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Systems and software engineering — Developing user documentation in an agile environment

Ingénierie du logiciel et des systèmes — Développement de la documentation de l'utilisateur dans un environnement agile

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Foreword

ISO (the International Organization for Standardization) and IEC (the International Electrotechnical Commission) form the specialized system for worldwide standardization. National bodies that are members of ISO or IEC participate in the development of International Standards through technical committees established by the respective organization to deal with particular fields of technical activity. ISO and IEC technical committees collaborate in fields of mutual interest. Other international organizations, governmental and non-governmental, in liaison with ISO and IEC, also take part in the work. In the field of information technology, ISO and IEC have established a joint technical committee, ISO/IEC JTC 1.

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International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

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 26515 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.

In this corrected version, the cover pages, front matter, page headers and footers have been corrected to reflect that ISO/IEC/IEEE 26515 is a joint development project under the Partner Standards Development Organization cooperation agreement between ISO and IEEE.

Introduction

Anyone who uses application software needs accurate information about how the software will help the users accomplish a task. The documentation may be the first tangible item that the user sees, and so influences the first impressions the users have 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, well designed documentation not only assists the users and helps to reduce the cost of training and support, but also enhances the reputation of the product, its producer, and its suppliers.

Projects that implement agile development focus on providing rapid and frequent deliveries of high value software. These methods often involve detailed planning only for the short term, and the implementation of processes in parallel, rather than planning for an entire project in distinct phases.

Although agile development methods often advocate less life cycle documentation, the users of a software product still expect and require quality user documentation to be provided with these software products. Although the end results of the user documentation process are the same, the methods to get there may be very different in an agile environment.

Agile development methods may lead to the production of less user documentation, but the user documentation developed must be sufficient to meet the needs and requirements of the users. If the deliverables of user documentation and associated life cycle documentation are agreed in a contractual relationship between an acquirer and a supplier, then the deliverables that are produced are dictated by the terms of the contract. In these circumstances, the user and life cycle documentation deliverables that are agreed upon will depend on the demands of the acquiring organization regardless of the types of development methodologies used to produce them.

Technical writers and other personnel involved in the production of user documentation should understand the agile development processes used by their organization, and use the most effective agile development methods to produce relevant and useful user documentation.

Because of the nature of agile development methods, the traditional means of developing the end user documentation (both print and onscreen) as described in the current ISO/IEC 2651*n* family of International Standards are not entirely applicable.

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*, and ISO/IEC 26514, *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*) and others in the ISO/IEC 2651*n* family of International Standards. It provides requirements and guidance to technical writers and related roles on how to adapt the processes described in the ISO/IEC 2651*n* family of International Standards to develop quality user documentation.

This International Standard is independent of the agile development methods and tools that are used to produce the software.

This International Standard will conform to ISO/IEC 12207:2008 (IEEE Std 12207:2008) as an implementation of the user documentation part of 6.1: Documentation. The primary references for this International Standard are ISO/IEC 26514:2008 and ISO/IEC 26513:2009.

Systems and software engineering — Developing user documentation in an agile environment

1 Scope

This clause presents the scope, purpose, organization, and candidate uses of this International Standard.

This International Standard supports the interest of technical writers and associated roles responsible for producing user documentation for software and systems developed within an agile environment. This International Standard takes a process standard approach to specify the way in which user documentation can be developed in agile development projects.

This International Standard provides requirements on information management and documentation processes appropriate for software projects that are using agile development methods.

Clause 5 covers the overall requirements for documentation in the software life cycle.

Clause 6 describes how the information development lead or project manager may plan and manage the user documentation development team in an agile environment.

Clause 7 covers the relationship between the user documentation process and life cycle documentation process in agile development.

This International Standard is intended neither to encourage nor to discourage the use of any particular agile development tools or methods.

This International Standard provides guidance on processes appropriate for developers of user documentation in software and systems projects that are using agile development methodologies. It will not be limited to the development phase of the life cycle of user documentation, but includes activities throughout the user documentation life cycle.

This International Standard is intended for use in all organizations that are using agile development, or are considering implementing their projects using these techniques. It is assumed that users of this International Standard have experience or general knowledge of traditional user documentation processes.

2 Conformance

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

2.1 Application of conformance

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 features of agile methodology or the parts of user documentation (that is, scrum, sprint, chapters, topics, pages, screens, windows, etc.) is not required to claim conformance.

Conformance to this International Standard may only be claimed by an organization if all of the requirements in this International Standard can be met by the organization. When conformance is claimed for a multi-supplier program, it may be the case that no individual supplier may claim conformance because no single contract calls for all the required activities. Nevertheless, the program, as a whole, may claim conformance if each of the required activities are performed by an identified party.

This International Standard may be included or referenced in contracts or similar agreements when the parties (called the acquirer and the supplier) agree that the supplier shall deliver user 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 develop documentation in accordance with this International Standard.

Organizations, projects, or multi-supplier programs intending to claim tailored conformance should consult ISO/IEC 12207/IEEE Std 12207:2008, Annex A, Tailoring Process.

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/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 and the following apply.

4.1
agile development
software development approach based on iterative development, frequent inspection and adaptation, and incremental deliveries, in which requirements and solutions evolve through collaboration in cross-functional teams and through continuous stakeholder feedback

4.2
agile environment
organization or team implementing agile development methods and approaches

4.3
audience
category of users sharing the same or similar characteristics and needs (for example, purpose in using the documentation, tasks, education level, abilities, training, and experience) that determine the content, structure, and use of the intended documentation

NOTE There may be a number of different audiences for a software product's documentation (for example, management, data entry, maintenance).

4.4
burndown chart
document that records project status, usually showing tasks completed against total number of tasks

4.5
documentation
information that explains how to use a software product

NOTE In this International Standard, documentation is used to mean user documentation.

4.6
feature
functional or non-functional distinguishing characteristic of a system, usually an enhancement to an existing system

4.7
iteration
repetition of a process or activity

4.8
persona
archetypical user of a system, based on research into real users of a system

4.9
scrum
iterative project management framework used in agile development, in which a team agrees on development items from a requirements backlog and produces them within a short duration of a few weeks

4.10
scrum master
person who facilitates the scrum process within a team or project

4.11
scrum meeting
brief daily project status meeting or other planning meeting in agile development methodologies

NOTE The scrum meeting is usually chaired by the scrum master.

4.12
scrum report
report that documents the daily activities of a scrum team, recording any problems or issues to be dealt with

4.13
scrum team
members of an agile development team working together under the scrum process, usually led by the scrum master and project owner

4.14
sprint
short time frame, in which a set of software features is developed, leading to a working product that can be demonstrated to stakeholders

NOTE In some organizations, a sprint is known as an iteration.

4.15
use case
description of the behavioural requirements of a system and its interaction with a user

4.16
user story
simple narrative illustrating the user goals that a software function will satisfy

4.17
writer
person designing or developing user documentation

5 User documentation processes in an agile environment

5.1 Relationship between user and life cycle documentation processes

Teams using agile development shall perform the following activities:

a) identify documents to be produced by the process or project;

b) specify the content and purpose of all documents and plan and schedule their development and production;

c) identify the standards to be applied for development of documents;

d) develop and publish documents in accordance with identified standards and in accordance with nominated plans;

e) maintain documents in accordance with specified criteria.

The following information items are used in documentation developed using both traditional and agile development methods:

- description;
- plan;
- policy;
- procedure;
- report;
- request;
- specification.

NOTE 1 ISO/IEC/IEEE 15289:2011 defines the purpose and generic content of these information items.

The software implementation processes are the same between projects using traditional and agile development methods, but some or all of these stages may be repeated in each sprint. In some projects the software detailed design process may be shortened or sparsely documented. Code development may proceed through the development of working prototypes, rather than a detailed specification of the design being created and approved.

NOTE 2 Annex A contains a brief overview of agile development practices which the information developer may encounter.

Software Implementation Processes

1. Software Implementation
2. Software Requirements Analysis
3. Software Architectural Design
4. Software Detailed Design
5. Software Construction
6. Software Integration
7. Software Qualification Testing

Figure 1: Software Implementation Process

NOTE 3 ISO/IEC 12207:2008 (IEEE Std 12207-2008), *Systems and software engineering — Software life cycle processes* defines the software life cycle processes for a project.

5.2 Life cycle software documentation in an agile environment

Designing, developing, and testing user documentation is greatly assisted by the presence of life-cycle documentation such as a documentation plan, system design document, system test plan, release records, and problem reports. Other formal documentation specific to the user documentation development process may be produced, such as style guides and organizational procedures for content management and documentation reviews.

ISO/IEC 15289:2011, *Systems and software engineering — Content of life cycle information products (documentation)* provides recommended contents for the production of required documents throughout the systems/software life cycle.

In projects using agile development, any life-cycle documentation that is included in the project is likely to be less detailed, and possibly less formal than in other types of development projects. Some documents, for example, detailed specifications and design documents may not be produced at all. Because of the focus on delivery of working software, not only are some of the documents that traditionally would be produced as a part of the software life-cycle process not being produced (or are significantly reduced in content), but some of the processes may be skipped altogether. For example, the development team may proceed straight from producing a high level architectural design to software coding and testing, skipping the production of a detailed design.

Communication of the intent and behaviour of the user documentation may instead be provided by face to face communication, rather than through the use of detailed, formal documentation plans.

The documentation that is produced and the level of detail within each document are likely to be project specific. The level of detail may be influenced by the size of the team, the location of the team, requirements of acquirers, and other contractual agreements. More substantial documentation is needed if the team works in different time-zones or locations. Small, collocated teams may prefer minimal documentation and a reliance on face to face communication, whereas large, multi-location teams are likely to require more detailed documentation for communication purposes and future reference.

The types, level of detail, and timing of the production of the documentation will vary between projects. When the focus is on the delivery of working code, a development team may not have planned to include the resources needed to produce large quantities of documentation. Mechanisms are still required to ensure that the software product and associated user documentation match the user requirements; however these may be defined on the project.

Projects using agile development may benefit from the introduction of alternative content storage systems, such as wikis, that enable content to be captured quickly and cheaply. These allow information to be rapidly updated, and to be shared across the development team, including the technical writers, both locally and across multiple sites and time zones. However, wikis tend to collect chronological information without structuring the content for usability.

5.3 Life cycle documentation in agile development

Life cycle documentation should be produced in projects using agile development to communicate the processes, requirements, and deliverables required of the teams working on the project. These documents may contain less detail than their counterparts in other software development methods. The life cycle documents produced by projects using agile development are named the same as in other software projects, but the amount of detail or specific contents may differ.

The life cycle documentation items may not be formal or highly detailed documentation, but they are still useful in developing the user documentation. These documentation items should be produced by projects using agile development to assist both the production of software and user documentation that meet requirements:

- project plans;
- sprint plans;
- requirements documents, (expressed in user stories, scenarios);
- high-level design proposals, (may not be needed for agile development);
- test plans, (test procedure);
- risk statements, (risk register);
- user stories;
- use cases;
- descriptions of personas;
- burndown charts;
- task lists;
- scrum reports;
- end of sprint lessons learned reports.

6 Management of information development in an agile environment

6.1 Documentation management considerations for agile development

Agile development is an iterative and incremental approach to software development performed in a highly collaborative manner by “self-organizing” teams. There are many specific agile development methods. Most promote development sprints, teamwork, collaboration, and process adaptability throughout the life cycle of the project. Agile development methods frequently discourage the creation of detailed engineering support documentation and detailed technical specifications. This means that technical writers often do not have source documentation from which to extrapolate feature details.