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Partie 1: Cadre général

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Contents

Page

Foreword ... **iv**

Introduction ... **v**

1 Scope ... **1**

2 Normative references ... **1**

3 Terms and definitions ... **1**

4 Abbreviated terms ... **3**

5 Overview of the general framework and development principles ... **3**
5.1 General framework ... 3
5.2 Development principles for data use framework in smart cities ... 4

6 Description of core characteristics of considerations ... **5**
6.1 General ... 5
6.2 Sub-characteristics of considerations about data availability ... 5
6.3 Sub-characteristics of considerations about data quality assurance ... 5
6.4 Sub-characteristics of considerations about ease of data use ... 6
6.5 Sub-characteristics of considerations about data use security ... 6
6.6 Sub-characteristics of considerations about data-enabled innovation ... 7

Annex A (informative) **Examples of the sub-characteristics of considerations concerning data use in smart cities** ... **8**

Bibliography ... **16**

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Foreword

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This document was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*.

A list of all parts in the ISO/IEC 25005 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.

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Introduction

This document provides an integrated framework for data use that supports the multidimensional use of data as citywide strategic resources and assets. It aims to facilitate evidence-based decision making and enable data-based, data-driven and data-enabled smart cities development and applications.

Data use involves activities enabling data value realization for specific purposes in smart cities along the data value chain. This document is intended to assist in identifying problem-solving strategies and solutions for data use, data applications and data services citywide, including but not limited to data being not available when needed, data being not trusted when used, data not being easily used when available, data not being used securely and data value not being realized when in use.

This document provides a framework for data use in smart cities across five dimensions:

— data availability (ensuring data are accessible);

— data quality assurance (ensuring data are useful);

— ease of data use (ensuring data are easy to use);

— data use security (ensuring data are used securely);

— data-enabled innovation (ensuring data are used for enabling intelligent applications and services).

This document enhances the total capabilities of data use to support data-based, data-driven and data-enabled citywide information communication technology (ICT), big data and artificial intelligence (AI) applications and smart cities services. It is intended to fill the gaps in standards development for better collaboration and harmonization of sustainable data use considerations for smart cities from different standards development organizations (SDOs), to satisfy the maximized needs of multiple stakeholders from many views and various dimensions, e.g. effective, sustainable, comprehensive and innovative use of data as strategic resources and assets citywide.

This document can be used for citywide data use planning, deployment of design, implementation and management in smart cities development and applications.

The ISO/IEC 25005 series consists of three parts. This document provides foundations for standards collaboration on data use citywide and provides basic principles and core characteristics of considerations concerning the other parts in the series.

Figure 1 provides the relations among this document, ISO/IEC TR 25005-2 and ISO/IEC TS 25005-3, describing guiding principles for data use in smart cities, core characteristics of considerations of data use in smart cities which are the basis for data use in smart cities standard series.

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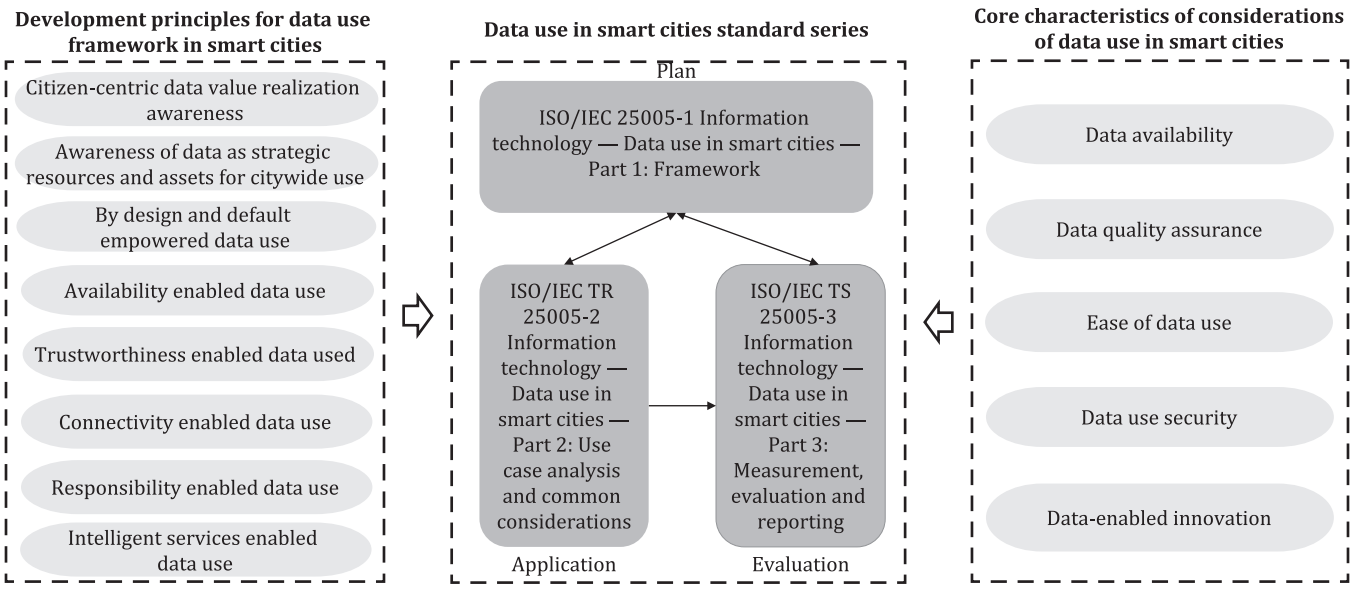


Figure 1 — ISO/IEC 25005 series

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Information technology — Data use in smart cities —

Part 1: Framework

1 Scope

This document provides a framework for data use in smart cities, based on five dimensions:

— data availability (data are available);

— data quality assurance (data are useful);

— ease of data use (data are easy to use);

— data use security (data are used securely);

— data-enabled innovation (data are used for enabling intelligent applications and services).

This framework is intended to facilitate effective, sustainable, comprehensive and innovative use of data as citywide strategic resources and assets.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

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
data availability
property of being accessible and usable upon demand by an authorized entity

[SOURCE: ISO 37166:2022, 3.2]

3.2
data exchange
representation, transmission, reception, storage, and retrieval of data

[SOURCE: ISO/IEC 20944-1:2013, 3.21.13.1, modified — The preferred term “data interchange” has been removed; Note 1 to entry has been deleted.]

3.3
data-enabled innovation
extent to which data are used by specified users to achieve specified goals with data-enabled monitoring applications, data-enabled early warning and prediction applications, data-enabled intelligent decision-making applications in a specified context of use

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3.4
data quality
degree to which a set of inherent characteristics of data fulfils requirements

[SOURCE: ISO 8000-2:2022, 3.8.1, modified — Note 1 to entry has been deleted.]

3.5
data quality assurance
assurance of *data quality* (3.4)

Note 1 to entry: The quality requirements include completeness, authenticity, reliability, timeliness, accuracy, consistency, and traceability.

3.6
data security
preservation of data to guarantee availability, confidentiality and data integrity

[SOURCE: ISO/IEC 29182-2:2013, 2.6.6]

3.7
data sharing
access to or processing of the same data by more than one authorized entity

Note 1 to entry: Use of the data can be synchronous or asynchronous.

Note 2 to entry: Data can be shared, for example, (i) by allowing access to, or the execution of operations over, the original dataset, or (ii) by giving a copy of the data to the interested entity.

Note 3 to entry: The way in which data is shared fundamentally influences the available controls and the statements needed in a data sharing agreement.

[SOURCE: ISO/IEC 23751:2022, 3.7]

3.8
data use
handling or dealing with data for a specific purpose

Note 1 to entry: In smart cities, data use refers to activities enabling data value realization along with data value-chain, including data availability, data quality assurance, ease of data use, data use security, and data-enabled innovation from citywide multi-stakeholder's interests.

[SOURCE: ISO/IEC 5207:2024, 3.30, modified — Note 1 to entry has been changed.]

3.9
data use security
extent to which data can be used by specified users to achieve specified goals with effectiveness, efficiency, inclusiveness, safety and security in a specified context of use

3.10
data value
importance that stakeholders attach to data and which is related to the perception of actual or potential benefit

Note 1 to entry: Data value ranges from immediate operational enhancements to long-term strategic gains for urban development and citizen's quality of life.

[SOURCE: ISO 16439:2014, 3.75, modified — The preferred term has been expanded from "value" to "data value"; in the definition, "funding institutions, politicians, the public, users, staff" has been deleted and "libraries" has been replaced by "data", Note 1 to entry has been changed.]

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3.11
smart city
city where improvements in quality of life, services, sustainability and resilience are facilitated by the effective integration of many and various types of physical systems, digital systems and social systems and the transformative use of data and technology

[SOURCE: IEC 60050-831:2025, 01-19, modified — Notes 1 and 2 to entry have been deleted.]

4 Abbreviated terms

AI artificial intelligence

ERAC electrical regulatory authorities council

ICT information communication technology

SDO standards development organization

UAS uncrewed aircraft system

5 Overview of the general framework and development principles

5.1 General framework

A general framework for comprehensive use of data in smart cities is shown in Figure 2. The core characteristics of considerations are categorized into five dimensions, with 28 sub-characteristics of considerations from various demands for data-based value support, data-driven value support, data-enabled value support. The five dimensions are data availability, data quality assurance, ease of data use, data use security and data-enabled innovation.

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