SLS 1114 : 1995
ISO 6592 : 1985

Sri Lanka Standard
INFORMATION PROCESSING – DUIDELINES FOR THE DOCUMENTATION OF COMPUTER – BASED APPLICATION SYSTEMS

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SRI LANKA STANDARDS INSTITUTION

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INFORMATION PROCESSING - GUIDELINES FOR THE DOCUMENTATION OF COMPUTER-BASED APPLICATION SYSTEMS

NATIONAL FOREWORD

This standard was approved by the Sectoral Committee on Information Technology on 1994.12.06 and was authorized for adoption and publication as a Sri Lanka Standard by the Council of Sri Lanka Standards Institution on 1995.12.14.

This Sri Lanka Standard is identical with ISO 6592 : 1985 Information processing - Guidelines for the documentation of computer-based application systems published by the International Organization for Standardization (ISO).

TERMINOLOGY AND CONVENTIONS

The text of the International Standard has been accepted as suitable for publication without deviation, as a Sri Lanka Standard. However, certain terminology and conventions are not identical with those used in Sri Lanka standards, attention is therefore drawn to the following;

a) Wherever the words "International standard" appear, referring to this standard, they should be interpreted as "Sri Lanka standard".

b) Wherever page numbers are quoted, they are ISO page numbers.

International Standard 6592

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION•МЕЖДУНАРОДНАЯ ОРГАНИЗАЦИЯ ПО СТАНДАРТИЗАЦИИ•ORGANISATION INTERNATIONALE DE NORMALISATION

Information processing — Guidelines for the documentation of computer-based application systems

Traitement de l'information — Principes généraux relatifs à la documentation des systèmes d'application informatisés

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work.

Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council. They are approved in accordance with ISO procedures requiring at least 75 % approval by the member bodies voting.

International Standard ISO 6592 was prepared by Technical Committee ISO/TC 97, *Information processing systems*.

Users should note that all International Standards undergo revision from time to time and that any reference made herein to any other International Standard implies its latest edition, unless otherwise stated.

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INTERNATIONAL STANDARD ISO 6592-1985 (E)

Information processing — Guidelines for the documentation of computer-based application systems

1 Scope and field of application

This International Standard establishes guidelines for the documentation of computer-based application systems. It also contains checklists with the aim of supporting effective activities throughout the system life cycle.

The guidelines given in this International Standard have been developed with the aim of

a) obtaining the necessary commitment of the parties involved with the development of the computer-based application system;

b) contributing to the production of a well-planned, standardized system documentation;

c) enabling the successive production of system documentation in parallel with system development.

Well-defined rules for documentation during the process of system development will facilitate

a) the preparation of the documentation itself;

b) estimation of the time and resources required for the achievement of a project;

c) exchange of information between the parties concerned, resulting in

— selection of attainable objectives for a system;

— a more complete and well-considered functional design;

d) making decisions and briefing of personnel during work on system development.

The system documentation produced in accordance with these guidelines

a) enables the management to exercise control over the development process;

b) enables users of the system to use it efficiently and correctly;

c) enables computer operators to schedule and run the system;

d) aids diagnosis and correction of errors or faults;

e) provides information about the system as support for system maintenance.

This International Standard does not cover the requirements for documenting the hardware design of a computer-based application system.

2 Principles of documentation

2.1 General considerations

Despite the diversity of applications of computer-based systems, there are fundamental similarities, for example, the obvious feature that a computer is always subject to input, processing and output phases. There should always be a need to establish and justify the resources such as personnel, materials and finance necessary to develop and implement a computer project, however large or small, and to document adequately all aspects of the proposed system.

It is in this context that the guidelines established in this International Standard have been formulated; the aim being to establish a basic framework of documentation that would act as a solid base for any project and enable effective development and implementation through proper progress and control machinery, permitting the development to proceed in a planned and authorized manner.

The application of these recommendations will vary according to the type of system being introduced: as an example, methods of operating might assume greater importance in a process control environment than in, for example, a commercial batch processing system.

A particular document or piece of information may have no relevance to one system and yet be important to another. The checklists given in this International Standard should be used to ensure that, if information is omitted from the documentation, the omission is the result of a positive decision and not an oversight.

The gradual change in the level of detail in the development process may necessitate revision of documentation from earlier stages.

2.2 Types of information

Two basic types of information are identified in this International Standard, i.e. administrative and technical.

Administrative information is project control and management information which records what has been authorized and what has been done. This information should be retained but it may not be necessary to update it once implementation is complete.

Technical information includes an up-to-date description of all aspects of the system, including hardware, software, and data. It is essential that it is constantly updated during the system life cycle.

Both types of information may be included in some documents, but these guidelines recommend that they be kept in separate sections so that the technical information may be more easily maintained.

2.3 Relationship between project stages and documentation

The guidelines given in this International Standard are structured to relate project development stages to the documentation which they generate. Generally, each stage is initiated and concluded by a document. Although the main stages take place in sequence, some stages and the preparation of some documents overlap each other, for example preparation of system support manuals should be started during the system design and development stage. The number of stages and the number of documents may vary for different applications; these guidelines list the elements of documentation which would usually appear in the documents generated by each stage of the development process.

3 Feasibility study

3.1 Objectives

The objectives of the feasibility study are

a) to identify exactly what is needed following a preliminary study;

b) to work out possible solutions and identify a preferred solution;

c) to document the requirements and constraints for the new system.

3.2 Feasibility study request

This document authorizes the use of resources to investigate a specific requirement, design aim or problem and to suggest a possible solution. It is produced by or for the user before work commences on the project.

Preparation of this document may entail the assistance of a specialist in determining, for example, the time and cost targets for the feasibility study.

Authorization of this feasibility study request leads to a feasibility study and the writing of a feasibility study report.

3.3 Feasibility study report

3.3.1 Objective

The feasibility study report should enable the user to decide whether or not to continue to the next stage of system design.

3.3.2 System problem and information analysis:

a) system problems:

1) definition, including background and present situation;

2) constraints, technical and financial;

b) system objectives:

1) definition and description;

2) delimitation;

3) summary;

c) system information:

1) definition and description;

2) relations;

3) specifications;

d) system processing:

1) description;

2) input, stored data, and output;

3) relations between data;

4) periodicity;

5) volume of data.

3.3.3 Project organization and requirements:

a) staff requirements;

b) training and education;

c) timetable of main activities;

d) manpower;

e) hardware;

f) software;

g) accommodation.

3.3.4 Costs and benefits:

a) financial costs;

b) benefits.

3.3.5 Proposed system:

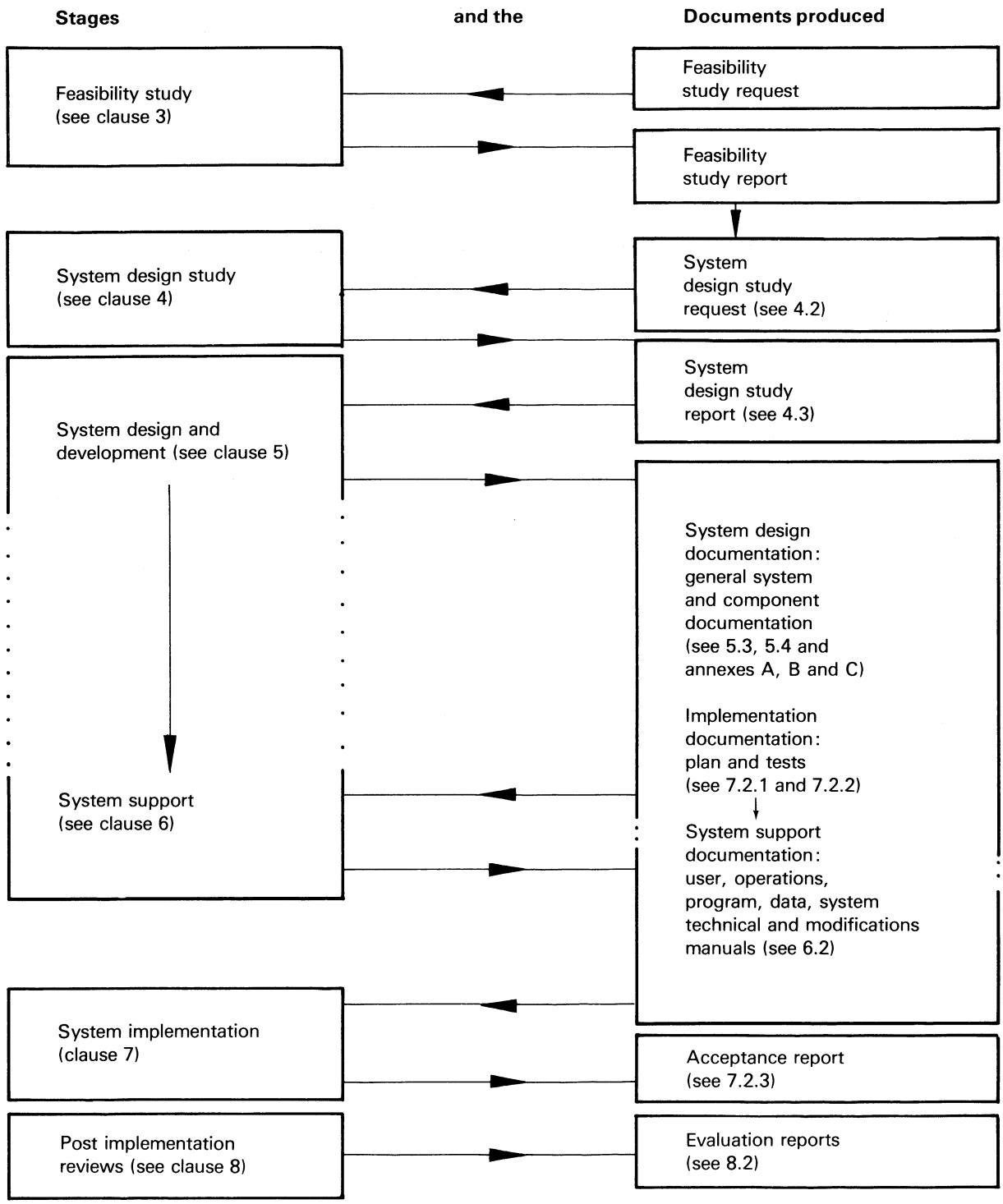
a) functional description;

b) controls to ensure accuracy;

c) security;

d) interfaces;

e) data flow;



* Alternative starting points in cases where a separate feasibility study is not required.

Figure — Summary of the relationship between project development

f) allowance for growth: volume of data, new functions;

g) scheduling/timing;

h) non-computer functions;

j) manpower;

k) hardware;

m) software;

n) accomodation.

3.3.6 Implementation, quality and acceptance considerations:

a) system testing;

b) file creation/conversion;

c) integration with existing systems;

d) user education and training;

e) emulation;

f) proposed changeover methods;

g) modifications to service;

h) quality assurance requirements;

j) product liability requirements;

k) system acceptance criteria.

3.3.7 Support facilities:

a) recovery from failure;

b) maintenance;

c) availability of spares.

3.3.8 Glossary: explanation of new or unusual terms.

3.3.9 Conclusions and recommendations:

a) system requirements:

1) needs of the user;

2) how they will be met.

b) alternatives:

1) describe alternatives considered;

2) state reasons for rejection.

4 System design study

4.1 Objective

The objective of this stage is to define, in detail, the chosen design.

4.2 System design study request

This document states the action that the initiator requires to be taken after considering the feasibility study report. In its simplest form, it will merely accept the recommendations in this report and authorize the system design study.

4.3 System design study report

4.3.1 Objectives

The system design study report should be sufficiently detailed in order that

a) the user has a clear description of what the system will do (input, processing, output information stored, timing, etc.);

b) the user knows exactly what to do to operate the system;

c) the organizational changes or adaptations necessary to implement the system and operate it are defined, and can be commenced as separate tasks;

d) the functional requirements for the system are sufficiently unambiguous for the system design documentation to be worked out in the next phase.

4.3.2 Plans:

a) organization;

b) timetable;

c) major resource requirements;

d) quality assurance;

e) standards to be used.

4.3.3 Costs and benefits:

a) development costs;

b) installation costs;

c) training and education costs;

d) running costs;

e) benefits, tangible and intangible.

4.3.4 System description:

a) functional overview of the application of the system;

b) hardware requirements;

c) communication requirements, for example terminals, lines, modems, concentrators;

d) software requirements for languages, data base, operating system, etc.;

e) data description;

f) data flow, including the normal and maximum volume of data;

g) allowance for change in data volume;

h) controls to ensure the accuracy of the data;

j) security, system integrity, data protection, physical security, availability;

k) environmental and power requirements (including any stand-by arrangements);

m) interfaces with other systems, either existing or proposed;

n) scheduling requirements;

p) allowance for additional functions;

q) non-computer procedures.

4.3.5 Implementation, quality and acceptance plans:

a) user education/training;

b) file creation/conversion;

c) system testing and performance assessments;

d) emulation;

e) modifications to service;

f) integration with existing systems;

g) changeover methods;

h) quality assurance requirements;

j) extent of product liability;

k) system acceptance criteria.

4.3.6 Support facilities:

a) recovery from failures;

b) responsibility and liability for maintenance;

c) availability of spares and back-up.

4.3.7 Summary of application system:

a) problem definition and solution;

b) recommendation;

c) system operation;

1) manpower;

2) hardware;

3) software;

4) accommodation;

5) financial estimates;

6) security;

7) scheduling/timing;

d) glossary of new or unusual terms used.

4.3.8 Summary for management:

a) manpower;

b) hardware;

c) quality assurance requirements;

d) accommodation requirements;

e) cost estimates:

1) next stage of project;

2) total project;

f) benefit estimates;

g) timetable.

5 System design and development

5.1 Objectives

The objectives are as follows:

a) specify, in detail, automated and manual processing procedures and establish their boundaries;

b) produce documentation to enable the writing of programs;

c) provide the information necessary to carry out work on testing and implementation of the new system;

d) make a detailed plan of all activities to be performed in the implementation stage;

e) give consideration to the preparation of system support manuals.

5.2 System design documentation

The purpose of this documentation is to provide a complete design record of the system based on the following principles:

a) that every part of the system has a function which should be described;

b) that all the functions of a complete system can be fully described by breaking the system down into its subordinate parts and also by describing these and their interactions and relationships.

The documentation should normally contain at least two levels of detail, namely:

— general system documentation (see 5.3);

— and component documentation (see 5.4).

5.3 General system documentation

In the general documentation, the level of detail of which the system should be described depends on the requirements of the system. This documentation may be required to form the basis for system support manuals.

The general system documentation should detail

a) project title;

b) objectives;

c) description (both textual and diagrammatic);

— identification of subsystems;

— interfaces with other systems;

d) security;

e) controls (including audit requirements);

f) operating environment;

g) recovery from failure;

h) support facilities necessary to operate the system;

j) data requirements;

k) test procedures;

m) change procedures.

5.4 Component documentation

This documentation should give detailed specifications of programs, files and manual operations. It may be required to form the basis for system support manuals.

5.4.1 Program specification

See annex A.

5.4.2 File and database specification

See annex B.

5.4.3 Manual routines specification

See annex C.

6 System support

6.1 Objective

The objective of this stage is to support the system once it has been accepted by the user. It embraces the following aspects:

a) normal use of the system;

b) detection and correction of errors;

c) possible modifications and enhancements.

It should be understood that this activity may not be carried out by the same staff who developed the system.

6.2 System support documentation

Support documentation should be formed from documents produced during the system design and development stage. Any changes made to the documents produced during that stage should be reflected in the documents for system support.

What is actually provided will depend on the particular system requirements, maintenance policy and documentation standards. However, in order to meet the system support objective it is recommended that the documentation be provided under the following headings:

a) **User manual**

This should describe, in a clear and concise way, the rights and responsibilities of both the user and the supplier of the system.

The following are examples of what these rights and responsibilities may be:

1) The rights of the user may include:

— the right to information about the usage of the system;

— the right to information about the system results and the correction of errors in data.

2) The responsibilities of the user may include:

— the correct preparation of input data;

— informing the supplier of any errors detected in the system.

3) The rights of the supplier may include:

— the right to revise the system, as supplied;

— the right to perform continuous testing to ensure that the system continues to function correctly.

4) The responsiblities of the supplier may include:

— the maintenance of accurate and up-to-date documentation;

— the distribution of accumulated user experience with the system.

All these rights and responsibilities will be subject to agreement between the supplier and the customer and may be influenced by national and international legislation and/or standards. Information applicable to legislation on aspects of quality assurance and product liability should be included in this manual.

b) **Operations manual**

This should describe how to operate the system using the computer and associated equipment in all its operational modes.

c) **Program manuals**

These should describe the purpose of each program and provide information such as mathematical formulae and algorithms used, error handling facilities and timing. They should include listings of the program, with comments, useful for modifications and enhancements, test data and results.

d) **Data manual**

This should describe the system data structure down to the level of detail specified by system requirements.

e) **System technical manual**

This should enable technical staff to understand the way the system works, assist them in error detection and correction and in making modifications and enhancements. Where appropriate, it should make reference to hardware descriptions.

f) **System change record**

This should record what, when, how, why and by whom changes were made and authorized to any part of the system.

7 System implementation

7.1 Objective

The objective of this stage is to carry out full acceptance tests of the system under all aspects of its operational environment and demonstrate that all the specified requirements have been met.

7.2 Documentation requirements

The input documentation to this stage should consist of an implementation plan and the acceptance tests for the system. The output documentation from this stage should be an acceptance report.

7.2.1 Implementation plan

Although implementation takes place at the end of project development, planning should begin at an early stage and the plan should be updated as necessary during the development of the system.

The plan should detail, for example:

a) accommodation and environment;

b) staff organization;

c) user education and training;

d) file set up;

e) update, assembly and distribution of documents;

f) verification of maintenance procedures;

g) timing and method of implementation;

h) system changeover procedures;

j) recovery procedures.

7.2.2 Acceptance tests

The documentation should specify how the tests will be conducted within the defined operational environments. It should also provide a check list of the results to be expected and give tolerances where necessary.

7.2.3 Acceptance report

This should be a document embodying the results of the acceptance tests signed by and duplicated to all relevant authorities.

If acceptance is to be qualified in any way, an official statement of deficiencies and suggested remedies, if possible, should be provided.

8 Post implementation reviews

8.1 Objectives

The objectives of this stage are periodically to

a) investigate the system's fulfilment of objectives;

b) follow up the distribution of resources and the cost estimates;

c) specify the intangible positive and negative effects of the system;

d) analyse and record the experience gained during work on the systems development.

8.2 Evaluation reports

Evaluation reports

a) assess whether the original system objectives were correct and how far they have been met in practice;

b) pinpoint matters capable of improvements;

c) endorse good practices;

d) identify and assess operational problems encountered, if any;

e) state whether the claimed benefits have been achieved;

f) document the experiences which will assist future systems development projects.

9 Management of documents

9.1 Production and handling of documents

An important aspect of all work on documentation is the creation of documents to fulfil the needs of the user of the documents. It is essential that such needs be clearly defined and that the content of a document be presented in a manner which makes it easy for the reader to access and understand.

Each individual document created in conjunction with a stage in the system development shall be allocated a unique identification number or code to facilitate its storage and subsequent retrieval. The identifying number or code shall clearly show the system or project and category of documentation to which the document belongs. The principles governing the identification of systems and subsystems may vary from organization to organization but should be described in the individual company's own instructions.

It is vital for ease of reference and control of amendments or updates that a clear and unambiguous method of page referencing be adopted.

Experience shows that there is positive advantage in introducing a documentation system that ensures that

a) each page is uniquely identified to the system, section, page within section, issue number and date of origination;

b) each section is identified as complete;

c) insertions and deletions are clearly identified.

It is recommended that a loose-leaf format is adopted.

Procedures to be followed for amendments to the system documentation should be agreed and clearly defined. It is essential that all project staff and users be acquainted with the correct procedures.

9.2 Principles of central documentation

The central documentation should contain all the information relating to the activities throughout the system life cycle.

This information is permanently valid as it is updated when each decision, achievement, modification, etc, is approved.

To facilitate this updating, each item of information should normally only appear once.

9.3 Advice on documentation distribution

It is important to distinguish clearly between the total documentation collection, normally stored centrally, and the assembled subsets required by different departments and personnel.

Subsets usually contain documents copied and compiled from different sections of the total documentation collection. A circulation list, based on an individual organization's requirements, should be drawn up for each document, noting the name or departmental code of the recipient of the documentation.

Annex A

Program documentation guidelines

(This annex forms part of the standard.)

A.1 Introduction

This annex gives guidance on the level of documentation required for program documentation.

The level of detail required for component documentation is greater than that necessary for the other items in the body of this International Standard. The requirements have, therefore, been published in the form of an annex.

A.2 Identification

A.2.1 Program name

Provide the title or name which identifies the program and a subtitle which briefly indicates its function.

A.2.2 Variants

Describe the names used for identifying any co-existing variants of the program.

A.2.3 Version

In addition to the program name and variant names, provide identification for the version that requires identifying among the several program versions that evolved after being modified over a period of time. The documentation shall reflect changes in the current version, and be kept up-to-date.

A.2.4 Date

Provide the date of release of the original and the current version of the program.

A.2.5 History

For every modification, specify

- variant name;
- version name;
- reference to the reason for and contents of modification;
- date of release;
- date of first use.

A.3 General items

A.3.1 Responsibilities

Provide addresses of organizations or persons responsible for

- development;
- operation;
- maintenance;
- further development of the program.

A.3.2 Contractual items

Provide sufficient information about contractual items, including costs as applicable, for example

- legal conditions such as copyright, privacy, security, etc.;
- modules supplied and corresponding purchase/rental price;
- installation;
- training;
- maintenance;
- quality assurance.

A.3.3 Scope and field of application

A.3.3.1 Describe briefly the objectives which can be achieved by use of the program.

A.3.3.2 Describe the functions of the program in a way that enables the user to decide whether, and within what limits, the program can be used.

A.3.3.3 Describe the design philosophy and method, outstanding and distinguishing features of the program, planned future revisions, etc.

A.3.4 Program specifications

A.3.4.1 Problem

A.3.4.1.1 Problem description

Present the problem to be solved by means of the program in a generally comprehensible form.

A.3.4.1.2 Supplementary information

State the theoretical principles, methods and literature references.

A.3.4.2 Problem solution

A.3.4.2.1 Conventions and terminology

Provide details of the form of presentation and rules which are to be used in the following parts of the documentation for example, special interpretation of characters/signs or combinations applicable to the solution of the problem; especially concerning: prefixes, signs, accuracy, rounding-off, coordinate systems, value ranges, tables of abbreviations used and their meanings, technical regulations of data processing.

A.3.4.2.2 Solution principles and algorithms

Describe the methods of solution and algorithms presented in connection with the specified functions and with the structural organization of the program.

A.3.4.3 Functional specification

A.3.4.3.1 Function

Describe in detail, in non-technical language, all of the functions of the program with an explanation of the data required and results produced.

A.3.4.3.2 Characteristics

Provide quantitative information for typical examples, such as performance data, level of accuracy, storage requirements, etc.

A.3.4.3.3 Restrictions

Specify any restrictions on the use of the program.

A.3.4.3.4 Error handling

Describe error handling by the program.

A.3.4.4 Data protection and security

Describe the data protection and security functions and facilities.

A.3.5 Application data description

Describe the application-oriented data (for example input/output data, permanently stored data) with attributes relevant to their use.

The data shall be described according to annex B.

This data description may be given in a separate document, with appropriate cross-references.

A.3.6 Operational specification

A.3.6.1 Language

Specify the programming language used, by reference to the appropriate International Standard. Also, provide the name, variant, version and supplier of the compiler or interpreter.

A.3.6.2 Software requirements

Provide the names, variants, versions of other programs needed to run the program (for example operating system, subroutines), with reference to the corresponding documentation of this software.

A.3.6.3 Hardware requirements

Provide the specifications of the hardware configuration necessary for running the program, with references to corresponding documentation and diagrams.

A.3.6.4 Mode of operation

Describe the mode of operation, for example batch, interactive, realtime.

A.3.7 Application example

Provide typical examples to help users understand the program, including listings of data and results.

A.3.8 Associated documentation

Provide a list of references to available documents which provide information on the program, (for example programmers' guide, installation guide), with references to supplier and order number of the documents.

A.4 Technical documentation

A.4.1 Technical program description

A.4.1.1 Terminology and conventions

Describe the terms and conventions including all names and other internal data used within the program.

A.4.1.2 Program structure

Describe the organization of the program units (for example sub-programs, modules, segments, common storage areas) in accordance with the specified problem solution.

The presentation which can be made graphically, for example by a tree-structure diagram, or by an appropriately structured textual description, shall contain the unit names, their entry points, and interfaces, as well as their inter-relationships.

A.4.1.3 Program listing

Provide a source program listing containing sufficiently detailed comments.

A.4.2 Technical data description

Provide a technical description of the data, including names, meanings, representations, contents, access, responsibilities, data security, and inter-relationships. This information should be provided for both application-oriented data (see A.3.5) and for other internal data.

The data should be described according to annex B. This description may be contained in a separate document, in which case appropriate cross-references shall be made.

A.4.3 Operation

A.4.3.1 Control instructions

Provide an appropriate commented list of all required operating system control instructions.

A.4.3.2 Methods of operation

Describe or reference the methods to start, stop, pause, interrupt, and restart the program for the possible operation modes, including special operations and the operational rules for data files.

The procedures to be followed in operating the program should be provided in accordance with annex C.

A.4.3.3 Messages

Provide a list and description of all messages, including instructions for any necessary operational actions.

A.4.4 Installation and support

A.4.4.1 Installation

Provide technical information for the installation of the program.

A.4.4.2 Adaptation

Provide sufficient information for users who need to adapt the program, for example for other environments, other uses.

A.4.4.3 Test

Describe the methods used to test the program, with input and expected results.

A.4.4.4 Support

Provide additional technical information for the continuing support and development of the program.

Annex B

Data documentation guidelines

(This annex forms part of the standard.)

B.1 Introduction

This annex gives guidance on the level of documentation required for data documentation.

The level of detail required for component documentation is greater than that necessary for the other items in the body of this International Standard. The requirements have, therefore, been published in the form of an annex.

B.2 Identification

B.2.1 Technical identification

Describe the technical identification of the data in program and database definitions.

Other technical identifications required should also be indicated (see B.4.2).

B.2.2 Application-oriented identification

Describe the application-oriented identification for the data, for example in working instructions or application-oriented documents.

Where synonyms have been used in application-oriented documents, these should also be specified here.

B.2.3 Category

Define the data by naming or describing their category, for example data field, record, file, segment, page, database.

B.2.4 Status

Describe the status of the data, for example test, production.

B.2.5 Applicability of the documentation

B.2.5.1 Scope and field of application

Indicate the scope and field of application of the documentation concerned, for example the organizational unit of an enterprise, range of application.

B.2.5.2 Validity

Detail the chronological validity of this documentation (from . . . to . . .) and supply pertinent identification of the version and, if required, indication of the variant. (A VERSION characterizes the validity as a function of time; a VARIANT is a co-existing alternative.)

B.3 Description of the data

B.3.1 Purpose

Give the application-oriented description of the data and their purpose of application, differentiating with respect to other data as required.

B.3.2 Descriptors

List the keywords, headings, and search words characterizing the application-oriented references in association with details of descriptor catalogues, as applicable.

B.3.3 Sensitivity

Indicate the sensitive properties of the data with respect to legal and operational requirements, for example data protection, confidentiality, classification (see clause B.6).

B.4 Representation

B.4.1 Structure (not applicable to data elements)

List the data objects forming the data entity being described, with their inter-relationships, for example position, arrangement, repetition factor.

B.4.2 Format

Describe the formats in which the data may occur. It may be sufficient to use such standard format descriptors as:

— PICTURE S9V99 COMPUTATIONAL (COBOL according to ISO 1989)

— blocked records of variable length (according to ISO 1989)

If data occur in several formats, all formats with their applications shall be indicated, for example program, file, database, print mask, input fields on screen, forms. If qualifying names are used, they should be stated.

B.4.3 Size

Indicate the physical size of the data entity in a customary or previously defined unit (for example byte, word); size may be indicated absolutely or by means of a formula. If required, upper and lower limits should be shown.

B.4.4 Medium (not applicable to data elements)

Indicate the medium on which the data resides, for example paper, magnetic tape, data link, network.

B.4.5 Compression

Detail the type and method of compression applicable to the data.

B.4.6 Code

Name the code used to represent the data, for example ISO 7-bit code, if it differs from the code defined at a higher logical level.

B.4.7 Character set

Define the valid character set for the data, especially with respect to special characters.

B.5 Content

B.5.1 Data type

Describe the type of data, for example integer, alphabetic, pointer, vector, table, clock time.

B.5.2 Units of measurement

Name the standard units of measurement applicable to the data, for example kilogram, millimetre.

B.5.3 Range of values

Indicate the ranges of values defined for the data, for example by enumeration of valid values, by indication of lower and upper bounds, or by reference to the range of values of data contained in the data entity being described.

B.5.4 Checking conditions

Detail the checking conditions required for the data unless they are already described by format, character set, data type and range of values; also give further details on any checking conditions connected with other data entities, for example check character, plausibility checks.

B.5.5 Encoding

Describe any encoding applied to the data in the context of the application. Indicate the rules for allocating codes, or reference a key list.

B.6 Access

B.6.1 Authorization

Authorities such as organizational units, agencies, persons, data processing procedures and programs, together with their legal basis and any other conditions are given in the following sub-clauses.

B.6.1.1 Origination

Indicate the authorities permitted to generate the data and to introduce it into the operational data and information system.

B.6.1.2 Read access

Indicate the authorities permitted to read the data.

B.6.1.3 Amendment

Indicate the authorities permitted to update or delete the contents of the data.

B.6.1.4 Communication

Indicate the authorities permitted to communicate the contents of the data to a third party without restriction. List the authorities authorized to receive such a communication.

B.6.2 Access regulations

Describe the measures or procedures which regulate access to the data by persons or programs according to their authorization.

B.7 Responsiblities

B.7.1 Application-oriented responsibility

Indicate the authorities having application-oriented responsibility for the data.

B.7.2 Organizational responsibility

Indicate the authorities having organizational responsibility for the data and its documentation.

B.7.3 Technical responsibility

Indicate the authorities having technical responsibility for the data, for example software development.

B.7.4 Custodial responsibility

Indicate the authorities and their locations where data is stored, for example the branch office of an enterprise.

B.8 Data security

B.8.1 Archiving

Detail the requirements for archiving the data, for example method, place, purpose, retention period, frequency.

B.8.2 Recovery

Indicate the procedures and the effort required to recover the archived data.

B.8.3 Encryption

Indicate the procedures for encrypting/decrypting the data, for example the relevant national standard.

B.9 Associations

B.9.1 Occurrence

List the data entities which contain the data being described.

B.9.2 Dependencies

List the other data entities on which this data is dependent and indicate the type or name of this dependency relationship.

B.9.3 Use

Provide or reference a list of athorities actually using the data. Also specify the type of access (in accordance with B.6.1).

Annex C

Human procedure documentation guidelines

(This annex forms part of the standard.)

C.1 Introduction

This annex gives guidance on the level of documentation required for human procedures documentation.

The level of detail required for component documentation is greater than that necessary for the other items in the body of this International Standard. The requirements have, therefore, been published in the form of an annex.

C.2 Identification

C.2.1 Procedure name

Provide the title or name used for identifying the procedure in the related system and program documentation, and a subtitle which briefly indicates its function.

C.2.2 Variants

Describe the names used to identify any co-existing variants of the program.

C.2.3 Version

In addition to the procedure name, and variant names, provide identification to distinguish the most recent version from its predecessors. For procedures closely related to programs, for example operating instructions, it is desirable to relate the procedure version name to the program version name.

C.2.4 Date

Provide the date of release of the original and current versions of the procedure.

C.2.5 History

For every release of a procedure modification, specify

- variant name;
- version name;
- reference to the reason for and content of the modification;
- date of release;
- date of first use.

C.3 General items

C.3.1 Responsibilities

Provide addresses of organizations or persons responsible for

- development;
- distribution;
- training;
- modification and further development of the procedure.

C.3.2 Contractual items

Provide sufficient information about contractual items, including costs as applicable, for example:

- legal conditions such as copyright, privacy, security, etc.;
- training;
- quality assurance;
- maintenance.

C.3.3 Scope and field of application

C.3.3.1 Describe briefly the objectives which can be achieved by following the procedure.

C.3.3.2 Describe the functions of the procedure in terms of the associated software and environment which indicate its use.

C.3.3.3 Describe or reference any philosophical, psychological, or ergonometric principles used in the design of the procedure; outstanding features; planned future revisions, etc.

C.3.4 Procedure specifications

C.3.4.1 Occasion, frequency

Describe the situations in which the procedure is applicable; if periodic, provide the cycle length, and the position within the cycle; if conditional, describe the events which prescribe the use of the procedure.

C.3.4.2 Conventions, terminology

Provide details or a reference to any conventions followed in the naming of this or related procedures, any abbreviations used, etc.

C.3.4.3 Function

Describe in detail all of the functions of the procedure, with particular reference to the materials and data required, the results recorded, the software and hardware utilized, the organizational units affected.

C.3.4.4 Capabilities and resource requirements

Provide quantitative information concerning typical volume and speed of processing, usage of resources such as computer and peripheral hardware, supplies, office equipment, space, etc.

C.3.4.5 Restrictions and exceptions

Describe any restrictions on the use of the procedure, or situations in which it is not applicable; preferably, include a reference to alternate procedures.

C.3.4.6 Personnel

Describe the person or persons who will follow the procedure, in terms of their function within the organization, for example billing clerk, computer operator.

C.3.4.7 Data protection, security, and privacy concerns

Describe briefly or reference any policies relevant to the protection of the data or the procedures themselves from unauthorized access.

C.3.5 Application data description

Describe the application-oriented data required by, processed by, and generated by the procedure, with attributes relevant to their use in the procedure.

The data shall be described in accordance with annex B.

The data description may be given in a separate document, with appropriate cross-references.

C.3.6 Environment specification

C.3.6.1 Personnel skills

Specify any special skills or training required by the person following the procedure.

C.3.6.2 Software requirements

Identify, by name, variant, version, any software involved in the usage of the procedure, and provide a reference to its documentation. For a procedure detailing the provision of input data to a program, make special reference to the data validation and error handling features of the program; for a procedure detailing the operation of a program, make special reference to the operational specifications of the program; for a procedure detailing the interpretation, control, or distribution of the output from a program, make special reference to the application and technical data descriptions, and messages.

C.3.6.3 Hardware requirements

Provide specifications for any computer hardware configuration involved in the procedure steps, and for any auxiliary or office equipment used with references to the corresponding documentation.

C.3.6.4 Supplies

Provide information concerning the procedure's requirements for such supplies as computer media, stationery items, etc.

C.3.6.5 Timing constraints

Describe any scheduling requirements, any constraints on speed of processing, or any limitations on the occasions calling for the use of the procedure.

C.3.7 Application example

Provide typical examples to help users understand the procedure, including illustrations of typical data and results.

C.3.8 Associated documentation

Provide a list of references to available documentation concerning the system of which the procedure is a part, the software and hardware involved, any related procedures, and any relevant organizational information. Also provide information concerning the location of this documentation, and any procedures necessary for its procurement.

C.4 Technical documentation

C.4.1 Technical procedure description

C.4.1.1 Terminology and conventions

Define or reference definitions for any technical or specialized terms used, and for any abbreviations. Provide or reference a description of the nomenclature conventions used in naming system components (programs, procedures, data entities).

C.4.1.2 Procedure structure

For composite procedures, which provide instructions for several occasions, or which contain conditional steps, describe the organization of the procedure, preferably graphically.

C.4.2 Procedure structure

Define the procedure to be followed as a series of numbered imperative instructions, beginning with any necessary collection of materials or information, and proceeding in chronological sequence to final disposition of any results of the procedure.

Distinguish carefully between instructions, for example worded in the imperative and explanatory material, for example worded passively, by typographical or other means.

Where steps are conditional or repetitive, arrange them so that the control information precedes the procedures it affects, and indicate the range of the control by step numbers both at the beginning of the affected steps and at their conclusion.

Tailor the language of the procedure steps to the skill set and training level of the person who will follow the procedure.

C.4.3 Technical data description

Provide a technical description of any data involved in the procedure, including names, meanings, representations, media, contents, access methods, structure, responsibilities, data security provisions, and inter-relationships. This information should be provided both for the application-oriented data (see C.3.5) and for any data internal to the procedure, for example control tallies, tables.

The data should be described in accordance with annex B. This description may be contained in a separate document, in which case appropriate cross-references are required.

C.4.4 Installation and support

C.4.4.1 Distribution and filing

Provide any necessary information about the means of distribution and procedures for filing or posting the procedure and its associated documentation.

C.4.4.2 Testing

Describe the methods used to test the procedure, with sample data processed and results.

C.4.4.3 Training

Detail

a) the provisions made for training the person who will initially and subsequently use the procedure;

b) the persons or organizations responsible;

c) the typical duration of training, the productivity "learning curve", etc.

C.4.4.4 Refinement

Describe or reference the means by which persons following the procedure, or other persons involved, may contribute suggestions for its improvement.

C.4.4.5 Adaptation

Provide any relevant suggestions for adapting the procedure for other uses or environments.

C.4.4.6 Support

Provide any additional technical information relevant to the continuing support and development of the procedure.

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