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Technical Specification

ISO/IEC DTS 20000-15

Information technology — Service management —

Part 15: Guidance on the application of Agile and DevOps principles in a service management system

Technologies de l'information – Gestion des services —

Partie 15: Lignes directrices pour l'application des principes "Agile" et "DevOp"s dans un système de gestion des services

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Contents

Page

Foreword

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This document was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 40, *IT Service Management and IT Governance.*

A list of all parts in the ISO/IEC 20000 series can be found on the ISO and IEC websites.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html and www.iec.ch/national-committees.

Introduction

This document is intended to assist users in relating the requirements specified in ISO/IEC 20000–1:2018 to the principles and practices of two frequently used software and service development frameworks, Agile and DevOps. Organizations can refer to this guidance as a cross-reference between the frameworks to help them plan, implement and improve a service management system (SMS).

ISO/IEC 20000–1 is the International Standard for service management and specifies requirements which can be used as the basis of a conformity assessment.

ISO/IEC 20000–1 specifies an integrated process approach in which an organization establishes, implements, maintains and continually improves an SMS. The services can be delivered to internal or external customers or a combination of both. Other parts of the ISO/IEC 20000 series provide supporting guidance.

Agile is defined as a collection of frameworks and techniques focusing on collaboration, iterative and incremental development and continuous improvement.

DevOps is defined as a set of principles and practices which enable better communication and collaboration between relevant stakeholders for the purpose of specifying, developing and operating software and systems services, and continuous improvements in all aspects of the lifecycle (ISO/IEC/IEEE 32675).

Despite these definitions being focused on software development, both Agile and DevOps principles have also been used in a much broader sense, including the development and delivery of services.

The DevOps framework is based on the Agile framework, adding automation of service development and delivery to it. Many Agile concepts discussed in this document are therefore equally applicable to DevOps.

Organizations can implement and improve their SMS using the requirements specified in ISO/IEC 20000–1 and the guidance in the other parts of the ISO/IEC 20000 series. An organization can adopt Agile and DevOps practices to support the management of their services in alignment with the requirements specified in ISO/IEC 20000–1. Other frameworks and practices can also be used to support ISO/IEC 20000–1.

Within this document, Clause 4 provides an overview of ISO/IEC 20000-1 and the SMS. Clause 5 applies Agile principles to the SMS. Clause 6 applies DevOps principles to the SMS. In Clause 7, the benefits and caveats surrounding the use of Agile, DevOps or a combination of the two in the SMS are discussed. Annex A provides a correlation of ISO/IEC 20000-1 clauses to the Agile and DevOps frameworks.

Information technology — Service management —

Part 15: Guidance on the application of Agile and DevOps principles in a service management system

1 Scope

This document provides guidance on the relationship between ISO/IEC 20000–1:2018 and two commonly used frameworks, Agile and DevOps. It can be used by any organization or person wishing to understand how Agile and DevOps can be used with ISO/IEC 20000–1, including:

a) an organization that has demonstrated or intends to demonstrate conformity to the requirements specified in ISO/IEC 20000–1 and is seeking guidance on the use of Agile or DevOps to establish or improve the SMS and the services;

b) an organization that already uses Agile or DevOps and is seeking guidance on how Agile or DevOps can be used to support efforts to demonstrate conformity to the requirements specified in ISO/IEC 20000–1;

c) an assessor or auditor who wishes to understand the use of Agile or DevOps as a support for achieving the requirements specified in ISO/IEC 20000–1.

Both approaches can be used independently or together. Depending on the context, an organization can deploy Agile frameworks only, DevOps frameworks only, use both Agile and DevOps frameworks in isolation, or use an integrated workflow with combined Agile and DevOps approaches. In any of these situations, this document can be used as guidance for the integration of Agile and DevOps practices in an SMS.

The guidance in this document can assist an organization in planning and preparing for a conformity assessment against ISO/IEC 20000-1, noting that an organization can only claim conformity by fulfilling all requirements specified in ISO/IEC 20000-1.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 20000-1, *Information technology — Service management — Part 1: Service management system requirements*

ISO/IEC 33202:—[1)], – *Software and systems engineering — Core Agile practices*

ISO/IEC/IEEE 32675, *Information technology — DevOps — Building reliable and secure systems including application build, package and deployment*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO/IEC 20000-1, ISO/IEC 33202, ISO/IEC/IEEE 32675 and the following apply.

1) Under preparation. Stage at the time of publication: ISO/IEC/DIS 33202:2024.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at https://www.electropedia.org/

3.1
Agile
collection of frameworks and techniques focusing on collaboration, iterative and incremental development and continuous improvement

Note 1 to entry: In this context, the term "Agile" is usually capitalized.

3.2
bottom-up intelligence
use of information coming from users themselves, so they can develop better options to achieve valuable objectives

3.3
continuous everything
increasing agility throughout the service lifecycle from testing, deployment and monitoring through to integration and delivery

3.4
cradle-to-grave
activities from the beginning of the service lifecycle to its end or disposal

Note 1 to entry: This term is specifically used in this way within the context of DevOps.

3.5
cross-functional autonomous team
team that has the skills and disciplines required to achieve an established goal, such as developing, deploying or operating a service

Note 1 to entry: These teams are fully empowered and self-sufficient for the designing, building, testing, deployment and running of the service.

3.6
customer-centric
doing business and ensuring a positive customer experience at every stage of the *customer journey* (3.7)

Note 1 to entry: When a customer-centric organization makes a decision, its people thoroughly analyze its impact on the customers.

3.7
customer journey
series or sum of customer experiences when engaging with an organization, its products or services

Note 1 to entry: “Series” is based on processes; “sum” is based on results.

[SOURCE: ISO 23592:2021, 3.8]

3.8
daily stand-up
short, daily, time-limited meeting used to discuss progress, plans and any blocking issues with each member of an *Agile* (3.1) team

[SOURCE: ISO/IEC TR 24587:2021, 3.7, modified — The term "time-boxed" has been replaced by "time-limited" at the beginning of the definition, and "Agile" has been capitalized. Note 1 to entry has been removed.]

3.9
DevOps
set of principles and practices which enable better communication and collaboration between relevant stakeholders for the purpose of specifying, developing, and operating software and systems products and services, and continuous improvements in all aspects of the lifecycle

[SOURCE: ISO/IEC/IEEE 32675:2022, 3.1.1]

3.10
hypothesis
theory that something can become valuable, even though this will not be known for sure until it is verified in a real environment

3.11
left-shift
shift-left
prioritizing the involvement of relevant stakeholders in applying quality activities, security, privacy, performance, verification, and validation earlier in the lifecycle

Note 1 to entry: In this document, the expression “shift-left” is used, because it is more common in the industry.

[SOURCE: ISO/IEC/IEEE 32675:2022, 3.1.2, modified — Admitted term "shift-left" has been added. Note 1 to entry has been added.]

3.12
minimum viable service
MVS
limited service release that includes the main *hypotheses* (3.10) that demonstrate whether the main product idea makes sense to the customer

3.13
result-oriented plan
plan that focuses on outcome rather than on the process used to deliver a service

Note 1 to entry: Following a result-oriented plan gives a higher chance of being successful. It pushes the organization to take ownership and be flexible in defining priorities. Most importantly, it enables the organization to measure progress against a defined set of requirements.

3.14
retrospective
team meeting at the end of an iterative cycle or at the end of a project to reflect on what went well, what was learned, and what should be done differently next time

[SOURCE: ISO/IEC/IEEE 24765:2017, 3.3488, modified — Preferred term has been changed from "retrospective meeting" to "retrospective". "Software project" has been changed to "project" in the definition.]

3.15
self-organizing team
team using its own knowledge to determine how best to do their job

3.16
servant leader
leader focusing on providing what the team need, removing impediments to their progress and supporting their productivity

3.17
service-thinking
focusing on the end-goal or the outcome of the process or service

3.18
service backlog
list of items ordered by value of what is to be done or to be achieved

3.19
service owner
person responsible for maximizing the value that the service development team creates, including managing the *service backlog* (3.18), identifying and prioritizing improvement opportunities and supporting operations.

Note 1 to entry: Within the context of this document, this term is used specifically in reference to Agile environments. Its use can be different within other service management environments.

3.20
technical debt
deferred cost of work not done at an earlier point in the service lifecycle

[SOURCE: ISO/IEC/IEEE 24765:2017, 3.4181, modified — "product life cycle" has been replaced with “service lifecycle".]

3.21
user story
brief description of required functionality describing the stakeholder roles, goals, benefits and motivation

[SOURCE: ISO/IEC 33202:—, 3.28, modified — Note 1 to entry has been removed.]

3.22
vanity metrics
statistics that look spectacular on the surface but do not necessarily translate to any meaningful business results

4 Introduction to ISO/IEC 20000–1:2018

ISO/IEC 20000-1 specifies requirements for establishing, implementing, maintaining and continually improving a service management system (SMS). An SMS supports the management of the service lifecycle, including the planning, design, transition, delivery and improvement of services, which meet agreed requirements and deliver value for customers, users and the organization delivering the services. The organization in the scope of the SMS can be a whole or part of a larger organization and can also be known as the "service provider".

ISO/IEC 20000-1 is intentionally independent of specific guidance. The organization can use a combination of generally accepted frameworks (e.g. Agile, DevOps) and its own experience. Appropriate tools for service management can be used to support the SMS.

All requirements specified in ISO/IEC 20000-1 are generic and are intended to be applicable to all organizations, regardless of the organization’s type or size, or the nature of the services delivered. While ISO/IEC 20000-1 can be used regardless of the organization’s type or size, or the nature of the services delivered, the document has its roots in IT. It is intended for service management of services using technology and digital information. The examples given in this document illustrate a variety of uses of ISO/IEC 20000-1.

Exclusion of any of the requirements in ISO/IEC 20000-1:2018, Clauses 4 to 10, is not acceptable when the organization claims conformity to ISO/IEC 20000-1, irrespective of the nature of the organization.

The organization cannot demonstrate conformity to the requirements specified in ISO/IEC 20000-1 if other parties are used to provide or operate all services, service components or processes within the scope of the SMS.

ISO/IEC 20000-10 includes the concepts for an SMS, the vocabulary used for the ISO/IEC 20000 series, a description of each part of the series and related standards.

Guidance is available in other parts of the ISO/IEC 20000 series in the form of:

— ISO/IEC 20000-2, *Guidance on the application of service management systems*;

— ISO/IEC 20000-3, *Guidance on scope definition and applicability of ISO/IEC 20000-1*;

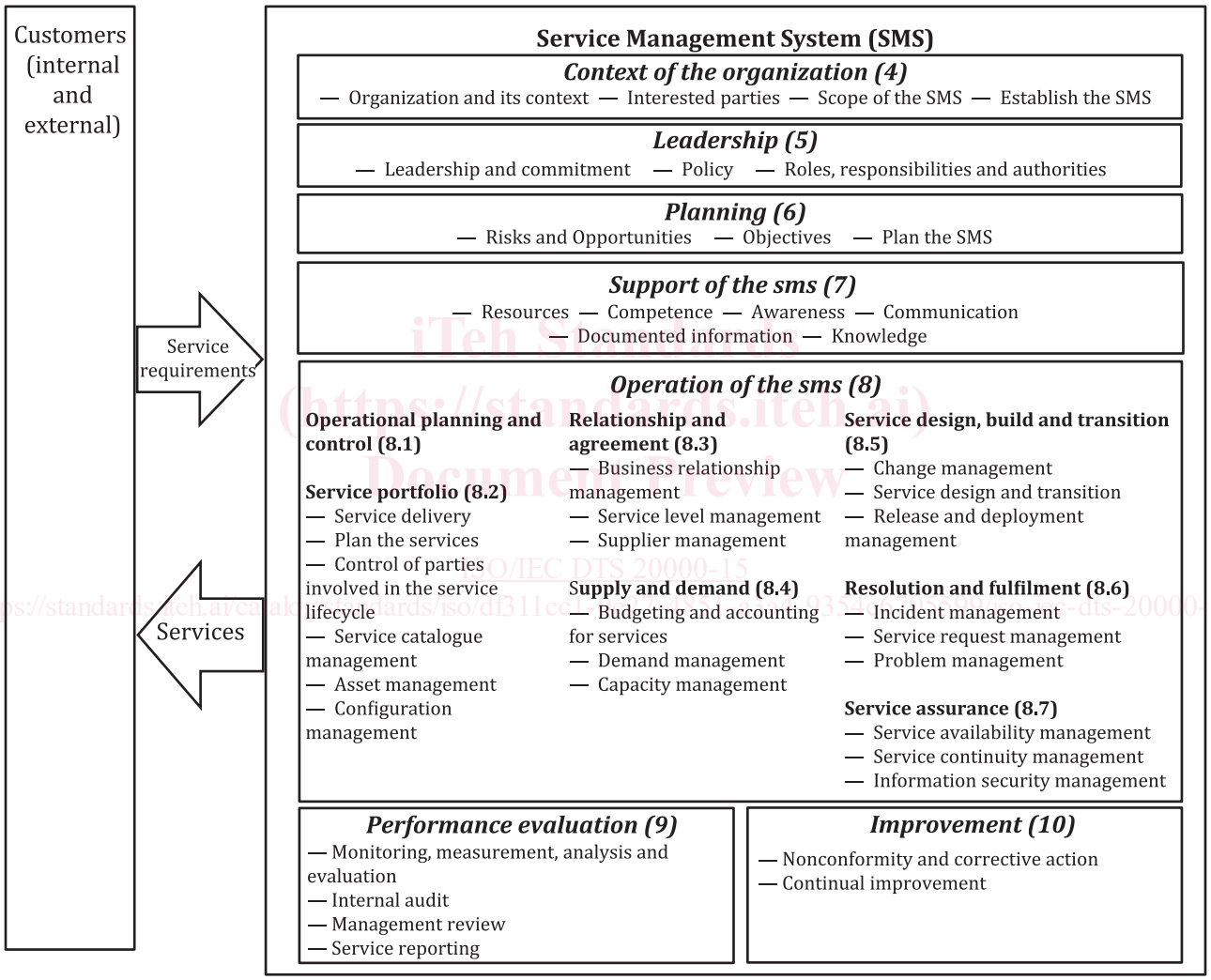
— ISO/IEC TS 20000-5, *Implementation guidance for ISO/IEC 20000-1*;

— ISO/IEC 20000-6, *Requirements for bodies providing audit and certification of service management systems*;

— ISO/IEC TS 20000-11, *Guidance on the relationship between ISO/IEC 20000-1 and service management frameworks: ITIL®*; and

— ISO/IEC TS 20000-14, *Guidance on the application of Service Integration and Management to ISO/IEC 20000-1*.

Figure 1 illustrates an SMS showing the clause content of ISO/IEC 20000-1.



NOTE Numbers in parentheses indicate ISO/IEC 20000-1 clause numbers.

Figure 1 — Service management system

5 Agile within an SMS based on ISO/IEC 20000–1

5.1 Background of Agile

To understand how Agile can help in service management, it is necessary to understand why Agile arose and the problem it was aiming to solve.

In its initial conception, Agile emerged to respond to a common problem identified in software development. In essence, it provided some guiding principles for answering the following question:

— How can one deliver valuable software to a customer when not even the customer is sure about what they want?

In other words, Agile focuses on customer satisfaction above all else, but in an unpredictable environment, also known as a high-uncertainty environment or a complex system. Value, the customer and uncertainty are the key points from which all Agile philosophical principles stem. These principles are summarized in the Agile Manifesto[12] (see 5.2), and they are the source of inspiration for all Agile frameworks that exist today.

From the key points of the Agile Manifesto, a series of Agile Principles are derived (see 5.2).

Although Agile emerged to respond to a common problem that exists in software development, its benefits have extended far beyond this discipline, and it has been tested in different sectors and contexts, some of them far removed from the world of software, such as education or health.

In the following subclauses, several Agile concepts will be discussed and applied to the requirements of ISO/IEC 20000-1.

5.2 Agile Principles

5.2.1 Overview

The Agile mindset has been expressed in terms of the Agile Manifesto and its related Principles (see Reference [12]). This subclause contains a summary of the Agile Manifesto and the Agile Principles. The Agile Manifesto and Agile Principles were written with software development in mind, but they can be interpreted for the context of services.

5.2.2 Agile Manifesto

The focus of Agile is to uncover better ways of providing services by providing those services and helping others to also provide services. This work has led to the valuation of:

— individuals and interactions over processes and tools;

— working services over comprehensive documentation;

— customer collaboration over contract negotiation;

— responding to change over following a plan.

Within this list, whilst the primary points (first element in each line) is considered the most important, the secondary elements (second element in each line) are also considered valuable.

NOTE See Reference [12] for further details and original text.

5.2.3 List of Agile Principles

The twelve Agile Principles are listed as follows:[12]

1) The highest priority is placed on satisfying the customer through early and continual delivery of valuable services.