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colour inside

Smart manufacturing standards map (SM2) – Part 2: Catalogue

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IEC Central Office
3, rue de Varembé
CH-1211 Geneva 20
Switzerland

Tel.: +41 22 919 02 11
info@iec.ch
www.iec.ch

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FOREWORD

1) 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.
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This document has been prepared by IEC systems committee SM: Smart Manufacturing in collaboration with ISO technical committee 184: Automation systems and integration.

The text of this Technical Report is based on the following documents:

Draft	Report on voting
SyCSM/48/DTR	SyCSM/56/RVDTR

Full information on the voting for its approval can be found in the report on voting indicated in the above table.

The language used for the development of this Technical Report is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at www.iec.ch/members_experts/refdocs.

A list of all parts in the ISO/IEC TR 63306 series, published under the general title *Smart manufacturing standards map (SM2)*, can be found on the IEC and ISO websites.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under webstore.iec.ch in the data related to the specific document. At this date, the document will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

IMPORTANT – The 'colour inside' logo on the cover page of this publication indicates that it contains colours which are considered to be useful for the correct understanding of its contents. Users should therefore print this document using a colour printer.

INTRODUCTION

International and regional standards developing organizations (SDOs), as well as consortia and national initiatives, identified the need for clarifying the standards landscape of thousands of publications related to manufacturing in general and more specifically to smart manufacturing.

On this matter, the "Big Picture" project initiated by ISO/TC 184 "Automation systems and integration" in 2001 is notable. It resulted in the publication of ISO/TR 23087:2018 [1][1].

The other important contributions are:

- NISTIR 8107, Current Standards Landscape for Smart Manufacturing Systems [2], 2016;
- VDI/VDE and ZVEI, Reference Architecture Model Industrie 4.0 (RAMI4.0) [3], 2015;
- final report of ISO/TMB Strategic Advisory Group Industry 4.0/Smart manufacturing, 2016.

The Smart Manufacturing Standards Map (SM2) project was initiated by ISO and IEC in order to provide a credible, central, and neutral repository of information about standards related to smart manufacturing.

NOTE Standards is a generic term covering international and national standards, specifications, technical reports, technical specifications, white papers and other similar deliverables provided by standards developing organizations (SDO) or consortia.

The goals of this project are to provide a systematic and reliable classification method (vocabulary and catalogue), and in the future a central repository with visualization tools for sorting, classifying and comparing standards.

These tools are intended to support SDOs, their officers and experts in the following tasks:

- identify standards that apply to their own domain;
- examine the main features of selected standards;
- generate comparisons between the relative positioning of different standards in their domain or other domains.

These tools should also serve standards users in the following tasks:

- identify the relevant standards for their activity;
- evaluate their activity in terms of the standards and the standardization projects;
- build their product development roadmap in accordance with the standards landscape.

These tools and the information contained in the repository are updated frequently to reflect new standards and the need for new ways to characterize standards as technology advances.

The ISO/IEC TR 63306 series comprises the following parts:

- Part 1: Framework describes the principle of structuring the standards catalogue and its use for analysing the standards landscape; it specifies the characteristics that are used for the classification of standards.
- Part 2: Catalogue lists relevant standards for smart manufacturing and their characteristics.

[1] Numbers in square brackets refer to the Bibliography.

SMART MANUFACTURING STANDARDS MAP (SM2) –

Part 2: Catalogue

1 Scope

ISO/IEC TR 63306-2 lists smart manufacturing related standards with their characteristics as specified in ISO/IEC TR 63306-1.

ISO/IEC TR 63306-2 is composed of two items:

- The SM2 Catalogue URLs (this document) that provides the URLs that lead to the ISO and IEC repositories.
- The SM2 Catalogue Data that are hosted both in ISO and IEC repositories. They provide the actual information about the smart manufacturing related standards (list and characteristics).

The SM2 Catalogue applies to international standards, de facto standards and consortium specifications; publications or projects. These are named "standards" in ISO/IEC TR 63306-2.

ISO/IEC TR 63306-2 is intended for SM2 Catalogue users. For SM2 Catalogue designers, it is possible that other documents will be provided.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

No terms and definitions are listed in this document.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at http://www.electropedia.org/
- ISO Online browsing platform: available at http://www.iso.org/obp

4 Access to the SM2 Catalogue tables

4.1 General

The SM2 Catalogue tables are Microsoft Excel®[2] files. These tables are stored in specific ISO and IEC repositories freely accessible online.

As detailed in ISO/IEC TR 63306-1, each row is assigned to a standard and each column is assigned to a characteristic (see Figure 1).

[2] Excel is the trademark of a product supplied by Microsoft Corporation. This information is given for the convenience of users of this document and does not constitute an endorsement by ISO or IEC of the product named.

	Identification		Hierarchy												Life cycle																	
	Reference	Title	Equipment hierarchy				Functional hierarchy								Product type life cycle				Product instance life cycle				Production system life cycle									
Status	Standard number	Standard title	Enterprise	Facility	Station	Device	Connected world	Business (L4)	Operations management (L3)	Control (L2)	Sensors and actuators (L1)	Process (L0)	Product		Marketing	Development	Sales	Obsolescence support	Manufacturing	Transport & stock	Use	Disposal	Concept	Design	Implementation	Use	Retirement	Integration					
Publication	IEC 61158-2	Industrial communication networks - Fieldbus specifications - Part 2: Physical layer specification and service definition	-	-	1	1	-	-	-	1	1	1	1		-	1	-	-	1	-	1	-	1	1	1	1	-					
Publication	IEC 61158-X-Y	Industrial communication networks - Fieldbus specifications - Part x-y: Data-link & Application layers service definition & protocol specification - Type y elements	-	-	1	1	-	-	-	1	1	-	1		-	1	-	-	1	-	-	-	1	1	-	1	-					

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Figure 1 – Example of SM2 Catalogue table

As smart manufacturing is a living topic, several versions of the SM2 Catalogue tables will be provided.

The standards have been proposed to their responsible technical committee for checking and fixing. Some technical committees processed their standards.

The standards that were processed in accordance with ISO/IEC TR 63306-1 by their owning technical committee are qualified "Validation by TCs/SCs" = "OK" and the text in the row is green.

The standards that were processed by their owning technical committee but not in accordance with ISO/IEC TR 63306-1 are qualified "Validation by TCs/SCs" = "Incomplete" and the text in the row is blue.

The standards that were not processed by their owning technical committee are qualified "Validation by TCs/SCs" = "Missing" and the text in the row is red.

4.2 Link to the ISO Standards Maintenance Portal

The SM2 Catalogue tables are accessible by the following URL to the ISO Standards Maintenance Portal (see Figure 2):

https://standards.iso.org/iso-iec/tr/

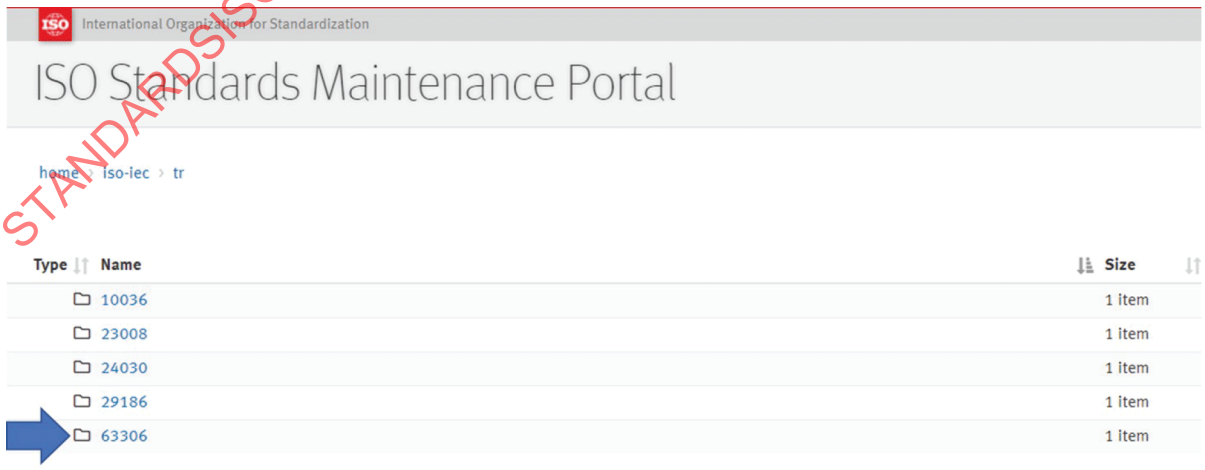

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Figure 2 – SM2 Catalogue ISO repository

NOTE The SM2 Catalogue tables available in the ISO Standards Maintenance Portal are those approved by the voting of the National Committees.

4.3 Link to the IEC SyC SM Supporting Documents

The SM2 Catalogue tables are accessible by the following URL to the IEC SyC SM Supporting Documents (see Figure 3):

https://www.iec.ch/sycsm/supportingdocuments

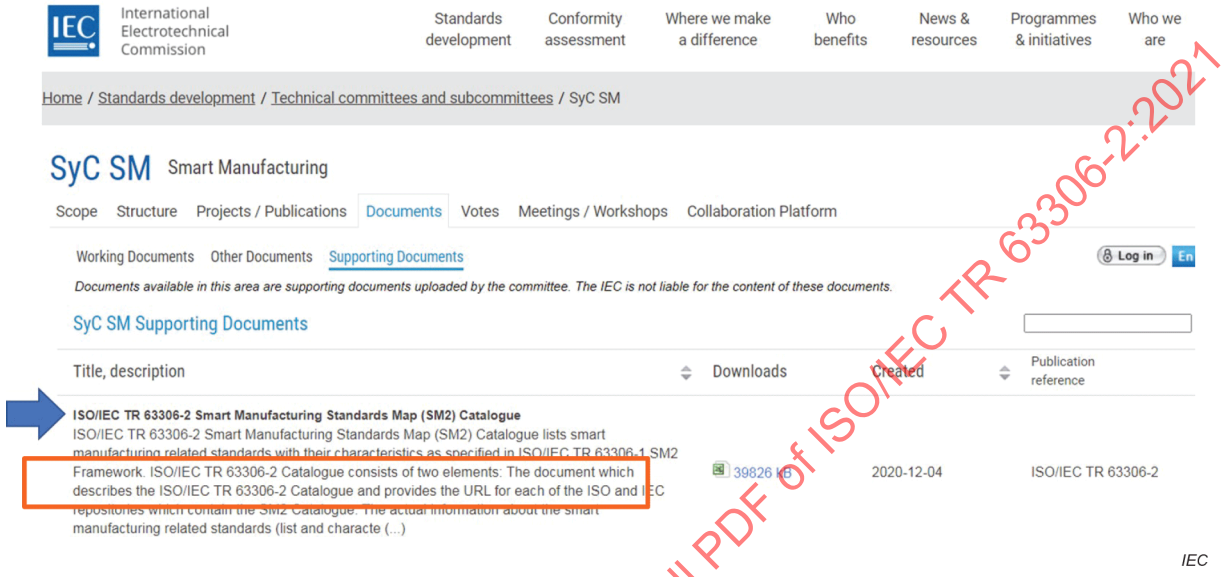

Figure 3 – SM2 Catalogue IEC repository

Bibliography

[1] ISO/TR 23087:2018, *Automation systems and integration – The Big Picture of standards*

[2] NISTIR 8107, *Current Standards Landscape for Smart Manufacturing Systems,* Yan Lu, KC Morris, Simon Frechette, 2016

[3] RAMI4.0, *Status Report, Reference Architecture Model Industrie 4.0 (RAMI4.0)*, VDE, VDI, ZVEI, July 2015