TECHNICAL SPECIFICATION

ISO/IEC TS 25052-1

First edition
2022-07

Systems and software engineering — Systems and software Quality Requirements and Evaluation (SQuaRE): cloud services —

Part 1:
Quality model

Ingénierie des systèmes et du logiciel — Exigences de qualité et évaluation des systèmes et du logiciel (SQuaRE): services en nuage —

Partie 1: Modèles de qualité

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Foreword

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This document was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 7, *Software and systems engineering*.

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Introduction

In the SQuaRE series, there are well-defined quality models for measuring and evaluating system and software products, IT services, data, etc. Although the SQuaRE series provides practical quality models, it does not fit new technologies well. To support the evaluation of new technologies, this document provides the quality model of cloud services, which is the extension to the quality models defined in ISO/IEC 2501n. In order to provide a practical guideline for quality evaluation of cloud services, this document has reflected special considerations on cloud computing, which are key characteristics, and cross-cutting aspects described in ISO/IEC 17788, and service level agreement (SLA) framework described in ISO/IEC 19086 (all parts).

Compared to the information and communication technology (ICT) systems, cloud computing has different characteristics. The followings are the key characteristics of cloud computing described in ISO/IEC 17788.

— Broad network access: physical or virtual resources are available when needed through the network using a variety of client devices.

— Measured service: resources are measured and paid for on a usage basis.

— Multi-tenancy: physical and virtual resources are allocated to multiple tenants, and their computations and data are isolated, therefore inaccessible from one another.

— On-demand self-service: cloud services are provisioned by cloud service customers automatically or with minimal interaction with cloud service providers.

— Rapid elasticity and scalability: resources are increased or decreased rapidly and elastically, and scalable horizontally and vertically.

— Resource pooling: physical or virtual resources are aggregated to provide services to one or more cloud service customers.

The quality model in this document is to support the non-functional specification and evaluation of cloud services from different perspectives by those associated with cloud service selection, requirements analysis, development, use, evaluation, support, maintenance, quality assurance and control, and audit.

For example, activities during cloud service selection that can benefit from the use of the quality model include:

— identifying cloud services requirements;

— establishing cloud service selection criteria;

— defining service coverage and service objectives;

— establishing service level agreements;

— establishing measures of quality characteristics in support of these activities.

Activities during cloud service development that can benefit from the use of the quality model include:

— identifying cloud service requirements;

— validating comprehensiveness of requirement definitions;

— identifying cloud service design objectives;

— identifying cloud service testing objectives;

— identifying quality control criteria as part of quality assurance;

— identifying acceptance criteria for a cloud service;