

ICS 25.040.01
CCS J 07



**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 40283.2-2026

**Automation systems and integration - Interoperability of
capability units for manufacturing application solutions - Part 2:
Capability templates and software unit cataloguing**

自动化系统与集成 制造应用解决方案的能力单元互操作 第2部分：能力模板和软件单元编目

(English Translation)

Issued on: April 30, 2026

Implemented on: November 1, 2026

Issued by: State Administration for Market Regulation

Table of Contents

- Preface
- Introduction
- 1 Scope
- 2 Normative References
- 3 Terms and Definitions
- 4 Overview of Software Unit Catalog
 - 4.1 Development of capability specifications as defined in the ISO 16100 series
 - 4.2 Objectives of the Software Unit Catalog
- 5 Software unit catalog and software capability description dictionary 6.
- 6 Software Unit Cataloging Process 7.
 - 6.1 The entire process of software unit cataloging
 - 6.2 Using the software unit catalog to develop capability specifications
- Appendix A (Informative) Competency Element Template
 - A.1 Conceptual Structure
 - A.2 Formal Structure
- Reference

Foreword

This document complies with the provisions of GB/T 1.1-2020 "Standardization Work Guidelines Part 1: Structure and Drafting Rules of Standardization Documents".

Drafting.

This document is Part 2 of GB/T 40283 "Interoperability of Capability Units in Automation Systems and Integrated Manufacturing Application Solutions".

GB/T 40283 has published the following parts.

---Part 2: Capability Templates and Software Unit Cataloging;

---Part 3: Verification and Validation of Capability Unit Interoperability;

---Part 4: Capability Unit Assessment for Manufacturing Application Requirements this document is equivalent to ISO 16300-2:2019 "Interoperability of capability units for automation systems and integrated manufacturing application solutions".

Part 2: Capability Templates and Software Unit Cataloging.

The following minimal editorial changes have been made to this document.

Since the main text of this document does not directly reference standard ISO 16300-3, it has been moved from Chapter 2 to the appropriate position in the references.

This change does not affect the technical content of this document.

Please note that some content in this document may involve patents. The issuing organization of this document assumes no responsibility for identifying patents.

This document was proposed by the China Machinery Industry Federation.

This document is under the jurisdiction of the National Technical Committee on Standardization of Automation Systems and Integration (SAC/TC159).

Introduction

GB/T 40283 addresses the needs of manufacturing software users and suppliers for software interoperability in the field of industrial automation.

User interoperability requirements include.

- Integrate automated application systems by combining a set of software components from various sources;
- Integrate the capabilities of software units from one resource system platform to another;
- Verify and validate the ability of software units to meet the requirements of automated application systems.

Supplier requirements include.

- Represents the set of capabilities provided by the software components used in a software unit;
- Verify whether the capabilities of the software components are part of the required software unit capabilities;
- Cataloging software units based on their interoperability in automated application systems to support widespread distribution.

The GB/T 40283 series also covers software interoperability services, including.

- Description of access software capabilities to enable interoperability assessment;
- It is best to use a search engine to automatically search for and locate candidate software units and components;
- indicates the dependencies between software components of an automated application running on a specific system platform.

First, software capabilities are defined as a set of standards that provide a set of capabilities and services, used to evaluate the performance of capability providers. Then, they are expressed...

The symbols and represent related software. ISO 16100 (GB/T 19902) addresses the interoperability capabilities of manufacturing software, aiming to provide a standard.

A standardized approach is used to describe the capabilities of manufacturing software based on the Manufacturing Software Unit (MSU) capability specification. In ISO 16100, software component packages...

Included in the MSU. ISO 16100 also provides a method for exchanging MSU capabilities as information through capability specifications. Software capabilities the Power Construction Standard (PCS) forms the basis for providing the aforementioned software interoperability services. ISO 16100 is used as the basis for GB/T 40283.

Establishing GB/T 40283 requires several steps. The initial steps demonstrate which interoperabilities are enabled using the software capability specification.

Sexual services. Subsequent steps developed specific methods and mechanisms for providing these interoperability services. The output of GB/T 40283 is intended to be distributed by four...

It consists of several parts.

---Part 1: Application Requirements Capability Unit Interoperability Guidelines. This defines a framework aimed at providing interoperability based on the capabilities offered by a set of MSUs.

This framework describes automation solutions. It will also define a set of capability elements and composition rules to tailor solutions to enterprise applications.

The capability requirements of automated systems represent interoperability criteria.

---Part 2: Capability Templates and Software Unit Cataloging. Defines templates used to describe the software units of an automation solution.

This document specifies the functionality, which can be mapped to the functional requirements of the target manufacturing application. It also specifies the functionality based on the functional attribute group.

Mapping rules for the contents of software unit directory entries. Mapping rules are also specified based on capability attributes, used to compose software units.

The contents of the cataloging item.

---Part 3: Verification and Validation of Capability Unit Interoperability. This specifies the verification capabilities related to application requirements and system solutions.

A framework for interoperability of units.

---Part 4: Capability Unit Assessment for Manufacturing Application Requirements.
Specifies the methods used to obtain the required manufacturing application requirements from the software unit catalog.

The search method uses the required candidate capability units, and the description is used as the report structure for the search results, with the aim of indicating the software unit.

The degree to which the candidate items in the meta-catalog correspond to the manufacturing application requirements.

Automation systems and integrated manufacturing application solutions Capability Unit Interoperability Part 2: Capability Templates and Software Unit Cataloging

1 Scope

This document specifies a set of template definitions for describing the capabilities of software units in an automation solution, which can be mapped to the target...

The capability requirements for manufacturing applications.

This document specifies how to develop and manage software unit catalogs based on capability attributes, and establishes the framework from capability specifications to software unit catalogs.

Mapping rules.

2 Normative references

The contents of the following documents, through normative references within the text, constitute essential provisions of this document. Dated citations are not included.

For references to documents, only the version corresponding to that date applies to this document; for undated references, the latest version (including all amendments) applies.

This document.

GB/T 19902.5-2011 Standard for the establishment of interoperability capabilities of industrial automation systems and integrated manufacturing software - Part 5: Based on multi-...

Methodology for Specific Regulation Matching of Capability-Based Structures (ISO 16100-5:2009, IDT) ISO 16100-1 Industrial automation systems and integrated manufacturing software interoperability capability building - Part 1: Framework Framework)
Note. GB/T 19902.1-2005 Industrial automation systems and integration-Establishment of manufacturing software interoperability capabilities-Part 1: Framework (ISO 16100-1:2002,