ISO/IEC JTC 1/WG 11
Smart cities
Convenorship: SAC (China)

Document type: Working Draft Text

Title: Initial Working Draft of 30145 Part 3 v 0.2

Status: ***Initial Working Draft of 30145 Part 3 v 0.2 has been approved by the first meeting.***

Date of document: 2016-06-08

Source: editor

Expected action: INFO

No. of pages: 3

Email of secretary: liutl@cesi.cn

Committee URL: http://isotc.iso.org/livelink/livelink/open/jtc1wg11

ISO 30145-3:####

ISO JTC 1/WG 11

Secretariat: China

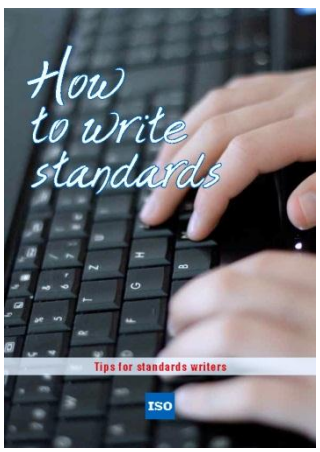
Title Information technology— Smart City ICT Reference Framework— Part 3: Smart City Engineering Framework

WD 0.1

Warning for WDs and CDs

This document is not an ISO International Standard. It is distributed for review and comment. It is subject to change without notice and may not be referred to as an International Standard.

Recipients of this draft are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.



Contents

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. 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 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. www.iso.org/patents

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

For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: Foreword - Supplementary information

The committee responsible for this document is ISO/JTC 1.

ADD INFORMATION ABOUT REPLACED STANDARDS AND OTHER PARTS AS NECESSARY

Introduction

The purpose of this international standard, Smart City ICT Reference Framework, is to assist city Chief Information Officer (CIO) and other stakeholders in planning and implementing a smart city. It comprise the following three parts:

- Part 1: Smart City Business Process Framework
- Part 2: Smart City Knowledge Management Framework
- Part 3: Smart City Engineering Framework

These three views are each 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 development of system architecture as a set of views. The value of using the separation of concerns is to simplify development and maintenance of the architecture.

Information technology— Smart City ICT Reference Framework— Part 3: Smart City Business Process

1 Scope

The scope of this standard is to define a generic Knowledge Managment Framework for a smart city. This standard will thus focus on smart city specific processes. and practices.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO #####-#:20##, *General title — Part #: Title of part*

3 Terms and definitions

3.1
term
text of the definition

Note 1 to entry: Text of the note.

3.2
term
text of the definition

4 Modelling Formalism

Editor (FC) note: We need to specify the formalism and convention used in this document.

5 Smart City Engineering Framework

A Smart City Engineering View can be developed using an Industry Architecture as defined in the TOGAF (The Open Group Architecture Framework). Industry Architectures guide the integration of common systems components with industry-specific components, and guide the creation of industry solutions for targeted customer problems within a particular industry. (See Annex for details)

It is recommended that JTC 1 should develop a Smart City Engineering View to guide the integration of common systems components with industry-specific components, and guide the creation of industry solutions for targeted customer problems within a particular industry. This Smart City Engineering View would respond to the business process needs identified in section 5.2 and implement the technology to exchange the knowledge elements identified in section 5.3.

A key element of the Engineering View would be a Solution Concept Diagram or similar overview of the engineering architecture. As identified in TOGAF, a Solution Concept Diagram provides a high-level orientation of the solution that is envisaged in order to meet the objectives of the architecture engagement.

In contrast to the more formal and detailed architecture diagrams developed in the following phases, the solution concept represents a "pencil sketch" of the expected solution at the outset of the engagement.

Figure 5.3-2 provides an initial Smart Cities Solution Concept Diagram. This high-level engineering view of Smart City is organized in layers typical of an information system deployment. The figure is similar to the TOGAF Technical Reference Model but with the important addition of a sensing layer at the bottom. The layers in the diagram are similar to the approach defined by the ITU Focus Group on Smart Sustainable Cities. The layers are also consistent with the approach used in China's Smart City Pilots1.

The layers in the Smart City Concept Diagram are discussed in the Annex. Some elements of the diagram are mature and have existing standards. Other elements are new and are under active development, e.g., IoT.

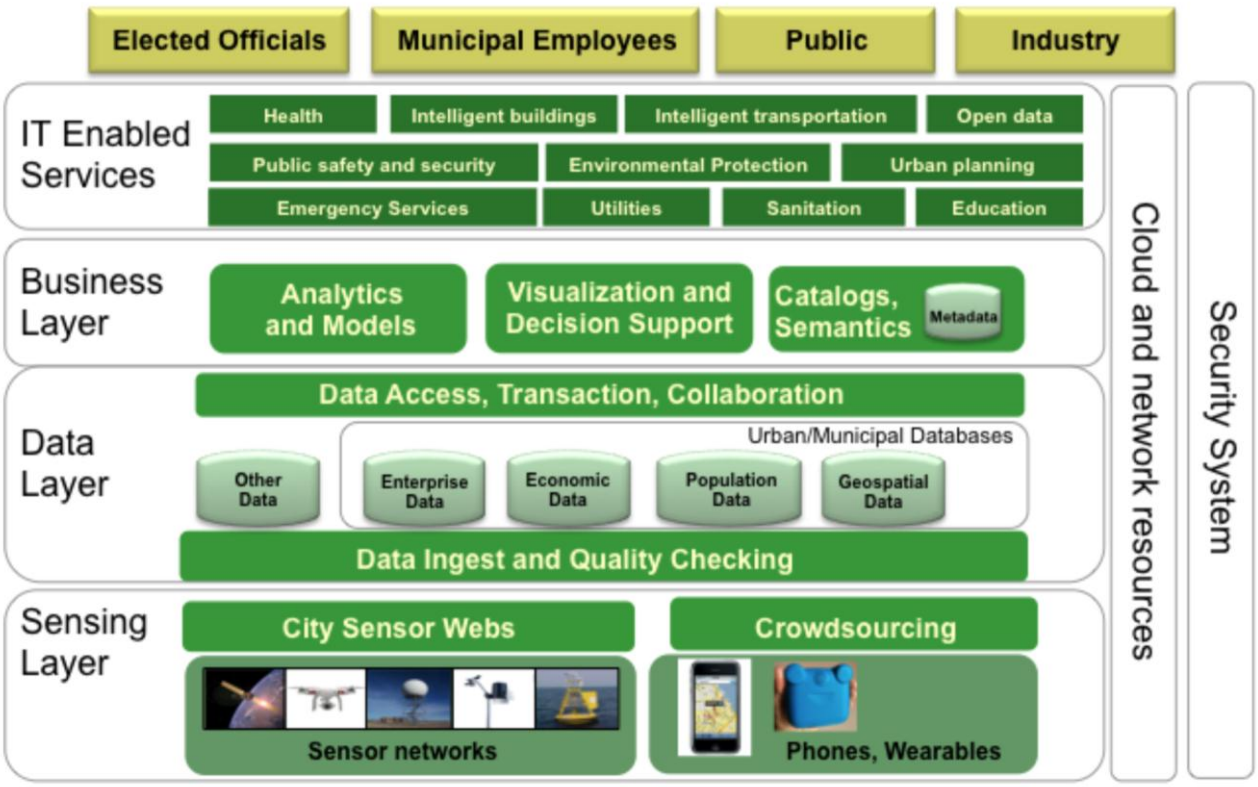
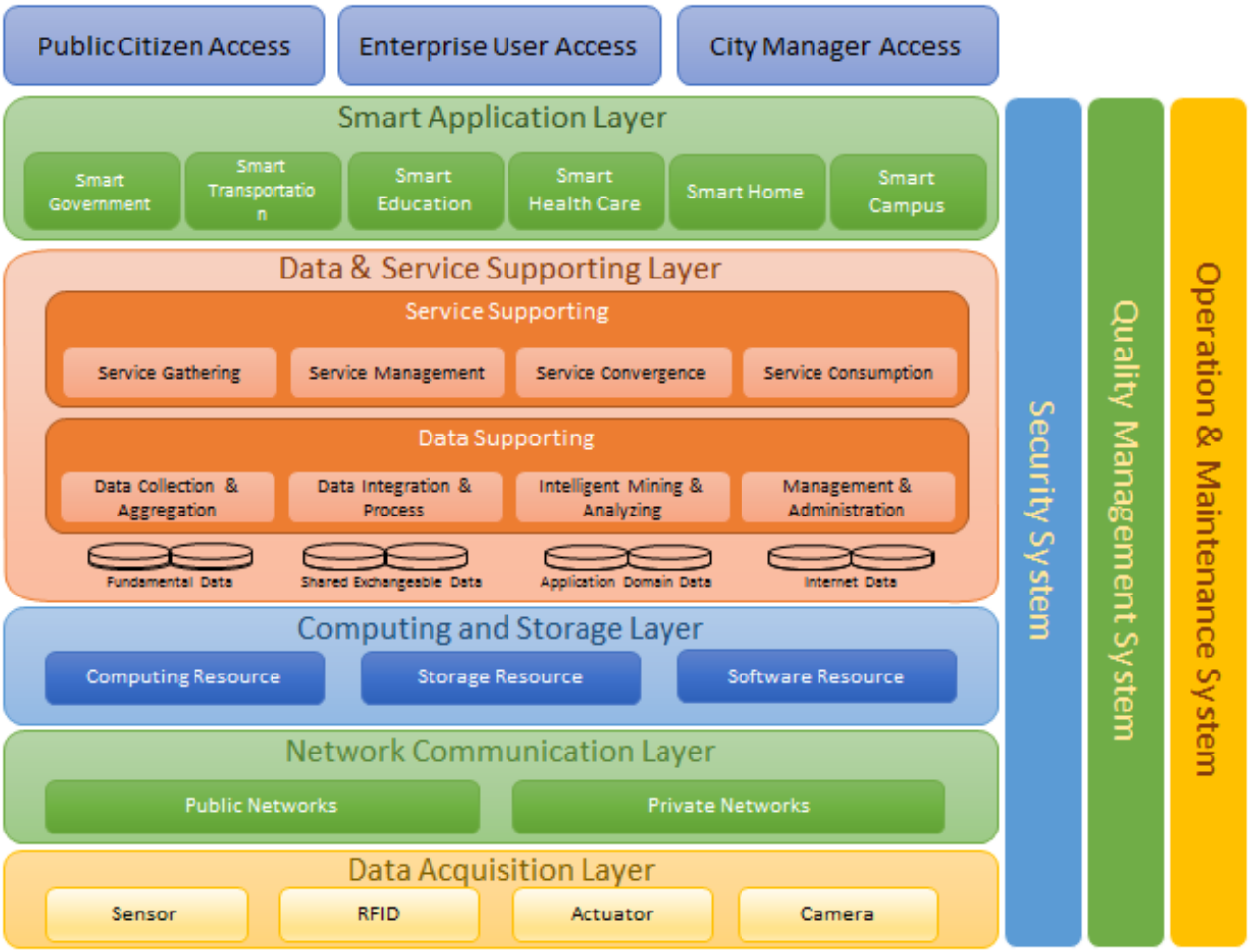


Figure 5-3 Smart Cities Solution Concept Diagram



Populating the Engineering View with International Standards.

Many standards exist relevant to the Smart City Engineering View. This section identifies standards developing organizations relevant to the industry architecture.

1 http://ieeexplore.ieee.org/xpl/articleDetails.jsp?arnumber=6502629

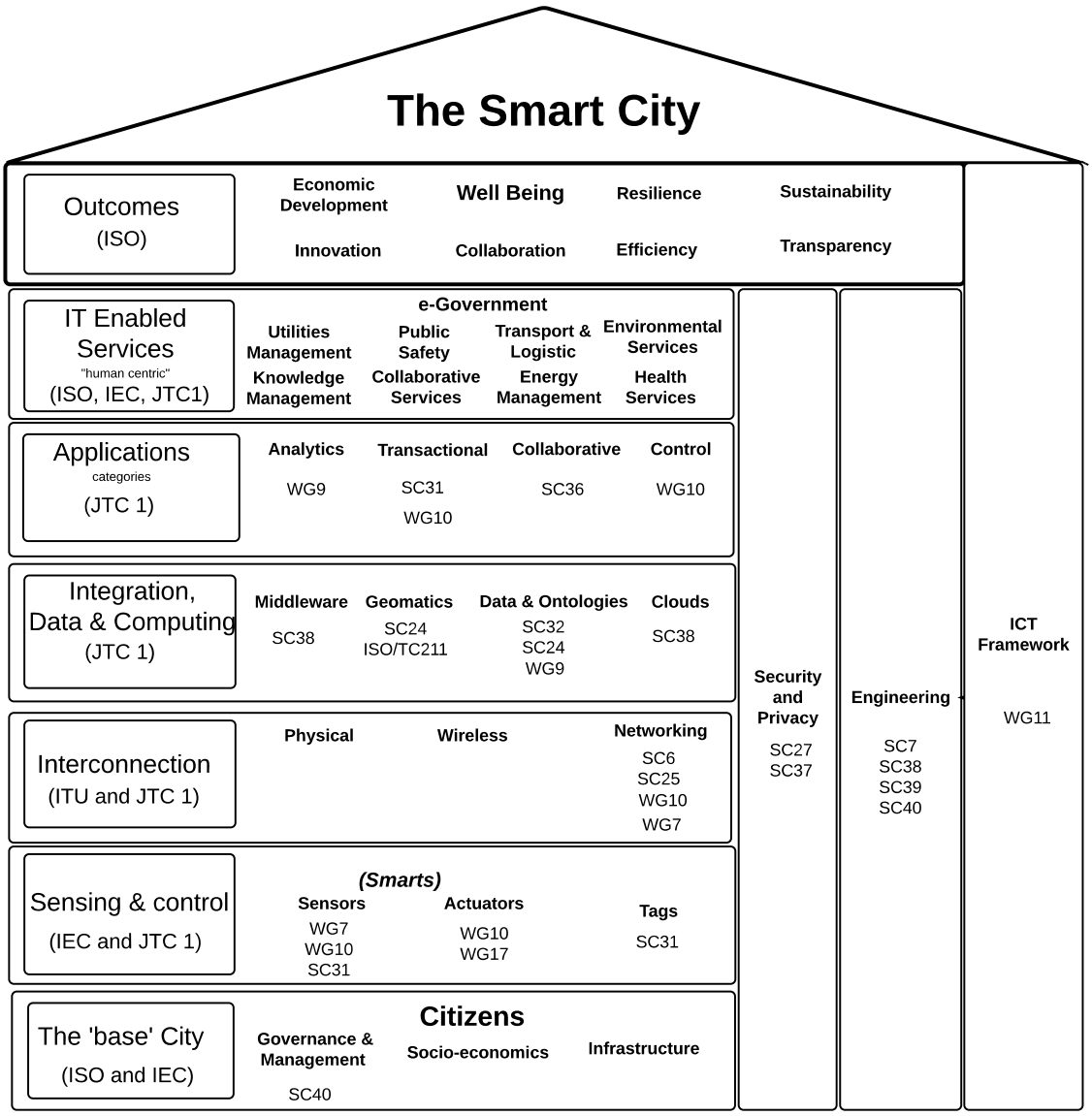


Figure 5-4 SDOs relevant to the Engineering View

It is informative to consider the similarities and differences between Figures 5.3 and 5.4.

 Figure 5.3 Smart Cities Solution Concept Diagram – provides a forward looking vision of the solution architecture needed to best achieve Smart City objectives.

 Figure 5.4 SDOs relevant to the Engineering View – provides a survey of existing, and therefore backward looking summary of international standards work that will play a role in Smart City development.

The difference in the two figures points to the need for additional standards. For example existing standards for sensors focus on the instrumentation aspects of sensors separated from computing at data centers. Whereas the concept architecture for smart cities envisions sensors combined with big data computing at the edge of the network allowing information exploitation across sensor webs. For example, deployment of multiple sensors on a single platform along with sufficient computational power allows for observation and feature fusion and control at the edge of the network bringing new capabilities to cities.

One of the issues for JTC 1 to consider, therefore, coming out of the growing importance of smart cities, is whether there needs to be any rearrangement of its existing structures to reflect these new business and technical realities.

5.1 Strategy, Infrastructure

Security System: The system builds a unified security platform for the Smart City application development. The security platform implements features include unified entries, unified certifications, unified authorization and unified audit which are shared by other layers.

Operation and Maintenance System: The system manages Smart City systems daily operations and have capability to coordinate other layers work together to deliver reliable, sustainable and consistent Smart City services.

Quality Management System: The system define quality policy of Smart City construction and operation, and manage other layers to ensure the quality is delivered.

5.2 Sensing, Interconnection and Data

Data Acquisition Layer: The layer provides the capability to sense the world and take actions. The capability leverages electronic devices such as sensor, RFID and camera etc. to identify and collect information from the infrastructures, environment, buildings etc., then perform situation monitoring and controlling.

Network Communication Layer: The layer consists of Internet, telephone network, cable television network and their convergence (ex. Mobile Internet). The layer provides communication infrastructure to Smart City through the high-capacity, high-bandwidth and high reliable optical networks and metropolitan wireless broadband network.

Computation and Storage Layer: The layer includes resources for computing, data storage and foundation software. It equips the Smart City a hardware and software platform to build and host upper layers applications. The platform leverages this layer resources to address application requirements for example, data management on storage, data processing through computing capability, etc.

5.3 Computing, Application and Services

Data and Service Support Layer: The layer is between application layer and resource layer, and take critical responsibility. The layer fuses the data capture capability, communication capability, data storage capability, computing capability into data management and service management capability which could be consumed by application layer directly.

Smart Application Layer: The layer offers smart applications and their integrations across industries and domains with supporting from the underneath layers. The applications come from different Smart City domains such as Smart Government, Smart Transportation, Smart Public Service, Smart Healthcare, Smart Parks, Smart Community, Smart Tour, etc. These applications supply comprehensive information, applications and services to address requirement from the public community, enterprise, city manager, etc.

6 Use Cases of Smart City Knowledge Management

Type text here - use subclauses if required e.g. 5.1 or 5.1.1.

Annex A (informative) Smart City Knowledge Management Guiding Principles

A.1 Clause

Type text here - use subclauses if required e.g. A.1.1 or A.1.1.1.

Bibliography

[1] ITU M.3050 Supplement 1 (02/07) Enhanced Telecom Operations Map (eTOM) - Interim view of an interpreter's guide for eTOM and ITIL practitioners

[2] ITU M.3050 Supplement 2 (02/07) Enhanced Telecom Operations Map (eTOM) - Public B2B Business Operations Map (BOM)

[3] M.3050 Supplement 3 (05/04) Enhanced Telecom Operations Map (eTOM) - eTOM to M.3400 mapping

[4] ITU M.3050 Supplement 4 (02/07) Enhanced Telecom Operations Map (eTOM) - An eTOM primer

[5] TMFORUM TR259 Smart City Maturity and Benchmark Model, Release 16.0.0 May 2016

[6] TOGAF

