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Systems and software engineering — Requirements for managers of user documentation

Ingénierie des systèmes et du logiciel — Exigences pour les gestionnaires de la documentation d'utilisation

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Foreword

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The main task of ISO/IEC JTC 1 is to prepare International Standards. Draft International Standards adopted by the joint technical committee are circulated to national bodies for voting. Publication as an International Standard requires approval by at least 75 % of the national bodies casting a vote.

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ISO/IEC/IEEE 26511 was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 7, *Software and systems engineering*, in cooperation with the Systems and Software Engineering Committee of the IEEE Computer Society, under the Partner Standards Development Organization cooperation agreement between ISO and IEEE.

This first edition of ISO/IEC/IEEE 26511 cancels and replaces ISO/IEC TR 9294:2005, which has been technically revised.

In this corrected version, the cover pages, front matter, page headers and footers have been corrected to reflect that ISO/IEC/IEEE 26511 is a joint development project under the Partner Standards Development Organization cooperation agreement between ISO and IEEE.

Introduction

Effective management of the software user documentation tasks is essential in order to ensure that documentation is usable, accurate, delivered when needed by the users, produced efficiently, and maintained consistent with the software. This International Standard addresses the management of user documentation in relation to both initial development and subsequent releases of the software and user documentation.

Anyone who uses application software needs accurate information about how the software will help the user accomplish a task. The documentation can be the first tangible item that the user sees, and if so, it can influence the user's first impressions of the product. If the information is supplied in a convenient form and is easy to find and understand, the users can quickly become proficient at using the product. Hence, a well-managed documentation process not only assists the user and helps to reduce the cost of training and support, but also enhances the reputation of the product, its producer, and its suppliers.

Although many software designers aim to have user interfaces that behave so intuitively that very little separate documentation is needed, this approach is rarely possible in practice. User documentation is an essential component of usable software products.

Documentation is often regarded as something done after the software has been implemented. However, for quality software documentation, its development should be regarded as an integral part of the software life-cycle process from the planning and design stages onwards. If done properly, documentation or information management is a big enough job to require process planning in its own right.

This International Standard was developed to assist users of ISO/IEC 15288:2008 (IEEE Std 15288-2008), *Systems and software engineering — System life cycle processes*, or ISO/IEC 12207:2008 (IEEE Std 12207-2008), *Systems and software engineering — Software life cycle processes*, to manage software user documentation as part of the software life cycle. This International Standard defines the documentation process from the manager's standpoint. It was developed to assist those who provide input to, perform, and evaluate user documentation management.

NOTE: Other International Standards in the ISO/IEC 265NN family address the documentation and information management processes from the viewpoint of documentation designers/developers, testers and reviewers, and acquirers and suppliers.

This International Standard applies to people or organizations producing suites of documentation, to those undertaking a single documentation project, and for documentation produced internally as well as to documentation contracted to outside service organizations. Beyond the development and production of a user manual, help system, or set of documentation for a single software product, it applies to a broader range of documentation management situations, including user documentation for those who install, implement, administer, and operate software for end users. Frequently, user documentation managers are responsible for the development and reuse of information (content management) for:

- multiple updates of user documentation as the software version is updated;
- multiple reuses or adaptations of information to support related software products;
- multiple translated or localized versions of user documentation;
- a portfolio of unrelated documentation projects being managed concurrently within an organization.

This International Standard is not intended to advocate the use of either printed or electronic (on-screen) media for documentation, or of any particular information management, content management, documentation testing, or project management tools or protocols. The requirements are media-independent, as far as possible. This International Standard may be applied to user documentation for systems including software as well as to software user documentation.

Systems and software engineering — Requirements for managers of user documentation

1 Scope

This International Standard supports the needs of software users for consistent, complete, accurate, and usable documentation. It provides requirements for strategy, planning, performance, and control for documentation managers. It specifies procedures for managing user documentation throughout the software life cycle. It also includes requirements for key documents produced for user documentation management, including documentation plans and documentation management plans.

This International Standard provides an overview of the software documentation and information management processes which are specialized for user documentation in this International Standard. It also presents aspects of portfolio planning and content management for user documentation. Specifically, it addresses the following:

- management requirements in starting a project, including setting up procedures and specifications, establishing infrastructure, and building a team, with examples of roles needed on a user documentation team;
- measurements and estimates needed for management control;
- the application of management control to user documentation work;
- the use of supporting processes such as change management, schedule and cost control, resource management, quality management and process improvement.

The works listed in the Bibliography provide guidance on the processes of managing, preparing, and testing user documentation.

NOTE 1: Related standards of value to documentation managers and others involved in the process include ISO/IEC 26514:2008, *Systems and software engineering — Requirements for designers and developers of user documentation* (also available as IEEE Std 26514-2010, *IEEE Standard for Adoption of ISO/IEC 26514:2008, Systems and Software Engineering — Requirements for Designers and Developers of User Documentation*); ISO/IEC 26513:2009, *Systems and software engineering — Requirements for testers and reviewers of user documentation* (also available as IEEE Std 26513-2010, *IEEE Standard for Adoption of ISO/IEC 26513:2009, Systems and Software Engineering — Requirements for Testers and Reviewers of User Documentation*); and ISO/IEC/IEEE 26512:2011, *Systems and software engineering — Requirements for acquirers and suppliers of user documentation*.

This International Standard is applicable for use by managers of user documentation projects or organizations with information designers and documentation developers. This International Standard may also be consulted by those with other roles and interests in the documentation process:

- managers of the software development process;
- acquirers of documentation prepared by suppliers;
- experienced writers who develop the written content for user documentation;
- developers of tools for creating on-screen documentation;

- human-factors experts who identify principles for making documentation more accessible and easily used;
- graphic designers with expertise in electronic media;
- user interface designers and ergonomics experts working together to design the presentation of the documentation on the screen.

This International Standard may be applied to manage the following types of documentation, although it does not cover all aspects of them:

- documentation for user assistance, training, marketing, and systems documentation for product design and development, based on reuse of user documentation topics;
- documentation of products other than software;
- multimedia marketing presentations using animation, video, and sound;
- computer-based training (CBT) packages and specialized course materials intended primarily for use in formal training programs;
- maintenance documentation describing the internal operation of systems software.

NOTE 2: ISO/IEC/IEEE 15289:2011 provides more detailed content for life cycle process information items (documentation).

2 Conformance

2.1 Definition of conformance

This International Standard may be used as a conformance document for projects and organizations claiming conformance to ISO/IEC 15288:2008 (IEEE Std 15288-2008), *Systems and software engineering — System life cycle processes*, or ISO/IEC 12207:2008 (IEEE Std 12207-2008), *Systems and software engineering — Software life cycle processes*.

This International Standard is meant to be tailored so that only necessary and cost-effective requirements are applied to documentation. Tailoring may take the form of specifying approaches to conform to its normative requirements, or altering its recommendations and approaches to reflect the particular software and documentation project more explicitly. Tailoring decisions made by the acquirer should be specified in the contract.

NOTE: Annex A (normative) of ISO/IEC 12207:2008 (IEEE Std 12207-2008) describes the tailoring process

Throughout this International Standard, "shall" is used to express a provision that is binding, "should" to express a recommendation among other possibilities, and "may" to indicate a course of action permissible within the limits of this International Standard.

Use of the nomenclature of this International Standard for the parts of user documentation (for example, chapters, topics, pages, screens, windows) is not required to claim conformance.

2.2 Conformance situations

Conformance of software user documentation management may be interpreted differently for various situations. Regardless of whether the organization or project has tailored the selected software life cycle processes or adopted them in full, the organization or project may claim conformance to this International Standard for its information management and software documentation management processes, or for both.

The relevant situation shall be identified when conformity is claimed for an organization: the organization shall make public a document declaring its tailoring of the process.

NOTE 1: One possible way for an organization to deal with clauses that cite "the documentation plan" is to specify that they shall be interpreted in the project plans for any particular documentation project.

- When conformance is claimed for a project, the project plans or the contract shall document the tailoring of the documentation requirements.

NOTE 2: A project's claim of conformance is typically specified with respect to the organization's claim of conformance.

- In a multi-supplier program: it can be the case that no individual project may claim conformance because no single contract is responsible for all the required management activities. Nevertheless, the program, as a whole, may claim conformance if each of the required activities is produced by an identified party. The program plans shall document the tailoring of the required tasks, and their assignment to the various parties, as well as the interpretation of clauses of this International Standard that reference "the contract".

- This International Standard may be included or referenced in contracts or similar agreements when the parties (called the acquirer and the producer or supplier) agree that the supplier will manage documentation services in accordance with this International Standard. It may also be adopted as an in-house standard by a project or organization that decides to manage its documentation services in accordance with this International Standard.

3 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO/IEC 12207:2008 (IEEE Std 12207-2008), *Systems and software engineering — Software life cycle processes*

ISO/IEC/IEEE 24765:2010, *Systems and software engineering — Vocabulary*

4 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO/IEC/IEEE 24765:2010 and the following apply.

NOTE 1: The verb "include" used in this International Standard indicates that either (1) the information is present or (2) a reference to the information is listed.

NOTE 2: Throughout this International Standard the term "documentation" refers to software user documentation. This International Standard refers to the "user documentation manager" or "the manager", which applies to anyone performing the required user documentation management activities, regardless of title or responsibilities for cost management.

4.1
audience
category of users sharing the same or similar characteristics and needs (for example, reason for using the documentation, tasks, education level, abilities, training, experience)

[ISO/IEC 26514:2008]

NOTE: There can be different audiences for documentation (for example, management, data entry, maintenance) that determine the content, structure, and use of the intended documentation.

4.2
complete
<documentation> including all critical information and any necessary, relevant information for the intended audience

4.3
configuration management
discipline applying technical and administrative direction and surveillance to identify and document the functional and physical characteristics of a configuration item, control changes to those characteristics, record and report change processing and implementation status, and verify compliance with specified requirements

4.4
content management
control of units of information with their metadata, to allow selective reuse in documents or information items with variable structures and formats

EXAMPLE: Content management for user documentation means management of help topics, explanations of concepts, troubleshooting procedures, compliance statements, and variables such as the names and host platforms of software products, with metadata tags that are applied to format output.

4.5
critical information
information describing the safe use of the software, the security of the information created with the software, or the protection of the sensitive personal information created by or stored with the software

[ISO/IEC 26514:2008]

4.6
customer
organization or person that receives a product or service

NOTE: In the context of this International Standard, the product is the user documentation.

[ISO/IEC 12207:2008]

4.7
document, noun
separately identified piece of documentation which could be part of a documentation set

[ISO/IEC 26514:2008]

4.8
document set
collection of documentation that has been segmented into separately identified volumes or files for ease of distribution or use

[ISO/IEC 26514:2008]

4.9
documentation
information that explains how to use a software product

[ISO/IEC 26514:2008]

NOTE 1: It may be provided as separate documentation, as embedded documentation, or both.

NOTE 2: In this International Standard, the term “documentation” is synonymous with the terms “user documentation” and “software user documentation”.

EXAMPLE: Printed manuals, on-screen information and stand-alone on-screen help.

4.10
illustration
graphic element set apart from the main body of text and normally cited within the main text

NOTE: In this International Standard, the term “illustration” is used as the generic term for tables, figures, exhibits, screen captures, flow charts, diagrams, drawings, icons, and other graphic elements.

4.11
information design
process of developing content that meets the needs of the audience

4.12
localization
creation of a national or specific regional version of a product

NOTE: It is possible to perform the localization process separately from the translation process.

4.13
minimalism
approach that includes critical information and the least amount of other information in documentation needed to be complete

4.14
procedure
ordered series of steps that a user follows to do one or more tasks

4.15
process
set of interrelated activities, which transform inputs into outputs

[ISO/IEC 12207:2008, definition 3.17]

4.16
project
endeavor with defined start and finish dates undertaken to create a product or service in accordance with specified resources and requirements

[ISO/IEC 12207:2008, ISO/IEC 15288:2008]

4.17
product authority
person or persons with overall responsibility for the capabilities and quality of a product

4.18
risk
combination of the probability of an event and its consequence

[ISO/IEC 16085:2006]

4.19
quality
ability of a product, service, system, component, or process to meet customer or user needs, expectations, or requirements

[ISO/IEC/IEEE 24765:2010]

4.20
step
one element (numbered list item) in a procedure that tells a user to perform an action (or actions)

[ISO/IEC 26514:2008]

NOTE 1: Responses by the software are not considered to be steps.

NOTE 2: A step contains one or more actions.

4.21
strategy
organization's overall plan of development, describing the effective use of resources in support of the organization in its future activities

[ISO/IEC 38500:2008]

4.22
usability
extent to which a product can be used by specified users to achieve specified goals with effectiveness, efficiency, and satisfaction in a specified context of use

[ISO/IEC 25062:2006]

4.23
user documentation
information to describe, explain, or instruct how to use software

[ISO/IEC 26514:2008]

NOTE: User documentation includes documentation to explain or instruct how to install, implement, administer, or operate software for end users.

4.24
work breakdown structure
WBS
a deliverable-oriented hierarchical decomposition of the work to be executed by the project team to accomplish the project objectives and create the required deliverables

NOTE: It organizes and defines the total scope of the project.

[*A Guide to the Project Management Body of Knowledge (PMBOK® Guide) – Fourth Edition*]

5 User documentation management within life cycle processes

5.1 User documentation management within the software life cycle

As defined in ISO/IEC 12207:2008 *Systems and software engineering — Software life cycle processes*, user documentation management is performed as a supporting process within the software or system life cycle. User documentation is developed in preliminary versions along with the software architectural design, and updated as needed during the software detailed design, software construction, software integration, software qualification testing, and software maintenance activities.

NOTE 1: User documentation may also be developed for previously released software or acquired for commercial off-the-shelf software.

NOTE 2: ISO/IEC/IEEE 26515, *Software and systems engineering — Developing user documentation in an agile environment,* has more information on the relation of user documentation development to software development.

Whether or not user documentation is prepared as part of the software life cycle, the documentation product has its own life cycle, including the stages of process implementation; design and development; production; and maintenance.

User documentation management shall be applied to the other activities in the documentation life cycle:

- analysis and design, which includes preparing the documentation designs for the project; collecting information about the software product and users, their tasks, and their needs for information; and designing documentation based on those needs;
- development and review, which includes structuring the content for usability, applying the documentation design by creating the written and graphic content, implementing the information in the specified media, editing and reviewing the content, and evaluating the user documentation with the rest of the product;
- production, which includes the integration, preparation, reproduction, and packaging and distribution of the documentation;
- maintenance, which includes keeping the documentation accurate and controlling document versions throughout the software product life cycle, including modifications for improved usability.

From the perspective of ISO/IEC 12207:2008, *Systems and software engineering — Software life cycle processes*, user documentation managers shall carry out the supporting processes of information management and software documentation management in accordance with 6.3.6 and 7.2.1 of ISO/IEC 12207:2008.

NOTE 3: For ease of reference, the text of these processes is included in Annex B.

The user documentation manager shall perform these management activities as part of a Plan-Do-Check-Act cycle:

1) setting user documentation strategy and objectives and preparing a documentation management plan
2) planning the user documentation project
3) controlling the user documentation project
4) selecting and implementing documentation resources, tools, and supporting systems
5) conducting process improvement for information management and documentation

As a result of successful implementation of the information management and software documentation management processes:

- a strategy identifying the documentation to be produced during the life cycle of the software product or service is developed;
- the standards to be applied for the development of the software documentation are identified;
- the documentation to be produced by the process or project is identified;
- the content and purpose of all documentation is specified, reviewed and approved;
- the documentation is developed and made available in accordance with identified standards;
- the documentation is maintained in accordance with defined criteria.

5.2 Portfolio management and content management

The software user documentation management process described in the previous section has the viewpoint of a single life cycle for an individual product, such as a single user manual, help system, or documentation set. This document takes the perspective of user documentation managers handling multiple projects and products. Thus, user documentation management usually involves the application of the portfolio management process, as stated in clause 6.2.3 of ISO/IEC 12207:2008.

The purpose of the Project Portfolio Management Process is to initiate and sustain necessary, sufficient, and suitable projects in order to meet the strategic objectives of the organization.

This process commits the investment of adequate organization funding and resources, and sanctions the authorities needed to establish selected projects. It performs continued qualification of projects to confirm they justify, or can be redirected to justify, continued investment.

As a result of the successful implementation of the Project Portfolio Management Process:

- business venture opportunities, investments or necessities are qualified, prioritized, and selected;
- resources and budgets for each project are identified and allocated;
- project management accountability and authorities are defined;
- projects meeting agreement and stakeholder requirements are sustained; and
- projects not meeting agreement or stakeholder requirements are redirected or cancelled.

The user documentation manager shall perform portfolio planning for documentation projects consistent with the organization's overall portfolio planning.

To sustain a portfolio of user documentation products and maintain consistency, content management is an efficient approach to avoid the repetitive effort of creating and formatting multiple documents covering similar information topics. Content management separates the content of the information products from their output formats. In a sense, content management is portfolio management applied to information assets, rather than to output software products or user documentation.

Software user documentation managers shall develop, implement, and maintain a content management strategy. The content management strategy shall specify the types of content that will be managed for reuse as a strategic priority and the types of output information items (documentation) that will be produced as a strategic priority, using the managed content. The content management strategy may define accountability and authorities for content management processes and systems. It may identify intended stakeholders and content users, including users of localized or translated content. It may establish thresholds to determine which types of content will be managed and maintained.

The content management strategy does not dictate the use of any specific content management system or document production tools.

NOTE: The Darwin Information Typing Architecture (DITA) is a document creation and management specification that builds content reuse into the authoring process (www.oasis-open.org)

5.3 Information management strategy and policies

User documentation management planning requires key decisions about work effort: who should do the work, using what sources of information, when and where, and using what tools. But before the manager goes far into detailed planning for projects, an information management strategy is needed: does the work need to be done at all, and how thoroughly does each aspect need to be performed?

The manager shall establish an information management or user software documentation management strategy. The strategy describes how user software documentation supports the organization's goals and serves its customers, and identifies priorities for its products and services. The strategy should be developed in consultation with the user documentation stakeholders (those individuals and organizations which have an interest in the effectiveness of the documentation). Stakeholders can include high-level executives, project authorities, help desk and service desk staff, customers, and business analysts.

An important principle in user documentation strategy is *minimalism.* Since it is not possible to document every detail of every software product, managers of user documentation need to take a more strategic view to prioritize documentation efforts so that they support the needs of the users, the customers, and the producing organization. Minimalism means that user documentation will include the critical information and the information needed by the users for their primary tasks. User documentation should be *task-oriented*, rather than covering every detail of the internal architecture of the software. Time and effort should not be spent documenting software features that can be readily discovered and easily understood by the users with the software's graphical user interface. With a minimalist perspective, the user documentation should not attempt to account for the use of every feature and every possible path through the software.

User documentation should be *audience-oriented*. Users can be managers, analysts, office personnel, professionals with no software expertise, maintenance programmers, etc. Depending on the tasks, they need various degrees of detail and different presentations of material. As part of information management strategy for user documentation, managers should plan for information reuse and adaptation (content management) to efficiently and effectively support its identified audiences. Then the documentation plan should specify what different types of information will be provided for different users.

Information management strategy should be communicated through documentation policies. Documentation policies prepared and supported by high-level management provide guidance to all decision-makers. Policies provide broad direction, and not detailed prescriptions on what to do or how to manage and prepare documentation. Formal, well-publicised policies should be established and communicated to everyone affected by the policies.

Documentation policies shall identify which documentation standards will be used. Compliance with relevant information storage, records management, and presentation standards and conventions may be required according to agreements and regulation. Existing standards should be adopted wherever possible. Where no suitable standards exist, standards and guidelines should be developed.

User documentation strategies, policies, and standards should enable managers to determine:

- what document types are required;
- how much documentation is to be provided;
- what the documents are to contain;
- what level of quality is to be achieved;
- when the documents are to be produced;
- how the documentation is to be stored, maintained, and communicated.

When an information management strategy has been established and the costs and expected benefits of organizational resources and projects have been estimated, the user documentation manager should apply the strategy to:

- evaluate the feasibility of achieving the goals of the projects with available resources and constraints;
- prioritize the projects to be started;
- establish thresholds to determine which projects will be executed.

6 Planning in documentation management

6.1 Work breakdown structures for documentation management

By defining the elements of the project, the work breakdown structure (WBS) is the foundation of effective planning, estimating, and reporting. The WBS should be used for estimating both time and other costs for each element, and also for tracking both time and other costs as they are expended. A consistent WBS is the frame of reference for initial estimation, ongoing reporting, corrective action (where variances indicate problems or opportunities), and perhaps for billing. The manager shall define a work breakdown structure at the level of each documentation project or element within the delivered information. The number of levels for documentation elements in the WBS depends on the scope of the effort and the level of detail needed for tracking cost, schedule, and technical quality. For WBS purposes, "elements" may be:

- document types, such as instructional materials, reference materials, training documentation;
- products to be documented;
- documentation projects or sets;
- delivered documents, such as user manual, help system;
- translated or localized versions of documents;
- document elements (topics, chapters, headings, illustrations).

Through further subdivision of WBS elements, the applicable cost and effort types can be identified. Effort types needed for the WBS elements may include

- project management;
- document design;
- audience analysis;
- providing information as a subject matter expert (SME);
- research and information gathering;
- writing;
- editing;
- illustrating;
- reviewing;
- revising;
- usability testing;
- production services.

Consistent with organizational policy, effort may also include infrastructure support that is allocated to several WBS elements, such as

- overall strategic planning;
- organizational and project activation;

- maintaining and administering a content management system and version control;
- production facilities;
- information distribution (such as via physical copies or internet site access);
- human resources and skills development.

6.2 Planning for user documentation

The manager shall develop and maintain plans for user documentation. Planning for user documentation includes:

- determining the scope of the user documentation management and technical activities;
- identifying project tasks and deliverables;
- establishing schedules for project tasks;
- identifying required resources to accomplish information management and documentation tasks.

The documentation management plan (Clause 7) contains schedules. Depending on the complexity and volume of work under way, separate schedules can be needed for the development of each document, consistent with the schedule for other parts of the software product, and combined into a master schedule. Because of the complexity of certain activities, detailed plans and schedules can be needed for user documentation testing, user documentation production, localization and translation, and documentation maintenance.

Developing a schedule for user documentation tasks includes the following steps:

- identify and describe products to be delivered;
- define the Work Breakdown Structure to implement the products;
- identify the key milestones, high-level due dates, and organizational constraints;
- set up major tasks consistent with the Work Breakdown Structure;
- identify the tasks and activities;
- estimate the activity durations;
- link the tasks and activities with their dependencies;
- identify the resources for each activity;
- check for resource overload;
- determine the critical path.

After determining the scope of the activities, the manager should establish the feasibility of projects by checking that the resources (personnel, infrastructure, tools, and information sources) required to execute and manage the project are available, adequate, and appropriate.

After determining the critical path (the shortest possible project duration) of a documentation schedule, the manager could need to revise the schedule before it is approved and implemented. For example, the schedule for a project could need to be modified as part of a master schedule for all projects drawing on the same

resources. If documentation must be available sooner than the scheduled completion, the scope of coverage in the documentation could need to be reduced or additional resources identified for some tasks.

Documentation schedules shall include time for review and test, revision, and approval of deliverables. Documentation plans shall clearly establish the responsible authority for review and approval of deliverables.

NOTE 1: The manager should schedule introductory and conceptual topics to be completed last, so that the knowledge of the software and the users amassed during the preparation of the other topics can be applied.

Typical tasks for a user documentation project which should be considered for inclusion in documentation schedules and estimates can be grouped into these categories:

- tasks related to determining the purpose and audience;
- design tasks;
- development tasks;
- translation and localization tasks;
- production tasks;
- change management and maintenance tasks.

NOTE 2: Detailed requirements for various aspects of these tasks are contained in ISO/IEC 26514:2008.

The following six Clauses, 6.2.1 through 6.2.6, list the typical tasks under these headings.

6.2.1 Determination of purpose and audience

Typical tasks relating to determining purpose and audience are to:

- obtain the goals and objectives of the software and the software development project;
- create the goals and objectives for the publications project;
- conduct audience research – by the software or documentation developers or another organization;
- obtain customer specifications for the software or documentation;
- plan customer research and conduct customer studies;
- meet typical users in their work environments, and observe them at work;
- analyze tasks the audience needs or wants to perform;
- establish the requirements of the project, including the project's objectives, motivations, and boundaries;
- acquire resources as needed;
- acquire tools as needed;
- locate and negotiate with vendors;
- learn how to use new content management or authoring tools and systems;
- prepare, review, and revise the information management plan;
- conduct management reviews of the project, including personnel, schedule, effort, and costs;
- evaluate projects for lessons learned and process improvement activities.

6.2.2 Design tasks

Typical design tasks are to:

- gather software information (software developers should provide information to the writers and answer questions);
- review existing information topics for applicability and reuse;
- describe the user's tasks in detail;
- become familiar with the software (preferably by using it);
- describe the organization of the document or document set;
- write content specifications or a detailed, annotated outline;
- design the format and presentation style, or select which style templates to apply;
- specify the documentation production and delivery systems, that is, the media to be used;
- specify the interface design for the documentation delivery;
- redesign information deliverables to meet customer needs;
- transform existing book-based content into consistent, reusable topics;
- review and revise the documentation plan.

6.2.3 Development tasks

Typical development tasks are to:

- write the text topics;
- create the illustrations;
- edit the text;
- build the on-screen documentation systems;
- provide specialized accessibility features;
- administer and support authoring and content management tools and systems;
- provide version control;
- review for technical accuracy of the documentation;
- review for correct operation of the system features of on-screen documentation;
- review style and quality of illustrations;
- perform a final copy edit;
- perform legal reviews;
- identify keywords and generate indexes and tables of contents;
- test the documentation at each planned testing stage, including usability testing;
- perform reviews at each technical review stage.

6.2.4 Translation and localization tasks

Typical translation and localization tasks are to:

- select a supplier of translation or localization services;
- prepare a special terminology dictionary for the target language;
- provide source language text and graphics files for the translators;
- translate or localize;
- edit and review the translated and localized copy;
- update the translation dictionary.

NOTE: Translation and localization should be done by a native speaker of the target language or localization area.

6.2.5 Production tasks

Typical production tasks are to:

- assemble files, topics, or sections to be released;
- for printed output, prepare camera-ready copy or digital files for delivery to the printer;
- perform print quality assurance checks;
- perform quality assurance checks of digital media such as DVDs and CDs;
- arrange for assembly, distribution, and delivery;
- coordinate the packaging and shipping of the documentation and the product.

6.2.6 Change management and maintenance tasks

Typical change management and maintenance tasks are to:

- collect and analyze incident reports for errors found in the documentation by users or service desk;
- update the documentation to take account of changes to the software and errors in the documentation;
- review or retest the changed documentation;
- maintain version control of the documentation and information topics;
- archive all necessary project artifacts according to organization policy, and security and privacy requirements;
- dispose of unwanted, invalid, or unverifiable information according to organization policy, and security and privacy requirements.

7 User documentation plans

7.1 User documentation management plan compared to documentation plan

This clause provides specifications for the contents of a user documentation management plan and a user documentation plan. Although the terminology is similar, in this standard, the difference between the two is the scope and type of planning. A documentation management plan covers the complete effort of an organization performing an information management process, most likely developing multiple versions of multiple user documentation products. A documentation plan has a smaller scope and includes the project plan for a single document or document suite, often including the documentation specifications.

In this standard, for simplicity of reference, each plan is described as if it were published as a separate document. However, plans shall be considered as conforming if they are unpublished but available in a repository for reference, divided into separate documents or volumes, or combined with other information items into one document. Use of the nomenclature for the plan titles or contents is not required to claim conformance with this standard. The lists of contents of documents (information items) do not specify a normative sequence, structure of parts, or a list of section titles.

Certain generic content shall be included in each plan. The verb ***"include"*** used in this document indicates that either (1) the information is present or (2) a reference to the information is listed.

A plan shall include the following elements

- date of issue and status;
- scope;
- issuing organization;
- references, being applicable policies, laws, standards, contracts, requirements, and other plans and procedures;
- approval authority;
- approach for technical and management review and reporting;
- other plans, that is, plans or task descriptions that expand on the details of a plan;
- planned activities and tasks;
- identification of tools, methods, and techniques;
- schedules;
- budgets and cost estimates;
- resources and their allocation;
- responsibilities and authority, including the senior responsible owner and immediate process owner;
- interfaces among parties involved;
- risks and risk identification, assessment, and mitigation activities;
- quality assurance and control measures;
- environment, infrastructure, security, and safety;
- change procedures and history;
- termination process.

7.2 Contents of the documentation management plan

The manager shall produce a documentation management (or information management) plan that defines and documents the process to be used for the management of information content and the development of documentation. The documentation management plan presents how the organization plans to conduct information management or software user documentation management activities during the life cycle. In addition to the required generic content identified in Clause 7.1, the documentation management plan should include the following items:

- the information management strategy and its relationship to the overall organizational strategy;
- descriptions of the process and activities for authorizing, developing, reviewing, storing, communicating, and maintaining information for users in electronic and printed media;
- identification of the information to be acquired, re-used, or produced;
- resources, roles, and responsibilities, consistent with the overall organizational policies;
- content management or reuse strategy and version control (document configuration management);
- identification of standards, guides, models, or templates for the structure, format, and style of electronic and printed user documentation;
- methodology and tools;
- quality controls to be implemented during documentation development;
- identification of model schedules and standard durations for information development, review, and approval;
- identification of standard measures and estimating methods for user documentation projects;
- who will receive or have access to restricted information;
- policies for retention of information, and provisions for version control, change control, and maintenance of user documentation;
- provisions for process evaluation and improvement.

7.3 Contents of the documentation plan

The manager shall produce a documentation plan that specifies the user documentation items to be produced during a project. In addition to the required generic content identified in Clause 7.1, the documentation plan should include the following items:

- identification of the software products covered in the user documentation;
- the rationale or purpose (instructional or reference), and scope of each document and document set;
- the intended audience(s) (user profiles) of each document, characterized by features such as education level, skills, and experience;
- the documents and information to be acquired, re-used, or developed, and expected sources;
- the usability requirements for the user documentation;
- the controlling template or standard design for the media and output format of each document;

- estimated size of the user documentation in terms of number of topics, illustrations, words, pages, error messages, commands, or other parameters;
- outline or table of contents or list of topics for the user documentation;
- methodology and tools for developing and producing the documentation, including methods for passing information on software changes to the documenter during software development;
- roles and responsibilities; required resources with skill levels; optionally, a team selection plan;
- schedules for document development, review and approval, and delivery, including dependencies on software product schedules or other documentation projects;
- related plans for translation or localization of the user documentation;
- identification of physical deliverables, such as the number of printed copies if applicable, disk and file formats (including software versions) if applicable, and location to which copies will be delivered.

Optionally, the documentation plan may include the level of security or confidentiality of each document, and who will receive or have access to restricted documents.

NOTE 1: ISO/IEC/IEEE 26512:2011 contains additional details on requirements for user documentation.

Usability requirements for the documentation, independent of the usability of the software, may include the following:

- time required to learn about the contents of the documentation, particularly if more than one document is supplied;
- time required to understand the documentation structure and to learn how to use it;
- time required to find information, once the user is familiar with the documentation;
- feasibility and time required to perform a specified task using the instructions in the documentation.

NOTE 2: ISO/IEC 26513:2009 provides requirements for user documentation testing, including usability testing.

A documentation plan should be prepared and approved before the development of the documentation begins, to ensure that all parties agree on the objectives and methods to be used. After approval, the plan should be distributed as widely as possible; this distribution should include all documentation development staff members, and may include acquirer staff members and subcontractors (for example, printers, typesetters, translators). If subsequent changes are made to the documentation plan, the manager shall ensure that affected stakeholders are notified of the change.

See Annex A for a sample documentation plan.

8 Project activation

8.1 Authorization, procedures, and specifications

According to organizational policy, user documentation projects shall be authorized by the manager, product authority, or high-level sponsor responsible for information management and documentation. Team members involved in a project should have access to the authorization information, including purpose and scope of the project.

The manager shall ensure that procedures are documented for documentation review, usability testing, and version control (configuration control). Procedures should cover use of information management or content management systems for the creation, change, review and collaboration, retention, search and retrieval, and transmission of information, as well as for administering system access.

The most difficult aspect of implementing a set of procedures is to gain “buy-in” from the appropriate people. Senior management should be prepared to sponsor the project. Buy-in can be achieved by education, but a much more robust and efficient outcome is achieved by involving process users in process development. For a documentation team, team members may be involved in deciding what the process should be, and in documenting the procedures.

The manager shall ensure that specifications are prepared for related documents, so that related documents have consistent style and format for ease of use. A consistent style in the software product, product packaging, and user documentation can benefit the user.

A **style specification** shall address the following:

- standard or controlled vocabulary (especially for translation/localization);
- spelling of product-specific terms;
- use of the organization logo and software product logo;
- design of title/home pages;
- page/screen layout;
- style for text and for levels of headings;
- use of acronyms;
- capitalization;
- list styles;
- procedures styles;
- software code sample style;
- writing conventions;
- illustration styles;
- representation of warnings, cautions, and notes.

Specifications may address use of standard metadata or taxonomy.

NOTE: ISO/IEC 26514:2008 includes detailed requirements and guidance for the presentation format and style of user documentation.

8.2 Infrastructure

The manager shall obtain infrastructure resources or services for the creation, change, representation, review and collaboration, retention, search and retrieval, transmission, and publication of information. Information shall be stored and retained in such a way that it is readily retrievable and legible, in facilities that protect against damage, deterioration, and loss.

NOTE: Media, location, and protection of the information should be determined in accordance with the specified storage and retrieval periods, and with organization policy, agreements, and legislation.

The documentation management plan shall indicate the required infrastructure systems (equipment and software).

8.3 Information development team

8.3.1 Definition of roles

The manager shall define a set of roles for the planned user documentation activities, such as information and documentation design, development, and production. The manager shall identify responsibilities, skills, and expertise for each role.

There are two contexts in which roles are performed:

- ongoing: in a documentation team, tasked with the documentation of one or more software products under continuous development;
- project: as part of a team that will be disbanded on the project's completion.

A role is not a job. Depending on the size of the task, there may be more than one role for a person, or more than one person for a role. For small documentation projects, one person can perform all of the necessary roles; it is possible that a given small project does not need all roles. For large projects, multiple people may be involved in each role; all roles can be needed. Very large projects will possibly need additional support roles (for example, HR specialist, administrative support, and IT support) to enable the team to complete the project.

NOTE 1: ISO/IEC/IEEE 26515 describes user documentation roles in an agile development team.

The organization shall allocate resources for the achievement of project objectives.

The organization shall ensure that only individuals with the requisite skills and expertise fill those roles. Some roles may be allocated to people who are involved in the development of documentation, but who do not report through the documentation team.

EXAMPLE: A “subject-matter expert” (SME) who provides product information or a technical reviewer who checks the technical content of a work for correctness and coverage of critical functions may be external to the user documentation team.

Those selected for user documentation teams may be expected to have some familiarity with the scientific, business, or technical functions and tasks supported by the software. This will enable them to accurately present the concepts and functions of the software and enable the software users to perform their tasks. However, it is rarely necessary for the information designer or writer to be the SME.

Similarly, information development team members will need to use infrastructure tools in their work. However, it is usually counterproductive for managers to limit their search for team members to those with extensive experience on specific tools. The writer's ability to learn new tools and technology quickly is far more valuable than experience on any specific tool. The same skills that enable the writer to learn new tools quickly are also applicable to quickly understanding the new software being documented.

NOTE 2: When user documentation services are acquired for short-term projects and immediate needs, selection of resources that are skilled in the use of specific tools is appropriate.

User documentation team members operate at a range of competence and **responsibility levels**. Three broad levels are identified: junior, intermediate, and senior. The following descriptions of responsibility levels for writers may be adapted for other roles.

Junior writers undertake writing under general direction. The work involves the application of knowledge of technical writing techniques and principles and requires some initiative and judgement. Persons at this level have relevant training and sound liaison and communication skills, but little or no practical work experience in information technology. As they become more experienced, their work will require progressively less review and direction and they are expected to exercise more individual initiative and judgement. Persons at this level may be required to interact with and provide work guidance to auxiliary staff.

Writers, or intermediate writers, undertake writing and related activities under limited direction. Persons at this level are expected to have relevant training and be experienced in and capable of performing a wide range of technical writing. They may work as individuals, as members of a team, or as team leaders, depending on the size and complexity of projects.

Senior writers undertake technical writing requiring considerable originality, independence, initiative, and judgement under limited direction. Persons at this level are expected to have mastered information-development techniques and principles and have demonstrated their proficiency by applying these techniques and principles on multiple projects. They should demonstrate the ability to monitor, control, and evaluate changes and to produce innovative work within time and budget and format constraints. Their work includes directing the development, modification, and/or maintenance of documentation.

Job descriptions may be constructed from a list of roles and designation of appropriate skill level. The manager may assist in preparing job descriptions. The manager should communicate the required roles and specific skills needed to persons responsible for recruiting people for the roles.

8.3.2 Example roles for user documentation

The roles required for a particular team vary depending on the task the team is to perform.

Certain responsibilities and capabilities are applicable to many roles in an organization, such as:

- being able to work effectively with product developers, instructional designers, support personnel, trainers, and others;
- being open to and enthusiastic about changing from traditional ways of working.

For each role, the following clauses define the responsibilities of the role. The manager should identify the needed roles for the organization and its projects so that all aspects of the operation of the team are covered.

8.3.2.1 Manager

The manager's responsibilities include:

- scoping and estimating the effort required for each documentation project and task;
- planning a project and carrying through on the plan through the information development life cycle;
- scheduling tasks;
- selecting and assigning staff to tasks;
- measuring and monitoring progress and exerting control when performance changes are needed;
- reporting to other stakeholders (including management) on progress;
- managing risks;
- resolving issues arising between team members, and between the team and others;
- mentoring and supporting team members, and interacting with all other stakeholders, exercising interpersonal skills at a high level;
- working with an Information Architect or Information Designer or both to balance requirements against cost.

NOTE: Performance of management tasks requires understanding of the tasks involved in the development of documentation. Project management skills are necessary even in a documentation maintenance environment.

8.3.2.2 Team leader

The team leader's responsibilities include:

- mentoring writers and illustrators to ensure that they work to schedule and requirements, exercising interpersonal skills at a high level;
- providing progress monitoring information to the Manager.

8.3.2.3 Information architect

The information architect's responsibilities include:

- collecting organizational needs, user needs, budget, and other inputs;
- developing a documentation strategy, such as the application of minimalist principles;
- planning and documenting the allocation of information for multiple audiences to a set of information products;
- communicating the documentation strategy both to the documentation team (in particular, to the information designers), and to the rest of the organization, exercising interpersonal skills at a high level;
- being a spokesperson for sound information design in the context of business requirements and constraints;
- working with a manager to balance requirements and costs.

8.3.2.4 Usability designer

The usability designer's responsibilities include:

- working with the Information Architect and/or Information Designer to ensure the usability of the planned documentation;
- arranging and analysing usability tests of documentation and associated products, applying knowledge of usability theory and practice;
- analyzing documentation and associated products in relation to health and safety regulations, principles, and practice.

8.3.2.5 Graphic designer

The graphic designer's responsibilities include:

- developing an overall look and feel for documentation;
- developing documentation templates, including cover design, using documentation tools as needed;
- working with illustrators to ensure a consistent application of illustration standards;
- using illustration tools as required to produce meaningful graphic elements in documentation.

8.3.2.6 Information designer

The information designer's responsibilities include:

- performing audience analysis;
- developing documentation plans for individual documents or document sets;
- applying the organization's documentation strategy to information design;
- working with the Manager to balance requirements and costs;
- communicating designs to the documentation team;
- monitoring work products to ensure that they meet the plan.

8.3.2.7 Writer

The writer's responsibilities include:

- interviewing subject matter experts to gain an understanding of the material to be documented;
- writing documentation using a structure that is specified in a documentation plan;
- applying language skills at a high level and according to writing standards;
- working with Illustrators to produce diagrams;
- working with reviewers and SMEs to resolve errors and areas that are unclear;
- exercising interpersonal skills at a high level in discharging these responsibilities;
- developing skills in specific content management tools, relying on background knowledge of documentation tools and text processing tools in general.

8.3.2.8 Illustrator

The illustrator's responsibilities include:

- developing illustrations, using high-level illustration skills and illustration tools;
- developing skills in specific illustration tools, relying on background knowledge of illustration tools in general;
- liaising with graphic designers on illustration standards;
- liaising with writers on illustration content.

8.3.2.9 Editor

The editor's responsibilities include:

- checking user documentation drafts against a documentation plan and revising to improve the arrangement, clarity, conciseness, completeness, and usability of text and illustrations;
- checking drafts for conformance to applicable international and organizational standards;

- checking and correcting written material against style specifications for errors, inconsistencies, and opportunities for improvement, applying written language skills at a high level.

NOTE: Editing may be applied at various levels, from complete restructuring and reorganization of drafts to correction of factual or grammatical errors. The level of editing should be chosen consistent with the strategic importance of the user documentation.

8.3.2.10 Quality specialist

The quality specialist's responsibilities include:

- developing process documentation for use by the documentation team;
- assessing documentation being developed for compliance with any relevant regulations;
- auditing documentation processes, ensuring compliance with internal and external standards.

8.3.2.11 Indexer

The indexer's responsibilities include:

- developing indexes (including both paper and on-screen indexes), applying experience and skill to select indexed terms and concepts;
- using indexing tools in the development of indexes, and developing tool knowledge as necessary.

8.3.2.12 Tester

The tester's responsibilities include:

- assessing the accuracy of the information in the documents;
- assessing the usability of the documentation;
- as appropriate, recommending changes based on deficiencies in usability or accuracy or both.

NOTE: The user documentation tester may recommend changes in the documentation and the software.

8.3.2.13 Translation/localization coordinator

The localization coordinator's responsibilities include:

- interacting with translation/localization providers to provide source materials and maintain version control;
- furnishing a terminology list or dictionary of previously translated terms to be used and terms, such as product names, that are not to be translated;
- ensuring the quality of translations;
- participating in framing contracts to govern the performance of translation providers;
- assessing providers' technical compliance with contracts.

NOTE: This role may be supported by a procurement department for acquisition of services. ISO/IEC/IEEE 26512:2011 provides requirements for the acquisition and supply of user documentation services, including translation and localization services.

8.3.2.14 Translator

The translator's responsibilities include:

- translating documentation, applying high-level language skills in both the source and target languages, and specific skills as a translator;
- developing a translation dictionary;
- testing and evaluating materials that have been translated.

Translators should be native speakers of the target language.

8.3.2.15 Publisher

The publisher's (or production coordinator's) responsibilities include:

- constructing the final version of the documentation in all required media and providing it to the customer, using automated tools as required;
- overseeing the final quality checks before publication;
- determining front and back matter and adding it to printed documentation;
- determining metadata and adding it to on-screen documentation;
- for embedded documentation, liaising with software developers for integration of the documentation within the software product;
- producing delivery media such as disks;
- implementing configuration control of published material.

8.3.2.16 Print Coordinator

The print coordinator's responsibilities include:

- liaising with external or internal printing suppliers, drawing on experience in and knowledge of the print industry and of current print and production processes;
- ensuring the quality, cost, and timely delivery of proofs and final printed materials;
- participating in the preparation of contracts to govern printing and print finishing services, and assessing providers' compliance with such contracts (unless supported by a procurement department, or only using internal printing facilities).

9 User documentation management control methods

9.1 Documentation measurements

Documentation measurements are essential to developing more accurate documentation estimates, plans, and schedules, and to controlling and improving the documentation products and process. Collecting and analyzing measurements for documentation supports understanding the quality level of user documentation, improving that quality, and quantifying the improvement. By measuring quality, the documentation manager can:

- know whether the quality level is changing;

- teach quality techniques to others ("success models");
- determine where competitors stand ("competitive analysis").

The measurement process uses the "Plan-Do-Check-Act" model. The documentation manager shall perform measurement planning by setting goals for measurement and defining the key measurements to be collected. The documentation manager shall adopt, document, and consider for improvement such measurements as are considered important to stakeholders. The manager shall collect, record, and analyze measurements, and shall establish baselines and identify trends. The manager shall apply measurements for the control of work performance and for improving procedures.

Measurement for documentation and information management shall be suitable for use. A suitable measurement has the following attributes:

- well-defined, so that everyone has the same understanding of its meaning;
- has a range, a meaningful domain, and a known slope, that is, the shape of the curve is understood;
- easily obtained or worth the effort to obtain;
- reproducible or repeatable;
- corresponds to something important to process outcomes and quality.

EXAMPLE For the number of spelling errors per 1000 words, the range is 0 (no errors) to 1000 (every word is misspelled). The domain is the entire range. The slope is negative (larger numbers are worse than smaller numbers). The measurement is objective and, given a specified wordlist authority, repeatable.

NOTE: ISO/IEC 15939:2007 provides more detail.

9.1.1 User documentation product measurements

The manager's most common need for user documentation measurements is to enable estimating the size of a product, and the time and resources required to produce it. The traditional measurement for user documentation size, number of pages, is subject to significant variation due to differences in delivery formats and amount of content on a page. The number of topics is now more commonly used to determine the size of the finished product, as it is based on the number of user tasks to be documented. The organization should establish the typical length of a topic (as in an online help system) for estimating purposes.

The manager should consider several complexity factors in estimating the number of topics to be included in a software user document:

- strategic importance of the software to the organization and the criticality of the software functions, keeping in mind minimalist documentation principles;
- availability of reusable or shared topics among user documentation projects and software products;
- number of illustrations to be produced or reproduced as screen captures;
- relative complexity or simplicity of the procedure to be documented, considered from the perspective of the audience. Relatively complex procedures can require several topics for adequate coverage;
- audience's understanding of the concepts and workflow being automated in the software functions;
- audience's familiarity with basic navigational techniques for the software;
- need for reference material, such as troubleshooting procedures, error messages, and lists of commands and codes, if these are not embedded in the software.

The complexity or number of internal functions in the software often does not correlate well to the number of topics needed in user documentation.

The number of words in the source document is a typical measure for estimating translation costs (the number of words in the translated target language will vary). For translation of revisions, the number of words changed is a common measure.

Secondary product measurements assess the availability of usability features, such as the number of indexed terms per topic, number of examples per topic, and proportion of active-voice sentences (for English).

9.1.2 User documentation productivity measurements

Estimating the rate of producing work is essential to documentation planning and control. However, the traditional measure of hours per page (or more recently, hours per topic) is affected by many variables:

- importance of conciseness in products such as quick reference cards, which require special design efforts and more time to produce than a longer document;
- number of illustrations to be captured or developed compared to the amount of text;
- complexity of the information to be documented and the writer's skill and familiarity with the subject matter and the software;
- availability of subject matter experts, the software requirements, and the software system;
- proportion of content that is reused or automatically updated, such as use of variables to change product names in the documentation;
- time lost to rework, including rework due to changes in the software requirements and changes in functions that have already been documented;
- inclusion of indirect effort in documentation estimates, such as setup of content management systems and templates and involvement in project leadership (especially for agile development teams), SME interviews, software testing, and user documentation usability testing.

Managers shall develop baseline productivity measurements and record productivity for subsequent projects. Managers should weigh the impact of these variables to estimate productivity and project duration for new efforts.

Organizations frequently attempt to develop top-down parametric estimates of required user documentation resources by comparison to the number of software developers or engineers. Because of the variables listed in this clause, such estimates can vary from 1:5 to 1:100 and are rarely comparable among organizations. More user documentation staff members are needed when they are closely involved in the work of the software development team and are supporting a critical new project. Fewer user documentation staff members are needed for maintenance updates to well-documented products. Ratios for documentation staff to developers, or for editors to writers, may be used for estimates within organizations, based on experience with similar projects and adjustments for project complexity and staff experience.

9.1.3 User documentation quality measurements

Quality characteristics for user documentation include

- technical accuracy;
- ease of finding needed information not cluttered with unneeded information;
- ease of understanding the content;

- effective use of illustrations and examples;
- convenience of the design and package or media in the context of use;
- readable text;
- grammatical correctness;
- usefulness for solving problems without further assistance.

To measure the extent to which these quality characteristics are present, quality measures for user documentation traditionally track the number of defects, such as grammatical or spelling errors, or discrepancies between the software and the user documentation. A useful quality measure is conformance with standards and requirements for content, structure, and format, assuming the user documentation requirements are available in the documentation plan. These measurements influence the user's impression of reliability and quality of documentation. Checklists may be used to evaluate compliance.

However, the most useful measure of user documentation quality is the results of usability testing. Managers shall ensure that documentation is tested to meet its usability requirements (Clause 7.3).

After production, user documentation quality can be measured through analysis of calls to the organization's service desk. The manager should analyze service calls to identify areas for additions, corrections, and improvements in the user documentation and the documentation for the service desk staff. Documentation revisions may be made available online for software user access, and through updated knowledge topics and procedures for the service desk staff. Improved user documentation can dramatically lower the number and duration of service desk calls, thus lowering software support costs, and improving customer satisfaction with the software product and the organization. Analysis of reported problems may also be used to improve documentation planning and other procedures for future projects.

User satisfaction surveys can also elicit estimates of the quality of user documentation and suggestions for improvement.

9.1.4 Process improvement measurements

The manager should identify, record, and analyze measurements of the information management and user documentation management processes to support process improvement. Typical measurements of value may include:

- proportion of work covered by documented policies and procedures or operating instructions;
- average length of time to complete process steps;
- proportion of process steps considered to add value for the customers;
- ratio of hours applied directly to a project to hours applied indirectly to support several projects, that is, overhead;
- amount of rework required to meet quality standards or conform to standard systems, formats, styles, and plans;
- percent of projects completed on time or within budget.

9.2 Documentation estimating

The manager shall record the basis of resource estimates, and record the calculations of resource requirements for particular projects so that they can be compared against the actual figures to improve future estimates.

Estimating the hours and resources required to develop documentation should be performed using a combination of top-down and bottom-up discrete estimates. Both approaches require that at least a preliminary documentation plan or work breakdown structure (WBS) is available.

Top-down estimates compare the project with other similar projects. For example, in a series of user manuals documenting printers, based on the amount of content reuse and the decreasing effort needed to document the first four models in a similar line of products, the trend may be extrapolated to predict the effort needed for documenting the fifth in the series.

Top-down estimates for new work compared to previous efforts need to be adjusted, taking into consideration the size and complexity of the project and the skills of the available resources.

Bottom-up estimates combine estimates for each discrete task to form a total estimate. The estimate should be compared to the organization's baseline productivity measurements, such as hours per topic or days per illustration.

When there is a limited budget for a project, managers should determine whether the allocated budget aligns with the cost estimate derived from the top-down and bottom-up estimates. Discrepancies can lead to reduction in scope for the documentation project. Similarly, when the project has a fixed deadline for delivery, the manager should determine from the estimate and preliminary schedule whether the delivery date is feasible. The manager will possibly need to revise the estimate to use additional or more experienced resources, which would make the project more costly, or to reduce the scope of the project if resources are limited.

A good way to estimate an unknown project is to perform a pilot project. A writer should develop a sample chapter or a few topics and record the amount of time that was used. With the actual value as a baseline, the manager may generate the value for the rest of the project.

In addition to estimating resources needed to perform the tasks (such as listed in Clause 6.2), the documentation manager should consider costs for outsourced services such as translation, production and copying, materials, equipment, packing, and shipping.

When estimating the cost of producing copies of printed documentation, the manager should consider the following:

- the number of pages in the document;
- the size of the pages;
- the use of color;
- the preparation of special illustrations;
- quality and type of the paper;
- the number of copies required of each document;
- printing costs;
- binding and packaging costs, including materials;
- distribution costs.

10 Applying management control to documentation

10.1 Purpose and outcomes

The manager shall control the information management and software user documentation effort to ensure performance follows plans and schedules, stays within projected budgets, and satisfies quality and usability objectives. Control includes:

- taking measurements;
- recording, investigating, and resolving problems;
- acting to avoid the recurrence of problems;
- estimating the impact of requested changes;
- redirecting activities to correct or mitigate deviations from objectives and plans.

The manager shall hold reviews and prepare progress analysis reports at significant project milestones or periodically, and at least monthly. The manager shall periodically review the entire portfolio of work to ensure that each effort remains viable, as indicated by, for example, continuing need for the user documentation and relevance to the organization's strategies. The organization shall act to cancel or suspend projects whose disadvantages or risks to the organization outweigh the benefits of continued investment, where agreements permit it.

10.2 Change management

The manager shall plan to control reuse and revision of plans, records, delivered documents, and topics as software products and the documentation continue their life cycle. The change management plan should describe the following:

- control of revision of the information;
- archiving of both electronic and hard-copy documentation;
- control and distribution of the documentation management plan after its formal approval.

The manager shall establish a system for uniquely identifying information items and documentation under change control. Identification data should include the documented software product, language, type of user document, edition and revision, date of release, and status (such as preliminary or final).

Master materials shall be stored in accordance with organizational requirements for record retention, security, maintenance, and backup.

10.3 Schedule and cost control

The manager shall track performance against schedules and resource plans or budgets. Performance tracking includes recording actual duration, actual resources used, and the completed proportion of each part of the documentation, WBS element, or task in the schedule.

Variable percentages may be used for topics that have been started but are not complete. More rigorous tracking methods assign fixed percentages at the start of a task (such as 20% for task start and the remaining 80% at task completion, or even 0 for task start and 100% at task completion).

When tracking shows that a project is behind schedule, schedules should not be adjusted to save time by eliminating activities that demonstrate acceptable quality, such as content reviews and usability tests. The manager should consider the impact of tradeoffs among the constraints of cost, schedule, and quality.

Managers benefit from comparing their project status to baseline schedules and budgets to understand whether activities are ahead of schedule or behind, and whether they are underspending or overspending. However, schedule and cost variance do not give a complete picture of project performance.

Underspending is generally regarded favorably, but if project expenses are less than budgeted because the team has accomplished little work and is behind schedule, the project is likely to miss its goals. Conversely, if project expenses are over budget, but the team is completing work more quickly than planned, the team could actually finish early and without overspending for the project as a whole.

A better performance measure is earned value, or budgeted cost of work performed (BCWP). If performance is on track, earned value will be the same as the actual cost of the work performed. Earned value greater than actual cost indicates favorable performance; earned value less than actual cost indicates less satisfactory performance.

EXAMPLE: A manager has estimated the effort required to write Chapter 1 at 10 working days at a cost of 500 Euros per day (5000 Euros total). To date the writers have expended a total of 6 days in working on that chapter. From the material that has been written, the manager estimates that the Chapter is 80% complete, which should have taken 8 days (10 days × 80%). The earned value is 80 percent of 5000 = 4000 Euros. The actual cost is 3000 Euros (6 days at 500 Euros per day). Earned value is greater than actual cost, showing favorable performance.

10.4 Resource management

10.4.1 Project communication

Consistent and timely communication with team members is invaluable for conveying strategies, goals, and plans; evaluating risks, gathering project status; and reporting problem resolutions. Electronic communication media are valuable when working within organization constraints, such as geographically dispersed (virtual) project teams.

10.4.2 Managing documentation team members and suppliers

The manager shall determine the knowledge and skill level expected for satisfactory performance of each role identified for use on a project (see Clause 8.3.2 for examples). The organization shall recruit or identify and train staff to meet the resource needs of the organization and its projects, or acquire user documentation services. The manager shall communicate descriptions of their roles and responsibilities to user documentation and information management staff. The manager shall maintain records of staff performance for use in estimating future projects and making suitable assignments of staff.

NOTE: ISO/IEC/IEEE 26512:2011, *Systems and software engineering — Requirements for acquirers and suppliers of user documentation,* addresses management control of suppliers of user documentation services.

10.4.3 Managing translation services

Management of translation is a specialized instance of the need to balance accuracy, timeliness, and cost of user documentation. By planning for translation from the beginning of a project, managers may minimize cost and improve the quality of translation by:

- selecting documentation designs that rely on drawings rather than text, and avoiding converting text labels to graphics in illustrations;
- selecting output formats that allow room for translation into languages that take more space than the source language (for example, translating from English into German);
- taking special care in selecting output formats for languages that are read in a different direction than the source language (for example, translating from English to Arabic);
- using a controlled vocabulary with consistent terminology and sentence structure;
- negotiating translation dictionary in reusable form from the translation service;

- planning for reuse of material so that only changed words need to be newly translated;
- avoiding rework by scheduling translation when the source language version has completed reviews and testing.

During a translation project, strict monitoring and control of tasks for translation, review, testing, and rework or corrections can require extra management attention for timely completion.

10.5 Quality management

Managers should determine how quality is to be achieved and maintained, consistent with documentation strategy.

EXAMPLE: A user guide might take the form of a set of printed pages stapled together or an electronic version; it might have extensive illustrations designed by a graphics expert, or be presented in a visual format on an electronic user device.

Managers should set standards for the content, structure, and format of user documentation products, appropriate to the criticality of information and the intended use of the documentation (for example, intended for frequent reference or intended as an initial orientation tutorial). The standards may be presented in the documentation management plan, documentation plan, templates or models. The content of high-quality user documentation is

- accurate;
- complete for critical information;
- clear;
- efficient, measured by the user's ability to find needed information quickly;
- effective, measured by the user's ability to apply the information to accomplish a task.
- relevant to user needs, providing a satisfactory user experience;

10.5.1 Managing for product quality—reviews and tests

The manager shall ensure that user documentation is evaluated for satisfaction of requirements before it is delivered. Typical quality problems with user documentation are that it is incorrect, incomplete, contains unnecessary information, uses inconsistent terminology, is disorganized, is written for a reading level beyond the intended audience, has poor access or navigation, and—for instructional materials—is not task-oriented.

NOTE: ISO/IEC 26513:2009, *Systems and software engineering – Requirements for testers and reviewers of user documentation*, has detailed requirements for ensuring product quality through reviews and usability tests. ISO/IEC 26514:2008, *Systems and software engineering — Requirements for designers and developers of user documentation*, describes how to structure user documentation intended to instruct in the use of the software. ISO/IEC 90003:2004, *Software engineering — Guidelines for the application of ISO 9001:2000 to computer software* may be consulted for applicability to software user documentation quality.

10.5.2 Risk and problem management

Risks to user documentation can affect the schedule, cost, or quality of a user documentation project or organizational portfolio. Based on the organization's information management strategy and project objectives, the user documentation manager should identify, evaluate, treat, and monitor risks. Risk treatment measures can include avoiding, optimizing, transferring or retaining (accepting) risk:

- risk avoidance – choosing an alternate approach to eliminate a risk;
- risk mitigation – taking steps to diminish the severity of a risk;

- risk acceptance – determining that the cost of avoiding or mitigating the risk is greater than the potential impact if the risk becomes an actual problem.

NOTE 1: Refer to ISO/IEC 16085:2006, *Systems and software engineering — Life cycle processes — Risk management* for a more detailed discussion of risk.

In addition to managing the documentation project risks, the documentation manager should be aware of risks identified for users of the software and ways in which the user documentation can reduce those risks, for example, by including warnings and cautions.

The manager shall establish and implement a problem management system for user documentation. The manager shall establish and implement procedures for identifying and reviewing reported problems with user documentation, categorizing the severity of problems, determining the root cause of problems, resolving the problems, and correcting organizational processes when needed.

NOTE 2: When software and user documentation are being developed concurrently, an integrated problem management system can help resolve issues in both areas.

10.5.3 Process improvement

Process improvement is possible when organizations have repeatable documented processes. The manager shall hold a review meeting at the end of a project and collect information on successful processes and recommendations for process improvements. The manager shall ensure that recommendations for process improvements are recorded and reviewed for possible implementation.

Annex A
(informative)

Sample documentation plan

Contents

Compile as required.

1. Preamble

This documentation plan is issued by the documentation manager of ABC Company on *(insert date)*.

Status: first draft.

This documentation plan is offered for the approval of ….

2. Introduction

Provide a brief introduction to the documentation project: purpose, scope, issuing organization, approval authority

This documentation plan is intended to address the needs of XYZ software users, including distributors, purchasers, and end-users of the product.

The documentation described in this documentation management plan is intended to produce both financial and other benefits, which can include cultural changes, reduced costs, better-defined processes, better software return on investment, better knowledge retention, faster and more effective induction of new staff, compliance with standards, and compliance with legislation.

3. Overview of the documentation set

Identify the titles of the individual items in the documentation set and provide a brief description of its focus.

The documentation will be split into the following volumes:

- reseller manual;
- installer manual;
- customer service officer manual.

The reseller manual will be aimed at the resellers who will distribute the product. It will introduce them to the product, and outline the product's main features and benefits to the customer.

The installer manual …

The customer service officer manual …

This documentation will include instructions for use of the special hardware at the point of customer contact.

4. Project context and applicable software products

Describe the environment in which the individual members of the audience will use the documentation and the impact that will have on the document's design and preparation.

For embedded documentation, specify the software environment, the rules governing navigational elements of each type of media, including any limitations. It is recommended that the rationale for the rules be detailed so as to help in their understanding and use.

ABC has developed, over the past two years, an innovative banking package called XYZ.

The documentation manager has developed this documentation plan for XYZ.

Resellers will distribute XYZ, and this documentation plan includes details of documents that describe the product to resellers.

The training division is currently developing training modules for use with XYZ, and the documentation team will work closely with them to ensure compatibility with the documentation.

XYZ is intended to operate in batch and interactive mode, with results available by 0700 Monday to Friday. A number of related products will be released during the months following the release of XYZ.

5. Intended audience

The following describes the audiences who will use the XYZ documentation:

Resellers who distribute the product: Resellers must have a very good knowledge of banking but are not necessarily familiar with the market. Parts of the training program will, however, concentrate on this, and the documentation can assume some familiarity with the process. Most resellers will be familiar with most but not all features of ABC systems and their operation. The documentation project must emphasize the need for comprehensive information that may be consulted in isolation. Resellers will generally have no programming knowledge but will be skilled in the operation of customer terminals.

Branch managers: Branch managers have excellent knowledge of the bank's procedures, both central office and customer-facing.

Customer service officers: Customer service officers have excellent knowledge of the bank's customer-facing procedures. The documentation project must emphasize ease of locating information.

6. Rationale or purpose

This section provides an overview of the tasks that the audiences will be required to perform using the software and the documentation.

6.1 Resellers

Resellers will use the documentation to learn about the product and to provide information to potential buyers. Resellers will also have to ensure that the potential customer's hardware and operating system platform will support the product. They will also have to advise the customer on required changes to that platform.

The table below describes the information needs of the audiences and draws together:

- the audiences performing the task;
- the identified tasks;
- the knowledge that is required by a person performing that task; what knowledge can be assumed from their background and training;
- the information need for that audience for that task, being the difference between the knowledge assumed and the knowledge required.

Audience	Task	Knowledge required for task	Deliverable	Topics to be covered
All			Menu structure of application	
Resellers	Determine hardware and software requirements	Minimum hardware platform, version of operating system and other software, licenses required	Simple list of operating system and hardware requirements	
Branch managers	Determine hardware and software requirements	Minimum hardware platform, version of operating system and other software, licenses required	List of software and hardware requirements, plus phone numbers for hardware and software distributors	
Branch managers	How to navigate the XYZ system	Menu structure of application	Menu structure of application	
Customer service officers	How to navigate the XYZ system	Menu structure of application	Windows introductory training	
Customer service officers	Enter form data into system	Which screen to use, in-depth knowledge of codes and their interpretation	Which screen to use	

The following table shows the relationships between the volumes set out above and the audiences the documentation team has identified:

	Reseller	Branch manager
Reseller manual	X	
Help files	X	X

7. Sources of content

The following documentation currently exists covering a number of aspects of the system.

- User requirements for the XYZ system;
- Hardware specifications for the customer terminals
- Company standard legal notices

The user documents to be written will be synthesized from the information here, together with information gathered through interviews with developers and test users.

We have factored this information into this project plan by …

8. Usability and accessibility requirements

List the specific requirements for software usability.

List the specific requirements for accessibility, such as Section 508 of the US Rehabilitation Act. http://www.section508.gov

9. Documentation design

Describe the various types of media in which the documentation will be developed and delivered.

Identify and provide a sample (in an appendix) of the standard formats and styles to be applied to the documentation topics.

10. Estimated size of the documentation

The documentation will be in the following volumes:

Title	Size (notional)	Publication method	Projected delivery date
Reseller manual	19 topics	Intranet	30 Sep 2011
Installer manual	24 topics	Printed and web-accessible	31 Oct 2011
Supervisor manual	40 topics	Intranet	19 Jan 2011
Customer service officer manual	4 topics	Intranet and printed quick reference	19 Jan 2011

Other key elements of the implementation will be:

List the key elements.

11. List of topics

This outline is an initial draft, and it is likely that changes will be made during the implementation phase. These changes will be discussed with the product authority if they are major.

11.1 Reseller manual

Introduction

Two topics covering what XYZ is, and a bulleted list of its major functions.

Two topics showing how XYZ fits into the ABC product line, and which other ABC products it interfaces with.

System requirements

A table showing the minimum system requirements for XYZ, including disk space and memory requirements, processor, and so on.

Maintenance will be supported by provision in the documentation of a means for ***feedback***, suggestions for improvement, and reporting of errors to be captured.

Using XYZ (topic list follows)

Index: Full index with a target of 5 entries per topic of original material.

11.2 Installer manual

Similar treatment for the installer manual and all other documents.

12. Resource estimates

Describe the structure for the documentation team, defining their individual roles and responsibilities.

13. Resource schedule

Provide a detailed schedule for the project activities. If the organization is responsible for the production of the documentation, be sure to include these time requirements.

The following tables show estimates of the page count and time to write each of the sections of the documentation.

Chapter/topic	Topics	Staff-hours
Introduction	4	24
System requirements	3	16
Using XYZ	136	776
Total	**143**	**816**

Estimates include time for each writer to become familiar with the task and work environment. Note that it is a central assumption of this plan that experienced, competent writers will be used to perform the work under the control of an experienced documentation project manager.

A further 10 days of project management time will be required.

Provide a list of milestone dates for the software and the documentation. Changes to these dates should be subject to the change control process

NOTE: It is critical that the dates of submission of drafts for reviews and deadlines for the return of comments from these reviews be included in these milestones. Failure to include these is one of the most common causes of project slippages.

14. Project procedures

14.1 Review processes

Project review meetings will be held as required during the project (but at a minimum, monthly), and should involve the user representative, documentation project manager, and documentation team writer(s).

The **review process** for all of the documentation will be as follows:

- A first draft will be produced when … and delivered to the product authority for review.
- First draft review should determine whether the language and coverage of the documentation is sufficient, and should generate comments on areas not covered so far.
- After first draft review, the writers will incorporate, where appropriate, requested changes arising from the review.
- The second draft will be delivered when … and delivered to …. Second draft review should concentrate on the correctness of the technical content of the document.
- The project will be at an end when all documents have passed review and have been distributed, and when a final project review report has been written.