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Smart community infrastructures — Urban data integration framework for smart city planning (SCP)

bsi.

National foreword

This British Standard is the UK implementation of ISO 37166:2022.

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A list of organizations represented on this committee can be obtained on request to its committee manager.

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Smart community infrastructures — Urban data integration framework for smart city planning (SCP)

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Foreword

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The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 268, *Sustainable cities and communities*, Subcommittee SC 1, *Smart community infrastructures*.

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.

Introduction

The city is a product of social evolution, technology, economic and social civilization improvements, as well as a fundamental unit for the social and economic life of its region. However, with the influence of global urbanization, increasingly more problems have been observed, such as environmental pollution, traffic congestion, insufficient resources and urban lifeline system weakness.

Urban planning refers to the conduct of engineering construction, economy, society, environment and land use of the city and its surroundings. It involves the regional layout of industry, the regional layout of buildings, the setting of transportation infrastructure and the planning of urban engineering. It is related to urban development and city infrastructure construction.

The planning, construction, operation, management and evaluation of community infrastructure is the process of natural environment transformation. This process involves multiple city managers and various data. Therefore, the integration of heterogeneous data for smart community infrastructure planning is particularly important. Based on ecological and spatial information, the smart city planning (SCP) data and infrastructure data that need to be integrated should be analysed. The establishment of a data integration framework and further realization of heterogeneous data integration is intended to support the operation of community infrastructure construction projects throughout their life cycles and ultimately achieve inclusive, sustainable and high-quality development of the city.

In terms of smart community infrastructure, ISO/TS 37151 describes the principles and requirements of performance metrics. ISO/TR 37152 gives possible issues and solutions in developing and operating smart community infrastructure, outline and benefits of a common framework for development and operation. In addition, BS/PAS 183 provides data interoperability, types of data, data protection reform, data value chain, purposes for data use, assessing data states, access rights for data and data structure.

ISO/TS 37151, ISO/TR 37152 and BS/PAS 183 provide the basis and guidance for ISO 37156, which describes the types and model, opportunities, privacy and security of data exchange and sharing, and provides guidance for data exchange and sharing of smart community infrastructure. ISO 37156 provides guidance for the integration of infrastructure data in this document, and this document is considered to be an application scenery of ISO 37156 in data integration.

INTERNATIONAL STANDARD ISO 37166:2022(E)

Smart community infrastructures — Urban data integration framework for smart city planning (SCP)

1 Scope

This document establishes a data framework that involves possible multi-source common data through standardized data integration and sharing mechanisms. It includes recommendations for:

— precision, dimensions of the data, data collection, updates and storing mechanisms;

— a data model for data integration, data standardization and data fusion approaches for heterogeneous smart city infrastructure data;

— a data security level and sharable attributes for all involved data, principles on data sharing or exchange.

This document focuses on the integration and application of heterogeneous data from urban infrastructure systems, such as water, transport, energy, drainage and waste, so as to support smart city planning (SCP). It contains case studies, in Annex A, of various smart city projects.

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 terminological 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
reinterpretable representation of information in a formalized manner suitable for communication, interpretation or processing

Note 1 to entry: Data can be processed by humans or by automatic means.

[SOURCE: ISO/IEC 2382:2015, 2121272]

3.2
data availability
property of being accessible and usable upon demand by an authorized entity

[SOURCE: ISO/IEC 27000:2018, 3.7, modified — term revised.]

3.3
data exchange
accessing, transferring, and archiving of *data* (3.1)

[SOURCE: ISO/TS 13399-5:2014, 3.7, modified — definition revised.]