

ITU-T

TELECOMMUNICATION
STANDARDIZATION SECTOR
OF ITU

L.1370

(11/2018)

SERIES L: ENVIRONMENT AND ICTS, CLIMATE
CHANGE, E-WASTE, ENERGY EFFICIENCY;
CONSTRUCTION, INSTALLATION AND PROTECTION
OF CABLES AND OTHER ELEMENTS OF OUTSIDE
PLANT

Sustainable and intelligent building services

Recommendation ITU-T L.1370

ITU-T L-SERIES RECOMMENDATIONS

ENVIRONMENT AND ICTS, CLIMATE CHANGE, E-WASTE, ENERGY EFFICIENCY; CONSTRUCTION, INSTALLATION AND PROTECTION OF CABLES AND OTHER ELEMENTS OF OUTSIDE PLANT

OPTICAL FIBRE CABLES

Cable structure and characteristics	L.100–L.124
Cable evaluation	L.125–L.149
Guidance and installation technique	L.150–L.199

OPTICAL INFRASTRUCTURES

Infrastructure including node elements (except cables)	L.200–L.249
General aspects and network design	L.250–L.299

MAINTENANCE AND OPERATION

Optical fibre cable maintenance	L.300–L.329
Infrastructure maintenance	L.330–L.349
Operation support and infrastructure management	L.350–L.379
Disaster management	L.380–L.399

PASSIVE OPTICAL DEVICES

L.400–L.429

MARINIZED TERRESTRIAL CABLES

L.430–L.449

For further details, please refer to the list of ITU-T Recommendations.

Recommendation ITU-T L.1370

Sustainable and intelligent building services

Summary

The concept of sustainable intelligent building (SIB) is closely related to efficiency and environmentally-aware practices. The concept is therefore the key enabler of the sustainability of the building itself, and of the city as a whole. Recommendation ITU-T L.1370 sets the minimal requirements for the efficient and sustainable management of the building as a unit. The sustainability of human activities in urban areas cannot be addressed without taking into consideration the building, which is the most basic unit that cities are composed of.

This Recommendation also defines the services enabled by the SIB concept, the way it contributes to the aforementioned goals of sustainability, its features, its different possible functioning modes, or its internal architecture and requirements with the Internet of things (IoT) node at its core.

Interoperability deserves a special mention among these requirements and specifications, as most of the added-value that the SIB provides comes into action when it interacts with other parts of the building, other buildings, city elements, or the city itself. Protocols, semantics, and normalization are key as a part of this interaction, and the SIB with its IoT node is required to be compliant with all of them.

Extensibility is another key feature for the SIB and the IoT node. The technology behind smart and sustainable cities is currently evolving very quickly, as it is a state-of-the-art technological arena. That is the reason why one of the most important architectural patterns to take into consideration is to design a SIB and an IoT node that support not only upgrading, but also the capacity to accommodate new technologies, protocols, services and applications that may be relevant for the industry in the future.

In addition to these clear advantages for the technical durability of the SIB infrastructure, this will enable as well the creation of an open "smart ecosystem", with third parties being able to integrate their own developments, expanding the capacities of the SIB, and ultimately contributing to improve the quality of life of citizens.

History

Edition	Recommendation	Approval	Study Group	Unique ID*
1.0	ITU-T L.1370	2018-11-13	5	11.1002/1000/13724

Keywords

Energy efficiency, environment, structural stability, sustainability, sustainable building.

* To access the Recommendation, type the URL <http://handle.itu.int/> in the address field of your web browser, followed by the Recommendation's unique ID. For example, <http://handle.itu.int/11.1002/1000/11830-en>.

FOREWORD

The International Telecommunication Union (ITU) is the United Nations specialized agency in the field of telecommunications, information and communication technologies (ICTs). The ITU Telecommunication Standardization Sector (ITU-T) is a permanent organ of ITU. ITU-T is responsible for studying technical, operating and tariff questions and issuing Recommendations on them with a view to standardizing telecommunications on a worldwide basis.

The World Telecommunication Standardization Assembly (WTSA), which meets every four years, establishes the topics for study by the ITU-T study groups which, in turn, produce Recommendations on these topics.

The approval of ITU-T Recommendations is covered by the procedure laid down in WTSA Resolution 1.

In some areas of information technology which fall within ITU-T's purview, the necessary standards are prepared on a collaborative basis with ISO and IEC.

NOTE

In this Recommendation, the expression "Administration" is used for conciseness to indicate both a telecommunication administration and a recognized operating agency.

Compliance with this Recommendation is voluntary. However, the Recommendation may contain certain mandatory provisions (to ensure, e.g., interoperability or applicability) and compliance with the Recommendation is achieved when all of these mandatory provisions are met. The words "shall" or some other obligatory language such as "must" and the negative equivalents are used to express requirements. The use of such words does not suggest that compliance with the Recommendation is required of any party.

INTELLECTUAL PROPERTY RIGHTS

ITU draws attention to the possibility that the practice or implementation of this Recommendation may involve the use of a claimed Intellectual Property Right. ITU takes no position concerning the evidence, validity or applicability of claimed Intellectual Property Rights, whether asserted by ITU members or others outside of the Recommendation development process.

As of the date of approval of this Recommendation, ITU had not received notice of intellectual property, protected by patents, which may be required to implement this Recommendation. However, implementers are cautioned that this may not represent the latest information and are therefore strongly urged to consult the TSB patent database at <http://www.itu.int/ITU-T/ipr/>.

© ITU 2019

All rights reserved. No part of this publication may be reproduced, by any means whatsoever, without the prior written permission of ITU.

Table of Contents

		Page
1	Scope.....	1
2	References.....	1
3	Definitions	1
3.1	Terms defined elsewhere	1
3.2	Terms defined in this Recommendation.....	2
4	Abbreviations and acronyms	2
5	Conventions	3
6	Description of a sustainable and intelligent building and its control by IoT node	3
6.1	Sustainable and intelligent building concept	3
6.2	Functioning modes of the SIB: standalone mode, in association with another SIB, or integrated with the smart city	5
7	Building IoT node: concept and structure	6
7.1	Basic structure	6
7.2	Building IoT node functional needs	7
7.3	Building IoT node requirements.....	8
8	Relationships of the SIB with other buildings	9
9	Relationships of the SIB with the city	10
	Appendix I – Examples of interaction between SIB and other systems	11
I.1	Fire detection case	11
I.2	Pollution	11
I.3	Water losses.....	11
I.4	Earthquakes	11
	Bibliography.....	13

Recommendation ITU-T L.1370

Sustainable and intelligent building services

1 Scope

This Recommendation sets out the services and data required for a sustainable and intelligent building to improve the quality of life of citizens, as well as the specification of its functional features and the technical requirements to be met by the device that provides these services and data.

2 References

The following ITU-T Recommendations and other references contain provisions which, through reference in this text, constitute provisions of this Recommendation. At the time of publication, the editions indicated were valid. All Recommendations and other references are subject to revision; users of this Recommendation are therefore encouraged to investigate the possibility of applying the most recent edition of the Recommendations and other references listed below. A list of the currently valid ITU-T Recommendations is regularly published. The reference to a document within this Recommendation does not give it, as a stand-alone document, the status of a Recommendation.

[ITU-T Y.4200] Recommendation ITU-T Y.4200 (2018), *Requirements for the interoperability of smart city platforms*.

[ITU-T Y.4201] Recommendation ITU-T Y.4201 (2018), *High-level requirements and reference framework of smart city platforms*.

3 Definitions

3.1 Terms defined elsewhere

This Recommendation uses the following terms defined elsewhere:

3.1.1 big data [b-ITU-T Y.3600]: A paradigm for enabling the collection, storage, management, analysis and visualization, potentially under real-time constraints, of extensive datasets with heterogeneous characteristics.

NOTE – Examples of dataset characteristics include high-volume, high-velocity, high-variety, etc.

3.1.2 city [b-ITU-T Y.4900]: An urban geographical area with one (or several) local government and planning authorities.

3.1.3 city platform [ITU-T Y.4201]: A computer system or integration of computer systems that , uses information and communication technologies (ICTs) to access data sources and process them to offer urban operation and services to the city.

NOTE – The concept is extended to a community.

3.1.4 Internet of things (IoT) [b-ITU-T Y.4000]: A global infrastructure for the information society, enabling advanced services by interconnecting (physical and virtual) things based on existing and evolving interoperable information and communication technologies.

NOTE 1 – Through the exploitation of identification, data capture, processing and communication capabilities, the IoT makes full use of things to offer services to all kinds of applications, whilst ensuring that security and privacy requirements are fulfilled.

NOTE 2 – From a broader perspective, the IoT can be perceived as a vision with technological and societal implications.

3.1.5 interoperability [b-ITU-T Y.101]: The ability of two or more systems or applications to exchange information and to mutually use the information that has been exchanged.