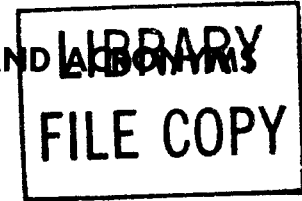# GLOSSARY OF SYSTEM DEVELOPMENT TERMS AND ACRONYMS

INFORMATION SYSTEMS

1. GENERAL

1.01 This section provides standard definitions for terms and acronyms used in, or related to, the System Development (007-2XX-XXX) series of Bell System Practices (BSPs).

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

1.03 This standard is applicable to developers of BSPs in the 007 (Information Systems) series. It is also intended to aid communication among planning, approval and control personnel, technical support personnel, the system development team, and operations and maintenance personnel, by establishing a common understanding of the terms used in the System Development series of BSPs.

1.04 It is not the intent of this section to include all data processing terms in general use. A list of references on general data processing terminology is provided in part 3.

2. DEFINITION OF SYSTEM DEVELOPMENT TERMS AND ACRONYMS

Acceptance Test

A specific type of test that determines the completeness, operability, and reliability of a system in the operating environment before it is formally accepted and put into operation. (See System Certification.)

Activity Network

A graphic representation of system development activities and their interrelationships. (See Program Evaluation Review Technique [PERT].)

Algorithm

A prescribed set of well-defined rules or processes for the solution of a problem in a finite number of steps.

Application Programs

A group of computer programs, sometimes called a computer system, which operate together in a unified manner to perform specified business or work functions.

Approval Authority, Project

The individual who, or organization which, determines the relative priority among organizational projects, the approval points for a project, and whether a given project is canceled, postponed, or approved to expend additional resources.

Audit, System

A set of activities, performed by auditors, to examine a system's operation, procedures, controls and documents, to evaluate the system controls that have been designed and implemented, and to identify any control or operational weaknesses. The audit activities cover both operational systems and ones under development.

Benchmark

A range of performance or statement of performance against which test results can be compared.

BSP

Bell System Practice.

Business Objective

An aspect of the corporate operations which a current or proposed system strives to support or accomplish, eg, reduced work force, increased customer satisfaction, reduced inventory levels, new capabilities, etc.

Centrally Developed System (CDS)

An information system developed and supported by AT&T, Bell Laboratories, Western Electric, or

a joint OTC venture for use by multiple associated companies. CDSs may be deployed or nondeployed.

Certification Testing

(See System Certification.)

Change Maintenance

Making alterations, ie, design changes to a system, within the context of its current system requirements (definition), in order to maintain a viable system. Such changes are based on influences outside the system, eg, rate changes, FCC/State regulatory directives, vendor-related situations. (See Maintenance.)

Change Management (CM)

An administrative process to control changes to a system and related products, during development and maintenance, without compromising the current objectives and requirements of the system. Change management activities include evaluating requests, prioritizing requests, scheduling work, packaging changes, etc.

Code

In data processing, the representation of data according to a predetermined set of rules, eg, transaction codes, heading codes, customer codes. May also refer to computer program instructions such as source code or object code.

Communications Media

The means of interaction within the system and between systems, eg, cards, tapes, paper forms, telephone, cathode-ray tube displays. They provide vehicles for persons and machines to communicate.

Communications Network

The channels of interaction between the components of a system or between systems. System data are transferred via the network to, or from, the system processes that are performed in different physical locations. Networks may be transportation networks (eg, mail delivery, shipping) or transmission networks (eg, analog, digital, or shortwave transmission).

Complementary Files

Complementary or auxiliary files are those files which are not the primary files of a system. They may contain the following types of data: reference data, data required to edit and validate system inputs, translation data (translating manual to machine codes and vice versa), data to be added to certain types of input records. Complementary files may be mechanized or manual.

Completion Agreement

The formal documentation of system acceptance by those who will operate and use the system. Prepared during the Conversion Phase of system development, it specifies the agreed schedule for resolving identified problems and identifies initial items for maintenance.

Component Verification

(See System Verification.)

Computer Subsystem (CSS)

The machine/software portion of a computer based system. The CSS includes all of the computer hardware and related equipment, control programs, and application programs required to perform the machine functions of the system. (See Personnel Subsystem.)

Computer Subsystem Design

The design of the system module(s), program(s), and computer job structure(s), development of the procedure specifications for application programs, and determination of hardware and software requirements for the application.

Computer Subsystem Verification Test

(See System Verification.)

Constraint, System Development

Any external or internal limitation on a system's development, installation, or maintenance, eg, interface requirements with other systems, company policies, Federal and State Regulatory requirements, or economic, hardware, and personnel resource availability.

Contingency Analysis

The identification of possible problems which could arise, eg, processing problems, potential errors, malfunctions, performance degradation, natural disasters, or other difficulties. Then determining the frequency and criticality of such occurrences, and deciding what can be done to eliminate, minimize, or accommodate these abnormalities. This analysis is required during the design of the computer and personnel subsystems.

Control

(See System Controls.)

Conversion Phase

The seventh phase of the Total System Development process. Actual planning for conversion starts in Preliminary Design Phase. In the Conversion Phase, records are created or converted to new forms, system personnel are trained, and the new system is installed under actual operating conditions. If the new system is replacing an existing one, the old system is phased out and the new system is phased in.

Cost/Benefit Analysis

An economic analysis of forecasted costs to develop a system and the benefits to be derived from a system's implementation. The analysis results help project approvers to determine the payoff for a project in comparison to its developmental costs and the costs for the present method of operation. Sometimes referred to as a worth analysis.

Critical Incident Technique

A method for isolating human behavior characteristics important to the performance of a particular job. Critical incidents are collected and then analyzed to determine the human behavior charcteristics essential for successful job performance.

Critical Path Method (CPM)

A procedure of planning the schedule of work for a project. The activities to be performed to complete the work are identified and the length of time to complete them is estimated on the basis of mini-

mum cost. The sequence in which the activities must be performed forms a series of paths. The longest path is called the critical path and determines the time required to complete the project.

CRT

Cathode Ray Tube, eg, the display device of a Computer Terminal such as a DATASPEED® 40 terminal.

CSD

(See Computer Subsystem Design.)

CSS

(See Computer Subsystem.)

Cycle

The time interval when a set of events is completed, or a set of operations are repeated regularly in the same sequence (these operations may be subject to variations on each repetition). It may also refer to the unit of time required for a computer to perform a basic function (machine cycle).

Data

Representations of facts, concepts, or instructions in a form suitable for communication, interpretation, or processing by humans or mechanized means.

Data (Logical Viewpoint)

Considers data within the context of the application which uses them and independently of the physical devices on which they are stored.

Data (Physical Viewpoint)

Considers how the data are stored and accessed. The data does not have to be associated with any particular application.

Data Base

A collection of data stored within the boundaries of a system from which data can be retrieved. It has a degree of permanence and is stored within the system on: (1) A mechanized file(s), eg, disk,

magnetic tape; (2) A manual file(s), eg, paper file, reference manual. A data base may contain complementary files as well as master files.

Data Base Administrator (DBA)

Person(s) responsible for the definition, organization, protection, and efficient access and use of data bases.

Data Base Design

The primary activities are to:

- Determine the system's data base requirements

- Analyze data, data relationships, and data usage requirements to develop logical data base specifications

- Determine physical file organization and use of physical storage devices

- Determine data access and retrieval methodologies

- Communicate requirements to corporate data base administration.

Data Base Management System (DBMS)

A software package which facilitates: (1) Changing the physical data structure of data elements, ie, adding new data elements, deleting existing ones, or altering the relationship among existing data elements, (2) Retrieval of data elements, (3) Updating data element values.

Data Catalog

A collection of data elements, data groups, data aggregates, or data models (logical views of data, entity-relations) which depict or define data as perceived by the user organization (void of any description of physical implementation in a data set or data base).

Data Communication

The transmission and receipt of data over communication channels and often including operations such as coding, decoding, and validation.

Data Dictionary

A collection of data elements, data groups, data aggregates, or structural models which depict or define data as required to be physically implemented in a data base or data set.

Data Element

The smallest intelligible piece of data as seen from a system user's viewpoint (eg, employee age, employee social security number).

Data Group

Two or more data elements, which take on a single meaning when grouped together (eg, the elements month, day, and year combined to form the data group date). Also called a chain.

Data Processing

The entire set of operations such as searching files, rearranging data, printing, editing, or other functions usually characterized as being highly repetitive and applied to large masses of data.

Data Properties

Characteristics of data such as:

- Context (name and meaning)

- Key (identifier)

- Position (length and sequence)

- Value (range, actual specific, numeric, alphabetic, alphanumeric, etc)

- Representation—(length, sequence, and grouping).

Data Set

This term can be used with two distinctly different meanings: (1) Equipment, usually referenced as a modem, serving as an interface unit between certain types of business machines and communications facilities, such as the telephone network, (2) A grouping of data groups/elements, commonly referenced as a (data base) file. (See also Logical Data Set and Physical Data Set.)

Data Structure

The arrangement of data elements which are interrelated to form a data organization reflecting the whole and the relationship of its parts.

Data System

(See Information System.)

Data Values

The set of representations assigned to a data element expressed in terms of range, actual specific, numeric, alphabetic, alphanumeric, etc.

Decision Analysis

The identification and inspection of activities which require a human or machine decision, and the determination of the best way to display or process the information needed to arrive at a correct decision.

Decision Tables

A documentation technique which is used to record multiple sets of conditions and corresponding actions derived during decision analysis. Decision tables are applicable to both manual and machine functions in a system.

Definition Phase

The third phase of the Total System Development process. In this phase all the system requirements are detailed, eg, inputs, outputs, data requirements, control and reliability requirements, and major functions. These system requirements define what the system will do to meet the objectives developed during the feasibility phase.

Deliverable Documentation

Documents which must accompany a system and be delivered to the system operators, users, maintenance personnel, support and staff personnel.

Deliverable System

(See Deployed System.)

Deployed System

A centrally developed system that is designed to be operated at a location(s) within the OTCs. The system, as developed, is maintained centrally. Previously referred to as a portable or delivered system.

Design

(See System Design.)

Design Specifications

Statement of detailed design decisions for subsystems (or components) within a system.

Detail Design Phase

The fifth phase of the Total System Development process. During this phase the design of the PSS and CSS, including the human/machine interfaces, are completed concurrently and the physical design specifications are prepared.

Development

(See Total System Development.)

Developmental Activities

Activities which must be performed during the various phases of Total System Development, eg, data collection, systems analysis, preparation of data flows or function flow charts, function analysis, preparation of input/output descriptions, preparation of a data dictionary, etc.

Developmental Documentation

Documents prepared primarily to serve system development needs. These documents may be considered internal to the project and in most cases are not delivered outside the developing organization.

Development Project

(See Project.)

Disaster Recovery

The operation of recovering from the effects of a computer facility disruption and restoring, in a preplanned manner, the capabilities of the facility.

Documentation

(See Deliverable or Developmental Documentation.)

Documentation Component

An informational module of system development documentation which can service diverse needs of various functional roles.

Documentation Package

Any set of documentation components which collectively serve a set of related needs of one or more users.

Downtime

The time interval during which a computer subsystem or a specific device, eg, terminal, computer input/output unit are malfunctioning due to hardware or software failure.

DPC

Data Processing Center.

Economic Feasibility

An analytic study which examines the financial viability of a system. It addresses questions like the following: "Will this proposed system return more dollar value in benefits than it costs to develop and operate?" and "What among the alternatives provides the most economical system operation?" Cost/benefit or worth analysis, value analysis, return on investments, and break-even point determination are some of the techniques frequently used.

Electronic Data Processing (EDP)

Data processing performed largely by electronic equipment.

End of Phase Reports

Documents produced at the end of each TSD phase by the project manager or team. These reports include the phase products and project status review to upper management. They also may be used to seek approval for project continuation.

Enhancement

A modification to an existing system which changes the basic operating objectives or require-ments of the system. Considered a new development effort, the design of enhancements requires recycling through the Total System Development process. Enhancements are initiated normally by a system change request.

Environment

The totality of circumstances, objects, or conditions under which a system operates. For example, it may include corporate policy, the equipment used by the user, workspace layout and conditions, DPC equipment and equipment layout, business conditions, legal requirements, and the number, type, skill/knowledge and characteristics of the people operating the system.

Equipment

Devices used in conjunction with the computer hardware, eg, terminals, card readers, printers, keyboards, key-disk, etc.

Fallback and Recovery

The operation of recovering from failures in any aspect of system operation, eg, hardware, software, data base, manual operations, communications, etc. Includes the providing of back-up through the storage of data bases on alternative storage devices. (See Disaster Recovery.)

Feasibility Phase

The second phase of the Total System Development process. It is concerned with transforming ideas and broad problem/opportunity statements into precise objectives and performance specifications to be met by the system. Alternative solutions (system models) for the problem/opportunity are developed and then examined to determine the economic, technical, and operational feasibility of each solution (model).

Field

A specified area of a document, record, or card allocated to a specific item of information, eg, a group of card columns used to represent a wage rate. (See Data Element.)

Flowchart

A graphic representation of a system, subsystem, or process in which symbols and text are used to represent processing, data, and flow.

Function

A series of processes leading to a definite end or purpose. Information systems contain three types of functions: (1) Data handling functions, which together produce system outputs from available inputs, (2) Integrity functions, which provide audit, control, recovery, reliability, etc, capability, (3) Management functions which permit systems control and administration.

Function Allocation

The process of assigning individual functions to people or machines based upon the requirements of the functions, economic and organizational considerations, and the capabilities of people and machines.

Function Analysis

The process of breaking down (decomposing) functions into smaller and smaller subfunctions with increased level of detail concerning the processing within the function and related input and output data.

Function Hierarchy

A technique to graphically depict functions at succeeding levels of detail. The vertical structure of the hierarchy depicts functional relationships on multiple horizontal planes. The functions on each plane are mutually exclusive and exhaustive.

Functional Role

A set of work activities and responsibilities which contribute to a system's development, maintenance, or operation. It emphasizes functions rather than job title and has specific skill/knowledge requirements, eg, project control, testing support, data base design, computer center operations.

Generic

(See New Generic and System Release.)

Goal

A statement, usually high-level, of economic and operational benefits which a corporation desires to achieve in a specific time frame. Goals result from analysis of business problems and opportunities considered from both short range and long range perspectives.

Hardware

The physical computer which processes data and interfaces with various equipment for the transfer of system data.

HIPO

Hierarchy plus Input-Process-Output. A graphic and textual tool used as an aid to analysis and design of information systems. A functional hierarchy (top-down) diagram is supported by an IPO diagram. Each IPO diagram portrays the inputs to, and outputs from, a process and describes the processing to be performed. This documentation tool is frequently used to document system analysis and function analysis activities.

Human Performance Engineering (HPE)

(See Personnel Subsystem Development.)

Implementation Phase

The sixth phase of the Total System Development process. Implementation is the phase in which the system (manual and machine) is constructed, according to the design specifications produced in the Detail Design Phase, and then fully tested to ensure that it meets the system requirements established in the Definition Phase.

Information Display

A structured visual display of information. An information display can be handwritten, typewritten, produced by a computer, printed by a teletypewriter, or displayed on a CRT device. Various media can be used to display the information, eg, preprinted forms, interpreted punched cards, microfilm, CRT device.

Information System

Includes all computer-based systems except those systems internal to Western Electric and Bell Laboratories and those integrated into the switching and transmission components of the network or

into customer products. Although some systems are called operations systems or operations support systems, they all will be referred to as information systems.

Input/Output Analysis

The process by which inputs to, and outputs from, a function or process are identified and differences in characteristics are noted. Lower level activities (processes) which are needed to act upon inputs to produce outputs are thereby identified.

Input, System

Data received by the system for processing or storage in order to prepare the required outputs. Inputs are received from people or machines, which are outside the boundaries of the system, by a variety of manual and mechanized means.

Interface

The point of contact between two processors, ie, person to person, person to machine, machine to machine. The human-machine interface is an example.

IPO

Input-Process-Output. The formatted textual documentation tool to support a functional Hierarchy Diagram. It displays the inputs and outputs of a function or set of functions and describes aspects of the underlying processing. (See HIPO.)

Job

A task or group of tasks which can be performed manually or by a computer. A manual job consists of one or more work modules (positions). A computer job is synonymous with a program or string of programs.

Job Aid

(See Performance Aid.)

Job Inventory

A method for identifying personnel resources with a comprehensive picture of the capabilities, experiences, and other characteristics which exist in a pool of employees.

Job Run

A single continuous performance of a computer process; one or more process activities executed consecutively as one computer operation.

Job Study

The identification of behavioral characteristics and requirements of a job by collecting data from an existing system, generally by content analysis, observation, interview, or questionnaire.

Key Data Field(s)

A particular field of data or combination of fields in a data record upon which a search or ordering process is based, eg, social security number, item number, name, etc.

Logical Data

See Data (Logical Viewpoint).

Logical Data Base

Data and their relationships as perceived by the system's users. It consists of names for data, classifications for grouping different data together, and a structure of relationship among the data items. The logical data base is conceptual and therefore is neither manual nor mechanized; it encompasses all data within the system. The logical data base is described in terms of information sets.

Logical Data Structure

Describes the organization of group/elements which is meaningful from the user/usage view(s).

Logical Information Set

The collection of logical records which are required to service a particular system process (eg, for the computer payroll process, a payroll logical information set could contain employee logical records and time sheet logical records). An information set may or may not contain all occurrences of various logical records, depending upon the way the user depicts the breakdown of the system process, eg, one payroll information set could contain only hourly paid employee records and their related time sheet records.

Logical Record

An organization of data groups/elements which describe an entity. For example, the entity employee could be described by a logical record containing the group/elements name, social security number, age, address, birthdate, and service date.

Logical Structure

Reflects the breakdown of the system into smaller parts without looking at the physical means used in operating these parts.

Maintenance

Activities performed on an existing system to continue, preserve, or retain the operation of the system in accordance with its current system requirements. Three types of maintenance currently defined are: (1) Change, (2) Preventive, (3) Repair.

Maintenance Release

A consolidated update of portions of a system containing accumulated fixes, imposed design changes, and minor enhancements which do not have significant economic or operational impact (based upon the judgement of the Project Manager) on the users and/or operators.

Manual Interface Design

An aspect of Human Performance Engineering which emphasizes the application of human factors data to the design of equipment, controls, displays, forms, performance (job) aids, work places and environment.

Mapping

A procedure used to relate logical relationships of entities, usually data, to one another.

Measurement Criteria

Requirements that designate in quantifiable terms how system performance will be measured; eg, criteria state what acceptable rate of error, degree of precision or under what conditions the system will meet the required performance in order for it to be successful. (See Performance Specifications.)

Media

(See Communications Media.)

Microfiche

Microfilm in the form of cards or chips, normally more efficient than roll film for mechanized information retrieval systems.

Microfilm

Photographic film, either 35- or 16-mm, used as a medium for storing business records or other information in a data retrieval system.

Milestone

A key start or completion date for an activity. It may be used as a checkpoint during the system development or maintenance process.

Model, System

The portrayal of a current or proposed system using a defined set of symbology and conventions, eg, flowcharts, blueprints, HIPO diagrams, data flow diagrams mathematical models, computer simulation. This representation shows the logical system/subsystem requirements for receiving, storing, processing, and distributing data.

Modification Request (MR)

An MR is the primary document, or record, of change management. It is used to report problems or request new capabilities (enhancements).

Module, Program

A logically self-contained and discrete part of a program that accepts input, carries out a defined set of processing actions, and produces output. A properly constructed module has a single entry point and single exit point and is a separately compilable entity. At times it may be equivalent to a computer subroutine.

Module/Program Test

(See System Verification.)

Network

(See Activity Network or Communications Network.)

New Generic (New Version)

A release with new functional capabilities which are expected to have significant economic, functional, or operational impact on OTC users and/or operations (ie, new staffing and training must be conducted, new hardware must be acquired, or a substantial change in CPU time or storage facilities is expected).

New System

The first release of a system which performs a new function or functions not performed by any existing systems, or the first release of a system which consolidates functions of, or totally replaces, some existing system or systems.

Nondeliverable System

(See Nondeployed System.)

Nondeployed System

A centrally developed system designed to be operated at a central location, eg, on AT&T Corporate Computer Center computers. The system, as developed, is maintained centrally. Previously referred to as a nonportable or nondeliverable system. (See Deployed System.)

Objectives

Statements of what must be accomplished for the corporate goals to be realized. An objective contains a statement of what must be done and a reference to specific performance criteria and measures that will permit evaluation of its accomplishment. Three types of objectives are: (1) Business objectives, (2) System objectives, (3) Project (developmental) objectives.

On-the-Job-Training (OJT)

Training which is administered while the trainee is performing the job.

On-Line System

A system in which the input data is transmitted to the computer directly from the point of origin and/or output data is transmitted directly to where it is required.

Operating Agreements

The mutual agreements among operating groups (users, DPC, support services, network control, etc) defining responsibilities and commitments, eg, operating schedules, bill-back arrangements, training responsibilities, etc. (See Service Agreements.)

Operational Feasibility

Examination of the probability of the proposed system operating successfully, as defined or designed, in the operational environment. Addresses questions, such as: Will the management and nonmanagement personnel accept the system or will they resist it? Can the people perform the manual functions efficiently and accurately? Is the system administratively viable?

Operations Support Systems (OSS)

Now referred to as Minicomputer Based Operations Systems. (See Operations Systems.)

Operations Systems (OS)

Hardware/software based systems designed to aid Operating Telephone Company operations such as engineering and network services (planning, engineering, provisioning, administration, message-recording, etc) and customer services (service order processing, assignment, directory, etc). (See Information Systems.)

Output, System

Information delivered (or available for delivery) by the system to recipients (people or machines) outside the system boundaries. Outputs are produced by any combination of subsystems within the system. They are delivered to their intended recipients by a variety of manual and mechanized means.

Output Data

Information items included on the outputs. Data to be delivered from a device or program, usually after some processing.

Outside Vendor

Any individual, partnership, corporation, etc, not part of the Bell System which provides informa-

tion systems equipment or services to some portion of the Bell System.

Password

A unique string of characters that a program, computer operator, or user must supply to meet security requirements before gaining access to data stored in a mechanized data base.

Performance Aid

A device or document which stores information required by a person on the job and which enhances their ability to perform a particular operation or class of operations.

Performance Criteria

Qualitative and quantitative indices of performance necessary to measure the success of a specified system, or parts of a system, eg, program, work module, or job. (See Measurement Criteria.)

Performance Review Phase

This is the eighth and last phase of the Total System Development process and is performed after the system has been operational for several months. The phase involves collection and analysis of data about the system performance (as compared with the system and business objectives), the user attitude toward the system, and the effectiveness of the development effort itself. The resulting report contains information about proposed maintenance or enhancement items, or may state that the system is performing exactly as specified. This phase closes the loop in development by evaluating if the system delivered by the developers is really the system specified during the progressive phases of Total System Development. The scope of the one-time Performance Review will probably be far broader than any ongoing performance tracking system that is established to periodically evaluate the system in operation.

Performance Specifications

Statements that specify performance required to meet the objectives and the measurement (performance) criteria, stated in terms of timeliness, efficiency, accuracy, usability, etc, to identify when

the required performance has been met. The specifications are quantified to state the value of the measurement sought and the time frame in which it is sought. (See also Performance Criteria.)

Periodic Release

(See System Release.)

Personnel Subsystem (PSS)

The portion of the system comprised of people who operate within the system and the points where people interface with the system at the system boundaries, including all related forms, displays, procedures, and training.

Personnel Subsystem Development (PSD)

The process of designing work modules, hardware/software interfaces that support the human performance of work, and the development of related forms, displays, procedures, and training.

Personnel Subsystem Verification Test

(See System Verification.)

PERT

(See Program Evaluation and Review Technique.)

Phase

(See System Development Phase.)

Physical Data

See Data (Physical Viewpoint).

Physical Data Base

A physical data base is the implementation of the logical data base into a form for physical storage, either machine or manual storage. It consists of representations of data values, locations of data groups or elements, and the functions necessary to manage the data and its transfer between processing and the physical data base. The physical data base may be either mechanized (disk files, tape files, etc) or manual (job files, paper files, desk index). Collectively the physical data bases encompass all the data within the system. A physical

data base is described in terms of physical data sets.

Physical Data Group/Elements

Generally the same set as the logical group/elements but are further defined according to their storage attributes (length, data type, etc).

Physical Data Set

A physical data set is the collection of physical records, stored on the same device, organized into a manageable resource from a human or machine viewpoint. It may contain all the records associated with a given logical record (person, job, skill, department) or all instances of a logical record (all persons in the company, all jobs in a department).

Physical Security

The protection of all elements of the processing environment from any disaster, man-made or natural, by employing the mechanical and human resources necessary to safeguard the company's assets.

Position

(See Work Module.)

Position Practice

(See Work Module Instruction.)

Preliminary Design Phase

The fourth phase of the Total System Development process in which the general architecture of the system is designed. System processes are examined to determine which should be performed by people and which are to be allocated to the computer and related software.

Preventive Maintenance

Actions taken with the specific intent to prevent faults from occurring and to maintain continuous system operation. Such activities are normally performed at the operational location. This includes activities to detect potential problems and initiate remedial actions that will prevent system degradation, eg, periodic maintenance checks, testing, performance monitoring, consultations. (See Maintenance.)

Process

A series of actions or operations (human or machine) directed towards a particular result. Processes receive input, use or maintain the data base and produce output. Processes are related to performance specifications which specify the timeliness, accuracy, efficiency, and usability of the process.

Processors

A functional unit that interprets and executes instructions, eg, processes are performed by processors. In the world of information systems, the processors are personnel and/or machines.

Program

A program is part of the Computer Subsystem and consists of a module or group of related modules. The related modules are usually performed within a given time duration, sequentially executed, operate on the same data and produce a desired result. A program is physically a set of computer executable object code with no unresolved external references.

Program Evaluation and Review Technique (PERT)

PERT is a method used to symbolically represent the sequence and time relationships among elements (activities) of a project. It involves the construction of a network diagram that illustrates these relationships. PERT can be used for scheduling, estimating time, cost budgeting, and monitoring project status.

Program Testing

Activities in which each computer program or module is tested, either individually or grouped, and the interface between it and all related programs is tested. (See System Verification.)

Project

A one-time effort with a specific objective and an identifiable termination point. It is planned, staffed, and controlled as a unique entity.

Project Director

The person appointed for overall coordination of a very large project or interdepartmental project involving multiple development groups.

Project Leader

A project participant who lends technical skill to project completion and usually manages a specific portion of the team effort.

Project Management

Usually a team effort to plan, organize, and control the system development, installation, and maintenance process from an administrative standpoint.

Project Management Plan

(Project or Phase) The overall project plan or phase plan(s) comprised of descriptions of the developmental activities to complete a project or phase of a project. Time frames for completion of activities, products to be produced and associated time frames, resources required, etc.

Project Manager

A member of the sponsoring organization, eg, in the AT&T General Departments, who has the responsibility for defining system requirements, overall project strategy, the work plan, activities, products, costs, budgets, schedules, system quality, and continued monitoring of system viability throughout the information system life cycle.

Project Scope

The estimated size of the project in terms of people, time, cost, and other resources based on the system objectives, requirements, and specifications.

Proposal Phase

The first phase of the Total System Development process in which a user organization analyzes its current operation, and identifies a problem/opportunity which requires mechanization, or finds a need to enhance, modify, or upgrade a current system (manual or mechanized).

Providers

This may be a person, another system, or group that is outside the system boundaries and that provides input to the system. Providers may directly interface with the system, eg, via a terminal. Providers may also be users of system outputs.

PSD

(See Personnel Subsystem Development.)

PSS

(See Personnel Subsystem.)

Q

(No definitions at this time.)

Real Time

Actual time occurrence of an event. For example, a real time control system is one in which operations are performed by the control equipment in time with a physical process such that the outputs obtained are useful in controlling that process.

Release Agency

The agency responsible for providing system delivery, installation support, and on-going maintenance (with participation by the development agency as required) for centrally developed systems.

Repair Maintenance

Actions taken to make corrections to a system and return it to operation, or maintain its operation, in accordance with system specifications. Repair maintenance activities are normally initiated by a trouble report submitted by the user. (See Maintenance.)

Response Time

The interval between the occurrence of an event and the response to that event, eg, the interval between a terminal operator taking a *send* action and receiving a system message at the terminal that the transmitted message or data was accepted or rejected. Typically, response time is composed

of queuing time, processing time, and transportation (or transmission) time.

Resources

Equipment, materials, personnel, money, information, etc, which can be drawn on, as needed, for the development, operation, and maintenance of a system.

Resource Leveling

The scheduling of work so as to minimize the difference between minimum resource requirements and peak or maximum resource requirements.

Service Agreement

A formal written commitment by system management, data services, and other organizations, eg, a system user, network services, data center, administrative services, that defines acceptable levels of service expected by the participants of operational computer-based systems.

Simulation

A process or a model designed to represent the functioning of a system or one system with another.

Skill/Knowledge Matrix

A list of all skills and knowledge required by a person to perform a specific work module (position) or job. A Skill/Knowledge Matrix is used as an aid in determining the type of people required for, and type of training to be given to, management and nonmanagement employees required to develop, convert, operate, or maintain a proposed system.

Soak, System

Refers to initial deployment of a new release or generic of a system for purposes of testing in a site environment (operational) prior to general availability to all user sites. (See also System Trial.)

SOE

Standard Operating Environment. This identifies the hardware/software environment which will process centrally developed and/or maintained products, eg, SOE-IBM (Section 007-203-101) and SOE Data Communications (Section 007-400-100).

Short Interval Scheduling

A technique used to arrange network activities in short intervals, eg, two weeks, to maintain better monitoring and control of project activities and products.

Software, System

The collection of computer programs and routines which augment the capability of a computer, eg, compilers, library routines, and operating systems. Software helps satisfy the processing requirements of the machine portion of a system.

Source Document

The original entry form from which input for a data processing system is derived. (See Input System.)

Specifications

Statements of how a particular piece of the system is to be accomplished. Specifications reflect the design decisions that have been made for the parts of the system, eg, System Input Specifications state how the information will look when it comes into the system.

Sponsoring Organization

The organization, eg, within the AT&T Segments/Departments, which represents the users of an information system during its developmental and operational life.

Static Data

Permanently retained data which is stored within the physical data base from one processing cycle to another. The data values usually remain relatively stable and are normally updated in time frames independent from the normal processing cycle.

Subsystem (or Component System)

A system within a system, such that, it possesses all of the characteristics of a system while being wholly contained within a larger system.

Symbology

The means by which ideas are expressed, eg, words, numbers, codes, characters, symbols.

System

An identified set of people and machines, linked by materials and information flows, working together according to a designed plan to support or achieve coporate goals/objectives.

System Analysis

A process to:

- Analyze the existing environment to identify problem/opportunity situations.

- Identify user needs to be addressed by the system.

- Develop alternative system models to satisfy user needs.

- Define informational, functional, and performance requirements of the new system.

- Define system boundaries and interfaces with other systems/projects.

System Boundary

Marks the outer limits of the total operational system. All processes within the system boundary are designed as part of the system. Activities beyond the system boundary may be influenced by the system but are not part of the system. Typical of such activities is the work performed by system user personnel. It is this work that the system has been designed to support and enhance.

System Certification

Testing performed in an operational environment to determine the acceptability of the system (computer and personnel subsystems) in regards to meeting objectives and performance specifications. Properties such as computer run time, resource utilization, output quality, terminal response time, human performance, training effectiveness, usefulness, and quality of personnel subsystem documentation (performance aids, reference material, etc) are tested to assure that they meet performance specifications.

System Controls

Those actions, processes, or physical barriers that ensure the accuracy, completeness, security, and continuity of system data and system operations.

System Design

An analysis and synthesis process to:

- Develop the system's functional requirements and architecture

- Allocate system functions to the appropriate resource (people or machines) to optimize system performance

- Analyze system functions to determine processing logic, system control, reliability, and recovery processes.

System design is performed at different levels of detail to serve different development objectives, eg, logical design and physical design. (See Preliminary Design Phase and Detail Design Phase.)

The term System Design is often used to denote the end product of the system design process.

System Developer

The organization designated as responsible for the design and construction of an information system.

System Development Team

A group of personnel comprised of various specialists who provide a multidisciplinary approach to systems development. (Reference Section 007-200-310, Functional Roles in a Systems Environment.)

System Input

(See Input, System.)

System Life Cycle

Is comprised of two primary stages: Development and Maintenance. Once a system has been developed, Proposal through Conversion Phases, and

becomes operational, it enters the maintenance stage which continues until the system is either retired, replaced, or redeveloped.

System Maintenance

(See Maintenance.)

System Objectives

A statement of intent to design for a particular purpose. It states what a system must accomplish in order to provide a solution for a recognized corporate problem and/or take advantage of an opportunity. System objectives therefore are based on corporate goals/objectives and support the attainment of the related business objectives.

System Operation

The daily operation of a developed system which continues until a replacement system must be developed, due to changes in state-of-the-art, economic considerations, growth, etc, and the new system has been put into operation.

System Output

(See Output, System.)

System Release

The initial release of a new system or release of a new version (new generic). For a new version it is an updating of the operational system allowing for the inclusion of user requested enhancements, modifications, or add-ons to the system. This may occur on a scheduled or as needed basis. Typically, system releases are used by vendors and central developers and may include updated software, documentation, hardware changes, and other related products. (See New Generic and New System.)

System Requirements

Statements of what the system must perform and produce to satisfy system and performance objectives. System requirements reflect the decisions made during the Definition Phase for the selected system model, eg, System Input Requirements state what information is required as input to the system.

System Trial

A negotiated agreement for trial deployment where an OTC installs and processes the functions of a centrally developed system to determine the operational and functional completeness of the system.

System Validation

The process of testing the logical correctness of the system in an operating environment. This includes an evaluation of the impact of the environment on the system and vice versa. The basic testing objectives are to:

- Verify that the system (computer and personnel subsystem) as a whole performs according to specifications established in earlier development stages.

- Determine the best operational arrangements of components of computer logic under ideal and controlled conditions.

- Determine that all interfaces (manual/machine, manual/manual, etc) are procedurally sound.

System Verification (Computer and Personnel Subsystem Tests)

The process of testing the logical correctness of each component (module/program) within the computer subsystem, each component (work module) within the personnel subsystem, and their relationship with other components within the subsystem. System verification concentrates on testing assembled modules, chained programs, or work modules, human/machine interfaces, and transaction flow through the system. Such testing is performed in a testing rather than an operational environment. (See System Validation.)

Task

A group of related activities which produces a meaningful product, service, or result. This product, service, or result is readily observable, consistent from one time to another, and contributes significantly to the overall objectives of a function within the system.

Task Analysis

The analytical process employed to determine and describe the detailed human activities required to accomplish the system functions assigned to people. Higher order activities are broken down into component parts from which human behavior characteristics are identified and analyzed to determine the behavorial requirements for successful performance of each activity.

Technical Review

A review of technical products to assure correctness, clarity, and the best product, eg, design reviews, structured walk-throughs.

Technological Feasibility

Is concerned with the ability to meet the system objectives and performance specifications with the existing state-of-the-art relevant to hardware, software, selection and training of personnel, etc.

Terminal

A telecommunications device which can be used to enter data and/or receive data from a computer.

Testing

A group of activities which measure how a system and its components perform compared to the system specifications and/or a benchmark. It is concerned with the performance of all portions of the system, manual and machine, and occurs in several phases of system development. Testing is conducted to: (1) Verify the computer subsystem and the personnel subsystem through component and subsystem tests, (2) Validate the system's performance in an operating (total system) environment, (3) Certify the system for acceptance by the user.

Total System Development (TSD)

A systematic phased approach to the analysis, design, and implementation of information systems. This approach involves the concurrent development of the Computer Subsystem (CSS) and the personnel subsystem (PSS). The general principles of TSD are applicable to any effort, large or small, and can be applied effectively to the development of new systems or to the enhancement of existing systems. TSD is composed of eight phases:

- Proposal

- Feasibility

- Definition

- Preliminary Design

- Detail Design

- Implementation

- Conversion

- Performance Review.

(See each phase, eg, Definition Phase.)

Trial

(See System Trial.)

Transient Data

Data created and used within an application during a processing cycle.

Transaction Path Testing

Testing which involves the validation of all logic that may be required to process sample transactions that will enter the system.

TSD

(See Total System Development.)

User

A person, system, or group that receives and uses outputs of a system but does not directly support a system function. User activities are outside the system boundaries, but users may directly interface with the system, eg, via a terminal. Users may also be providers of system inputs.

Version

See New Generic (New Version.)

Walk-Through

(See Structured Walk-Through.)

Work Module

The largest set of tasks that should not be subdivided among two or more people. A work module consists of one task or a group of related tasks. One or more work modules may make up one job. The tasks in a work module are usually performed in sequence, are done in one place or area, require similar skills, and produce a desired product or result. If the volume of transactions processed by a work module is greater than one person can handle within a given time frame, the work module can be assigned to multiple people.

Work Module Instruction

A reference document containing the appropriate material required to perform the designed work module. A work module instruction can be prepared using one of three levels of detail:

(1) Descriptive—describes capabilities, features, I/O, but not specific work activities.

(2) Guide—charts, diagrams and narrative describe the general work that may be required given various conditions or situations.

(3) Procedural—step by step actions usually performed in a set cyclical manner.

Work Module Specification

Specifies, (1) The procedures for performing the work module, (2) Inputs to and outputs of the work module, (3) Interfaces with other parts of the system or other systems. It also includes the level of work module documentation which has been selected. (See Work Module Instruction.)

Worth Analysis

An evaluation of the net cost or savings of a system determined through use of present system costs, proposed system development, and conversion costs, proposed system operating costs and proposed system savings or revenue increases. (See Cost/Benefit Analysis.)

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