INTERNATIONAL STANDARD

ISO/IEC 30145-2

First edition
2020-10

Information technology — Smart City ICT reference framework —

Part 2: Smart city knowledge management framework

Reference number
ISO/IEC 30145-2:2020(E)

© ISO/IEC 2020



COPYRIGHT PROTECTED DOCUMENT

© ISO/IEC 2020

All rights reserved. Unless otherwise specified, or required in the context of its implementation, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Email: copyright@iso.org
Website: www.iso.org

Published in Switzerland

Contents

Page

Foreword ... **iv**
Introduction ... **v**
1 Scope ... **1**
2 Normative references ... **1**
3 Terms and definitions ... **1**
4 Background ... **3**
5 Aims of the knowledge management framework ... **3**
6 Overview of the smart city knowledge management framework ... **3**
7 ICT implementation components in the knowledge management framework ... **4**
7.1 Smart city domain knowledge model ... 4
7.1.1 Smart city related models ... 4
7.1.2 Knowledge model construction technique ... 4
7.2 Smart city knowledge management platform ... 5
7.2.1 The platform of smart city knowledge management ... 5
7.2.2 Smart city knowledge base and its interface ... 5
7.2.3 Smart city knowledge acquisition and organization ... 5
7.2.4 Smart city knowledge mining and analysis ... 5
7.2.5 Smart city knowledge trustworthiness evaluation ... 6
Annex A (informative) **Use cases for a smart city knowledge management framework** ... **7**
Bibliography ... **8**

© ISO/IEC 2020 – All rights reserved

Foreword

ISO (the International Organization for Standardization) and IEC (the International Electrotechnical Commission) form the specialized system for worldwide standardization. National bodies that are members of ISO or IEC participate in the development of International Standards through technical committees established by the respective organization to deal with particular fields of technical activity. ISO and IEC technical committees collaborate in fields of mutual interest. Other international organizations, governmental and non-governmental, in liaison with ISO and IEC, also take part in the work.

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 document 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).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO and IEC shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents) or the IEC list of patent declarations received (see http://patents.iec.ch).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

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 Joint Technical Committee ISO/IEC JTC 1, *Information technology*.

A list of all parts in the ISO/IEC 30145 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.

© ISO/IEC 2020 – All rights reserved

Introduction

0.1 General

The purpose of this document is to assist city chief information officers (CIO) and other stakeholders in planning and implementing a smart city. It comprises the following three parts:

— Part 1: Smart city business process framework

— Part 2 (this document): Smart city knowledge management framework

— Part 3: Smart city engineering framework

Each of the three parts is aimed at a different role or viewpoint within the city and thus separate focus needs to be maintained. The "separation of concerns" is a principle for the development of a city as it uses ICT to deliver the vision and objectives for the city. The value of using the separation of concerns is to simplify development and maintenance of the architecture as the city both develops and delivers improved outcomes for the city stakeholders.

Figure 1 shows the components of the smart city ICT reference framework, which consist of 5 components: stakeholders, vision and outcomes, the business process framework, the knowledge management framework, and the engineering framework. This document describes the knowledge management framework. The business process framework is described in ISO/IEC 30145-1:—[1)] and stakeholders, vision and outcomes, and the engineering framework are described in ISO/IEC 30145-3 respectively.

1) Under preparation. Stage at the time of publication: ISO/IEC DIS 30145-1:2020.

© ISO/IEC 2020 – All rights reserved

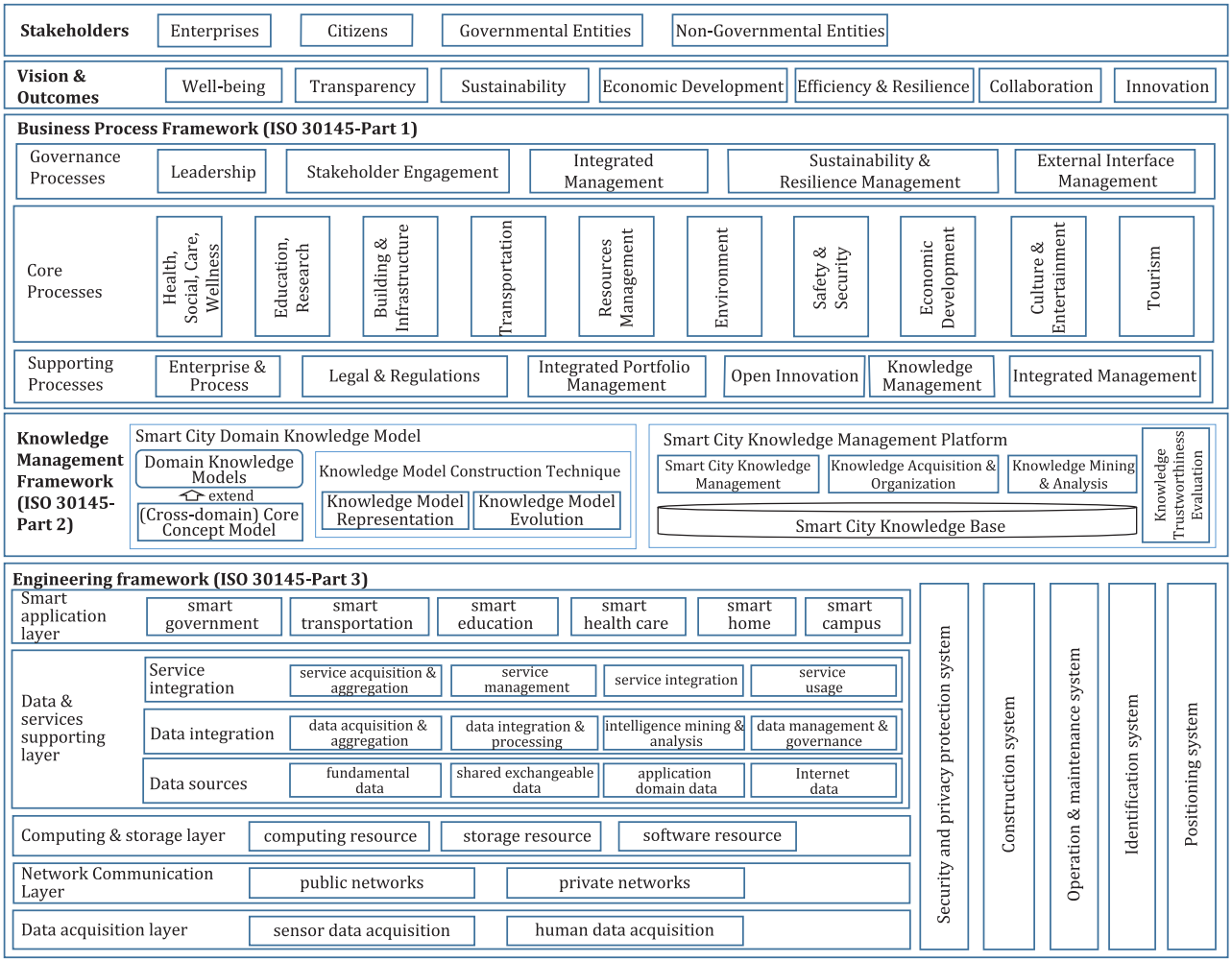


Figure 1 — Smart city ICT reference framework

0.2 Stakeholders

The stakeholders served by the smart city ICT reference framework are businesses, citizens, government organizations and non-government organizations. This stakeholder list is not exhaustive but defines the key stakeholders in a smart city and the user for the smart city ICT reference framework.

0.3 Vision and outcomes

The motivation for making a city smart is a result of a shared vision and a set of agreed outcomes from all of the city stakeholders. The vision and outcomes of the smart city ICT reference framework are well-being, transparency, sustainability, economic development, efficiency and resilience, collaboration and innovation. This vision and outcomes list is not exhaustive but defines the key vision and outcomes of a smart city. The smart city ICT reference framework articulates a vision that the smart city will be transparent in the delivery of city services which meet city sustainability ambitions. This vision uses collaboration and innovation approaches to deliver desired city outcomes. City outcomes are expected to improve efficiency and resilience of city services and promote economic development activities which enhance the well-being of citizens.

© ISO/IEC 2020 – All rights reserved

Information technology — Smart City ICT reference framework —

Part 2:
Smart city knowledge management framework

1 Scope

This document specifies a generic knowledge management framework for a smart city, focusing on creating, capturing, sharing, using and managing smart city knowledge. It also gives the key practices which are required to be implemented to safeguard the use of knowledge, such as interoperability of heterogeneous data and governance of multi-sources services within a smart city.

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
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, modified — Notes 2 and 3 to entry deleted.]

3.2
information
data (3.1) that are processed, organized and correlated to produce meaning

Note 1 to entry: Information concerns facts, concepts, objects, events, ideas, processes, etc.

3.3
knowledge
collection of facts, events, beliefs, and rules, organized for systematic use

[SOURCE: ISO/IEC 2382:2015, 2123771, modified — Notes 1 and 2 to entry deleted.]

© ISO/IEC 2020 – All rights reserved