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**Intelligent manufacturing - Network collaborative design - Part
2: Software interface and data interaction**

智能制造 网络协同设计 第2部分：软件接口和数据交互

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Table of Contents

1 Scope	1
2 Normative references	1
3 Terms and Definitions	1
4 General	1
5 Software interface	2
5.1 Overview	2
5.2 Classification	2
5.3 General requirements	3
6 Data Interaction	4
6.1 Overview	4
6.2 Basic Interaction Protocol	4
6.3 General requirements	5

Foreword

This document was issued on 17 March 2023 by the State Administration for Market Regulation; Standardization Administration of the PRC and takes effect on 1 October 2023.

It is a GB/T standard: recommended rather than compulsory, but it is the text a Chinese reviewer applies when assessing a submission.

It is classified under ICS 35.240, Chinese classification N10.

This document is in accordance with the provisions of GB/T 1.1-2020 "Guidelines for Standardization Work Part 1. Structure and Drafting Rules for Standardization Documents" drafting.

This document is the second part of GB/T 42383 "Smart Manufacturing Network Collaborative Design". GB/T 42383 has issued the following part.

- Part 1. General requirements;
- Part 2. Software interface and data interaction;
- Part 4. Design requirements for the whole life cycle;
- Part 5. Multidisciplinary collaborative simulation.

Please note that some contents of this document may refer to patents. The issuing agency of this document assumes no responsibility for identifying patents.

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Introduction

GB/T 42383 "Smart Manufacturing Network Collaborative Design" is proposed to be composed of the following five parts.

--- Part 1. General requirements. The purpose is to specify the general principles, general requirements and requirements of the network collaborative design platform.

beg. It is suitable for remote design participants to develop complex product systems in the field of intelligent manufacturing with the support of the network collaborative design platform

The implementation and management of collaborative design is also applicable to the establishment of a network collaborative design platform.

--- Part 2. Software interface and data interaction. The purpose is to specify the software interface in the network collaborative design platform in the field of intelligent manufacturing

The technical requirements that need to be met in the design of interaction with data, and the description of the software interface type and the basic protocol of data interaction are given.

The software interface and data interaction framework in the design process of the network collaborative design platform suitable for complex products and equipment in the field of intelligent manufacturing

structure construction and technology implementation.

--- Part 3. Knowledge Base. The purpose is to specify the model and management requirements of the network collaborative design system knowledge base, knowledge base construction,

Knowledge base functions and knowledge base application requirements. It is suitable for the construction, management, application and maintenance of the network collaborative design system knowledge base.

--- Part 4. Design requirements for the whole life cycle. The purpose is to specify the general requirements for the design of the whole life cycle and the

Life cycle collaborative design requirements and specific design requirements for each stage of product life cycle. Applicable to the complex field of intelligent manufacturing

Collaborative design and management of the product system and its subsystem's full life cycle network.

--- Part 5. Multidisciplinary collaborative simulation. The purpose is to specify the architecture of the multidisciplinary co-simulation system in the process of network co-design

Requirements, technical requirements, functional requirements, simulation system construction, simulation process construction and system application logic, etc. for smart

Multidisciplinary collaborative simulation in the process of network collaborative design in the manufacturing field, the scope of the field can include multi-field strong coupling simulation, multi-field weak coupling simulation

Co-simulation and multi-disciplinary co-simulation and other fields.

Intelligent Manufacturing Network Collaborative Design

Part 2. Software interface and data interaction

1 Scope

GB/T 42383.2-2023 covers the software interfaces and the data exchange inside a networked collaborative design platform for intelligent manufacturing. Clause 4 sets the general picture: a platform of this kind calls on remote resources held in many different software systems - the design subsystems of each participating party and the tools built into the platform itself - and has to coordinate them. Clause 5 deals with the software interface, giving an overview, a classification of interface types, and the general requirements each type must meet. Clause 6 deals with data interaction, giving an overview, the basic interaction protocol, and the general requirements for exchanges across it. Terms are taken from Part 1, which sets the platform architecture. Collaborative design fails at the joins. When several firms design one machine together, each keeps its own modelling, data management and simulation tools, and every pair of tools tends to grow its own converter; models arrive with the geometry intact and the tolerances lost, revisions overwrite each other, and nobody can say which version is current. Naming the interface classes and settling one interaction protocol is what stops those converters from multiplying. Part 2 of the GB/T 42383 series, for platform vendors, software suppliers and the manufacturers assembling a joint design chain.

This document specifies the technical requirements to be met in the software interface and data interaction design of the network collaborative design platform in the field of intelligent manufacturing.

And it gives the description of the software interface type and the basic protocol of data interaction.

This document is applicable to the software interface and data interaction in the design process of the network collaborative design platform for complex products and equipment in the field of intelligent manufacturing

Construction of architecture and implementation of technology.

2 Normative references

The contents of the following documents constitute the essential provisions of this document through normative references in the text. Among them, dated references

For documents, only the version corresponding to the date is applicable to this document; for undated reference documents, the latest version (including all amendments) is applicable to

this document.

GB/T 42383.1-2023 Intelligent Manufacturing Network Collaborative Design Part 1. General Requirements