

ICS 35.240.50

CCS L70



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

GB/T 42137-2022

**Guidelines for intelligent manufacturing capability construction
for discrete industry**

离散型智能制造能力建设指南

Issued on: December 30, 2022

Implemented on: July 1, 2023

**Issued by: State Administration for Market Regulation;
Standardization Administration of the PRC**

Table of Contents

1 Scope	1
2 Normative references	1
3 Terms and Definitions	1
4 Abbreviations	1
5 Overall method of intelligent manufacturing capacity building	2
6 Life cycle dimension intelligent manufacturing capacity building	2
6.1 Life cycle data collection capability	2
6.2 Lifecycle Interconnection Capabilities	2
6.3 Life cycle data visualization capability	3
6.4 Life cycle data analysis capability	3
6.5 Life cycle optimization decision-making ability	3
7 System-level dimensions of intelligent manufacturing capacity building	4
7.1 System-level data collection capabilities	4
7.2 System-level interconnection and intercommunication capabilities	4
7.3 System-level data visualization capability	4
7.4 System-level data analysis capabilities	4
7.5 System level optimization decision-making ability	5

Foreword

This document was issued on 30 December 2022 by the State Administration for Market Regulation; Standardization Administration of the PRC and takes effect on 1 July 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 35.240.50, Chinese classification L70.

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.

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

This document is proposed and managed by the Ministry of Industry and Information

Technology of the People's Republic of China.

This document is drafted by. China Institute of Electronic Technology Standardization, Shenzhen Saixi Information Technology Co., Ltd., Jiangsu Saixi Technology Development Co., Ltd.

Co., Ltd., Tianjin University, Beijing Machinery Industry Automation Research Institute Co., Ltd., Beijing University of Science and Technology, Kaos Industrial Intelligence Research Institute (Qingdao)

Co., Ltd., Beijing Hollysys Intelligent Technology Co., Ltd., Tsinghua University, Intelligent Manufacturing Institute of Heilongjiang Academy of Sciences, Shenzhen Huazhi Intelligent Manufacturing

Manufacturing Technology Co., Ltd., Yunnan Kunming Ship Design and Research Institute Co., Ltd., Shanghai Intelligent Manufacturing Functional Platform Co., Ltd., Chongqing University of Posts and Telecommunications, Beijing

Jingyi Intelligent Manufacturing Technology Innovation Center Co., Ltd., Qingdao Kute Intelligent Co., Ltd., Tianjin Aibo Rui Technology Development Co., Ltd., United

Think (Beijing) Co., Ltd., China Textile Machinery Association, Baowu Equipment Intelligent Technology Co., Ltd., MCC Jingcheng Engineering Technology Co., Ltd., Qingdao

Baojia Intelligent Equipment Co., Ltd., Jianwei Software Technology (Shanghai) Co., Ltd., Harbin Institute of Technology Robot (Shandong) Intelligent Equipment Research Institute, Communication

Express (China) Co., Ltd., Hebei University of Technology, Shenzhen Lianyou Technology Co., Ltd., Dongfeng Design and Research Institute Co., Ltd., SINOMACH Intelligent Technology Research Institute

Research Institute Co., Ltd., Shenzhen Hualong Xunda Information Technology Co., Ltd., Jiangsu Yawei Machine Tool Co., Ltd., Jinhang Digital Technology Co., Ltd.

Responsible company, Mitsubishi Electric Automation (China) Co., Ltd., Xiamen Intreme Technology Co., Ltd., Xiamen Youxin Information Technology Co., Ltd.,

Shanghai Aerospace Equipment Manufacturing General Factory Co., Ltd., Sichuan Chengweld Bauma Welding Equipment Engineering Co., Ltd., Delta Intelligent Technology (Beijing) Co., Ltd.

Division, Chongqing Mengxun Electronic Technology Co., Ltd., CSSC Ninth Design and Research Institute Engineering Co., Ltd.

The main drafters of this document. Li Jia, Zhou Hang, He Honghong, Wei Sha, Cheng Yuhang, Guo Nan, Zhang Hui, Ma Yuanye, Jiao Guotao, Li Ruiqi, Liu Anan,

Sun Jiexiang, Xiao Chengyong, Zhu Yiming, Xie Hongbing, Lin Feng, Su Hang, Gong Wei,

Liu Bin, Shen Chao, Ji Zhanfeng, Wei Min, Cui Wenya, Li Haibin, Liao Shaohua,
Tao Hongzhi, He Zhiyong, Lang Junqi, Ye He, Wang Hongtao, Wang Yunbo, Ren Lei, Chen
Junyu, Wang Wei, He Shuya, Han Sida, Hu Lihua, Chen Xi, Liu Jing,
Wang Leda, Zhao Yu, Chen Peng, Jiang Feng, Liu Shu, Li Xingbao, Liu Yi, Zhu Chao, Gao
Shanqing, Chen Jiancheng, Zhong Zhenzhe, Cheng Hui, Zhu Pinchao, Zhao Dongfang,
Chen Jing, Yu Lingyun, Ding Weijie.

Discrete Intelligent Manufacturing Capability Building Guide

1 Scope

GB/T 42137-2022 guides discrete manufacturers in building intelligent manufacturing capability, and treats it as a set of capabilities that can be named and worked on rather than as equipment to be bought. After the overall method, the guidance is laid out along two dimensions. The life cycle dimension takes five capabilities in order - collecting data, interconnecting what has been collected, making it visible, analysing it, and using the analysis to decide and optimise - and applies them across the life cycle. The system level dimension takes the same five capabilities and applies them at the successive system levels of the enterprise. The order is the argument: each capability rests on the one before it, and a plant that buys analytics while its machines are still islands of unconnected data ends up with dashboards fed by figures typed in by hand, which is the failure the sequence is arranged to prevent. Terms and abbreviations are settled first, so a capability name means the same thing to the plant and to the supplier selling against it. Written for discrete manufacturers planning their own programme and for the consultants, trainers and implementers they engage.

This document provides guidance for the construction of discrete intelligent manufacturing capabilities, and gives the overall method, as well as dimensions such as life cycle and system level.

Suggestions for smart manufacturing capacity building.

This document is applicable to discrete manufacturing enterprises, as well as providing intelligent manufacturing capacity building consulting, training and implementation services for discrete manufacturing enterprises.

service personnel and institutions.

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 39116-2020 Intelligent Manufacturing Capability Maturity Model

GB/T 39117-2020 Smart Manufacturing Capability Maturity Assessment Method

3 Terms and Definitions

The following terms and definitions apply to this document.

3.1

In order to achieve the goal of intelligent manufacturing, the enterprise manages and comprehensively applies the degree and improvement process of personnel, technology, resources, and manufacturing.

Note. The improvement process is mainly reflected in data collection, interconnection, visualization, data analysis, decision optimization, etc. in the life cycle dimension and system level dimension

aspect.

[Source. GB/T 39116-2020, 3.1.1, with modifications]

3.2

The process of producing a product (such as an automobile, appliance, appliance, computer, etc.) or part that consists of discrete components.

[Source. GB/T 18725-2008, 3.87, modified]

3.3

lifecycle lifecycle

All stages from product prototype development to product recycling and remanufacturing.

[Source. GB/T 40647-2021, 3.2]

3.4

system level system hierarchy

The hierarchical division of the organizational structure related to enterprise production.

Note. It mainly includes equipment, unit, workshop, enterprise, collaboration and other levels. Process manufacturing enterprises are usually not subdivided into the equipment level.