—System Reliability Measures Description
- 5.34—System Performance Monitoring Capabilities.

3.10 *System Control Requirements (System Analysis):*

(a) ***Purpose***—This component identifies the functional requirements for control features to ensure that system performance meets system objectives. It serves as the basis for subsequent design of control procedures.

(b) ***Specifications***—For each major area of processing:

(1) Identification of critical performance criteria for which control procedures are required.

(2) Processing control requirements:

(a) Primary editing, balancing, and error correction activities required.

(b) Activities required to ensure the integrity and usefulness of the system data (eg, its accuracy, completeness, timely processing and distribution).

(c) Security activities required for data access, updating, and distribution.

(d) Requirements for trouble and error identification, resolution, and reporting.

(3) Administrative control requirements to ensure overall system performance and integrity (eg, indices, work summaries, performance summaries, management reports).

(4) Requirements, if any, in addition to the above, to ensure system auditability.

(c) ***Prerequisite Components:***

- 2.05—System Objectives
- 3.02—System Output Requirements
- 3.03—System Input Requirements
- 3.04—System Data Requirements
- 3.06—Data Conversion Considerations
- 3.07—Function Structure
- 3.08—Function Description
- 3.09—Potential Problem Areas.

(d) ***Using Components:***

- 3.12—System Overview - Definition
- 4.01—Function Allocation Description
- 4.02—System Output Specification
- 4.03—System Input Specification
- 4.04—Subsystem Function Structure
- 4.05—Subsystem Function Description
- 4.11—Logical Record Specification
- 4.12—Logical Segment Specification
- 4.13—Logical Data Base Specification
- 4.15—System Conversion Requirements
- 4.16—System Test Plan
- 4.22—Software Requirements
- 5.08—Manual File Specification
- 5.10—CSS File Specification
- 5.12—Data Set Group Specification
- 5.13—Physical Data Base Specification
- 5.32—System Controls Description
- 5.34—System Performance Monitoring Capabilities
- 8.02—System Performance Evaluation.

3.11 *System Reliability Requirements (System Analysis):*

(a) ***Purpose***—This component assesses the potential impact of system failures, and establishes the minimum reliability requirements which the system must satisfy. It serves as a basis for design of system fallback and recovery procedures.

(b) ***Specifications***—For each major area of processing:

(1) Identification of potential areas for system failure, including for each:

(a) An estimate of the potential operational and economic impact if failure occurred.

(b) An estimate of the probability of the failure occurring.

(2) Requirements for fallback and recovery, including:

(a) Conditions under which fallback and/or recovery is to be invoked.

(b) Timing requirements for establishing fallback states and/or executing recovery.

(c) Functions and data which are affected by fallback/recovery procedures.

(d) Functions and data required for alternative processing and/or recovery.

(e) Minimum performance levels and maximum duration tolerable for states of degraded operation.

(c) ***Prerequisite Components:***

- 2.05—System Objectives
- 3.02—System Output Requirements
- 3.03—System Input Requirements
- 3.04—System Data Requirements
- 3.07—Function Structure
- 3.08—Function Description
- 3.09—Potential Problem Areas.

(d) ***Using Components:***

- 3.12—System Overview - Definition
- 4.01—Function Allocation Description
- 4.02—System Output Specification
- 4.03—System Input Specification
- 4.04—Subsystem Function Structure
- 4.05—Subsystem Function Description
- 4.16—System Test Plan
- 4.18—Equipment Requirements
- 4.21—DPC Hardware Requirements
- 4.22—Software Requirements
- 4.23—Communications Network Requirements
- 5.13—Physical Data Base Specification
- 5.33—System Reliability Measures Description
- 5.34—System Performance Monitoring Capabilities
- 8.02—System Performance Evaluation.

3.12 *System Overview - Definition (System Analysis):*

(a) ***Purpose***—This component provides a concise overview of the system at the end of Definition, for those who will be involved in or impacted by its operation (eg, higher management, potential users of this or related systems).

(b) ***Specifications***—The overview describes the system's functional structure and major capabilities, and includes:

(1) A general description of the system's purpose and intended usage (including system objectives) which highlights changes from previous phases.

(2) Assumptions and constraints which, if changed, alter the system definition significantly.

(3) A diagram showing the flow of data among the major functions, and interfaces with other systems.

(4) A general description of the system's outputs, inputs, and data requirements.

(c) ***Prerequisite Components:***

- 2.05—System Objectives
- 2.09—System Model
- 3.02—System Output Requirements
- 3.03—System Input Requirements
- 3.04—System Data Requirements
- 3.06—Data Conversion Considerations
- 3.07—Function Structure
- 3.08—Function Description
- 3.10—System Control Requirements
- 3.11—System Reliability Requirements.

(d) ***Using Components:***

- 3.13—Findings and Recommendations
- 4.24—System Overview - Preliminary Design.

3.13 *Findings and Recommendations (System Analysis):*

(a) ***Purpose:*** This component summarizes the status of the system and project at the end of the Definition Phase. It provides the definition team with a vehicle for formal recommendations. It presents a broad picture of Definition Phase activities, costs, schedules, and results.

(b) ***Specifications:***

(1) A report on the actual schedule, costs, project team makeup, and other resources used in the Definition Phase. Any significant deviations from the plan developed in the Feasibility Phase are to be highlighted.

(2) Present worth of the system and noneconomic benefits, highlighting changes from the previous phase.

(3) A recommendation for the disposition of the project (continue development, defer development, cancel, recycle through an earlier phase) along with documentation of the reasons for the recommendation.

(c) ***Prerequisite Components:***

- 2.09—System Model
- 2.14—Findings and Recommendations
- 3.01—System Constraints
- 3.12—System Overview - Definition.

(d) ***Using Components:***

- 4.26—Status and Recommendations
- 8.04—Development Effort Evaluation.

4. PRELIMINARY DESIGN PHASE COMPONENTS

COMPONENT NETWORK DIAGRAM

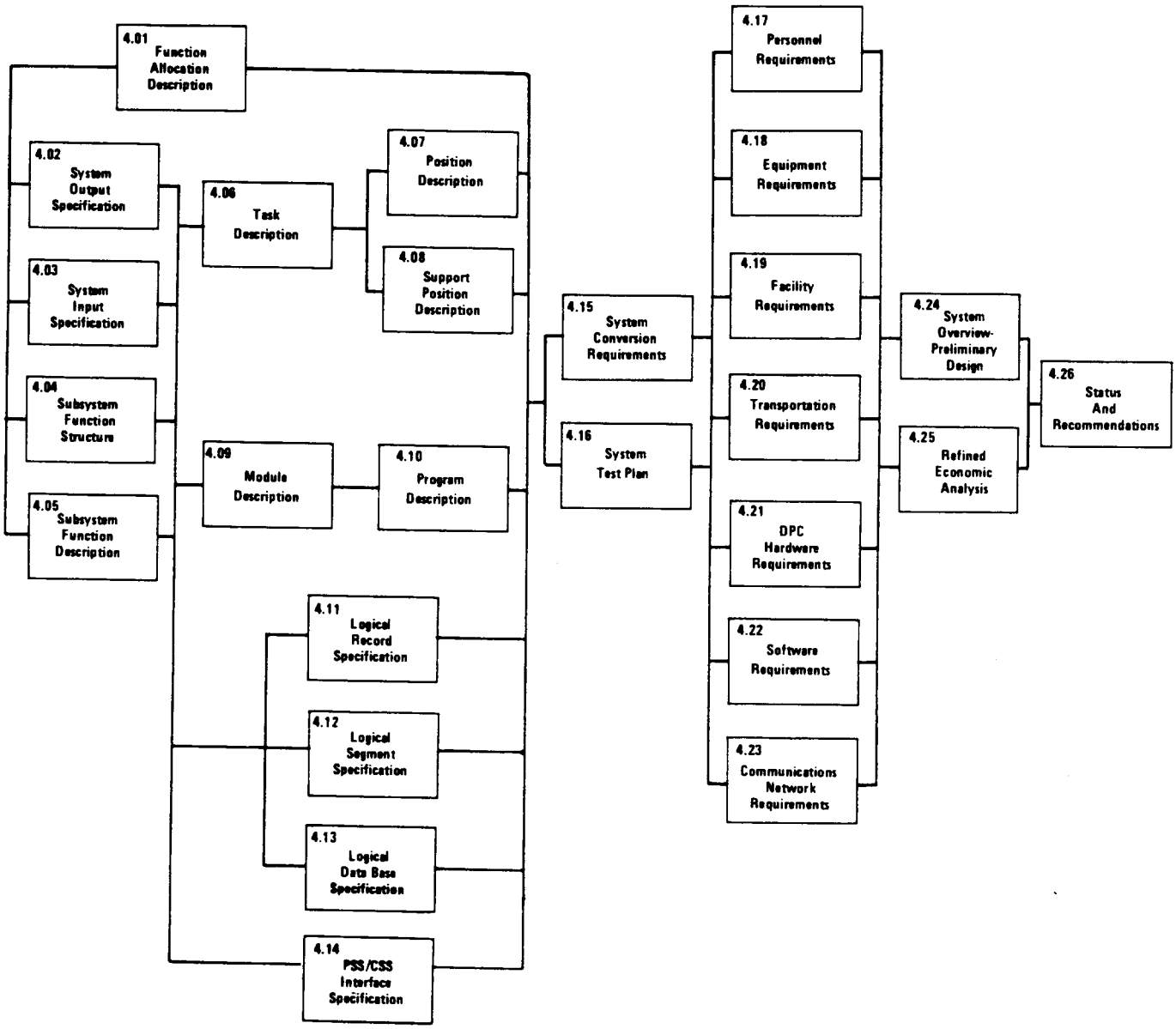

Fig. 4—Preliminary Design Phase Component Network Diagram

COMPONENT CHECKLIST

____4.01—Function Allocation Description
____4.02—System Output Specification
____4.03—System Input Specification
____4.04—Subsystem Function Structure
____4.05—Subsystem Function Description
____4.06—Task Description
____4.07—Position Description
____4.08—Support Position Description
____4.09—Module Description
____4.10—Program Description
____4.11—Logical Record Specification
____4.12—Logical Segment Specification
____4.13—Logical Data Base Specification
____4.14—PSS/CSS Interface Specification
____4.15—System Conversion Requirements
____4.16—System Test Plan
____4.17—Personnel Requirements
____4.18—Equipment Requirements
____4.19—Facility Requirements
____4.20—Transportation Requirements
____4.21—DPC Hardware Requirements
____4.22—Software Requirements
____4.23—Communications Network Requirements
____4.24—System Overview - Preliminary Design
____4.25—Refined Economic Analysis
____4.26—Status and Recommendations.

COMPONENT SPECIFICATIONS

4.01 *Function Allocation Description (System Analysis):*

(a) ***Purpose:*** This component documents the allocation of functions or sets of functions to specific resources, and provides the rationale for the allocations as input to the Personnel Subsystem (PSS) and Computer Subsystem (CSS) design processes.

(b) ***Specifications:***

(1) For each function or set of functions allocated, the rationale for the allocation (eg, processing speed, redundant task, cost effectiveness, control requirements, complex decision, etc). The pros and cons of feasible alternatives to the selected allocation are summarized.

(2) A reference to the Subsystem Function Structure for each function allocated.

(c) ***Prerequisite Components:***

- 2.05—System Objectives
- 2.09—System Model
- 3.01—System Contraints
- 3.07—Function Structure
- 3.08—Function Description
- 3.09—Potential Problem Areas
- 3.10—System Control Requirements
- 3.11—System Reliability Requirements.

(d) ***Using Components:***

- 4.02—System Output Specification
- 4.04—System Input Specification
- 4.05—Subsystem Function Description
- 4.14—PSS/CSS Interface Specification
- 4.16—System Test Plan
- 4.24—System Overview - Preliminary Design.

4.02 ***System Output Specification (System Analysis):***

(a) ***Purpose***—This component specifies the logical and physical attributes of system outputs at a level of detail sufficient to support design of the PSS and CSS functions which produce them.

(b) ***Specifications***—For each system output:

(1) Name and/or unique identifier.

(2) Destination (organizations and physical locations) and delivery schedules, and method(s) by which the output is transmitted or transported.

(3) Physical characteristics, including:

(a) Media (eg, printout, tape, etc)

(b) Format and sequencing

(c) Size (eg, physical size, weight, etc)

(d) Volume (eg, pages, lines, transactions, etc)

(e) Frequency (eg, daily, monthly, on-demand estimates, etc)

(f) Number of copies.

(4) Volatility and retention requirements.

(5) Performance criteria (eg, accuracy, timeliness, completeness, security, etc).

(6) A list of group/elements contained in the output.

(c) ***Prerequisite Components:***

- 3.02—System Output Requirements
- 3.05—Group/Element Definition
- 3.07—Function Structure
- 3.08—Function Description
- 3.09—Potential Problem Areas
- 3.10—System Controls Requirements
- 3.11—System Reliability Requirements
- 4.01—Function Allocation Description.

(d) ***Using Components:***

- 4.03—System Input Specification
- 4.04—Subsystem Function Structure
- 4.05—Subsystem Function Description
- 4.06—Task Description
- 4.09—Module Description
- 4.11—Logical Record Specification
- 4.12—Logical Segment Specification
- 4.13—Logical Data Base Specification
- 4.16—System Test Plan
- 4.20—Transportation Requirements
- 4.24—System Overview - Preliminary Design
- 5.08—Manual File Specification
- 5.10—CSS File Specification
- 5.12—Data Set Group Specification
- 5.13—Physical Data Base Specification
- 5.14—Group/Element Specification
- 5.22—Hardware Sizing Guidelines
- 5.32—System Controls Description
- 5.33—System Reliability Measures Description
- 5.34—System Performance Monitoring Capabilities
- 5.35—System Validation Test Plan
- 5.36—System Certification Test Plan
- 6.01—PSS Verification Test Instruction

- 6.02—CSS Verification Test Instructions
- 6.03—System Validation Test Instructions
- 6.04—System Certification Test Instructions
- 6.27—Operating Agreements
- 8.02—System Performance Evaluation.

4.03 ***System Input Specification (System Analysis):***

(a) ***Purpose***—This component specifies the logical and physical attributes of system inputs at a level of detail sufficient to support design of the PSS and CSS functions which will use it.

(b) ***Specifications***—For each system input:

(1) Name and/or identifier.

(2) Source (organizations and physical locations), and the method(s) by which the input will be transmitted or transported from its source.

(3) Physical characteristics, including:

(a) Media (eg, paper or magnetic tape, source documents, etc)

(b) Format and sequencing

(c) Size (eg, physical size, weight, etc)

(d) Volume (eg, transactions, pages, reels, etc)

(e) Frequency.

(4) Volatility and retention requirements.

(5) Performance criteria which the input must meet (eg, accuracy, completeness, timeliness, security, etc).

(6) A list of group/elements contained in the input.

(c) ***Prerequisite Components:***

- 3.03—System Input Requirements
- 3.05—Group/Element Definition
- 3.07—Function Structure
- 3.08—Function Description
- 3.09—Potential Problem Areas
- 3.10—System Control Requirements
- 3.11—System Reliability Requirements
- 4.02—System Output Specification.

(d) ***Using Components:***

- 4.04—Subsystem Function Structure
- 4.05—Subsystem Function Description
- 4.06—Task Description.
- 4.09—Module Description
- 4.11—Logical Record Specification
- 4.12—Logical Segment Specification
- 4.13—Logical Data Base Specification
- 4.16—System Test Plan
- 4.20—Transportation Requirements
- 4.24—System Overview - Preliminary Design
- 5.08—Manual File Specification
- 5.10—CSS File Specification
- 5.12—Data Set Group Specification
- 5.13—Physical Data Base Specification
- 5.14—Group/Element Specification
- 5.22—Hardware Sizing Guidelines
- 5.32—System Controls Description
- 5.33—System Reliability Measures Description
- 5.34—System Performance Monitoring Capabilities
- 5.35—System Validation Test Plan
- 5.36—System Certification Test Plan
- 6.01—PSS Verification Test Instructions
- 6.02—CSS Verification Test Instructions
- 6.03—System Validation Test Instructions
- 6.04—System Certification Test Instructions
- 6.27—Operating Agreements.

4.04 ***Subsystem Function Structure (System Analysis):***

(a) ***Purpose***—This component depicts the system functions to a sufficient level of detail to identify manual tasks and computer modules.

(b) ***Specifications***—A single hierarchy or data flow may depict all the system's functions, or they may be organized into multiple representations. A hierarchy or data flow may include PSS functions, CSS functions, a functional subsystem, physically or time-related functions, or any combination of these. Included for each function is:

(1) A breakdown of each function into its subordinate or subfunctions, including the functions required for control, fallback and recovery, conversion, etc.

(2) Name and/or identifier for each function in the representation.

(c) ***Prerequisite Components:***

- 3.07—Function Structure
- 3.08—Function Description
- 3.09—Potential Problem Areas
- 3.10—System Control Requirements
- 3.11—System Reliability Requirements
- 4.01—Function Allocation Description
- 4.02—System Output Specification
- 4.03—System Input Specification
- *4.05—Subsystem Function Description.

(d) ***Using Components:***

- *4.05—Subsystem Function Description
- 4.06—Task Description
- 4.07—Position Description
- 4.08—Support Position Description
- 4.09—Module Description
- 4.10—Program Description
- 4.14—PSS/CSS Interface Specification
- 4.16—System Test Plan
- 4.24—System Overview - Preliminary Design
- 5.35—System Validation Test Plan
- 5.36—System Certification Test Plan.

4.05 *Subsystem Function Description (System Analysis):*

(a) ***Purpose:*** This component describes how each function is performed. For the lower level functions, it provides input to task analysis (for PSS functions) or module specification (for CSS functions).

(b) ***Specifications:***

(1) Name and/or unique identifier.

(2) A description of the function, including:

(a) Descriptive statements of the processes which the function must perform.

(b) Conditions under which subordinate and subfunctions are performed.

(c) Procedures, formulas, algorithms, decision tables, etc, for performing the function.

(d) Identification of the specific data which the function processes.

(3) The allocation of the function.

(4) Considerations which affect the design or grouping of tasks or modules.

(5) Any constraints or restrictions on the function or its processing.

(c) ***Prerequisite Components:***

- 3.04—System Data Requirements
- 3.05—Group/Element Definition
- 3.07—Function Structure
- 3.08—Function Description
- 3.10—System Control Requirements
- 3.11—System Reliability Requirements
- 4.01—Function Allocation Description
- 4.02—System Output Specification
- 4.03—System Input Specification
- *4.04—Subsystem Function Structure.

(d) ***Using Components:***

- *4.04—Subsystem Function Structure
- 4.06—Task Description
- 4.09—Module Description
- 4.14—PSS/CSS Interface Specification
- 4.16—System Test Plan
- 4.22—Software Requirements
- 4.24—System Overview - Preliminary Design
- 5.15—Module Specification.

4.06 ***Task Description (Personnel Subsystem Design):***

(a) ***Purpose***—This component identifies manual tasks and their characteristics. It serves as a basis for grouping tasks into positions, and for designing the positions.

(b) ***Specifications***—For each task:

(1) Name and/or unique identifier, and a reference to the system activities performed by the task.

(2) Physical requirements, including:

(a) Location(s) at which the task is performed.

(b) Equipment required to perform the task.

(3) Processing requirements, including:

(a) Task input and output

(b) Processing performed by the task

(c) Estimated processing time per item

(d) Frequency of execution

(e) Performance requirements

(f) Task complexity.

(4) Personnel requirements, including:

(a) Skill requirements

(b) Knowledge requirements.

(5) Dependencies on other tasks.

(6) Comments relevant to assigning the task to a position.

(c) ***Prerequisite Components:***

- 3.05—Group/Element Definition
- 4.02—System Output Specification
- 4.03—System Input Specification
- 4.04—Subsystem Function Structure
- 4.05—Subsystem Function Description.

(d) ***Using Components:***

- 4.07—Position Description
- 4.08—Support Position Description
- 4.14—PSS/CSS Interface Specification
- 5.01—Position Specification
- 5.02—Support Position Specification.

4.07 *Position Description (Personnel Subsystem Design):*

(a) ***Purpose***—This component specifies the grouping of tasks into positions, and describes the characteristics of each position. It serves as a basis for position specification and design.

(b) ***Specifications***—For each position:

(1) Name and/or unique identifier.

(2) Organization(s) which will perform the position.

(3) The rationale for grouping the tasks in this position.

(4) A diagram of the tasks in the position, showing their sequence and dependencies, and the flow of data among them.

(5) Position inputs and outputs, to the group/element level of detail, highlighting CSS, and system boundaries, if any.

(6) Interdependencies with other positions.

(7) Physical characteristics, such as:

(a) Location(s) at which the position is performed

(b) Equipment required.

(8) Performance characteristics, such as:

(a) Input volumes and estimated through-put

(b) Performance requirements

(c) Criticality.

(9) Personnel characteristics, such as:

(a) Skill requirements

(b) Knowledge requirements

(c) Training requirements.

(10) Identification of forms requirements, including:

(a) Form name and/or unique identifier

(b) Contents

(c) Storage and retention requirements

(d) Security

(e) Volumes

(f) Form characteristics.

(c) ***Prerequisite Components:***

- 4.04—Subsystem Function
- 4.06—Task Description
- *4.14—PSS/CSS Interface Specification.

(d) ***Using Components:***

- *4.14—PSS/CSS Interface Specification
- 4.15—System Conversion Requirements
- 4.16—System Test Plan
- 4.17—Personnel Requirements
- 4.18—Equipment Requirements
- 4.19—Facility Requirements
- 4.20—Transportation Requirements
- 4.23—Communications Network Requirements
- 4.24—System Overview - Preliminary Design
- 5.01—Position Specification
- 5.03—Position Grouping into Jobs
- 5.05—Organizational Considerations
- 5.06—PSS Verification Test Plan
- 5.23—Training Specification
- 5.26—Equipment Specifications

- 5.27—Transportation Specifications
- 5.31—Facility Planning
- 5.32—System Controls Description
- 5.33—System Reliability Measures Description
- 5.34—System Performance Monitoring Capabilities
- 6.07—Administrative Requirements.

4.08 *Support Position Description (Personnel and Computer Subsystem Design):*

(a) ***Purpose:*** This component identifies assignment of tasks performed by existing support positions (eg, word processing, keypunch, distribution, etc). It serves as a basis for the specification and design of material which the application must provide to supplement the support positions' documentation.

(b) ***Specifications:***

(1) Identification of each support position to which system tasks have been assigned, including:

(a) Position name and/or unique identifier

(b) Organization and location

(c) Brief description of the position's normal functions.

(2) Identification of application tasks which each support position will perform, including, as applicable, a diagram depicting the sequence and dependencies of the tasks and flow of data among them.

(3) Identification of inputs to and outputs from the support position, to the group/element level of detail, highlighting CSS and system boundaries, and including estimated input volumes and expected through-put.

(4) Identification of any special equipment requirements, or particularly heavy usage or existing equipment.

(5) Any special performance and control requirements.

(6) Identification of form requirements, including:

(a) Form name and/or unique identifier

(b) Contents

(c) Storage and retention requirements

(d) Security

(e) Volumes

(f) Form characteristics.

(7) A brief description of the rationale for assigning the system tasks to the support position.

(c) ***Prerequisite Components:***

- 4.04—Subsystem Function Structure
- 4.06—Task Description
- *4.14—PSS/CSS Interface Specification.

(d) ***Using Components:***

- *4.14—PSS/CSS Interface Specification
- 4.15—System Conversion Requirements
- 4.16—System Test Plan
- 4.17—Personnel Requirements
- 4.18—Equipment Requirements
- 4.19—Facility Requirements
- 4.20—Transportation Requirements
- 4.23—Communications Network Requirements
- 4.24—System Overview - Preliminary Design
- 5.02—Support Position Specification
- 5.06—PSS Verification Test Plan
- 5.26—Equipment Specification
- 5.27—Transportation Specifications
- 5.32—System Controls Description
- 5.33—System Reliability Measures Description
- 5.34—System Performance Monitoring Capabilities
- 6.06—Support Position Information.

4.09 ***Module Description (Computer Subsystem Design):***

(a) ***Purpose***—This component identifies CSS modules and their characteristics. It serves as a basis for grouping modules into programs, and for module and program design.

(b) ***Specifications***—For each module:

(1) Name and/or unique identifier.

(2) Reference to the system function(s) performed by the module.

(3) Processing requirements, including:

(a) Module input and output

(b) Data processing performed by the module

(c) Frequency of execution

(d) Performance requirements

(e) Module complexity.

(4) Dependencies on other modules.

(5) Comments relevant to assigning the module to a program.

(c) ***Prerequisite Components:***

- 3.05—Group/Element Definition
- 4.02—System Output Specification
- 4.03—System Input Specification
- 4.04—Subsystem Function Structure
- 4.05—Subsystem Function Description
- *4.11—Logical Record Specification
- *4.12—Logical Segment Specification.

(d) ***Using Components:***

- 4.10—Program Description
- *4.11—Logical Record Specification
- *4.12—Logical Segment Specification
- 4.13—Logical Data Base Specification
- 4.21—DPC Hardware Requirements
- 4.22—DPC Software Requirements
- 5.09—Physical Record Specification
- 5.10—CSS File Specification
- 5.11—Physical Segment Specification
- 5.12—Data Set Group Specification
- 5.13—Physical Data Base Specification
- 5.15—Module Specification.

4.10 *Program Description (Computer Subsystem Design):*

(a) ***Purpose***—This component specifies the grouping of modules into programs, and describes the characteristics of each program. It serves as a basis for program specification and design.

(b) ***Specifications***—For each program:

(1) Name and/or unique identifier.

(2) List of modules assigned to the program.

(3) The rationale for grouping the modules in this program.

(4) Program inputs and outputs, highlighting PSS, and system boundaries if any.

(5) Scheduling requirements, such as:

(a) Frequency of execution (eg, daily, monthly, on demand, etc)

(b) When input is available and output due

(c) Dependencies and execution sequences with other programs.

(6) Program Language.

(7) Processing mode, eg, timeshare, batch, etc.

(8) Resource requirements:

(a) CPU usage

(b) Memory

(c) Device requirements (eg, tape, disk, printer, etc)

(d) Execution times and method of calculation

(e) Execution priority requirements.

(c) ***Prerequisite Components:***

- 4.04—Subsystem Function Structure
- 4.09—Module Description.

(d) ***Using Components:***

- 4.13—Logical Data Base Specification
- 4.14—PSS/CSS Interface Specification
- 4.15—System Conversion Requirements
- 4.16—System Test Plan
- 4.21—DPC Hardware Requirements
- 4.22—Software Requirements
- 4.23—Communications Network Requirements
- 4.24—System Overview - Preliminary Design
- 4.25—Refined Economic Analysis
- 5.10—CSS File Specification
- 5.12—Data Set Group Specification
- 5.13—Physical Data Base Specification
- 5.16—Program Specification
- 5.18—CSS Job Specification
- 5.21—CSS Verification Test Plan
- 5.32—System Controls Description
- 5.33—System Reliability Measures Description
- 5.34—System Performance Monitoring Capabilities
- 6.08—DPC Scheduling Requirements.

4.11 ***Logical Record Specification (Data Base Design):***

(a) ***Purpose***—This component specifies the organization of system data which will ***not*** reside under Data Base Management Systems into logical records which the application's programs process.

(b) ***Specification***—For each logical record, the following is included:

(1) Name and/or unique identifier.

(2) Narrative description, including the rationale for combining these group/elements as a logical record.

(3) Group/elements contained in the logical record, format, and number of times each group/element will occur (single, multiple, variable range) and the logical relationships among the group/elements in the record.

(4) Logical relationships with other system data.

(5) Functions which process the record, nature of the processing, frequency of the processing, and the method(s) by which each function accesses it.

(6) Estimated volume of the logical record type.

(7) Performance criteria (eg, accuracy, completeness, security, etc).

(c) ***Prerequisite Components:***

- 3.04—System Data Requirements
- 3.05—Group/Element Definition
- 3.10—System Control Requirements
- 4.02—System Output Specification
- 4.03—System Input Specification
- *4.09—Module Description.

(d) ***Using Components:***

- *4.09—Module Description
- 4.15—System Conversion Requirements
- 4.16—System Test Plan
- 4.21—DPC Hardware Requirements
- 5.09—Physical Record Specification
- 5.14—Group/Element Specification
- 5.15—Module Specification
- 5.16—Program Specification
- 5.21—CSS Verification Test Plan
- 5.35—System Validation Test Plan
- 5.36—System Certification Test Plan
- 6.02—CSS Verification Test Instructions
- 6.03—System Validation Test Instructions
- 6.18—Executable Program.

4.12 *Logical Segment Specification (Data Base Design):*

(a) ***Purpose***—This component specifies the organization of system data which reside under Data Base Management Systems into logical segments which the application's programs process. It serves as a basis for communication between the application program and the Data Base Management System.

(b) ***Specifications***—For each logical segment, the following is included:

(1) Name and/or unique identifier.

(2) Narrative description, including the rationale for combining these group/elements as a logical segment.

(3) Group/elements contained in the logical segment, format, and number of times each group/element will occur (single, multiple, variable range) and the logical relationships among the group/elements in the segment.

(4) Logical relationships with other system data.

(5) Functions which process the segment, nature of the processing, frequency of the processing, and the method(s) by which each function accesses it.

(6) Estimated volume of the logical segment type.

(7) Performance criteria (eg, accuracy, completeness, security, etc).

(c) ***Prerequisite Components:***

- 3.04—System Data Requirements
- 3.05—Group/Element Definition
- 3.10—System Control Requirements
- 4.02—System Output Specification
- 4.03—System Input Specification
- *4.09—Module Description.

(d) ***Using Components:***

- *4.09—Module Description
- 4.13—Logical Data Base Specification
- 4.15—System Conversion Requirements
- 4.16—System Test Plan
- 4.21—DPC Hardware Requirements
- 5.11—Physical Segment Specification
- 5.14—Group/Element Specification
- 5.15—Module Specification
- 5.16—Program Specification
- 5.21—CSS Verification Test Plan
- 5.35—System Validation Test Plan
- 5.36—System Certification Test Plan
- 6.02—CSS Verification Test Instructions
- 6.03—System Validation Test Instructions
- 6.18—Executable Program.

4.13 *Logical Data Base Specification (Data Base Design):*

(a) ***Purpose:*** This component specifies the logical organization of the system's data into logical data base(s). It serves as a basis for physical data base design, and for design of the modules which process the logical data base.

(b) ***Specifications:***

(1) Identification of logical segments contained in the data base(s).

(2) Hierarchical and/or network structures of the data required to support system processing. Relationships among logical segments, and among data bases, are depicted. Access paths should be identified.

(3) Identification of data and/or data bases which are shared with other systems.

(c) ***Prerequisite Components:***

- 3.04—System Data Requirements
- 3.05—Group/Element Definition
- 3.10—System Control Requirements
- 4.02—System Output Specification
- 4.03—System Input Specification
- 4.09—Module Description
- 4.10—Program Description
- 4.12—Logical Segment Specification.

(d) ***Using Components:***

- 4.15—System Conversion Requirements
- 4.16—System Test Plan
- 4.24—System Overview - Preliminary Design
- 5.11—Physical Segment Specification
- 5.12—Data Set Group Specification
- 5.13—Physical Data Base Specification
- 5.21—CSS Verification Test Plan
- 5.35—System Validation Test Plan
- 5.36—System Certification Test Plan
- 6.02—CSS Verification Test Instructions
- 6.03—System Validation Test Instructions.

4.14 *PSS/CSS Interface Specification (System Design):*

(a) ***Purpose***—This component specifies the logical and physical attributes of all data which crosses the PSS/CSS boundary, and serves as a common reference point for further PSS and CSS design.

(b) ***Specifications***—For each PSS/CSS interface, the following is included:

(1) Name and/or unique identifier.

(2) A description of how the interface is accomplished (eg, CRT display, terminal keyboard, source document, punched cards, printout magnetic tape, etc).

(3) A detailed description of the data which crosses the interface, including as applicable:

(a) Content.

(b) Format (depending on the nature of the PSS positions, format specification may continue into Detail Design).

(c) Sequencing.

(d) Volume (eg, transactions, pages, lines, etc) and frequency.

(e) Physical size.

(4) Performance criteria (eg, accuracy, completeness, timeliness, processing controls, security, etc).

(c) ***Prerequisite Components:***

- 4.01—Function Allocation Description
- 4.04—Subsystem Function Structure
- 4.05—Subsystem Function Description
- 4.06—Task Description
- *4.07—Position Description
- *4.08—Support Position Description
- 4.10—Program Description.

(d) ***Using Components:***

- *4.07—Position Description
- *4.08—Support Position Description
- 4.16—System Test Plan
- 4.23—Communications Network Requirements
- 4.24—System Overview - Preliminary Design
- 5.01—Position Specification
- 5.02—Support Position Specification
- 5.06—PSS Verification Test Plan
- 5.15—Module Specification
- 5.21—CSS Verification Test Plan
- 5.23—Training Specification
- 6.01—PSS Verification Test Instructions
- 6.02—CSS Verification Test Instructions
- 6.03—System Validation Test Instructions.

4.15 *System Conversion Requirements (System Design):*

(a) ***Purpose:*** This component specifies the requirements for installing the system into its operating environment, and is the basis for a detailed conversion plan.

(b) ***Specifications:***

(1) A description of the overall conversion strategies for installing the new system, and for phasing out any existing systems it will replace.

(2) Identification of data which must be converted, including:

(a) Source and responsibility for the data.

(b) Present media and formats.

(c) Present condition of the data (eg, accuracy, completeness, quality, etc) and a brief description of how well it meets the performance criteria specified for it within the system.

(3) Identification of PSS and CSS functions used to convert the data (eg, collect, purify, transform, etc), including both operational system functions to be used, and functions which have been designed especially for conversion.

(4) Identification of positions which must be converted, reorganizations which must be implemented, etc, highlighting major changes to the organization, its personnel and/or work procedures.

(5) For each major conversion activity, the following is included:

(a) Types and quantities of resources required (eg, personnel, equipment, hardware/software usage, etc).

(b) Approximate duration of the activity.

(c) Any special planning, coordination, training, or controls required.

(c) ***Prerequisite Components:***

- 3.06—Data Conversion Considerations
- 3.09—Potential Problem Areas
- 3.10—System Control Requirements
- 4.07—Position Description
- 4.08—Support Position Description
- 4.10—Program Description
- 4.11—Logical Record Specification
- 4.12—Logical Segment Specification
- 4.13—Logical Data Base Specification.

(d) ***Using Components:***

- 4.16—System Test Plan
- 4.24—System Overview - Preliminary Design
- 4.25—Refined Economic Analysis
- 5.23—Training Specification
- 5.37—System Conversion Plan.

4.16 *System Test Plan (Test):*

(a) ***Purpose:*** This component provides an overview of system testing (System Verification, System Validation, and System Certification) and its objectives, and identifies the resources which testing will require. It serves as a basis for formulating detailed test plans.

(b) ***Specifications:***

(1) General Test objectives for each level of testing.

(2) An overview of system testing to be performed, including a general description of strategies and techniques to be used.

(3) Test site(s) and location(s).

(4) An overall schedule for testing.

(5) Estimates of the resource types and quantities which will be required for each level of testing, including:

(a) Personnel (project team and nonproject)

(b) Facilities and equipment

(c) Hardware and software

(d) Communications and transportation networks.

(6) Test data base requirements, including:

(a) Contents

(b) Description of its use

(c) Means for creation and maintenance.

(c) ***Prerequisite Components:***

- 2.05—System Objectives
- 3.10—System Control Requirements
- 3.11—System Reliability Requirements
- 4.01—Function Allocation Description
- 4.02—System Output Specification
- 4.03—System Input Specification
- 4.04—Subsystem Function Structure
- 4.05—Subsystem Function Description
- 4.07—Position Description
- 4.08—Support Position Description
- 4.10—Program Description
- 4.11—Logical Record Specification
- 4.12—Logical Segment Specification
- 4.13—Logical Data Base Specification
- 4.14—PSS/CSS Interface Specification
- 4.15—System Conversion Requirements.

(d) ***Using Components:***

- 5.06—PSS Verification Test Plan
- 5.21—CSS Verification Test Plan
- 5.35—System Validation Test Plan
- 5.36—System Certification Test Plan.

4.17 *Personnel Requirements (System Design):*

(a) ***Purpose:*** This component specifies the personnel requirements for system conversion and operation. It serves as a basis for planning the assignment of existing personnel, and/or providing for the availability of new personnel.

(b) ***Specifications:***

(1) Personnel quantities and skill levels, by organization and location

(2) A general overview of training requirements.

(3) An approximate schedule for personnel availability.

(c) ***Prerequisite Components:***

- 4.01—Function Allocation Description
- 4.07—Position Description
- 4.08—Support Position Description.

(d) ***Using Components:***

- 4.19—Facility Requirements
- 4.24—System Overview - Preliminary Design
- 4.25—Refined Economic Analysis
- 5.04—System Personnel Guidelines.

4.18 *Equipment Requirements (System Design):*

(a) ***Purpose***—This component details the equipment requirements for system conversion and processing. It serves as a basis for selecting specific equipment and vendors.

(b) ***Specifications***—For each equipment type (eg, terminal, typewriter, copier, printer, optical reader, key disk, etc), the following is provided as applicable:

(1) Device or equipment type and a brief description of its intended usage.

(2) Functional capabilities, including special features, and requirements interface with other devices (eg, communications network interface, etc).

(3) Performance requirements, such as:

(a) Processing capacity

(b) Operational availability

(c) Reliability factors

(d) Maintenance considerations

(e) Expected useful life.

(4) Environmental constraints (eg, space, power, temperature, etc).

(5) Quantity required by location.

(6) Cost allowance or limit.

(c) ***Prerequisite Components:***

- 4.01—Function Allocation Description
- 4.07—Position Description
- 4.08—Support Position Description.

(d) ***Using Components:***

- 4.19—Facility Requirements
- 4.23—Communications Network Requirements
- 4.24—System Overview - Preliminary Design
- 4.25—Refined Economic Analysis
- 5.01—Position Specification
- 5.06—PSS Verification Test Plan
- 5.21—CSS Verification Test Plan
- 5.26—Equipment Specifications
- 5.31—Facility Planning.

4.19 *Facility Requirements (System Design):*

(a) ***Purpose:*** This component specifies facility requirements for system conversion and operation. It serves as a basis for planning the use of existing facilities, and/or providing for new facilities.

(b) ***Specifications:***

(1) Locations where facilities must be available, and a general description of the facility requirements (eg, a general space and lighting, etc).

(2) A general statement concerning the adequacy of existing facilities, and identification of any requirements for expanded or new facilities.

(3) A brief description of any equipment types to be installed which will require special power, engineering, or construction to accommodate.

(4) A schedule for facility availability.

(c) ***Prerequisite Components:***

- 3.01—System Constraints
- 4.07—Position Description
- 4.08—Support Position Description
- 4.17—Personnel Requirements
- 4.18—Equipment Requirements.

(d) ***Using Components:***

- 4.20—Transportation Requirements
- 4.23—Communications Network Requirements
- 4.24—System Overview - Preliminary Design
- 4.25—Refined Economic Analysis
- 5.01—Position Specification
- 5.03—Position Grouping into Jobs
- 5.31—Facility Planning.

4.20 *Transportation Requirements (System Design):*

(a) ***Purpose:*** This component specifies the transportation requirements for system conversion and operation. It serves as a basis for planning the use of existing transportation facilities, and/or providing for new data transportation arrangements.

(b) ***Specifications:***

(1) Identification of each originating and receiving location, including address.

(2) A description of the data to be transported, including:

(a) Media (eg, printout, magnetic tape, source documents, etc)

(b) Volume by location

(c) Estimated size and weight per unit volume.

(3) Scheduling considerations, such as:

(a) Data availability times

(b) Data delivery requirements

(c) Scheduling constraints by location and data type.

(4) Special security and handling requirements.

(5) Environmental constraints (eg, heat, dampness, magnetic field protection, etc).

(6) Interfaces with other transportation systems.

(7) Reliability factors and backup requirements.

(8) Selected mode of transportation (eg, trunk, air freight, mail, etc).

(c) ***Prerequisite Components:***

- 3.01—System Constraints
- 4.02—System Output Specification
- 4.03—System Input Specification
- 4.07—Position Description
- 4.08—Support Position Description
- 4.19—Facility Requirements
- 4.24—System Overview - Preliminary Design
- 4.25—Refined Economic Analysis
- 5.01—Position Specification
- 5.27—Transportation Specifications.

(d) ***Using Components:*** None

4.21 *DPC Hardware Requirements (Computer Subsystem Design):*

(a) ***Purpose***—This component details the hardware requirements for the installation and operation of the system. It serves as a basis for planning the use of existing equipment, and/or for selecting and ordering new equipment which is required.

(b) ***Specifications***—This component specifies the hardware configuration(s) which will be required to install and operate the system. For each piece of hardware required, the following is provided as applicable:

(1) Unit or device type, and a brief description of its intended usage.

(2) Functional capabilities, including special feature requirements and needs to interface with other devices, units, and communications equipment.

(3) Performance requirements, such as:

(a) Processing capacity

(b) Service availability and response times

(c) Reliability factors

(d) Expected useful life

(e) Usage of shared units and devices.

(4) Environmental constraints (eg, space, power, weight, etc).

(5) Quantity required and locations.

(6) Cost allowance or limit.

(c) ***Prerequisite Components:***

- 3.01—System Constraints
- 3.11—System Reliability Requirements
- 4.09—Module Description
- 4.10—Program Description
- 4.11—Logical Record Specification
- 4.12—Logical Segment Specification.

(d) ***Using Components:***

- 4.22—Software Requirements
- 4.23—Communications Network Requirements
- 4.24—System Overview - Preliminary Design
- 4.25—Refined Economic Analysis
- 5.09—Physical Record Specification
- 5.10—CSS File Specification
- 5.11—Physical Segment Specification
- 5.12—Data Set Group Specification
- 5.13—Physical Data Base Specification
- 5.21—CSS Verification Test Plan
- 5.22—Hardware Sizing Guidelines
- 5.29—DPC Hardware Specifications.

4.22 *Software Requirements (Computer Subsystem Design):*

(a) ***Purpose:*** This component describes the software requirements, general and special purpose, for converting and operating the system. It serves as a basis for planning the use of existing software, and/or for developing or selecting new software.

(b) ***Specifications:***

(1) A brief description of programming languages, file structuring, and access methods to be used, and of other general software requirements.

(2) A description of special purpose software requirements (eg, new operating system, randomizing routine, software monitoring package, etc), including for each as applicable:

(a) Purpose and intended usage

(b) Functional capabilities, including special feature requirements, and needs to interface with other hardware and software

(c) Processing capabilities and time element constraints

(d) Hardware resource usage constraints.

(c) ***Prerequisite Components:***

- 3.01—System Constraints
- 3.10—System Control Requirements
- 3.11—System Reliability Requirements
- 4.05—Subsystem Function Description
- 4.09—Module Description
- 4.10—Program Description
- 4.21—DPC Hardware Requirements.

(d) ***Using Components:***

- 4.23—Communications Network Requirements
- 4.24—System Overview - Preliminary Design
- 4.25—Refined Economic Analysis
- 5.09—Physical Record Specification
- 5.10—CSS File Specification
- 5.11—Physical Segment Specification
- 5.12—Data Set Group Specification
- 5.13—Physical Data Base Specification
- 5.21—CSS Verification Test Plan
- 5.30—Software Specification.

4.23 *Communications Network Requirements (Data Communications Design):*

(a) ***Purpose:*** This component details the communication network requirements for system installation and processing. It serves as a basis for planning the use of existing networks, and/or planning the installation of new networks.

(b) ***Specifications:***

(1) Locations to be interconnected, including address.

(2) Mode of transmission (eg, dial up, private line, etc).

(3) Hardware/software interfaces (device types, software packages, etc), and the interface characteristics, such as:

(a) Data representation codes

(b) Message or block sizes of data

(c) Transfer rates, line speeds, etc

(d) Response times

(e) Polling sequences.

(4) Data to be transmitted by location, including message sizes and volumes.

(5) Schedule and reponse considerations, such as:

(a) Peak load times

(b) Response equipments which allow the network to be engineered for particularly high utilization, or require it be engineered for especially low utilization

(c) Scheduling constraints by locations and/or data type.

(6) Environmental constraints.

(7) Back-up requirements.

(8) Potential for shared or common networks.

(c) ***Prerequisite Components:***

- 3.01—System Constraints
- 3.11—System Reliability Requirements
- 4.07—Position Description
- 4.08—Support Position Description
- 4.10—Program Description
- 4.14—PSS/CSS Interface Specification
- 4.18—Equipment Requirements
- 4.19—Facility Requirements
- 4.21—DPC Hardware Requirements
- 4.22—Software Requirements.

(d) ***Using Components:***

- 4.24—System Overview - Preliminary Design
- 4.25—Refined Economic Analysis
- 5.15—CSS Verification Test Plan
- 5.28—Communications Network Specifications.

4.24 *System Overview - Preliminary Design (System Design):*

(a) ***Purpose***—This component presents a concise overview of the system and its features at the end of Preliminary Design Phase. It provides information to those involved in or impacted by its operation (eg, higher management, potential users, etc). The component highlights any differences from previous phases.

(b) ***Specifications***—The overview describes the system's major features and characteristics, basic operation and capabilities, including:

(1) A general description of the system's purpose and intended usage.

(2) A general statement of the system's operational impact.

(3) A general description of the classes of inputs to and outputs from the system, and data base(s) within the system.

(4) A diagram of the system's flow, showing major functions, their allocation, and the flow of data among them.

(5) A brief description of the conversion effort required.

(6) Overall resource estimates (eg, personnel, hardware, equipment, etc).

(c) ***Prerequisite Components:***

- 3.12—System Overview - Definition
- 4.01—Function Allocation Description
- 4.02—System Output Specification
- 4.03—System Input Specification
- 4.04—Subsystem Function Structure
- 4.05—Subsystem Function Description
- 4.07—Position Description
- 4.08—Support Position Description
- 4.10—Program Description
- 4.13—Logical Data Base Specification
- 4.14—PSS/CSS Interface Specification
- 4.15—System Conversion Requirements
- 4.17—Personnel Requirements
- 4.18—Equipment Requirements
- 4.19—Facility Requirements
- 4.20—Transportation Requirements
- 4.21—DPC Hardware Requirements
- 4.22—Software Requirements
- 4.23—Communications Network Requirements.

(d) ***Using Components:***

- 4.26—Status and Recommendations
- 5.37—System Conversion Plan
- 5.38—System Overview - Detail Design.

4.25 ***Refined Economic Analysis (System Design):***

(a) ***Purpose:*** This component is a more accurate view of the costs and benefits associated with the system. It provides a current picture of the system's estimated economic worth.

(b) ***Specifications:***

(1) Total costs, and a general cost breakdown, for each of the following:

(a) Developmental costs

(b) Conversation costs

(c) Operating costs

(d) Recurring costs for maintenance.

(2) System benefits, by organization including:

(a) Tangible economic benefits

(b) Intangible benefits, with any estimated economic impact

(c) Tangible noneconomic benefits, with any estimated economic impact.

(3) A present worth analysis.

(4) Any key assumptions upon which the costs and/or benefits are based.

(c) ***Prerequisite Components:***

- 2.13—Economic Analysis
- 4.15—System Conversion Requirements
- 4.17—Personnel Requirements
- 4.18—Equipment Requirements
- 4.19—Facility Requirements
- 4.20—Transportation Requirements
- 4.21—DPC Hardware Requirements
- 4.22—Software Requirements
- 4.23—Communications Network Requirements.

Note: Development cost estimates are provided by Project Management.

(d) ***Using Components:***

- 4.26—Status and Recommendations
- 8.01—System Effectiveness Evaluation
- 8.03—System Economic Evaluation.

4.26 *Status and Recommendations (System Design):*

(a) ***Purpose:*** This component summarizes the status of the system and the project at the end of Preliminary Design Phase. It provides the design team with a vehicle for formal recommendations. It presents a broad picture of Preliminary Design Phase activities, costs, schedules, and results.

(b) ***Specifications:***

(1) A report on the actual schedule, cost, project team makeup, and other resources used during Preliminary Design. Any significant deviations from the phase plan are highlighted and explained.

(2) A description of the system as seen at the end of Preliminary Design, highlighting the major design decisions behind the system architecture. Any changes made during this phase to the system objectives, scope, constraints, present worth, or noneconomic benefits are to be highlighted and explained.

(3) A recommendation for the disposition of the project (eg, continue or defer development, cancel, recycle through an earlier phase) along with documentation supporting the recommendation.

(c) ***Prerequisite Components:***

- 3.13—Findings and Recommendations
- 4.24—System Overview - Preliminary Design
- 4.25—Refined Economic Analysis.

(d) ***Using Components:***

- 5.39—Status and Recommendations
- 8.04—Development Effort Evaluation.

5. DETAIL DESIGN COMPONENTS

COMPONENT NETWORK DIAGRAM

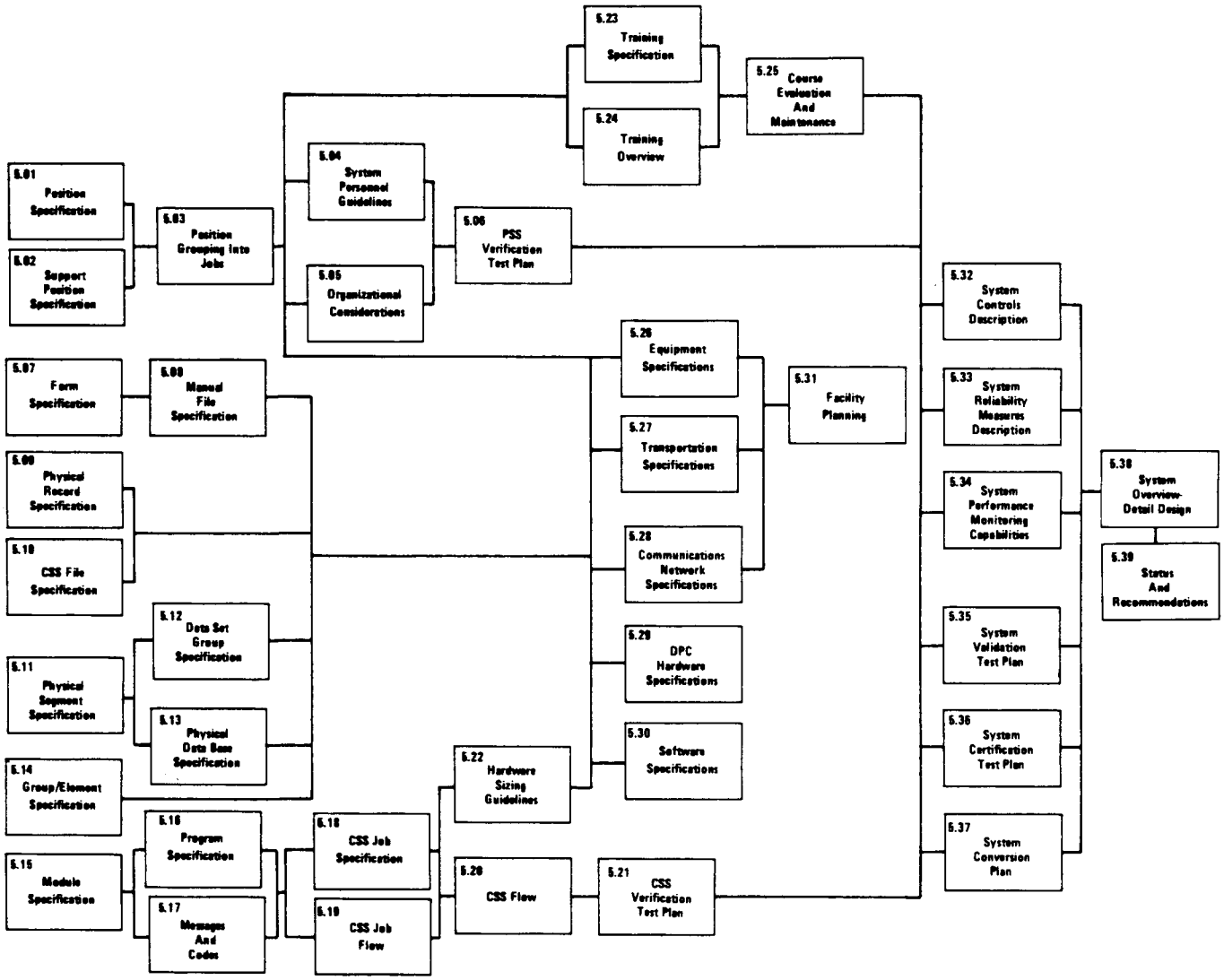

Fig. 5—Detail Design Phase Component Network Diagram

COMPONENT CHECKLIST

____ 5.01—Position Specification
____ 5.02—Support Position Specification
____ 5.03—Position Grouping into Jobs
____ 5.04—System Personnel Guidelines
____ 5.05—Organizational Considerations
____ 5.06—PSS Verification Test Plan
____ 5.07—Form Specification
____ 5.08—Manual File Specification
____ 5.09—Physical Record Specification
____ 5.10—CSS File Specification
____ 5.11—Physical Segment Specification
____ 5.12—Data Set Group Specification
____ 5.13—Physical Data Base Specification
____ 5.14—Group/Element Specification
____ 5.15—Module Specification
____ 5.16—Program Specification
____ 5.17—Messages and Codes
____ 5.18—CSS Job Specification
5.19—CSS Job Flow
____ 5.20—CSS Flow
____ 5.21—CSS Verification Test Plan
____ 5.22—Hardware Sizing Guidelines
____ 5.23—Training Specification
____ 5.24—Training Overview
____ 5.25—Course Evaluation and Maintenance
____ 5.26—Equipment Specifications
____ 5.27—Transportation Specifications
____ 5.28—Communications Network Specifications
____ 5.29—DPC Hardware Specifications
____ 5.30—Software Specifications
____ 5.31—Facility Planning
____ 5.32—System Controls Description
____ 5.33—System Reliability Measures Description
____ 5.34—System Performance Monitoring Capabilities
____ 5.35—System Validation Test Plan
____ 5.36—System Certification Test Plan
____ 5.37—System Conversion Plan
____ 5.38—System Overview - Detail Design
____ 5.39—Status and Recommendations

COMPONENT SPECIFICATIONS

5.01 *Position Specification (Personnel Subsystem Design):*

(a) ***Purpose:*** This component specifies the procedure for performing the position, and identifies the selected position documentation.

(b) ***Specifications:***

(1) Detailed specifications of the procedures and/or guidelines for performing each task within the position, including:

(a) Processing steps and activities, including decision points, and alternative processing paths.

(b) Identification of required exhibits (eg, sample media, completed form, drawing of equipment, illustration of a performance aid, etc).

(c) Identification of performance aids which are required (eg, handbooks, tables of values, procedure checklist, etc).

(2) Specifications for the required exhibits including:

(a) Contents

(b) Task names that use the exhibit

(c) Format requirements.

(3) Specifications for required performance aids including:

(a) Contents

(b) Task names and other positions that use the aid

(c) Frequency of use

(b) Conditions under which the aid will be used

(e) Performance aid characteristics

(f) Quantity required

(g) Maintenance requirements (eg, frequency of change, schedule for change, etc).

(4) A description of the type of required position documentation (eg, position practice, guidelines, training, vendor manuals, etc).

(c) ***Prerequisite Components:***

- 4.06—Task Description
- 4.07—Position Description
- 4.14—PSS/CSS Interface Specification
- 4.18—Equipment Requirements
- 4.19—Facility Requirements
- 4.20—Transportation Requirements.

(d) ***Using Components:***

- 5.03—Position Grouping into Jobs
- 5.04—System Personnel Guidelines
- 5.06—PSS Verification Test Plan
- 5.07—Form Specification
- 5.08—Manual File Specification
- 5.23—Training Specification
- 5.32—System Controls Description
- 5.33—System Reliability Measures Description
- 5.34—System Performance Monitoring Capabilities
- 5.35—System Validation Test Plan
- 5.36—System Certification Test Plan
- 5.37—System Conversion Plan
- 6.01—PSS Verification Test Instructions
- 6.03—System Validation Test Instructions
- 6.05—Position Procedures.

5.02 *Support Position Specification (Personnel and Computer Subsystem Design):*

(a) ***Purpose:*** This component specifies the procedures and material required to supplement the documentation of each support position (eg, word processing, keypunching, distribution, etc) which is required to support system tasks.

(b) ***Specifications:***

(1) For any specific tasks not adequately described in existing support position documentation, the following is included:

(a) Procedures and/or guidelines for performing the task, including decision points and contingencies.

(b) Identification of exhibits (eg, sample media, completed forms, drawing of equipment, etc) and performance aids (eg, handbooks, procedure checklists, etc) which each task requires.

(2) Specifications for exhibits which are required including:

(a) Contents

(b) Task names that use the exhibit

(c) Format requirements.

(3) Specifications for performance aids which are required, including:

(a) Contents

(b) Task names that use the aid

(c) Frequency of use

(d) Conditions of use

(e) Performance aid characteristics

(f) Quantity required

(g) Maintenance requirements (eg, frequency of change, schedule for change, etc).

(4) A description of the type of material which must be provided to supplement the support positions documentation.

(c) ***Prerequisite Components:***

- 4.06—Task Description
- 4.08—Support Position Description
- 4.14—PSS/CSS Interface Specification.

(d) ***Using Components:***

- 5.04—System Personnel Guidelines
- 5.06—PSS Verification Test Plan
- 5.07—Form Specification
- 5.08—Manual File Specification
- 5.23—Training Specification
- 5.32—System Controls Description
- 5.33—System Reliability Measures Description
- 5.34—System Performance Monitoring Capabilities
- 5.36—System Certification Test Plan
- 5.37—System Conversion Plan
- 6.01—PSS Verification Test Instructions
- 6.03—System Validation Test Instructions
- 6.06—Support Position Information.

5.03 ***Position Grouping into Jobs (Personnel Subsystem Design):***

(a) ***Purpose:*** This component recommends the groupings of positions into jobs. It serves as a basis for determining personnel needs.

(b) ***Specifications:***

(1) Recommended groupings of positions into jobs. Included is the sequence or flow of the positions within each job.

(2) Alternative groupings.

(3) The rationale for each grouping:

(a) Personnel factors, such as skill, knowledge and physical abilities

(b) Physical factors, such as workspace layout, equipment and environment

(c) Human factors, such as mental stress, isolation and the ability to perform more than one position

(d) Job enrichment factors, such as challenge and motivation

(e) Labor relation factors, such as divisions of work imposed by labor agreements

(f) Data sensitivity and security factors.

(4) A general description of the tradeoffs, ie, advantages and disadvantages of each grouping.

(c) ***Prerequisite Components:***

- 4.07—Position Description
- 4.19—Facility Requirements
- 5.01—Position Specification.

(d) ***Using Components:***

- 5.04—System Personnel Guidelines
- 5.05—Organizational Considerations
- 5.23—Training Specification
- 5.31—Facility Planning
- 5.37—System Conversion Plan
- 5.38—System Overview - Detail Design
- 6.07—Administrative Requirements.

5.04 *System Personnel Guidelines (Personnel and Computer Subsystem Design):*

(a) ***Purpose***—This component describes the system's personnel requirements (PSS jobs, administrative and support positions), and provides information for system staffing.

(b) ***Specifications***—A description of the personnel required to staff the system, including:

(1) Numbers required, by organization and job level.

(2) Skills and knowledge requirements.

(3) Training requirements and prerequisites.

(4) Applicable laws, regulations, and labor agreements.

(5) A description of the impact the system will have on the organizations' personnel, including as applicable:

(a) A description of changes to the existing staff (eg, more people, fewer people, changes in job levels or job skills, etc)

(b) Strategies for meeting new personnel requirements (eg, retraining, intercompany moves, hiring, etc). Predictions of the availability of personnel within the organization, the company, or the labor market

(c) Stategies for employing personnel displaced by the system (eg, retain for other jobs, reduce by attrition, etc). Estimated turnover rates, availability of other jobs in the organization of company, etc.

(6) A schedule for personnel availability.

(7) Identification of requirements to create or modify job descriptions.

(c) ***Prerequisite Components:***

- 4.17—Personnel Requirements
- 5.01—Position Specification
- 5.02—Support Position Specification
- 5.03—Position Grouping into Jobs.

(d) ***Using Components:***

- 5.05—Organizational Considerations
- 5.06—PSS Verification Test Plan
- 5.23—Training Specification
- 5.37—System Conversion Plan
- 5.38—System Overview - Detail Design
- 6.05—Position Procedures
- 6.22—Training Administration Requirements.

5.05 *Organizational Considerations (Personnel Subsystem Design):*

(a) ***Purpose:*** This component recommends placement of system personnel into the company's organization structure.

(b) ***Specifications:***

(1) The grouping of related jobs into an optimum organization structure.

(2) Identification of administrative requirements for each set of related jobs.

(3) Modifications and additions to the existing organizational structure.

(4) Recommendations for strategies that will enhance the working environment of the system such as:

(a) Changes to physical layout and arrangement of workspace.

(b) How much authority may be vested in the lower levels of the organizational structure when job proficiency increases.

(c) Changes to communication requirements between operational and administrative jobs.

(d) Possible strategies for scheduling work hours.

(5) Alternative organization structures including the advantages and disadvantages of each.

(c) ***Prerequisite Components:***

- 4.07—Position Description
- 5.03—Position Grouping into Jobs
- 5.04—System Personnel Guidelines.

(d) ***Using Components:***

- 5.31—Facility Planning
- 5.37—System Conversion Plan
- 5.38—System Overview - Detail Design
- 6.07—Administrative Requirements.

5.06 *PSS Verification Test Plan (Test):*

(a) ***Purpose:*** This component provides an overview of the PSS verification tests to be performed to confirm the logical correctness of each PSS task and position by itself, and in its contextual relationship with other PSS components.

(b) ***Specifications:***

(1) Identification of each PSS verification test to be performed, the task(s) or position(s) involved, and the objectives of the test.

(2) Scheduled start and completion dates for each test, and dependencies on other tests.

(3) A general description of the techniques to be used for each test.

(4) Overall resource requirements for PSS verification testing (personnel, equipment, facilities, etc).

(5) Test data base requirements for PSS verification testing (eg, sample data bases, inputs, outputs, scripts, etc).

(c) ***Prerequisite Components:***

- 4.07—Position Description
- 4.08—Support Position Description
- 4.14—PSS/CSS Interface Specification
- 4.16—System Test Plan
- 4.18—Equipment Requirements
- 5.01—Position Specification
- 5.02—Support Position Specification
- 5.04—System Personnel Guidelines
- 5.07—Form Specification
- 5.08—Manual File Specification
- *5.21—CSS Verification Test Plan.

(d) ***Using Components:***

- *5.21—CSS Verification Test Plan
- 5.35—System Validation Test Plan
- 5.36—System Certification Test Plan
- 6.01—PSS Verification Test Instructions
- 6.23—PSS Verification Test Results.

5.07 *Form Specification (Personnel Subsystem Design):*

(a) ***Purpose***—This component specifies the internal system forms required for conversion and operation, and establishes ordering, stocking, and distribution procedures.

(b) ***Specification***—For each form processed within the system, the following is included as applicable:

(1) Form title and number.

(2) Format, showing group/element layout, and layout of information (eg, instructions, routing, sign-offs, etc) which will be printed or allowed for on the form.

(3) Physical description (eg, size, number of parts, colors, foldouts, perforations, etc).

(4) Retention requirements, and any special instructions for disposition or destruction.

(5) Rate of use.

(6) Identification of any manual files in which the form or parts of the form will be stored.

(7) Identification of positions which will process the form.

(8) Restrictions on its use or distribution.

(9) Stocking and ordering information, including as applicable:

(a) Stockroom location(s) or supplier name

(b) Cost and billing arrangements

(c) Stock quantity and reordering levels

(d) Ordering procedures and lead times

(e) Delivery arrangements.

(c) ***Prerequisite Components:***

- 3.05—Group/Element Definition
- 5.01—Position Specification
- 5.02—Support Position Specification

(d) ***Using Components:***

- 5.06—PSS Verification Test Plan
- 5.08—Manual File Specification
- 5.14—Group/Element Specification
- 5.23—Training Specification
- 5.35—System Validation Test Plan
- 5.36—System Certification Test Plan
- 6.01—PSS Vertification Test Instructions
- 6.03—System Validation Test Instructions
- 6.05—Position Procedures
- 6.06—Support Position Information.

5.08 ***Manual File Specification (Personnel Subsystem):***

(a) ***Purpose***—This component specifies the organization of all forms which are retained within the system into manual files.

(b) ***Specification***—For each manual file, the following is specified as applicable:

(1) Name and/or unique identifier.

(2) Type of file (eg, binder, bin, card box, folders, etc).

(3) Identification of forms contained in the file.

(4) Method of organization (eg, sequence, keys, tabbing requirements, etc).

(5) Physical size.

(6) Volume of forms in the file.

(7) Volatility.

(8) Backup and retention requirements, and any special instructions for disposition or destruction.

(9) Any special environmental requirements for storage.

(10) Relationships to other files.

(11) Identification of positions which process (eg, create, update, use, delete, etc) the file.

(12) Any special security or access restrictions.

(c) ***Prerequisite Components:***

- 3.10—System Control Requirements
- 4.03—System Input Specification
- 5.01—Position Specification
- 5.02—Support Position Specification
- 5.07—Form Specification.

(d) ***Using Components:***

- 5.06—PSS Verification Test Plan
- 5.14—Group/Element Specification
- 5.23——Training Specification
- 5.27—Transportation Specifications
- 5.31—Facility Planning
- 5.35—System Validation Test Plan
- 5.36—System Certification Test Plan
- 5.37—System Conversion Plan
- 5.38—System Overview - Detail Design
- 6.01—PSS Verification Test Instructions
- 6.03—System Validation Test Instructions
- 6.04—System Verification Test Instructions
- 6.05—Position Procedures
- 6.06—Support Position Information.

5.09 ***Physical Record Specification (Data Base Design):***

(a) ***Purpose***—This component specifies the physical organization of system data which will not reside under a Data Base Management System into physical records for storage in the system's files.

(b) ***Specification***—For each physical record, the following is specified:

(1) Name and/or unique identifier.

(2) Narrative description.

(3) Physical characteristics, including:

(a) Physical format, showing the group/element layout within the record, and indicating the number of times each group/element occurs (single, multiple, variable range)

(b) Key and sequencing fields within the record

(c) Record length (fixed size or variable length range)

(d) Blocking factor.

(4) Estimated volume of the record type.

(5) File(s) in which the record is contained.

(6) Relationships to the logical record(s) it represents.

(7) Relationships with other physical records.

(8) Modules which process the record, and the nature of the processing (eg, access, use, create, update, or delete).

(9) Any special security or access restrictions.

(c) ***Prerequisite Components:***

- 3.05—Group/Element Definition
- 4.09—Module Description
- 4.11—Logical Record Specification
- 4.21—DPC Hardware Requirements
- 4.22—Software Requirements.

(d) ***Using Components:*** None

5.10 *CSS File Specification (Data Base Design):*

(a) ***Purpose***—This component specifies the organization of physical records into files for storage and processing.

(b) ***Specifications***—For each file, the following is specified:

(1) Name and/or unique identifier.

(2) Narrative description.

(3) Physical characteristics, including:

(a) Record types contained in the file

(b) Special labels

(c) Organization

(d) Access method(s) used

(e) Storage device and transmission requirements

(f) File volume (ie, number of records) and physical size (eg, reels of tape, cylinders, boxes of cards, etc).

(4) Relationships with other files.

(5) Modules which access the file.

(6) Volatility.

(7) Backup, retention, and storage requirements.

(8) Any special security or access restrictions.

(c) ***Prerequisite Components:***

- 3.10—System Control Requirements
- 4.02—System Output Specification
- 4.03—System Input Specification
- 4.09—Module Description
- 4.10—Program Description
- 4.21—DPC Hardware Requirements
- 4.22—Software Requirements
- 5.09—Physical Record Specification.

(d) ***Using Components:***

- 5.14—Group/Element Specification
- 5.15—Module Specification
- 5.21—CSS Verification Test Plan
- 5.22—Hardware Sizing Guidelines
- 5.27—Transportation Specifications
- 5.28—Communications Network Specifications
- 5.29—DPC Hardware Specifications
- 5.30—Software Specifications
- 5.35—System Validation Test Plan
- 5.36—System Certification Test Plan
- 5.37—System Conversion Plan
- 5.38—System Overview - Detail Design
- 6.02—CSS Verification Test Instructions
- 6.03—System Validation Test Instructions
- 6.04—System Certification Test Instructions
- 6.11—DPC Job Set-up Information.

5.11 ***Physical Segment Specification (Data Management):***

(a) ***Purpose***—This component specifies the physical organization of system data which resides under a Data Base Management System into physical segments for storage in a data base.

(b) ***Specifications***—For each physical segment, the following is specified:

(1) Name and/or unique identifier.

(2) Narrative description.

(3) Physical characteristics, including:

(a) Physical format, showing the group/element layout within the segment, and indicating the number of times each group/element occurs (single, multiple, variable range)

(b) Key and sequencing fields with the segment

(c) Segment size (fixed size or variable length range).

(4) Estimated volume for the segment type, including volatility factors such as seasonal fluctuations.

(5) Data base(s) and data set group(s) in which the segment is contained.

(6) Relationships to the logical segment it represents.

(7) Relationships to other physical segments.

(8) Modules which process the segment, the nature of the processing (eg, access, use, create, update, delete), and the frequency of access by each.

(9) Any special security or access restrictions.

(c) ***Prerequisite Components:***

- 3.05—Group/Element Definition
- 4.09—Module Description
- 4.12—Logical Segment Specification
- 4.13—Logical Data Base Specification
- 4.21—DPC Hardware Requirements
- 4.22—Software Requirements.

(d) ***Using Components:***

- 5.12—Data Set Group Specification
- 5.13—Physical Data Base Specification
- 5.14—Group/Element Specification
- 5.21—CSS Verification Test Plan
- 5.28—Communications Network Specifications
- 5.29—DPC Hardware Specifications
- 5.30—Software Specifications
- 5.35—System Validation Test Plan
- 5.36—System Certification Test Plan
- 6.02—CSS Verification Test Instructions
- 6.03—System Validation Test Instructions.

5.12 ***Data Set Group Specification (Data Management):***

(a) ***Purpose***—This component specifies the organization of physical segments into manageable physical data set groups for storage and processing.

(b) ***Specifications***—For each data set group, the following is specified:

(1) Name and/or unique identifier.

(2) Narrative description, including the rationale for specifying the data set group.

(3) Physical characteristics, including:

(a) Segment types contained in the data set group

(b) Structure of the data set group

(c) Access method(s) used

(d) Storage device and transmission requirements

(e) Volume (ie, number of segments) and physical size (eg, cylinders, etc).

(4) Relationships with other data set groups, and the methods by which they are recorded.

(5) Physical data base(s) in which the data set group is contained.

(6) Modules which access the data set group.

(7) Volatility.

(c) ***Prerequisite Components:***

- 3.10—System Control Requirements
- 4.02—System Output Specification
- 4.03—System Input Specification
- 4.09—Module Description
- 4.10—Program Description
- 4.13—Logical Data Base Specification
- 4.21—DPC Hardware Requirements
- 4.22—Software Requirements
- 5.11—Physical Segment Specification.

(d) ***Using Components:***

- 5.13—Physical Data Base Specification
- 5.14—Group/Element Specification
- 5.15—Module Specification
- 5.21—CSS Verification Test Plan
- 5.22—Hardware Sizing Guidelines
- 5.28—Communications Network Specifications
- 5.29—DPC Hardware Specifications
- 5.30—Software Specifications
- 5.35—System Validation Test Plan
- 5.36—System Certification Test Plan
- 5.37—System Conversion Plan
- 5.38—System Overview - Detail Design
- 6.02—CSS Verification Test Instructions
- 6.03—System Validation Test Instructions
- 6.04—System Certification Test Instructions
- 6.11—DPC Job Set-up Information.

5.13 *Physical Data Base Specification (Data Management):*

(a) ***Purpose***—This component specifies the organization of physical segments and data set groups into physical data base(s) for storage and processing.

(b) ***Specifications***—For each physical data base, the following is specified:

(1) Name and/or unique identifier.

(2) Narrative description.

(3) Physical characteristics, including:

(a) Segments and data set groups contained in the data base

(b) Structure

(c) Access method(s) used

(d) Storage device and transmission requirements

(e) Volume (ie, number of segments) and physical size (eg, cylinders, etc)

(f) Methods by which relationships among segments are recorded in the data base.

(4) Relationships to other physical data bases.

(5) Relationships to the system's logical data base.

(6) Modules which access the data base.

(7) Volatility and reorganization requirements.

(8) Identification of data which is shared with other systems.

(c) ***Prerequisite Components:***

- 3.10—System Control Requirements
- 3.11—System Reliability Requirements
- 4.02—System Output Specification
- 4.09—Module Description
- 4.10—Program Description
- 4.13—Logical Data Base Specification
- 4.21—DPC Hardware Requirements
- 4.22—Software Requirements
- 5.11—Physical Segment Specification
- 5.12—Data Set Group Specification.

(d) ***Using Components:***

- 5.14—Group/Element Specification
- 5.15—Module Specification
- 5.21—CSS Verification Test Plan
- 5.22—Hardware Sizing Guidelines
- 5.28—Communications Network Specifications
- 5.29—DPC Hardware Specifications
- 5.30—Software Specifications
- 5.35—System Validation Test Plan
- 5.36—System Certification Test Plan
- 5.37—System Conversion Plan
- 5.38—System Overview - Detail Design
- 6.02—CSS Verification Test Instructions
- 6.03—System Validation Test Instructions
- 6.04—System Certification Test Instructions
- 6.11—DPC Job Set-up Information.

5.14 *Group/Element Specification (Data Base Design):*

(a) ***Purpose***—This component specifies precisely the logical and physical attributes of the group/elements processed by, or stored within the system. It provides a common reference for the design of the physical data, and the PSS tasks, and CSS modules which act upon it.

(b) ***Specifications***—The Group/Element Specification incorporates the Group/Element Definition, which has been maintained since the Definition Phase, and adds physical attributes. (For clarity, those items from the Group/Element Definition which are incorporated into and maintained as part of this component are repeated in this specification.) The resultant component is an ordered list of group/elements, each defined in terms of:

(1) Name and/or unique identifier.

(2) For data groups, a list of contained data elements.

(3) A list of synonyms, acronyms, abbreviations and codes.

(4) A narrative description of the group/element including:

(a) Present and future needs it will satisfy

(b) Logical relationships with other group/elements.

(5) Allowable values, ranges, codes, etc.

(6) Most stringent performance criteria (eg, accuracy, security, beauty, etc).

(7) Inputs and outputs in which the group/element is contained, and any special roles the group/element takes on (eg, identification key, sequencing key, counter, etc).

(8) Logical records in which the group/element is contained, and any special roles the group/element takes on (eg, keys, sort field, subsetting criteria, etc).

(9) Physical records in which the group/element is contained, and any special roles the group/element takes on (eg, key, sort field, subsetting criteria, etc).

(10) PSS tasks and CSS modules which process the group/element, and nature of processing (eg, use, update, etc).

(11) Storage/Display formats and characteristics.

(12) Coding structures (eg, common language), if applicable.

(c) ***Prerequisite Components:***

- 3.05—Group/Element Definition
- 4.02—System Output Specification
- 4.03—System Input Specification
- 4.11—Logical Record Specification
- 4.12—Logical Segment Specification
- 5.07—Form Specification
- 5.08—Manual File Specification
- 5.09—Physical Record Specification
- 5.10—CSS File Specification
- 5.11—Physical Segment Specification
- 5.12—Data Set Group Specification
- 5.13—Physical Data Base Specification.

(d) ***Using Components:***

- 5.35—System Validation Test Plan
- 5.36—System Certification Test Plan.

5.15 *Module Specification (Computer Subsystem Design):*

(a) ***Purpose:*** This component establishes the processing requirements for each module. It serves as a basis for program design.

(b) ***Specifications:***

(1) Module name and unique identifier.

(2) Functions associated with the module.

(3) Detailed procedures which each module must perform, including decisions, alternative processing steps, control steps, etc. (These may take the form of structure charts, flowcharts, decision tables, narratives, etc)

(4) Data requirements, including:

(a) Group/elements used and their origin

(b) Group/elements created or changed, and their disposition

(c) Calls to the data bases and files

(d) Layout of transient data.

(5) Implementation constraints (eg, storage limitations, size, etc).

(6) Programming language used.

(c) ***Prerequisite Components:***

- 4.04—Subsystem Function Structure
- 4.09—Module Description
- 4.11—Logical Record Specification
- 4.12—Logical Segment Specification
- 4.14—PSS/CSS Interface Specification
- 4.23—Communications Network Requirements
- 5.10—CSS File Specification
- 5.12—Data Set Group Specification
- 5.13—Physical Data Base Specification.

(d) ***Using Components:***

- 5.16—Program Specification
- 5.21—CSS Verification Test Plan
- 6.02—CSS Verification Test Instructions
- 6.16—Logic Flow
- 6.18—Executable Program.

5.16 *Program Specification (Computer Subsystem Design):*

(a) ***Purpose:*** This component establishes the processing requirements for each program. It serves as a basis for designing CSS jobs.

(b) ***Specifications:***

(1) Program name and number.

(2) List of modules, and their structure within the program.

(3) Data requirements, including:

(a) Specific physical data which is processed, its origin, and destination

(b) Transient work files

(c) System inputs, outputs, and PSS/CSS interfaces.

(4) Messages and codes which the program issues.

(5) Program language used.

(c) ***Prerequisite Components:***

- 4.10—Program Description
- 4.11—Logical Record Specification
- 4.12—Logical Segment Specification
- 5.15—Module Specification.

(d) ***Using Components:***

- 5.17—Messages and Codes
- 5.18—CSS Job Specification
- 5.19—CSS Job Flow
- 5.21—CSS Verification Test Plan
- 5.22—Hardware Sizing Guidelines
- 5.29—DPC Hardware Specifications
- 5.32—System Controls Description
- 5.33—System Reliability Measures Description
- 5.34—System Performance Monitoring Capabilities
- 5.35—System Validation Test Plan
- 5.36—System Certification Test Plan
- 6.02—CSS Verification Test Instructions
- 6.03—System Validation Test Instructions
- 6.09—DPC Job Preprocessing Requirements
- 6.10—DPC Job Media Distribution
- 6.11—DPC Job Set-up Information
- 6.12—DPC Job Restart Procedures
- 6.13—DPC Job Output Control
- 6.14—Job Control Language
- 6.15—Recovery Procedures
- 6.16—Logic Flow
- 6.18—Executable Program.

5.17 ***Messages and Codes (Computer Subsystem Design):***

(a) ***Purpose***—This component documents the messages and codes generated by each program, and specifies the appropriate response.

(b) ***Specifications***—An ordered list of the messages and codes generated by each program, including for each are as follows:

(1) Name and/or unique identifier.

(2) Actual text of the message.

(3) Conditions under which it is issued, and programs which issue it.

(4) Actions to be taken when issued.

(5) Media (eg, printout, sysout, CRT display, etc).

(c) ***Prerequisite Component:***

- 5.16—Program Specification.

(d) ***Using Components:***

- 6.02—CSS Verification Test Instructions
- 6.09—DPC Job Preprocessing Requirements
- 6.10—DPC Job Media Distribution
- 6.11—DPC Job Set-up Information
- 6.12—DPC Job Restart Procedures
- 6.14—Job Control Language
- 6.15—Recovery Procedures.

5.18 *CSS Job Specification (Computer Subsystem Design):*

(a) ***Purpose***—This component specifies the organization of programs into jobs, and describes each job's characteristics. It serves as a basis for the development of operational documentation.

(b) ***Specifications***—For each job:

(1) Job name and number.

(2) A list of programs within the job.

(3) A summary of the inputs and outputs of the job, and of each job step.

(4) A description of the execution characteristics associated with each program, and optional and special preprocessing requirements.

(5) Control requirements.

(c) ***Prerequisite Component:***

- 5.16—Program Specification.

(d) ***Using Components:***

- 5.19—CSS Job Flow
- 5.20—CSS Flow
- 5.21—CSS Verification Test Plan
- 5.22—Hardware Sizing Guidelines
- 5.35—System Validation Test Plan
- 5.36—System Certification Test Plan
- 6.08—DPC Scheduling Requirements
- 6.09—DPC Job Preprocessing Requirements
- 6.10—DPC Job Media Distribution
- 6.11—DPC Job Set-up Information
- 6.12—DPC Job Restart Procedures
- 6.13—DPC Job Output Control
- 6.14—Job Control Language
- 6.15—Recovery Procedures.

5.19 *CSS Job Flow (Computer Subsystem Design):*

(a) ***Purpose:*** This component provides a picture of the job steps within each CSS job, and the data processed by each, for CSS operational personnel.

(b) ***Specifications:***

(1) A flowchart showing the programs executed within the job, and their sequence of execution.

(2) For each job step:

(a) Program name and number

(b) A diagram showing the program's inputs, outputs, data processed, and transient work files used

(c) A title or descriptive phrase.

(c) ***Prerequisite Components:***

- 5.16—Progam Specification
- 5.18—CSS Job Specification.

(d) ***Using Components:***

- 5.20—CSS Flow
- 5.21—CSS Verification Test Plan
- 5.35—System Validation Test Plan
- 5.36—System Certification Test Plan
- 5.38—System Overview - Detail Design
- 6.02—CSS Verification Test Instructions
- 6.03—System Validation Test Instructions
- 6.08—DPC Scheduling Requirements
- 6.09—DPC Job Preprocessing Requirements
- 6.10—DPC Job Media Distribution
- 6.11—DPC Job Set-up Information
- 6.12—DPC Job Restart Procedures
- 6.13—DPC Job Output Control
- 6.14—Job Control Language
- 6.15—Recovery Procedures.

5.20 ***CSS Flow (Computer Subsystem Design):***

(a) ***Purpose***—This component depicts the data flow(s) and scheduling dependencies among the CSS jobs. It is used by DPC operating groups for planning, scheduling, computer operation, I/O control, and training.

(b) ***Specifications***—A diagram of the flow(s) of CSS jobs, showing:

(1) Job names and numbers.

(2) Data flow among the jobs:

(a) System inputs and outputs, and interfaces with manual functions

(b) Data sets processed by each job

(c) Transient data flow among the jobs.

(3) Control requirements.

(c) ***Prerequisite Components:***

- 5.18—CSS Job Specification
- 5.19—CSS Job Flow.

(d) ***Using Components:***

- 5.21—CSS Verification Test Plan
- 5.35—System Validation Test Plan
- 5.36—System Certification Test Plan
- 5.37—System Conversion Plan
- 5.38—System Overview - Detail Design
- 6.08—DPC Scheduling Requirements
- 6.09—DPC Job Preprocessing Requirements
- 6.10—DPC Job Media Distribution
- 6.11—DPC Job Set-up Information
- 6.12—DPC Job Restart Procedures
- 6.13—DPC Job Output Control
- 6.14—Job Control Language
- 6.15—Recovery Procedures.

5.21 *CSS Verification Test Plan (Test):*

(a) ***Purpose:*** This component provides an overview of the CSS component and system verification tests to be performed to verify the logical correctness of each module, program, job, and subsystem.

(b) ***Specifications:***

(1) Identification of each CSS verification test to be performed, the modules, programs, jobs, or subsystem involved, and the objectives of the test.

(2) Scheduled start and completion dates for each test, and dependencies on other tests.

(3) A general description of the techniques to be used for each test.

(4) Overall resource requirements for CSS verification testing (hardware, software, personnel, etc).

(5) Test data base requirements for CSS verification testing (eg, files, inputs, outputs, on-line scripts, etc).

(c) ***Prerequisite Components:***

- 4.10—Program Description
- 4.11—Logical Record Specification
- 4.12—Logical Segment Specification
- 4.13—Logical Data Base Specification
- 4.14—PSS/CSS Interface Specification
- 4.16—System Test Plan
- 4.21—DPC Hardware Requirements
- 4.22—Software Requirements
- 4.23—Communications Network Requirements
- *5.06—PSS Verification Test Plan
- 5.09—Physical Record Specification
- 5.10—CSS File Specification
- 5.11—Physical Segment Specification
- 5.12—Data Set Group Specification
- 5.13—Physical Data Base Specification
- 5.15—Module Specification
- 5.16—Program Specification
- 5.18—CSS Job Specification
- 5.19—CSS Job Flow
- 5.20—CSS Flow.

(d) ***Using Components:***

- *5.06—PSS Verification Test Plan
- 5.35—System Validation Test Plan
- 5.36—System Certification Test Plan
- 6.02—CSS Verification Test Instructions
- 6.24—CSS Verification Test Results.

5.22 ***Hardware Sizing Guidelines (Computer Subsystem Design):***

(a) ***Purpose:*** This component specifies the systems to be installed and operated in multiple locations (eg, Companies, DPCs, etc). It is especially pertinent to, but not limited to Centrally Developed Systems. It identifies the variables and options which affect hardware resource requirements, and provides algorithms for computing the specific resource requirements for any given location.

(b) ***Specifications:***

(1) A description of variables and options, and their effect on resource requirements, including as applicable:

(a) Processing variables (eg, input/output volumes, data base size, etc)

(b) Hardware/Software options (eg, choice of data storage media choice of computer type, Operating System features, etc)

(c) Scheduling options (eg, job scheduling, load leveling, etc).

(2) Guidelines for selecting the best options for any given location.

(3) Algorithms for computing the size and quantity of each hardware device based on the appropriate variables and selected options.

(c) ***Prerequisite Components:***

- 4.02—System Output Specification
- 4.03—System Input Specification
- 4.21—DPC Hardware Requirements
- 5.10—CSS File Specification
- 5.12—Data Set Group Specification
- 5.13—Physical Data Base Specification
- 5.16—Program Specification
- 5.18—CSS Job Specification.

(d) ***Using Component:***

- 5.38—System Overview - Detail Design.

5.23 *Training Specification (Training Development):*

(a) ***Purpose***—This component provides detailed specifications for each course required.

(b) ***Specifications***—For each course to be developed:

(1) Purpose of the course, including:

(a) Positions/tasks addressed

(b) Skills to be trained

(c) Type of audience and estimated numbers.

(2) Course objectives.

(3) Course outline.

(4) Performance criterial, and methods for their evaluation.

(5) Test material specifications.

(6) Reference documentation (eg, position documents, performance aids, vendor materials, company instructions, forms, etc).

(7) Type of course to be developed (eg, instructor-led, self-paced, computer-aided, On-The-Job-Training (OJT) seminar, etc).

(c) ***Prerequisite Components:***

- 4.07—Position Description
- 4.14—PSS/CSS Interface Specification
- 4.15—System Conversion Requirements
- 5.01—Position Specification
- 5.02—Support Position Specification
- 5.03—Position Grouping into Jobs
- 5.04—System Personnel Guidelines
- 5.07—Form Specification
- 5.08—Manual File Specification.

(d) ***Using Components:***

- 5.24—Training Overview
- 5.25—Course Evaluation and Maintenance
- 5.35—System Validation Test Plan
- 5.36—System Certification Test Plan
- 5.38—System Overview - Detail Design
- 6.05—Position Procedures
- 6.06—Support Position Information
- 6.19—Training Course Description
- 6.20—Student Course Material
- 6.21—Instructor Course Material
- 6.22—Training Administration Requirements.

5.24 *Training Overview (Training Development):*

(a) ***Purpose:*** This component provides an overview of the application training which will be provided.

(b) ***Specifications:***

(1) A brief description of each course.

(2) Course sequences and dependencies.

(3) Prerequisite courses (nonapplication) which are assumed to be available.

(4) Identification of the types and numbers of personnel who will attend.

(5) Overall training strategies, including plans for integrating training with system conversion and operation.

(6) General resource requirements (eg, instructors, facilities, special equipment, etc).

(c) ***Prerequisite Component:***

- 5.23—Training Specification.

(d) ***Using Components:***

- 5.25—Course Evaluation and Maintenance
- 5.35—System Validation Test Plan
- 5.36—System Certification Test Plan
- 5.37—System Conversion Plan
- 5.38—System Overview - Detail Design
- 6.03—System Validation Test Instructions
- 6.07—Administrative Requirements
- 6.19—Training Course Description
- 6.20—Student Course Material
- 6.21—Instructor Course Material
- 6.22—Training Administration Guidelines.

5.25 ***Course Evaluation and Maintenance (Training Development):***

(a) ***Purpose:*** This component provides procedures for the evaluation and maintenance of centrally/locally/vendor developed training courses.

(b) ***Specifications:***

(1) Student feedback procedures (eg, interviews, student questionnaires, etc).

(2) Instructors' evaluation procedures (eg, use of test statistics, instructor feedback forms, etc).

(3) Methods for on-the-job evaluation of training effectiveness.

(4) Course maintenance request procedures.

(c) ***Prerequisite Components:***

- 5.23—Training Specification
- 5.24—Training Overview.

(d) ***Using Components:***

- 6.21—Instructor Course Material
- 6.22—Training Administration Guidelines.

5.26 *Equipment Specifications (System Design):*

(a) ***Purpose***—This component identifies the equipment selected as best meeting the system's requirements, and provides ordering and installation information for equipment not already in operation.

(b) ***Specifications***—For each equipment type (eg, terminal, typewriter, copier, etc), the following is provided as applicable:

(1) Type of device, including vendor name and model number, and quantity needed.

(2) Special feature numbers.

(3) Interfaces with other equipment (eg, terminal clusters, etc).

(4) Requirements not met by the device.

(5) Operating requirements (eg, power, light, space, environmental requirements, etc).

(6) Ordering information, including as applicable:

(a) Contact and address

(b) Ordering procedures

(c) Ordering and installation lead times.

(7) Cost breakdown, including a comparison of purchase versus leased costs when appropriate:

(a) Basic and special feature costs

(b) Maintenance costs

(c) Shipping and installation costs

(d) Quantity and lease duration cost reductions

(e) Billing arrangements.

(8) Installation, testing, and acceptance requirements.

(9) Available documentation for the device.

(c) ***Prerequisite Components:***

- 4.07—Position Description
- 4.08—Support Position Description
- 4.18—Equipment Requirements.

(d) ***Using Components:***

- 5.28—Communications Network Requirements
- 5.31—Facility Planning
- 5.33—System Reliability Measures Description
- 5.34—System Performance Monitoring Capabilities
- 5.35—System Validation Test Plan
- 5.36—System Certification Test Plan
- 5.37—System Conversion Plan
- 5.38—System Overview - Detail Design
- 6.01—PSS Verification Test Instructions
- 6.03—System Validation Test Instructions
- 6.05—Position Procedures
- 6.06—Support Position Information
- 6.20—Student Course Material
- 6.21—Instructor Course Material.

5.27 *Transportation Specifications (System Design):*

(a) ***Purpose***—This component specifies the means selected for transporting system data, and provides information for using existing arrangements and/or for establishing new services.

(b) ***Specifications***—For each transportation service required, the following is included as applicable:

(1) A description of the service, including the provider's name, contact, address, telephone, etc.

(2) Transportation requirements, which will be met by the service (eg, mode, timings, etc).

(3) Contracts or agreements which must be entered or altered, including performance requirements and penalties for noncompliance.

(4) Information which must be supplied to the provider of the service (eg, scheduling, data media, size, weight, special security, or handling, etc).

(5) Procedures for establishing a new service, or for sharing an existing one, and lead time requirements.

(6) Basic and special service costs.

(c) ***Prerequisite Components:***

- 4.07—Position Description
- 4.08—Support Position Description
- 4.20—Transportation Requirements
- 5.08—Manual File Specification
- 5.10—CSS File Specification.

(d) ***Using Components:***

- 5.31—Facility Planning
- 5.32—System Controls Description
- 5.33—System Reliability Measures Description
- 5.34—System Performance Monitoring Capabilities
- 5.35—System Validation Test Plan
- 5.36—System Certification Test Plan
- 5.37—System Conversion Plan
- 5.38—System Overview - Detail Design
- 6.01—PSS Verification Test Instructions
- 6.03—System Validation Test Instructions
- 6.10—DPC Job Media Distribution.

5.28 *Communication Network Specification (Internal Data Network Support):*

(a) ***Purpose:*** This component specifies the communication network configuration required to transmit system data. It identifies the use of shared networks, and provides information for ordering new facilities.

(b) ***Specifications:***

(1) Type of network (eg, dial-up, private line, etc).

(2) A network diagram, showing:

(a) Specific locations being connected (eg, address, room number, etc).

(b) Network configuration

(c) Termination interfaces (eg, control unit or terminal type, etc).

(3) Types and quantities of modems, and options to be used.

(4) Identification of existing networks which are shared, and new network requirements.

(5) For new requirements, ordering information and lead times.

(6) A cost breakdown for the network.

(c) ***Prerequisite Components:***

- 4.23—Communications Network Requirements
- 5.09—Physical Record Specification
- 5.10—CSS File Specification
- 5.11—Physical Segment Specification
- 5.12—Data Set Group Specification
- 5.13—Physical Data Base Specification
- 5.26—Equipment Specifications.

(d) ***Using Components:***

- 5.31——Facility Planning
- 5.32—System Controls Description
- 5.33—System Reliability Measures Description
- 5.34—System Performance Monitoring Capabilities
- 5.35—System Validation Test Plan
- 5.36—System Certification Test Plan
- 5.37—System Conversion Plan
- 5.38—System Overview - Detail Design
- 6.02—CSS Verification Test Instructions
- 6.03—System Validation Test Instructions.

5.29 *DPC Hardware Specifications (Hardware Support):*

(a) ***Purpose***—This component identifies the hardware which has been selected to meet the application's processing requirements.

(b) ***Specifications***—For each hardware requirement (eg, mainframe, memory, disk unit, tape drive, etc), the following is provided as applicable:

(1) Type of hardware, including vendor name and model number, and quantity needed.

(2) Special feature numbers.

(3) A description of diagram of how the hardware interfaces with other hardware.

(4) Requirements not met by the hardware.

(5) For shared hardware, the utilization requirements (eg, CPU usage, tape drive hours used, number of dial-up ports needed, etc).

(c) ***Prerequisite Components:***

- 4.21—DPC Hardware Requirements
- 5.09—Physical Record Specification
- 5.10—CSS File Specification
- 5.11—Physical Segment Specification
- 5.12—Data Set Group Specification
- 5.13—Physical Data Base Specification
- 5.16—Program Specification.

(d) ***Using Components:***

- 5.30—Software Specification
- 5.32—System Controls Description
- 5.33—System Reliability Measures Description
- 5.34—System Performance Monitoring Capabilities
- 5.35—System Validation Test Plan
- 5.36—System Certification Test Plan
- 5.37—System Conversion Plan
- 5.38—System Overview - Detail Design
- 6.02—CSS Verification Test Instructions
- 6.03—System Validation Test Instructions.

5.30 *Software Specifications (Software Support):*

(a) ***Purpose***—This component identifies the software that has been selected as best meeting the system's requirements, and provides ordering and installation information to the DPC planning and support functions.

(b) ***Specifications***—Most general software is specified in Section 007-203-100. Rules for Centrally Developed Systems, according to the hardware vendor, or defined by an Operating Company or local standards. For general software not covered by these, and for special software, the following should be provided as applicable:

(1) Title or name of package, including vendor name and product number

(2) Special feature numbers

(3) Hardware resource requirements

(4) Required supporting software

(5) List of available documentation.

(c) ***Prerequisite Components:***

- 4.22—Software Requirements
- 5.09—Physical Record Specification
- 5.10—CSS File Specification
- 5.11—Physical Segment Specification
- 5.12—Data Set Group Specification
- 5.13—Physical Data Set Specification
- 5.29—DPC Hardware Specifications.

(d) ***Using Components:***

- 5.32—System Controls Description
- 5.33—System Reliability Measures Description
- 5.34—System Performance Monitoring Capabilities
- 5.35—System Validation Test Plan
- 5.37—System Conversion Plan
- 5.38—System Overview - Detail Design
- 6.02—CSS Verification Test Instructions
- 6.03—System Validation Test Instructions
- 6.12—DPC Job Restart Procedures
- 6.14—Job Control Language
- 6.15—Recovery Procedures.

5.31 ***Facility Planning (System Design):***

(a) ***Purpose***—This component details the work area requirements for each user location, and graphically depicts the interconnection of equipment and its placement in the work area.

(b) ***Specifications***—For each work area, the following is included as applicable:

(1) A floor plan indicating the placement of equipment (eg, desks, file cabinets, terminals, printers, modems, typewriters, etc).

(2) General requirements, including as applicable:

(a) Overall space requirements

(b) Lighting

(c) Noise level tolerances

(d) Personnel facilities.

(3) Specific environmental requirements for each equipment type, including as applicable:

(a) Space (including clearances for access and cooling)

(b) Power

(c) Temperature, humidity, and dust tolerances

(d) Floor loading capacities.

(4) A diagram of interconnections among the equipment (eg, terminal clusters, modem connections, etc).

(5) Physical modifications or new facilities which will be required, individuals or organizations responsible, and a schedule for implementing the physical plan.

(6) Security provisions.

(c) ***Prerequisite Components:***

- 4.07—Position Description
- 4.18—Equipment Requirements
- 4.19—Facility Requirements
- 5.03—Position Grouping into Jobs
- 5.05—Organizational Considerations
- 5.08—Manual File Specification
- 5.26—Equipment Specifications
- 5.27—Transportation Specifications
- 5.28—Communications Network Specifications.

(d) ***Using Components:***

- 5.32—System Controls Description
- 5.37—System Conversion Plan
- 5.38—System Overview - Detail Design
- 6.03—System Validation Test Instructions
- 6.07—Administrative Requirements.

5.32 ***System Controls Description (System Design):***

(a) ***Purpose***—This component identifies the control procedures which have been designed to ensure system quality (eg, processing accuracy and timeliness, security, integrity, efficiency, etc).

(b) ***Specifications***—For each area of processing (eg, transaction type, functional subsystem, etc), the following is included:

(1) A brief description of the controls which have been designed into the system (eg, edits, output checks, audit trails, exception reports, security procedures, etc).

(2) The purpose of each control (ie, performance levels it is designed to ensure, data it is designed to protect, exception conditions it is designed to catch, etc).

(3) If performance is out of tolerance, or attempts have been made to violate security, a brief description of the corrective action which the control triggers.

(4) Position, program, or administrative function in which each control resides.

(c) ***Prerequisite Components:***

- 3.09—Potential Problem Areas
- 3.10—System Controls Description
- 4.02—System Output Specification
- 4.03—System Input Specification
- 4.07—Position Description
- 4.08—Support Position Description
- 4.10—Program Description
- 5.01—Position Specification
- 5.02—Support Position Specification
- 5.16—Program Specification
- 5.27—Transportation Specifications
- 5.28—Communications Network Specifications
- 5.29—DPC Hardware Specifications
- 5.30—Software Specifications
- 5.31—Facility Planning.

(d) ***Using Components:***

- 5.35—System Validation Test Plan
- 5.36—System Certification Test Plan
- 5.38—System Overview - Detail Design
- 6.03—System Validation Test Instructions
- 6.04—System Certification Test Instructions
- 6.07—Administrative Requirements
- 6.13—DPC Job Output Control
- 6.26—Operating Agreements
- 8.02—System Performance Evaluation.

5.33 *System Reliability Measures Description (System Design):*

(a) ***Purpose:*** This component identifies the system features designed to ensure reliability and continuity. It supports administration of the system.

(b) ***Specifications:***

(1) A description of the reliability measures designed into the system (eg, fallback, recovery, reconstruction, reconfiguration, data retention, etc), and their interrelationships.

(2) The purpose of each procedure (ie, system performance being ensured, malfunction, disruption, or disaster being provided for, etc).

(3) Guidelines for the use of each procedure.

(4) Responsibility for initiating and executing each procedure, and reporting requirements.

(5) Positions and/or programs in which the reliability measures reside.

(c) ***Prerequisite Components:***

- 3.09—Potential Problem Areas
- 3.11—System Reliability Requiremennts
- 4.02—System Output Specification
- 4.03—System Input Specification
- 4.07—Position Description
- 4.08—Support Position Description
- 4.10—Program Description
- 5.01—Position Specification
- 5.02—Support Position Specification
- 5.16—Program Specification
- 5.26—Equipment Specifications
- 5.27—Transportation Specifications
- 5.28—Communications Network Specification
- 5.29—DPC Hardware Specifications
- 5.30—Software Specifications.

(d) ***Using Components:***

- 5.35—System Validation Test Plan
- 5.36—System Certification Test Plan
- 5.38—System Overview - Detail Design
- 6.03—System Validation Test Instructions
- 6.04—System Certification Test Instructions
- 6.07—Administrative Requirements
- 6.12—DPC Job Restart Procedures
- 6.15—Recovery Procedures
- 6.26—Operating Agreements
- 8.02—System Performance Evaluation.

5.34 *System Performance Monitoring Capabilities (System Design):*

(a) ***Purpose:*** This component identifies system performance which must be maintained, and describes the management reports, outputs, etc, for monitoring it.

(b) ***Specifications:***

(1) A description of system performance which must be measured, acceptable performance levels, and the penalties for failing to maintain them.

(2) A description of the system's capabilities for monitoring performance, such as:

(a) Indices

(b) Work summaries

(c) Performance or results summaries

(d) Exception reporting

(e) Other management reports, outputs, etc,

(3) Guidelines for interpreting the information and statistics which are produced.

(c) ***Prerequisite Components:***

- 3.09—Potential Problem Areas
- 3.10—System Control Requirements
- 3.11—System Reliability Requirements
- 4.02—System Output Specification
- 4.03—System Input Specification
- 4.07—Position Description
- 4.08—Support Position Description
- 4.10—Program Description
- 5.01—Position Specification
- 5.02—Support Position Specification
- 5.16—Program Specification
- 5.26—Equipment Specifications
- 5.27—Transportation Specifications
- 5.28—Communications Network Specifications
- 5.29—DPC Hardware Specifications
- 5.30—Software Specifications.

(d) ***Using Components:***

- 5.35—System Validation Test Plan
- 5.36—System Certification Test Plan
- 5.38—System Overview - Detail Design
- 6.03—System Validation Test Instructions
- 6.04—System Certification Test Instructions
- 6.07—Administrative Requirements
- 6.26—Operating Agreements
- 8.02—System Performance Evaluation.

5.35 *System Validation Test Plan (Test):*

(a) ***Purpose:*** This component provides an overview of the system validation testing performed to test the logical correctness of the system in its operating environment.

(b) ***Specifications:***

(1) Identification of each validation test to be performed, the PSS position(s) and CSS job(s) or subsystem involved, and the objectives of the test.

(2) Scheduled start and completion dates for each test, and dependencies on other tests.

(3) A general description of the techniques to be used for each test.

(4) Overall resource requirements for system validation testing (personnel, hardware, software, facilities, etc).

(5) Test data base requirements for system validation testing (eg, files, inputs, outputs, on-line scripts, etc).

(6) A brief description of any differences between the testing environment (eg, hardware, software, personnel, etc) and ultimate operating environment, including any assumptions about the validity of the testing environment, and conditions which testing does not validate.

(c) ***Prerequisite Components:***

- 2.05—System Objectives
- 4.02—System Output Specification
- 4.03—System Input Specification
- 4.04—Subsystem Function Structure
- 4.11—Logical Record Specification
- 4.12—Logical Segment Specification
- 4.13—Logical Data Base Specification
- 4.16—System Test Plan
- 5.01—Position Specification
- 5.06—PSS Verification Test Plan
- 5.07—Form Specification
- 5.08—Manual File Specification
- 5.09—Physical Record Specification
- 5.10—CSS File Specification
- 5.11—Physical Segment Specification
- 5.12—Data Set Group Specification
- 5.13—Physical Data Base Specification
- 5.14—Group/Element Specification
- 5.16—Program Specification
- 5.18—CSS Job Specification
- 5.19—CSS Job Flow
- 5.20—CSS Flow
- 5.21—CSS Verification Test Plan
- 5.23—Training Specification
- 5.24—Training Overview
- 5.26—Equipment Specifications
- 5.27—Transportation Specifications
- 5.28—Communications Network Specifications
- 5.29—DPC Hardware Specifications
- 5.30—Software Specifications
- 5.32—System Controls Description
- 5.33—System Reliability Measures Description
- 5.34—System Performance Monitoring Capabilities.

(d) ***Using Components:***

- 5.36—System Certification Test Plan

- 5.37—System Conversion Plan
- 6.03—System Validation Test
- 6.04—System Certification Test Instructions
- 6.25—System Validation Test Results.

5.36 *System Certification Test Plan (Test):*

(a) ***Purpose:*** This component provides an overview of the system certification testing conducted to certify the performance of the system (run times, turnaround, response times, resource utilization, etc) under operating conditions (operational volumes and schedules, etc).

(b) ***Specifications:***

(1) Identification of each certification test to be performed, the PSS position(s) and CSS job(s) or subsystem involved, and the objectives of the test.

(2) Scheduled start and completion dates for each test, and dependencies on other tests.

(3) A general description of the techniques to be used for each test.

(4) Overall resource requirements for system certification testing (personnel, hardware, software, facilities, etc).

(5) Test data base requirements for system certification testing.

(6) A brief description of any differences between the testing environment and conditions (eg, hardware, software, personnel, test volumes, equipment and hardware utilization, etc) and the ultimate operating environment and conditions, including any assumptions about the validity of the testing, and conditions which testing does not certify.

(c) ***Prerequisite Components:***

- 2.05—System Objectives
- 4.02—System Output Specification
- 4.03—System Input Specification
- 4.04—Subsystem Function Structure
- 4.11—Logical Record Specification
- 4.12—Logical Segment Specification
- 4.13—Logical Data Base Specification
- 4.16—System Test Plan
- 5.01—Position Specification
- 5.02—Support Position Specification
- 5.06—PSS Verification Test Plan
- 5.07—Form Specification
- 5.08—Manual File Specification
- 5.09—Physical Record Specifications
- 5.10—CSS File Specification
- 5.11—Physical Segment Specification
- 5.12—Data Set Group Specification
- 5.13—Physical Data Base Specification
- 5.14—Group/Element Specification
- 5.16—Program Specification
- 5.18—CSS Job Specification
- 5.19—CSS Job Flow
- 5.20—CSS Flow
- 5.21—CSS Verification Test Plan
- 5.23—Training Specification
- 5.24—Training Overview
- 5.26—Equipment Specifications
- 5.27—Transportation Specifications
- 5.28—Communications Network Specifications
- 5.29—DPC Hardware Specifications
- 5.30—Software Specifications
- 5.32—System Controls Description
- 5.33—System Reliability Measures Description
- 5.34—System Performance Monitoring Capabilities

- 5.35—System Validation Test Plan
- 5.37—System Conversion Plan.

(d) ***Using Components:***

- 5.37—System Conversion Plan
- 6.03—System Validation Test Instructions
- 6.04—System Certification Test Instructions
- 7.01—System Certification Test Results.

5.37 *System Conversion Plan (System Design):*

(a) ***Purpose:*** This component provides operating groups with the information required for a smooth and coordinated conversion to the new system.

(b) ***Specifications:***

(1) A description of the overall conversion strategy for installing the new system, and for phasing out any existing systems it replaces. Included is an overall schedule and major milestone.

(2) A checklist of documents and products required to convert and operate the system (eg, run books, position procedures, plans and schedules, operating agreements, etc).

(3) A data conversion plan, if applicable, including:

(a) A description of the data conversion effort (eg, data to be converted, source(s), purification and translation requirements, etc) including detailed schedules.

(b) Positions and programs for converting the data, and any special guidelines required for on-time use.

(c) Resource requirements (eg, personnel, hardware, software, equipment).

(d) Interdependencies with other conversion activities.

(4) A PSS conversion plan, if applicable, including:

(a) A description of the PSS conversion effort, highlighting the impact which the new system has on the organization and its personnel. Included are detailed schedules for reorganizations, personnel availability and training, and position installation.

(b) Guidelines for accomplishing organization changes, and for converting positions.

(c) Guidelines for implementing physical planning (eg, work space, environment, equipment acquisition and/or installation, etc).

(d) Interdependencies with other conversion activities.

(5) A CSS conversion plan, if applicable, including:

(a) A description of the CSS conversion effort, highlighting the impact of the new system on computer operating groups (eg, DPC), and including detailed schedules for CSS conversion.

(b) Guidelines for installing and testing hardware, support software, and the CSS jobs and programs.

(c) Interdependencies with other conversion activities.

(6) Guidelines for coordinating required changes in other systems.

(c) ***Prerequisite Components:***

- 2.01—Existing Environment
- 4.15—System Conversion Requirements
- 4.24—System Overview - Preliminary Design
- 5.01—Position Specification
- 5.02—Support Position Specification
- 5.03—Position Grouping into Jobs
- 5.04—System Personnel Guidelines
- 5.05—Organizational Considerations
- 5.08—Manual File Specification
- 5.10—CSS File Specification
- 5.12—Data Set Group Specification
- 5.13—Physical Data Base Specification
- 5.20—CSS Flow

- 5.24—Training Overview
- 5.26—Equipment Specifications
- 5.27—Transportation Specifications
- 5.28—Communications Network Specifications
- 5.29—DPC Hardware Specifications
- 5.30—Software Specifications
- 5.31—Facility Planning
- 5.35—System Validation Test Plan
- 5.36—System Certification Test Plan.

(d) ***Using Components:***

- 5.36—System Certification Test Plan
- 6.04—System Certification Test Instructions
- 7.02—Completion Agreements.

5.38 *System Overview - Detail Design (System Design):*

(a) ***Purpose***—This component provides a concise overview of the system as seen at the end of Detail Design Phase. It provides information to those who will be involved in or impacted by its operation.

(b) ***Specifications***—The overview describes the systems architecture and characteristics, basic operation and capabilities, and includes:

(1) A general description of the system's purpose and intended usage.

(2) A statement of the system's impact on the organization, its personnel and operating procedures.

(3) A general description of the inputs to and outputs from the system, and the data base(s) within the system.

(4) A diagram of the system, showing its general architecture, its major positions and programs, and the flow of data among them.

(5) Overall schedules for system availability and processing, and processing cycles (eg, daily, monthly, etc).

(6) A general overview of the strategies and schedules for converting positions and implementing organization changes.

(7) A general overview of data conversion strategies and schedules, identifying major classes of data to be converted, its source, and briefly describing the positions and programs to be used.

(8) Overall resource requirements for personnel, facilities, equipment, hardware, software, transportation, and telecommunications networks.

(c) ***Prerequisite Components:***

- 4.24—System Overview - Preliminary Design
- 5.03—Position Grouping into Jobs
- 5.04—System Personnel Guidelines
- 5.05—Organizational Considerations
- 5.08—Manual File Specification
- 5.10—CSS File Specification
- 5.12—Data Set Group Specification
- 5.13—Physical Data Base Specification
- 5.19—CSS Job Flow
- 5.20—CSS Flow
- 5.22—Hardware Sizing Guidelines
- 5.24—Training Overview
- 5.26—Equipment Specifications
- 5.27—Transportation Specifications
- 5.28—Communications Network Specifications
- 5.29—DPC Hardware Specifications
- 5.30—Software Specifications
- 5.31—Facility Planning
- 5.32—System Controls Description
- 5.33—System Reliability Measures Description
- 5.34—System Performance Monitoring Capabilities.

(d) ***Using Component:***

- 5.39—Status and Recommendations.

5.39 *Status and Recommendations (System Design):*

(a) ***Purpose:*** This component summarizes the status of the system and project at the end of the Design Phase. It provides the Design team with a vehicle for formal recommendations. It presents an overall picture of Design Phase activities, costs, schedules, and results.

(b) ***Specifications:***

(1) A report on the actual schedule, costs, project team makeup, and other resources used in the Detail Design Phase. Any significant deviations from the phase plan are to be highlighted and explained.

(2) A description of the system as seen at the end of the Detail Design, highlighting and explaining any major modifications to the system design, and any significant changes to the system objectives, scope, constraints, or worth.

(3) A recommendation for the disposition of the project (continue development, defer development, cancel, recycle through an earlier phase) along with documentation of the reason and the recommendations.

(c) ***Prerequisite Components:***

- 4.26—Status and Recommendations
- 5.38—System Overview - Detail Design.

(d) ***Using Components:***

- 6.27—Status and Recommendations
- 8.04—Development Effort Evaluation.

6. IMPLEMENTATION PHASE COMPONENTS

COMPONENT NETWORK DIAGRAM

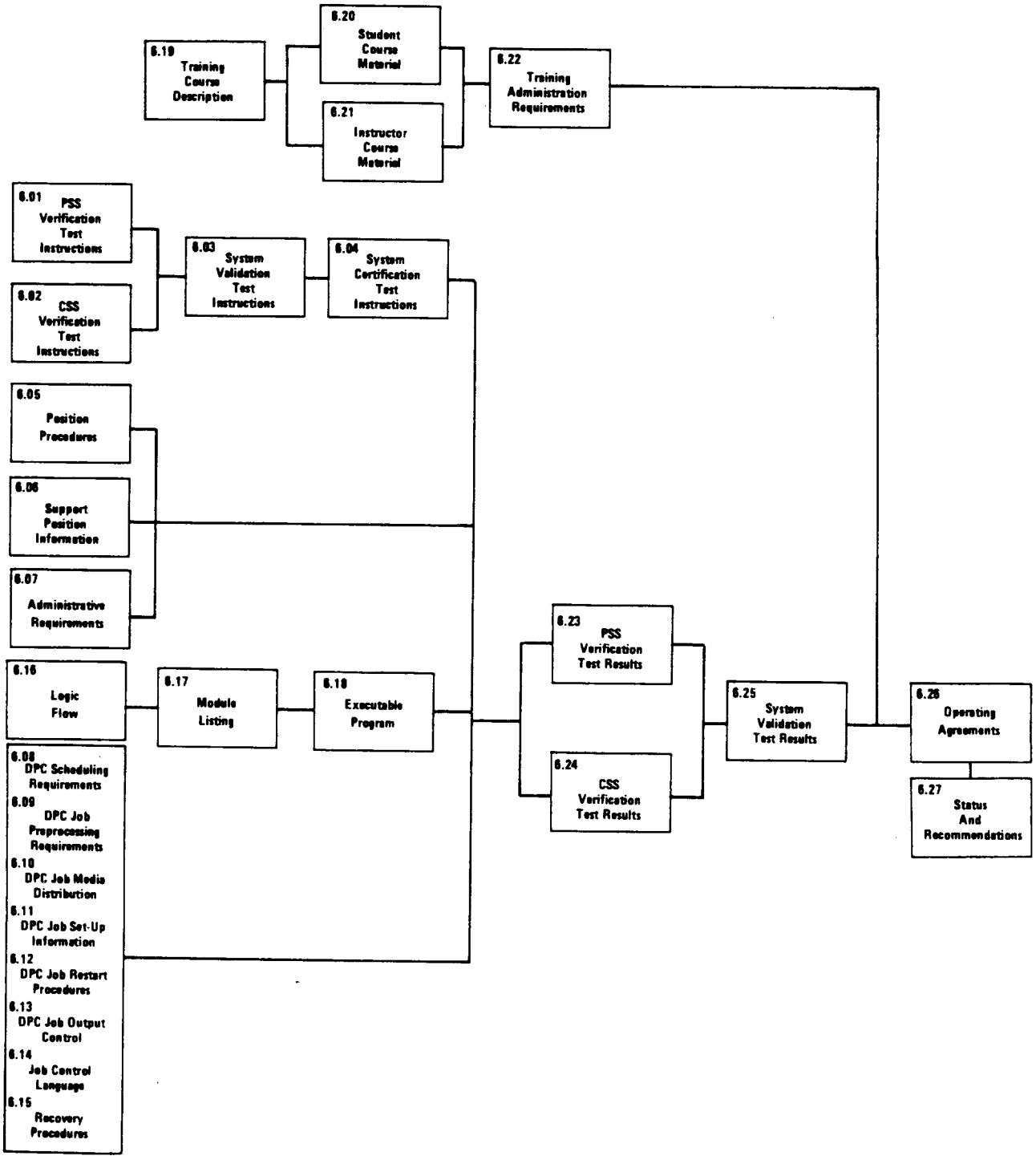

Fig. 6—Implementation Phase Component Network Diagram

COMPONENT CHECKLIST

____ 6.01—PSS Verification Test Instructions
____ 6.02—CSS Verification Test Instructions
____ 6.03—System Validation Test Instructions
____ 6.04—System Certification Test Instructions
____ 6.05—Position Procedures
____ 6.06—Support Position Information
____ 6.07—Administrative Requirements
____ 6.08—DPC Scheduling Requirements
____ 6.09—DPC Job Preprocessing Requirements
____ 6.10—DPC Job Media Distribution
____ 6.11—DPC Job Set-Up Information
____ 6.12—DPC Job Restart Procedures
____ 6.13—DPC Job Output Control
____ 6.14—Job Control Language
____ 6.15—Recovery Procedures
____ 6.16—Logic Flow
____ 6.17—Module Listing
____ 6.18—Executable Program
____ 6.19—Training Course Description
____ 6.20—Student Course Material
____ 6.21—Instructor Course Material
____ 6.22—Training Administration Requirements
____ 6.23—PSS Verification Test Results
____ 6.24—CSS Verification Test Results
____ 6.25—System Validation Test Results
____ 6.26—Operating Agreements
____ 6.27—Status and Recommendations

COMPONENT SPECIFICATIONS

6.01 *PSS Verification Test Instructions (Test):*

(a) ***Purpose***—This component provides instructions to the tester for conducting each PSS verification test, states the conditions for the test, and identifies specific resource requirements.

(b) ***Specifications***—For each PSS verification test:

(1) Identification of the position or task(s) being tested.

(2) Objectives of the test.

(3) Test data (inputs, job aids, data bases, references, etc).

(4) Techniques and procedures to be used for conducting the test (eg, pretest instructions, data to collect, debriefing, etc).

(5) Test analysis procedures and expected results (outputs, error handling, data base updates, etc).

(6) Conditions upon which the test is dependent (eg, other tests, prerequisite training, environmental conditions).

(7) Relationships and interfaces with other PSS verification tests.

(8) Resources required for the test (personnel, materials, facilities, and equipment). Note those operational resources which will be available and used for testing, and those which are simulated.

(9) Plan for documentation and distribution of test results.

(c) ***Prerequisite Components:***

- 4.02—System Output Specification
- 4.03—System Input Specification
- 4.14—PSS/CSS Interface Specification
- 5.01—Position Specification
- 5.02—Support Position Specification
- 5.06—PSS Verification Test Plan
- 5.07—Form Specification
- 5.08—Manual File Specification
- 5.26—Equipment Specifications
- 5.27—Transportation Specifications.

(d) ***Using Components:***

- 6.03—System Validation Test Instructions
- 6.04—System Certification Test Instructions
- 6.23—PSS Verification Test Results.

6.02 *CSS Verification Test Instructions (Test):*

(a) ***Purpose***—This component provides instructions to the tester for conducting each CSS component and system verification test, states the conditions for the test, and identifies specific resource requirements.

(b) ***Specifications***—For each CSS verification test:

(1) Identification of the modules, programs, jobs, or subsystem to be tested.

(2) Objectives of the test.

(3) Test data (inputs, data bases, etc).

(4) Test analysis procedures and expected results (outputs, error messages, updates, etc).

(5) Techniques and procedures to be used for conducting the test.

(6) Conditions upon which the test is dependent.

(7) Interfaces with other CSS verification tests.

(8) Resources required for the test (hardware, software, personnel, etc).

(9) Plan for documentation and distribution of test results.

(c) ***Prerequisite Components:***

- 4.02—System Output Specification
- 4.03—System Input Specification
- 4.11—Logical Record Specification
- 4.12—Logical Segment Specification
- 4.13—Logical Data Base Specification
- 4.14—PSS/CSS Interface Specification
- 5.09—Physical Record Specification
- 5.10—CSS File Specification
- 5.11—Physical Segment Specification
- 5.12—Data Set Group Specification
- 5.13—Physical Data Base Specification
- 5.15—Module Specification
- 5.16—Program Specification
- 5.17—Messages and Codes
- 5.19—CSS Job Flow
- 5.21—CSS Verification Test Plan
- 5.28—Communications Network Specifications
- 5.29—DPC Hardware Specifications
- 5.30—Software Specifications.

(d) ***Using Components:*** None

6.03 ***System Validation Test Instructions (Test):***

(a) ***Purpose***—This component provides instructions to the tester for conducting each system validation test, states conditions for the test, and identifies specific resource requirements.

(b) ***Specifications***—For each system validation test:

(1) Identification of PSS positions and CSS jobs or subsystems involved in the test.

(2) Objectives of the test.

(3) Test data (inputs, data bases, job aids, etc).

(4) Test analysis procedures and expected results (outputs, error handling, data base updates, recovery capabilities, security, etc).

(5) Techniques and procedures used for conducting the test.

(6) Conditions upon which the validity of the test is dependent (eg, other tests, prerequisite training, operating environment conditions).

(7) Relationships and interfaces with other validation tests.

(8) Resources required for the test (personnel, hardware, software, materials, etc).

(c) ***Prerequisite Components:***

- 4.02—System Output Specification
- 4.03—System Input Specification
- 4.11—Logical Record Specification
- 4.12—Logical Segment Specification
- 4.14—PSS/CSS Interface Specification
- 5.01—Position Specification
- 5.02—Support Position Specification
- 5.07—Form Specification
- 5.08—Manual File Specification
- 5.09—Physical Record Specification
- 5.10—CSS File Specification
- 5.11—Physical Segment Specification
- 5.12—Data Set Group Specification
- 5.13—Physical Data Base Specification
- 5.16—Program Specification
- 5.19—CSS Job Flow
- 5.24—Training Overview
- 5.26—Equipment Specifications
- 5.27—Transportation Specifications
- 5.28—Communications Network Specifications
- 5.29—DPC Hardware Specifications
- 5.30—Software Specification
- 5.31—Facility Planning
- 5.32—System Controls Description
- 5.33—System Reliability Measures Description
- 5.34—System Performance Monitoring Capabilities
- 5.35—System Validation Test Plan
- 5.36—System Certification Test Plan
- 6.01—PSS Verification Test Instructions
- 6.02—CSS Verification Test Instructions.

(d) ***Using Components:***

- 6.04—System Certification Test Instructions
- 6.25—System Validation Test Results.

6.04 ***System Certification Test Instructions (Test):***

(a) ***Purpose***—This component provides instructions to the tester for conducting each system certification test, states the conditions for the test, and identifies specific resource requirements.

(b) ***Specifications***—For each system certification test:

(1) Identification of the PSS positions and CSS jobs or subsystems involved in the test.

(2) Objectives of the test.

(3) Test data (inputs, data bases, job aids, etc).

(4) Test analysis procedures and expected results (outputs, data base updates, error handling, recovery capabilities, security, etc).

(5) System performance specifications (eg, run times, response criteria, schedule commitments, resource utilization, output quality, etc).

(6) Techniques and procedures for conducting the test.

(7) Conditions upon which the validity of the test is dependent (volumes, prerequisite training, the operating environment, etc).

(8) Relationships and interfaces with other certification tests.

(9) Resources required for the test (personnel, hardware, software, material, etc).

(10) Plan for documentation and distribution of test results.

(c) ***Prerequisite Components:***

- 4.02—System Output Specification
- 4.03—System Input Specification
- 5.08—Manual File Specification
- 5.10—CSS File Specification
- 5.12—Data Set Group Specification
- 5.13—Physical Data Base Specification
- 5.24—Training Overview
- 5.32—System Controls Description
- 5.33—System Reliability Measures Description
- 5.34—System Performance Monitoring Capabilities
- 5.35—System Validation Test Plan
- 5.36—System Certification Test Plan
- 5.37—System Conversion Plan
- 6.03—System Validation Test Instructions.

(d) ***Using Component:***

- 7.01—System Certification Test Results.

6.05 *Position Procedures (Position Development):*

(a) ***Purpose***—This component provides, for each position, the instructions and supporting information needed to perform the position.

(b) ***Specifications***—For each position:

(1) Position identification.

(2) The detailed procedures and decisions for those positions which are step by step in nature, or guidelines for those positions which are not highly proceduralized.

(3) Performance aids which are in document form, and references to other performance aids required by the position. For each performance aid, a description of its use.

(4) Copies of or references to instructions for equipment used by the position.

(5) Indices, glossaries, and references as required.

(c) ***Prerequisite Components:***

- 5.01—Position Specification
- 5.04—System Personnel Guidelines
- 5.07—Form Specification
- 5.08—Manual File Specification
- 5.23—Training Specifications
- 5.26—Equipment Specifications.

(d) ***Using Components:***

- 6.07—Administrative Requirements
- 6.19—Training Course Description
- 6.20—Student Course Material
- 6.21—Instructor Course Material.

6.06 ***Support Position Information (Position Development):***

(a) ***Purpose***—This component provides information to support positions which are outside the application, but which require information about the application to support its operation (eg, keypunch, typing, distribution, etc).

(b) ***Specifications***—For each support position, as applicable:

(1) A description of the tasks which the support position will perform, including both the tasks which are performed normally by the position, and tasks which are unique for the application.

(2) Schedules (cyclical or demand) and volumes of work.

(3) Inputs the position received, including source, content, format, media, and volumes. Source document form numbers. Samples may be included.

(4) Outputs the position produced or processed, including destination, content, format, media, and volumes. Special quality requirements are specified. Samples may be included.

(5) Performance aids, as required.

(6) Special equipment requirements and unusual equipment utilization demands.

(c) ***Prerequisite Components:***

- 4.08—Support Position Description
- 5.02—Support Position Specification
- 5.07—Form Specification
- 5.08—Manual File Specification
- 5.23—Training Specification
- 5.26—Equipment Specification.

(d) ***Using Components:*** None

6.07 ***Administrative Requirements (Position Development):***

(a) ***Purpose***—This component identifies the responsiblities of management positions for administering system functions, and provides administrative procedures and guidelines for the positions and jobs to be managed.

(b) ***Specifications***—For each management position, as applicable:

(1) Responsibilities of the management position for the system, and detailed descriptions of guidelines and procedures for accomplishing the assigned responsibilities.

(2) Overviews of positions and jobs performed by subordinates, and their relationships. Also included are minimum skill requirements, training available, and staffing considerations for each position or job.

(3) Identification of forms, reports, and other inputs, outputs, and data for which the inputs, outputs and data for which the management position is responsibile, identified by name, media, and source or destination. Included are guidelines for quality control.

(4) System schedules, and guidelines for administering, including:

(a) Sources, volumes, and due times for inputs

(b) Execution times for people and machines, and resource requirements

(c) Destinations, volumes, and schedules for outputs.

(5) Control information, including:

(a) Procedures for verifying system performance (eg, accuracy, security) and guidelines for executing

(b) Procedures for correcting error conditions

(c) Procedures for recovery from system or component failure

(d) Contingency plan for backup of system functions.

(6) Highlighting of critical tasks and data for which the management position is responsible.

(7) Contacts (names, addresses, telephone numbers) and conditions under which they are to be called.

(c) ***Prerequisite Components:***

- 4.07—Position Description
- 5.03—Position Grouping into Jobs
- 5.05—Organizational Considerations
- 5.24—Training Overview
- 5.31—Facility Planning
- 5.32—System Controls Description
- 5.33—System Reliability Measures Description
- 5.34—System Performance Monitoring Capabilities
- 6.05—Position Procedures
- 6.06—Support Position Information.

(d) ***Using Components:***

- 6.19—Training Course Description
- 6.20—Student Course Material
- 6.21—Instructor Course Material
- 6.26—Operating Agreements.

6.08 *DPC Scheduling Requirements (Programming):*

(a) ***Purpose***—This component provides DPC Operations and DPC Scheduling with the information required to schedule the computer jobs.

(b) ***Specifications***—The following information is provided for each job:

(1) Job, name, and number.

(2) Frequency (daily, weekly, monthly).

(3) Schedule or event which causes the job to be run.

(4) Approximate execution times, and any nonlinear properties or discontinuities of programs within the job which cause execution times to be disproportionate to transaction or data volumes.

(5) Resources required for the job, and any nonlinear properties or discontinuities of programs within the job which cause resource consumption to be disproportionate to transaction or data volumes.

(a) Memory required (in K-bytes)

(b) Devices (types and numbers)

(c) Print and punch volumes (for calculating space spool and output device requirements).

(6) Data requirements, including:

(a) Data set name and numbers

(b) When input data sets are available, and when output data sets are due.

(7) Sequence of execution (identification of jobs which must run before and after this job, and conditions under which this job should and should not run).

(8) Identification of highly critical scheduling requirements.

(c) ***Prerequisite Components:***

- 4.10—Program Description
- 5.18—CSS Job Specification
- 5.19—CSS Job Flow
- 5.20—CSS Flow.

(d) ***Using Component:***

- 6.26—Operating Agreements.

6.09 ***Job Preprocessing Requirements (Programming):***

(a) ***Purpose***—This component provides DPC Input/Output Control with the instructions required to prepare the computer job for processing.

(b) ***Specifications***—For each job the following is included:

(1) Job, name, and number.

(2) Instructions for selecting and determining variable options, parameters, and data set information (eg, punching volume serial numbers into JCL).

(c) ***Prerequisite Components:***

- 5.16—Program Specification
- 5.17—Messages and Codes
- 5.18—CSS Job Specification
- 5.19—CSS Job Flow
- 5.20—CSS Flow.

(d) ***Using Components:*** None

6.10 *DPC Job Media Distribution (Programming):*

(a) ***Purpose***—This component provides DPC Input/Output Control with instructions for preparation and distribution of all CSS job media.

(b) ***Specifications***—For each job, the following is included:

(1) Job, name, and number.

(2) Name and type of output media (printouts, tapes, COM, fiche, etc).

(3) Preparation instructions (bursting, collating, interpretation, binding, etc).

(4) Labeling and delivery information.

(5) Special instructions.

(c) ***Prerequisite Components:***

- 5.16—Program Specification
- 5.17—Messages and Codes
- 5.18—CSS Job Specification
- 5.19—CSS Job Flow
- 5.20—CSS Flow
- 5.27—Transportation Specifications.

(d) ***Using Component:***

- 6.26—Operating Agreements.

6.11 *DPC Job Set-up Information (Programming):*

(a) ***Purpose***—This component provides DPC Input/Output Control with the information required to set up each computer job for execution.

(b) ***Specifications***—For each job, the following is included:

(1) Job, name, and number.

(2) Frequency of execution.

(3) Approximate execution time.

(4) Data set identification (inputs, outputs, files, data bases, etc):

(a) Data set name (DD name) and volume serial number

(b) Device required (tape, disk, etc)

(c) Source and destination

(d) Retention.

(5) Printer set-up information:

(a) Paper requirements (form number, number of parts, etc)

(b) Carriage tape, print train, form control buffer, print buffer, etc).

(6) Special set-up instructions.

(c) ***Prerequisite Components:***

- 5.10—CSS File Specification
- 5.12—Data Set Group Specification
- 5.13—Physical Data Set Specification
- 5.16—Program Specification
- 5.17—Messages and Codes
- 5.18—CSS Job Specification
- 5.19—CSS Job Flow
- 5.20—CSS Flow.

(d) ***Using Components:*** None

6.12 *DPC Job Restart Procedures (Programming):*

(a) ***Purpose***—This component provides DPC Operations with instructions to be followed if the job must be restarted or rerun.

(b) ***Specifications***—For each job, the following is included:

(1) Conditions under which the job should be and should not be restarted or rerun.

(2) If a checkpoint is used:

(a) Program identification

(b) Frequency of checkpoint

(c) Checkpoint file name, and whether it is overlaid or accumulative.

(3) Special instructions for restarting or rerunning the job:

(a) Utilities or special programs that must be run

(b) Previous jobs and/or programs that must be rerun

(c) Data sets which must be cataloged/uncataloged

(d) Instructions for preparing any job control statements that are required for restart or rerun.

(c) ***Prerequisite Components:***

- 5.16—Program Specification
- 5.17—Messages and Codes
- 5.18—CSS Job Specification
- 5.19—CSS Job Flow
- 5.20—CSS Flow
- 5.30—Software Specifications
- 5.33—System Reliability Measures Description.

(d) ***Using Components:*** None

6.13 *DPC Job Output Control (Programming):*

(a) ***Purpose***—This component provides DPC Operations with the requirements and instructions for manually verifying the accuracy of computer output, and advises actions to be taken as a result of a program message or error condition.

(b) ***Specifications***—For each job, the following is included:

(1) A list of verification checks to be performed.

(2) Methods to be used, and instructions for verifying the output. Methods include:

(a) Program messages

(b) Volume limits (eg, number of printed pages)

(c) Totals to be checked.

(3) Actions to be taken if an error is detected.

(c) ***Prerequisite Components:***

- 5.16—Program Specification
- 5.17—Messages and Codes
- 5.18—CSS Job Specification
- 5.19—CSS Job Flow
- 5.20—CSS Flow
- 5.32—System Controls Description.

(d) ***Using Component:***

- 6.26—Operating Agreements.

6.14 *Job Control Language (Programming):*

(a) ***Purpose***—This component provides DPC Operations with the job control material and information (JCL and listings) required to initiate and run the computer job.

(b) ***Specifications***—For each job, the following is included:

(1) Job, name, and number.

(2) Control card deck (JCL), and a printed listing of the job control statements.

(3) Identification of library members and cataloged procedures on which control card images reside, and printed listings of the card images.

(c) ***Prerequisite Components:***

- 5.16—Program Specifications
- 5.17—Messages and Codes
- 5.18—CSS Job Specifications
- 5.19—CSS Job Flow
- 5.20—CSS Flow
- 5.30—Software Specifications.

(d) ***Using Components:*** None

6.15 *Recovery Procedures (Programming):*

(a) ***Purpose:*** This component provides DPC Operations and Data Base Administration with instructions for recovery and restoration, to ensure data base integrity and allow normal system operations to resume.

(b) ***Specifications:***

(1) Identification of data bases and files for which recovery procedures exist.

(2) A description of the options available for recovery or restoration of each data base and file, and guidelines for using each option. Conditions under which each data base or file should be and should not be recovered or restored is specified.

(3) Detailed instructions for executing each recovery procedure:

(a) Utilities and special programs that must be run, including instructions for preparing any job control statements which are required

(b) Data sets to be cataloged/uncataloged

(c) Previous jobs and/or programs which must be rerun, and identification of data which must be reentered.

(4) Administrative procedures to be followed when recovery or restoration procedures are used (eg, user notification, programmer involvement, etc).

(c) ***Prerequisite Components:***

- 5.16—Program Specification
- 5.17—Messages and Codes
- 5.18—CSS Job Specification
- 5.19—CSS Job Flow
- 5.20—CSS Flow
- 5.30—Software Specifications
- 5.33—System Reliability Measures Description.

(d) ***Using Component:***

- 6.26—Operating Agreements.

6.16 ***Logic Flow (Programming):***

(a) ***Purpose***—This component establishes the detailed processing steps, decisions, and flow, within a module, that are required for source coding.

(b) ***Specifications***—For each module, the following is included:

(1) Data used and its origin.

(2) Data created and its destination.

(3) Reads, writes, and calls to the data base.

(4) Processing steps, decisions, and sequence of flow.

(5) Linkage to other modules.

(c) ***Prerequisite Components:***

- 5.15—Module Specification
- 5.16—Program Specification.

(d) ***Using Components:***

- 6.17—Module Listing
- 6.18—Executable Program.

6.17 *Module Listing (Programming):*

(a) ***Purpose***—This component provides a readable computer-produced list of the statements executed when the module is run. It is used for making modifications to the source module.

(b) ***Specifications***—For each module, the following is included:

(1) Source statements.

(2) Cross-reference listing.

(3) External references.

(4) Procedure division map.

(c) ***Prerequisite Component:***

- 6.16—Logic Flow.

(d) ***Using Components:*** None

6.18 ***Executable Program (Programming):***

(a) ***Purpose:*** The executable program enables DPC Operations to process system data in accordance with design specifications.

(b) ***Specifications:*** Computer executable code (object code) with all external references resolved.

(c) ***Prerequisite Components:***

- 4.11—Logical Record Specification
- 4.14—Logical Segment Specification
- 5.15—Module Specification
- 5.16—Program Specification
- 6.16—Logic Flow.

(d) ***Using Components:*** None

6.19 *Training Course Description (Training Development):*

(a) ***Purpose***—This component provides management with the training course information needed to determine the training requirements of subordinates.

(b) ***Specifications***—For each course, the following is included:

(1) Course name and number.

(2) Description of the intended audience for the course.

(3) A general narrative description of the topics covered.

(4) Course and unit objectives.

(5) Student qualifications and prerequisite courses.

(6) Course length (average time if course is self-paced, and maximum time for dummies).

(c) ***Prerequisite Components:***

- 5.23—Training Specification
- 5.24—Training Overview
- 6.05—Position Procedures
- 6.07—Administrative Requirements.

(d) ***Using Components:*** None

6.20 ***Student Course Material (Training Development):***

(a) ***Purpose***—This component provides the student with the material and information required to take the course.

(b) ***Specifications***—For each course, the following is included:

(1) Course and unit objectives and tests.

(2) Course and unit schedules.

(3) Handouts, training aids, and reference material.

(4) Case study material.

(5) References to additional course related information (books, standards, etc).

(c) ***Prerequisite Components:***

- 5.23—Training Specification
- 5.24—Training Overview
- 5.26—Equipment Specification
- 6.05—Position Procedures
- 6.07—Administrative Requirements.

(d) ***Using Components:*** None

6.21 ***Instructor Course Material (Training Development):***

(a) ***Purpose***—This component provides the instructor with the information and materials needed to conduct the class, seminar, or workshop.

(b) ***Specifications***—For each course, the following is included:

(1) A detail lesson plan, including background material to aid the instructor.

(2) Guidelines for administering the course, such as:

(a) Class size

(b) Size of work groups for exercises

(c) Schedules.

(3) Instructions for the use of student materials, exams, training aids, instructor answer masks, foils, film strips, slides, movies, tape recordings, etc.

(4) Specifications for classroom equipment such as screens, vugraphs, projectors, audio equipment, chalkboards, easels, study carrels, and classrooms.

(c) ***Prerequisite Components:***

- 5.23—Training Specification
- 5.24—Training Overview
- 5.25—Course Evaluation and Maintenance
- 5.26—Equipment Specifications
- 6.05—Position Procedures
- 6.07—Administrative Requirements.

(d) ***Using Components:*** None

6.22 ***Training Administration Requirements (Training Development):***

(a) ***Purpose:*** This component provides management with the information required to plan and implement the training program.

(b) ***Specifications:***

(1) Instructor requirements, including:

(a) The number of instructors needed to teach the courses associated with the system

(b) Education and experience requirements

(c) Instructor training prerequisites.

(2) Detailed information on units within a course that must be modified or enhanced in accordance with local practices.

(3) Ordering information for the purchase of material and supplies. This includes item name, quantities, manufacturer, part number (if applicable), price and other pertinent ordering information.

(4) A course schedule which provides details on time, place, instructor, class size, and recommended number of trainees for the entire program (when available).

(5) Student prerequisites.

(6) Course sequences.

(7) Course evaluation methods and criterial.

(c) ***Prerequisite Components:***

- 5.23—Training Specification
- 5.24—Training Overview
- 5.25—Course Evaluation and Maintenance.

(d) ***Using Components:***

- 6.22—Training Administration Requirements
- 6.26—Operating Agreements.

6.23 *PSS Verification Test Results (Test):*

(a) ***Purpose***—This component documents the results of each PSS task and position verification test.

(b) ***Specifications***—For each test, the following information is included:

(1) Comparison of actual versus expected results.

(2) Analysis of deviations from expected results, and identification of problems (procedural, documentation, environmental, etc).

(3) Actions to be taken as a result of the test.

(4) Special conditions and allowances which were made, and their impact on test results.

(5) Observations of performance and resource usage deficiencies.

(c) ***Prerequisite Components:***

- 5.06—PSS Verification Test Plan
- 6.01—PSS Verification Test Instructions.

(d) ***Using Component:***

- 6.25—System Validation Test Results.

6.24 *CSS Verification Test Results (Test):*

(a) ***Purpose***—This component documents the results of each CSS component and system verification tests.

(b) ***Specifications***—For each test, the following is included:

(1) Comparison of actual versus expected results.

(2) Analysis of deviations from expected results, and identification of problems.

(3) Actions to be taken as a result of the test.

(4) Special conditions and allowance which were made, and their impact on test results.

(5) Observations of performance and resource usage difficulties.

(c) ***Prerequisite Components:***

- 5.21—CSS Verification Test Plan
- 6.02—CSS Verification Test Instructions.

(d) ***Using Component:***

- 6.25—System Validation Test Results.

6.25 ***System Validation Test Results (Test):***

(a) ***Purpose***—This component documents the result of each system validation test.

(b) ***Specifications***—For each test, the following is included:

(1) Comparison of actual versus expected results.

(2) Analysis of deviations from expected results, and identification of problems.

(3) Actions to be taken as a result of the test.

(4) Special conditions and allowances which were made, and their impact on test results.

(5) Observations of performance and resource usage deficiencies.

(c) ***Prerequisite Components:***

- 5.35—System Validation Test Plan
- 6.03—System Validation Test Instructions
- 6.23—PSS Verification Test Results
- 6.24—CSS Verification Test Results.

(d) ***Using Components:***

- 6.26—Operating Agreements
- 7.01—System Certification Test Results
- 7.02—Completion Agreements
- 8.02—System Performance Evaluation.

6.26 *Operating Agreements (Project Management):*

(a) ***Purpose:*** This component records the mutual agreements among operating groups (users, DPC, support services, network control, etc) defining responsibilities and commitments.

(b) ***Specifications:***

(1) Identification of groups covered by the agreement.

(2) Media responsibilities and commitments, including:

(a) Input schedules

(b) Input collection and verification

(c) Output quality control

(d) Output distribution schedules.

(3) Performance responsibilities and commitments (including conditions and methods of measurement), such as:

(a) System availability and reliability

(b) Response time

(c) Measurement and reporting (indices, etc).

(4) Operational responsibilities and commitments, including:

(a) Identifying, isolating, reporting, and follow-up on system faults and troubles.

(b) Initiating, executing, and controlling fallback and recovery

(c) Initiating and implementing system changes

(d) Maintaining the system

(e) Training responsibilities (for conversion and operation).

(5) The billing and charge back arrangements among operating groups.

(6) A plan for maintaining the Operating Agreement, including:

(a) A review plan

(b) Procedures each group must follow to change the Operating Agreement

(c) A mechanism to arbitrate interpretation of responsibilities.

(c) ***Prerequisite Components:***

- 4.02—System Output Specification
- 4.03—System Input Specification
- 5.32—System Controls Description
- 5.33—System Reliability Measures Description
- 5.34—System Performance Monitoring Capabilities
- 6.07—Administrative Requirements
- 6.08—DPC Scheduling Requirements
- 6.10—DPC Job Media Distribution
- 6.13—DPC Job Output Control
- 6.15—Recovery Procedures
- 6.22—Training Administration Requirements
- 6.25—System Validation Test Results.

(d) ***Using Components:***

- 6.27—Status and Recommendations
- 7.01—System Certification Test Results
- 7.02—Completion Agreements
- 8.02—System Performance Evaluation.

6.27 *Status and Recommendations (Project Management):*

(a) ***Purpose:*** This component summarizes the status of the project and of the system at the end of Implementation Phase. It presents an overall picture of the Implementation Phase activities, costs, schedules, and results. It is the Implementation team's vehicle for formal recommendations.

(b) ***Specifications:***

(1) A report of the actual schedules, costs, project team makeup, and other resources used during Implementation Phase, highlighting any significant changes to the phase plan.

(2) Current system status, including:

(a) A summary of the testing results and actions to be taken.

(b) The status of both deliverable and nondeliverable documentation.

(3) A description of changes to the Detail Design specification which were mandated during the Implementation Phase. Reasons for the changes are included. Their impact on project worth, schedules, and developmental and operational costs are stated.

(4) A recommendation for the disposition of the project (eg, convert, defer for further testing, modify the system, etc) along with documented reasons for the recommendation. Recommended schedules are included.

(c) ***Prerequisite Components:***

- 5.39—Status and Recommendations
- 6.26—Operating Agreements.

(d) ***Using Components:***

- 7.03—Status and Recommendations
- 8.04—Development Effort Evaluation.

7. CONVERSION PHASE COMPONENTS

COMPONENT NETWORK DIAGRAM

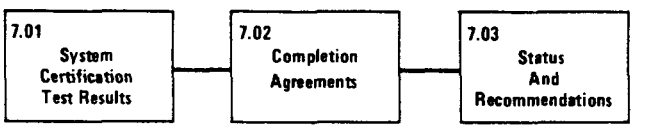

Fig. 7—Conversion Phase Component Network Diagram

COMPONENT CHECKLIST

____ 7.01—System Certification Test Results
____ 7.02—Completion Agreements
____ 7.03—Status and Recommendations

COMPONENT SPECIFICATIONS

7.01 *System Certification Test Results (Test):*

(a) ***Purpose***—This component documents the result of each system certification test.

(b) ***Specifications***—For each test, the following is included:

(1) Actual test results, including the variables measured (eg, system performance, run times, response times, etc) and their values.

(2) Analysis of deviations from expected results, and identification of problems (eg, procedural problems, design faults, program bugs, training deficiencies, etc).

(3) Actions to be taken as a result of the test.

(4) Special conditions and allowances which were made, and their impact on the test results.

(c) ***Prerequisite Components:***

- 5.36—System Certification Test Plan
- 6.04—System Certification Test Instructions
- 6.25—System Validation Test Results
- 6.26—Operating Agreements.

(d) ***Using Components:***

- 7.02—Completion Agreements
- 7.03—Status and Recommendations
- 8.02—System Performance Evaluation.

7.02 ***Completion Agreements (Project Management):***

(a) ***Purpose:*** This component is the formal documentation of system acceptance by those who operate and use the system. It specifies the agreed to schedule for resolving remaining problems, and identifies items for maintenance.

(b) ***Specifications:***

(1) Problems encountered during certification testing, and agreements for their resolution, including a correction schedule.

(2) Items for maintenance.

(3) Dates on which the system or parts of the system begin operation and enter the maintenance mode of the life cycle

(4) A sign-off on the above items by the development project manager, user operations, DPC operations, maintenance manager, and others as necessary.

(5) Schedules for any remaining conversion activities.

(c) ***Prerequisite Components:***

- 5.37—System Conversion Plan
- 6.25—System Validation Test Results
- 6.26—Operating Agreements
- 7.01—System Certification Test Results.

(d) ***Using Components:***

- 7.03—Status and Recommendations
- 8.02—System Performance Evaluation
- 8.04—Development Effort Evaluation
- 8.05—User Attitude Evaluation.

7.03 *Status and Recommendations (Project Management):*

(a) ***Purpose:*** This component summarizes the status of the system and project at the end of the Conversion Phase. It is the conversion team's vehicle for formal recommendations.

(b) ***Specifications:***

(1) A report on the actual schedules, costs, project team makeup, and other resources used during the Conversion Phase. Any significant deviations from the phase plan are highlighted.

(2) A description of the system as seen at the end of the Conversion Phase. Negotiated changes to the system's performance specifications or operating agreements are listed and explained. Their impact, if any, on system objectives, costs, and worth are analyzed.

(3) A recommendation for the disposition of the system (proceed into operation, defer operation, abandon) and for the disposition of the project (continue development, end development, resolve problems), along with documented reasons to support the recommendation.

(4) A recommendation for the scheduling of a Performance Review.

(c) ***Prerequisite Components:***

- 6.27—Status and Recommendations
- 7.01—System Certification Test Results
- 7.02—Completion Agreements.

(d) ***Using Components:***

- 8.04—Development Effort Evaluation
- 8.06—Findings and Recommendations.

8. PERFORMANCE REVIEW PHASE COMPONENTS

COMPONENT NETWORK DIAGRAM

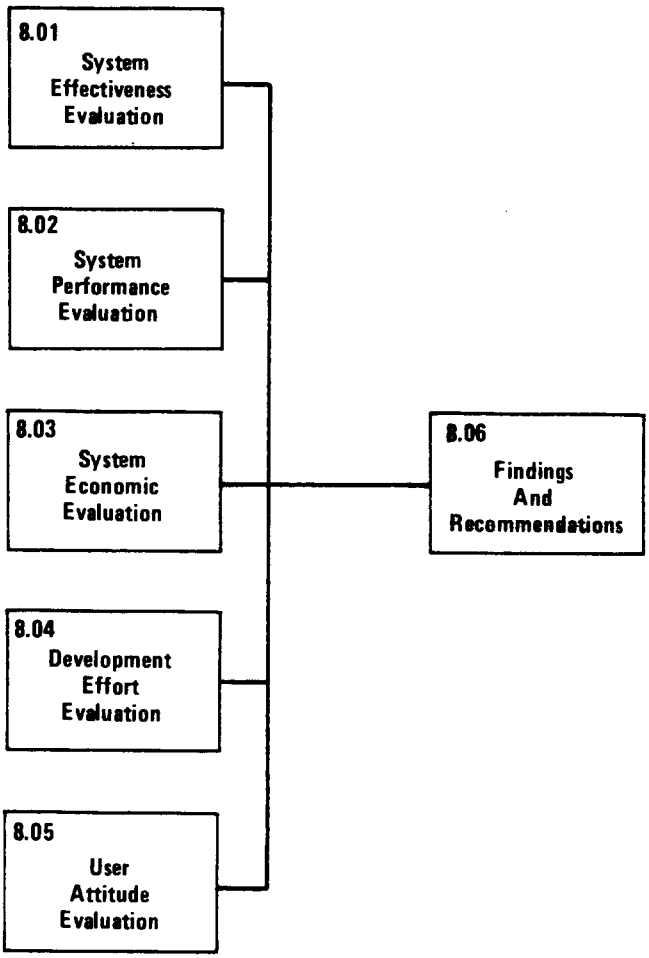

Fig. 8—Performance Review Phase Component Network Diagram

COMPONENT CHECKLIST

____ 8.01—System Effectiveness Evaluation
____ 8.02—System Performance Evaluation
____ 8.03—System Economic Evaluation
____ 8.04—Development Effort Evaluation
____ 8.05—User Attitude Evaluation
____ 8.06—Findings and Recommendations

COMPONENT SPECIFICATIONS

8.01 *System Effectiveness Evaluation:*

(a) ***Purpose:*** This component documents the effectiveness of the operational system in meeting its Business Objectives and resolving the problem/opportunities identified in Feasibility Phase.

(b) ***Specifications:***

(1) A description of how well the operational system is meeting each of its Business Objectives. A comparison of actual versus expected performance values of measurement criterial, and an analysis of deviations. A comparison of the operational system's effectiveness versus the old system.

(2) A description of how well the system has resolved each of the problem/opportunities identified during Feasibility Phase.

(3) A prognosis for system effectiveness in the future.

(4) A list of unanticipated benefits (from exceeding expected benefit levels, and from areas of benefit which were unforeseen).

(5) A list of any problems resulting from the new system.

(6) Recommendations for future development and additional system use which would enhance the system's effectiveness.

(c) ***Prerequisite Components:***

- 2.02—Problem/Opportunity Statement
- 2.10—Business Objectives
- 2.13—Economic Analysis
- 4.25—Refined Economic Analysis.

(d) ***Using Component:***

- 8.06—Findings and Recommendations.

8.02 ***System Performance Evaluation:***

(a) ***Purpose:*** This component documents how well the operational system is meeting the System Objectives for performance established in Feasibility and refined through the Design Phase. Problems with system performance (eg, efficiency, accuracy, reliability, security, operability, etc) and opportunities for enhancing performance are identified, and actions for improving performance recommended.

(b) ***Specifications:***

(1) A description of how well the operational system is meeting each of its System Objectives. A comparison of actual versus expected performance values and an analysis of deviations. An evaluation of the impact of inadequate or exceeded performance levels on system effectiveness and economics.

(2) An evaluation of the operational characteristics of the system (eg, reliability, availability, backup and recovery, security controls, accuracy controls, ease of operation, manageability, etc).

(3) An evaluation of PSS performance and training effectiveness (eg, productivity, quality of work, compliance with procedures, etc).

(4) An evaluation of CSS performance and DPC operating procedures (eg, resource usage, throughput, output quality, etc).

(5) An evaluation of the operational, economic, and technical adequacy of the design.

(6) An evaluation of the completeness and usefulness of operational documentation.

(7) Recommendations for changes (eg, procedural changes, resource changes, etc) to improve system performance which is inadequate, and to reduce excessive performance which is ineffective and uneconomical.

(c) ***Prerequisite Components:***

- 2.05—System Objectives
- 3.10—System Control Requirements
- 3.11—System Reliability Requirements
- 4.02—System Output Specification
- 5.32—System Controls Description
- 5.33—System Reliability Measures Description
- 5.34—System Performance Monitoring Capabilities
- 6.25—System Validation Test Results
- 6.26—Operating Agreements
- 7.01—System Certification Test Results
- 7.02—Completion Agreements.

(d) ***Using Components:***

- 8.04—Development Effort Evaluation
- 8.06—Findings and Recommendations.

8.03 ***System Economic Evaluation:***

(a) ***Purpose:*** This component compares the actual costs and economic benefits associated with system operation versus those estimated during development. It serves to highlight the differences between predicted and actual worth of the system, and to pinpoint where and why these differences occurred.

(b) ***Specifications:***

(1) A statement of the actual operating schedule and cost, highlighting, and explaining any significant deviations between planned and actual.

(2) A comparison of actual operating cost versus the old system.

(3) An evaluation of the system's benefits, highlighting and explaining any significant deviations between planned and actual (both positive and negative). Unanticipated economic benefits also should be included.

(4) A projection of future costs and economic benefits associated with continued operation and maintenance.

(5) A new present worth analysis.

(c) ***Prerequisite Components:***

- 2.13—Economic Analysis
- 4.25—Refined Economic Analysis.

(d) ***Using Component:***

- 8.06—Findings and Recommendations.

8.04 ***Development Effort Evaluation:***

(a) ***Purpose:*** This component evaluates the development effort in terms of the adequacy of the design, and the methods used for project administration and system development. It serves to highlight the strong points and the weak points of the effort, and to provide feedback for future projects on techniques, pitfalls, etc.

(b) ***Specifications:***

(1) A statement on the total project schedules, costs, and resource usage. Any significant deviations between actual and planned are highlighted and explained.

(2) An evaluation of the methods, procedures, and techniques used to administer the project. Areas to be included are planning, coordination within the project team, and controls on time, cost, and quality.

(3) An evaluation of the methods, procedures, and techniques used by the project team to develop and install the system. Areas to be included are data gatherings, design reviews, documentation techniques, change controls, testing procedures, etc.

(4) A report on the quality, completeness, and usefulness of the developmental and maintenance documentation.

(5) Recommendations to management and other project teams, including:

(a) Suggested improvements to standards, training, or support.

(b) Methods, procedures, and techniques that were especially successful, and conditions under which they might be used by future projects.

(c) Methods, procedures, and techniques that were unsuccessful conditions under which they failed, and why.

(b) Identification of pitfalls and areas which require controls and suggestions for the types of controls which might be appropriate.

(c) ***Prerequisite Components:***

- 2.12—Developmental Estimates
- 2.14—Findings and Recommendations
- 3.01—System Constraints
- 3.13—Findings and Recommendations
- 4.26—Status and Recommendations
- 5.39—Status and Recommendations
- 6.27—Status and Recommendations
- 7.02—Completion Agreements
- 7.03—Status and Recommendations
- 8.02—System Performance Evaluation.

(d) ***Using Component:***

- 8.06—Findings and Recommendations.

8.05 ***User Attitude Evaluation:***

(a) ***Purpose:*** This component evaluates the success of the operational system and its conversion as viewed by users and operators. It serves as a vehicle for recommending changes to enhance user satisfaction.

(b) ***Specifications:***

(1) An evaluation of user attitudes and feelings regarding the effectiveness of the system, in terms of the following:

(a) Suitability of the output (content, organization, format, etc)

(b) System performance (accuracy, timeliness, reliability, etc)

(c) Controls and Administration (security, trouble clearance, fallback, and recovery, etc)

(d) Confidence in system operation and results

(e) Responsiveness to maintenance and change requests

(f) Ease of operation and use.

(2) An evaluation of operator attitudes and feelings toward the system, in terms of the following:

(a) Ease of operation and use

(b) Usage problems

(c) Confidence in system operation and results.

(3) Recommendations for changes or future development which would increase user satisfaction.

(c) ***Prerequisite Component:***

- 7.02—Completion Agreements.

(d) ***Using Component:***

- 8.06—Findings and Recommendations.

8.06 *Findings and Recommendations:*

(a) ***Purpose:*** This component summarizes the results of the Performance Review Phase. It provides the performance review team with a vehicle with which to make formal recommendations for future projects and for the system under review.

(b) ***Specifications:***

(1) A summary report of system effectiveness, system performance, and user satisfaction.

(2) A summary report of the actual operating costs and benefits, and a comparison of actuals versus planned and versus the old system.

(3) A summary report of developmental costs and schedules, highlighting and explaining significant deviations from estimates.

(4) A summary report on the quality and completeness of system documentation.

(5) Recommendations for any changes in system operation, along with supporting documentation (operate as is, defer operations until changes are made, alter operating mode, abandon operation).

(6) Recommendations of items for maintenance versus future development.

(c) ***Prerequisite Components:***

- 7.03—Status and Recommendations
- 8.01—System Effectiveness Evaluation
- 8.02—System Performance Evaluation
- 8.03—System Economic Evaluation
- 8.04—Development Effort Evaluation
- 8.05—User Attitude Evaluation.

(d) ***Using Components:*** None