
**Framework for integration and
operation of smart community
infrastructures —**

**Part 1:
Recommendations for considering
opportunities and challenges from
interactions in smart community
infrastructures from relevant aspects
through the life cycle**

*Cadre pour l'intégration et l'exploitation des infrastructures
communautaires intelligentes —*

*Partie 1: Recommandations pour la prise en compte des opportunités
et des défis découlant des interactions dans les infrastructures
communautaires intelligentes, des aspects pertinents tout au long du
cycle de vie*



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Published in Switzerland

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

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*.

A list of all parts in the ISO 37155 series can be found on the ISO website.

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

Urban density is likely to increase for the foreseeable future, resulting in further urbanization complexity. From this perspective, a “smart community” approach is an important tool for addressing such urban challenges by integrating different forms of infrastructure in a rational and efficient manner.

An important aspect of a smart community is integrating infrastructures as “a system of systems”. In addition, a smart community has various stakeholders, including users, and each smart community infrastructure has extended scope life cycle (see [Figure 1](#)).

Until now it has not been possible to ensure consistency across infrastructure types to meet the requirements for smart community infrastructures, as owners have focused on just assembling solutions to each subsystem of infrastructures.

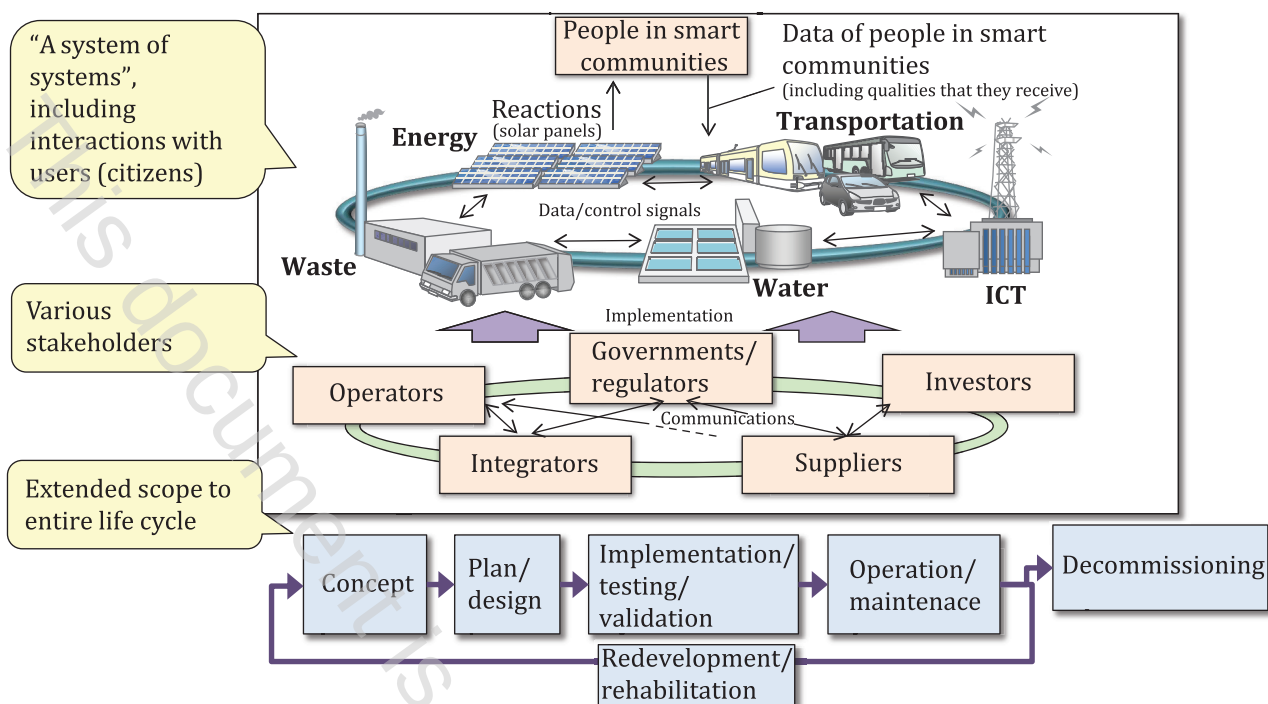
In order to ensure consistency of the specification of smart community infrastructures as a whole, firstly the functions of each subsystem need to be clarified and arranged based on the needs of a smart community. Secondly, the perspectives of various stakeholders and the life cycle of infrastructures need to be considered.

To solve these issues and realize well-functioning smart community infrastructures as a whole, infrastructure development and operation processes are expected to include a common framework, as described in ISO/TR 37152, composed of three elements (see [Figure 2](#)):

- element (A): allocation of consistent specification requirements to each component of a system and validation of the allocating procedures;
- element (B): specification requirements associated with interaction and adoption of adequate measures into planning and operation;
- element (C): process to facilitate information sharing and communication among stakeholders.

On conducting a study, it was found that all stakeholders will benefit from applying this framework (see [Clause 5](#)).

This document provides guidelines for realizing element (B), providing specification requirements to manage interactions and to adopt adequate measures into planning and operation. Parts 2 and 3 in the ISO 37155 series will be about elements (A) and (C), respectively. Should it be required, a guidelines document will be developed to support Parts 1 to 3.



NOTE The infrastructures, stakeholders and life cycle phases pictured in this figure are only examples. Other infrastructures, such as an urban agricultural system, could be included.

Figure 1 — Characteristics of a smart community infrastructure

Smart community infrastructures

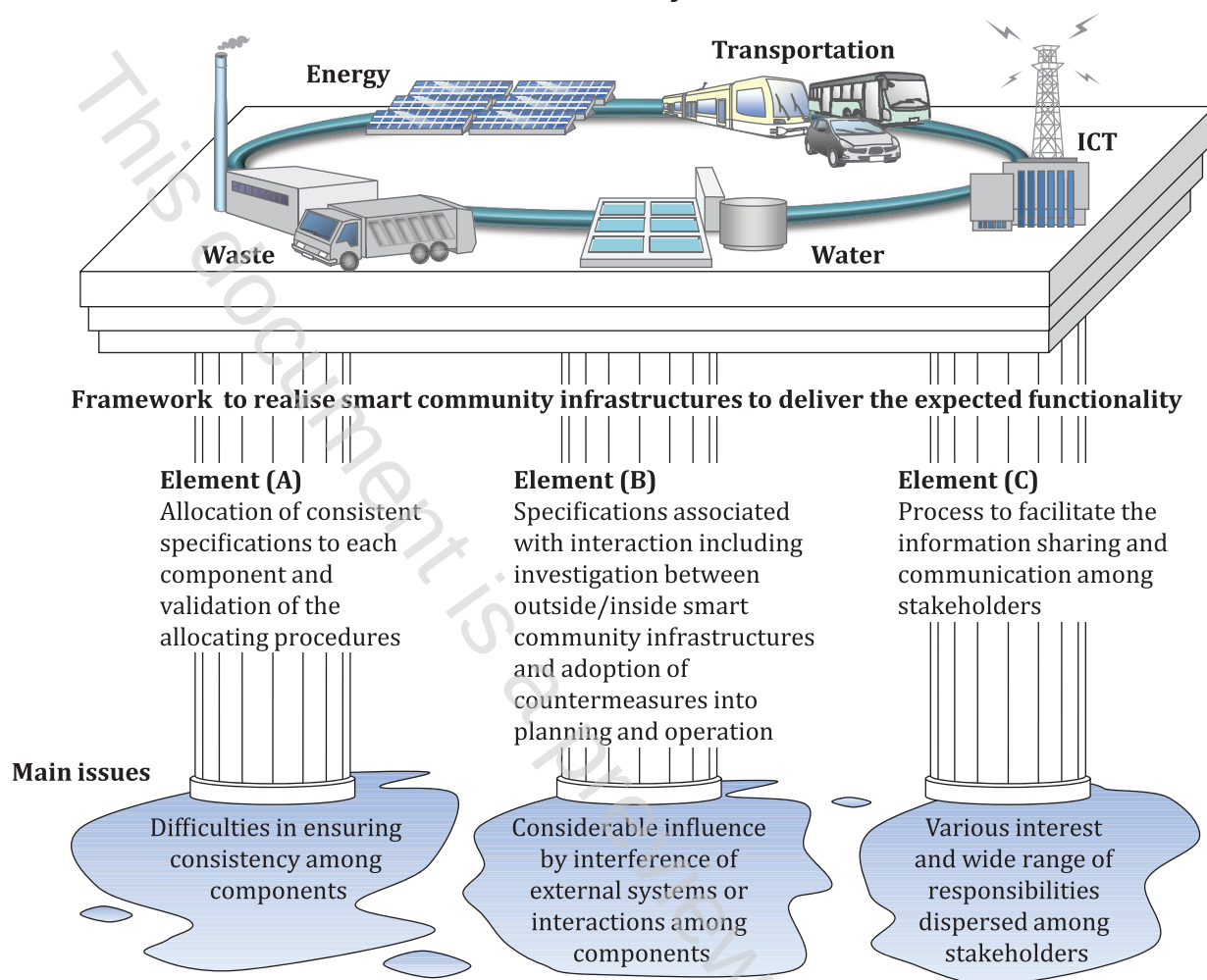


Figure 2 — Three elements of the framework

Framework for integration and operation of smart community infrastructures —

Part 1:

Recommendations for considering opportunities and challenges from interactions in smart community infrastructures from relevant aspects through the life cycle

1 Scope

This document describes a framework (a set of processes and methodologies) for smart community infrastructure interactions (interactions between multiple infrastructures, between infrastructures and stakeholders, and between infrastructures and the external environment) to ensure that such interactions are well identified and managed.

There are two potential use cases for this document. The first is for green field sites, where all the smart community infrastructures can be designed and developed at the same time. This is of value to planners and investors of major new infrastructure developments.

The second builds on the first and will support efficient management of an existing urban area by taking into account the increasing interdependencies of the infrastructures on each other and the way they should be managed as a system of systems. This document will also take into account accelerating technological and environmental changes.

Since this framework is concerned with ensuring the consistency of different systems consisting of smart community infrastructures, the scope does not overlap with any existing work or deliverables that have been or are being developed by existing TCs addressing issues at individual infrastructure level.

NOTE This document describes a management case (not a management system), i.e. specific processes that an organization needs to follow in order to meet specific objectives of this document.

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 <http://www.electropedia.org/>

3.1

risk

effect of uncertainty on objectives

Note 1 to entry: An effect is a deviation from the expected – positive and/or negative.