# ISO/IEC TR 63306-1

Edition 1.0 2020-12

# TECHNICAL REPORT

colour inside

## Smart manufacturing standards map (SM2) – Part 1: Framework



ISO/IEC TR 63306-1:2020-12(en)

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

ICS 25.040.01; 25.060.01; 01.040.25

ISBN 978-2-8322-9199-3

**Warning! Make sure that you obtained this publication from an authorized distributor.**

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# SMART MANUFACTURING STANDARDS MAP (SM2) –

## Part 1: Framework

## FOREWORD

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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/42/DTR | SyCSM/46/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.

In this document, the following print types are used.

– The font colour of the committee mandatory characteristics is red.

– The font colour of the committee conditional characteristics is purple.

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

**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.

1 Numbers in square brackets refer to the Bibliography.

# SMART MANUFACTURING STANDARDS MAP (SM2) –

# Part 1: Framework

## 1 Scope

This document describes the framework and the vocabulary that are used for the development of entries in the Smart Manufacturing Standards Map Catalogue. These enable the mapping and linking of standards and standard projects related to various aspects of smart manufacturing (product, production, supply chain, industrial services …).

The framework applies to international standards, de facto standards and consortium specifications; publications or projects; thereafter named "standards".

The framework part (Clauses 4) briefly describes the principle of structuring the standards catalogue and its use for analysing the standards landscape.

The vocabulary part (Clauses 5 to 13) specifies the characteristics that are used for the classification of standards.

NOTE The vocabulary is not universal but is the best effort to name the concepts used in different domains.

## 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 Principle of the Smart Manufacturing Standards Map (SM2)

### 4.1 Framework

The framework for the Smart Manufacturing Standards Map (SM2) enables the standardization stakeholders to identify, for each concerned standard, the characteristics related to its potential role and the impact of its use in the industry. These characteristics are defined in the SM2 Vocabulary.

Figure 1 shows the principle of this framework.