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

GB/T 42406-2023

**Industrial cloud service - Knowledge base access and manage
requirement**

工业云服务 知识库接入与管理要求

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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.

1 Scope

GB/T 42406-2023 covers how a knowledge base is connected to an industrial cloud service and how it is managed once it is connected. Access comes first: an overview of why knowledge bases are brought onto a cloud platform at all, so that knowledge and experience are aggregated and shared instead of staying inside one plant, then the access process itself and the requirements a base has to satisfy to be admitted. Management follows as four activities - retrieval, which starts with establishing a directory for the base, invocation, maintenance, and statistics - each with its own requirements. A terms clause defines what the document means by knowledge, and an abbreviations clause covers the

API through which the platform is reached. Industrial know-how tends to accumulate as documents and habits held by individual sites and individual people; moving it behind a shared platform only pays off if what may be admitted, how it is found and how it is kept current are settled beforehand rather than left to each connection. Of use to industrial cloud platform operators, manufacturing IT departments, and integrators building knowledge services.

This document specifies the requirement and management specification for knowledge base access to industrial cloud services.

This document is applicable to knowledge base retrieval, invocation, maintenance and statistics that meet the requirements of industrial cloud services.

2 Normative references

The contents of the following documents, through normative references in this text, constitute indispensable provisions of this document. Among them, for dated references, only the edition corresponding to that date applies to this document. For undated references, the latest edition (including all amendments) applies to this document.

GB/T 37700-2019 Information technology - Industrial cloud - Reference model

3 Terms and definitions

The following terms and definitions apply to this document.

3.1

Knowledge

The knowledge, judgment, or skill acquired through study, practice, or exploration.

[Source: GB/T 23703.2-2010, 2.1]

3.2

Industrial cloud service customer

The participant in a certain business relationship for the purpose of using industrial cloud services.

[Source: GB/T 37700-2019, 3.1.15]

3.3

Semantic net

A concept-based knowledge representation in which objects or states appear as nodes connected to links that specify the interrelationships between nodes.

[Source: GB/T 5271.28-2001, 28.02.10]

3.4

Knowledge tree

A hierarchical semantic net represented by a directed tree (graph).

[Source: GB/T 5271.28-2001, 28.02.11]

4 Abbreviations

The following abbreviation applies to this document.

API: Application Programming Interface

5 Knowledge base access requirements

5.1 Overview

In the process of industrial cloud service, through the access to knowledge base, knowledge aggregation and sharing is realized; to provide knowledge, experience and cases for industrial cloud service customers AND realize the reuse and sharing of knowledge.

The knowledge base includes public mold library, parts library, fault diagnosis rule library, algorithm model library, etc.

Knowledge bases generally use models, such as rules, semantic nets, knowledge trees, and knowledge graphs, to represent knowledge.

5.2 Access process

The knowledge base access process standardizes the main steps when accessing the knowledge base. It is divided into four parts: "planning-execution-testing-optimization":

- a) Knowledge base access planning shall include the process of defining knowledge base access content and access solutions;
- b) Knowledge base access execution shall include the process of accessing the industrial cloud knowledge base AND form industrial cloud service capabilities; dynamic recycling mechanism for resources after the knowledge base is removed.

d) It shall comply with the requirements of 7.3.5.2 in GB/T 37700-2019.

5.3.3 Access testing

Access testing shall:

- a) Verify the integrity, compatibility, consistency, and security of the accessed knowledge base;
- b) Check whether the communication bandwidth and capacity requirements for accessing the knowledge base can be met.

6 Management activities and requirements

6.1 Overview

Knowledge base management activities include knowledge base retrieval, invocation, maintenance and statistics. Retrieval includes establishing knowledge base directory, searching ranking, etc. Invocation includes specific industrial scenario applications, knowledge base content improvement, etc. Maintenance includes knowledge base backup management, disaster recovery management, internal personnel management, classification management, and knowledge base operation monitoring, etc. Statistics include classification statistics, ranking statistics, statistical analysis, etc.

6.2 Retrieval

During the industrial cloud service process:

- a) It shall establish knowledge base directory and index;
- b) It shall provide different types of retrieval interfaces, such as API, Web services, command line, etc.;
- c) It shall be able to provide corresponding retrieval services according to different authority levels;
- d) It shall provide the function of pushing search hot words;
- e) It can provide synonym search function;
- f) It can integrate contextual retrieval technology, query questions and user information;
- g) Through plug-ins and other methods, it shall convert knowledge base proprietary