

ICS 07.040
CCS A75



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

GB/T 44487-2024

**Protocol for information superposition based on ubiquitous
location**

泛在位置信息叠加协议

Issued on: September 29, 2024

Implemented on: April 1, 2025

**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 Symbols and abbreviations	3
5 Structure of Ubiquitous Location Information	3
5.1 Overview	3
5.2 Location Types of Ubiquitous Location Information	3
5.3 Information Metrics of Ubiquitous Location Information	4
6 Positional co-location form	4
6.1 General	4
6.2 Positional co-location representation	4
7 Information Conformal Form	5
7.1 Media Conformity	5
7.2 Structural conformality	5
8 Overlay method	6
8.1 General	6
8.2 Co-location superposition	6
8.2.1 Overview	6
8.2.2 Superconfirm co-location superposition	6
8.2.3 Confirmation of co-location superposition	6
8.3 Conformal superposition	6
8.3.1 General	6
8.3.2 Conformal superposition of media	7
8.3.3 Conformal superposition of structures	7
8.4 Specifying spatial superposition	7
8.5 Temporal superposition	7
8.5.1 Tense Unit	7
8.5.2 Superposition based on temporal features	7
8.6 Space-time superposition	8
8.7 Mixed superposition	8
8.8 Semantic Overlay	8
9 Overlay interface	8

9.1 Data structure of information element	8
9.1.1 Overview	8
9.1.2 Ubiquitous Location Information Identifier	8
9.1.3 Spatial reference system identifier	8
9.1.4 Information location	9
9.1.5 Spatial Position Mapping Method	9
9.1.6 Information duration period	9
9.1.7 Information media type identification	9
9.1.8 Information Measurement	9
9.1.9 Information Content	9
9.2 Information element integrity rules	10
9.3 Information element consistency rules	10
9.4 Information Element Instantiation	10
9.5 Overlay Operation	10
9.5.1 Superposition Operator	10
14 Reference	15

Foreword

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 of the contents of this document may involve patents. The issuing organization of this document does not assume the responsibility for identifying patents. This document is proposed by the Ministry of Natural Resources of the People's Republic of China. This document is under the jurisdiction of the National Technical Committee for Geographic Information Standardization (SAC/TC230). This document was drafted by: Wuhan University, Wuhan University of Technology, Beijing Baidu Netcom Technology Co., Ltd., Beijing University of Posts and Telecommunications, National Basic Research Institute Geographic Information Center, Tencent Datutongtu (Beijing) Technology Co., Ltd., Beijing NavInfo Technology Co., Ltd., Beijing NavInfo Wondershare Technology Co., Ltd. TECHNOLOGY LIMITED. The main drafters of this document are. Li Lin, Li Feng, Luo Zhenwei, Shen Hang, Yin Zhangcai, Zhang Chuanming, Deng Zhongliang, Jiao Jichao, Guo Jiankun, Zhu Hui, Zhang Jianping, Yang Zihua, Liu Qian, Huang Wei yuan, Shi Liangliang, Wu Qilong.

The ubiquitous location information overlay protocol is a technical convention for universal collection and organization of massive heterogeneous information based on spatial

location. Ubiquitous information in various forms and locations can be effectively and universally organized through a consistent spatial reference system. However, the spatial positioning scale and location geometry (point, line, surface, etc.) involved in ubiquitous location are diverse and uncertain, and their location needs to be standardized. Therefore, this protocol summarizes the spatial characteristics and information presentation forms of various ubiquitous locations and agrees to use a common Based on the framework of location and conformality, the operation of information collection is realized by superposition behavior, and the basic organizational method of ubiquitous location information import and collection is implemented. This document can realize the universal collection of information based on any spatial location under the condition of ensuring the lossless information semantics, which is the basis for the information semantic collection. Integration and fusion, information mining and knowledge discovery, providing consistent spatially positioned information input terminals and interfaces. Ubiquitous Location Information Overlay Protocol

1 Scope

GB/T 44487-2024 defines a protocol for superimposing information on ubiquitous location. Its subject is the layer that sits between a position and an application: a position may be expressed as coordinates, as a street address, as a room in a building, as a point on an indoor map or as a proximity to a beacon, and an application that wants to attach information to a place has to be able to do so regardless of which of those the position came from. The standard sets the structure of ubiquitous location information and the location types it recognises, then the model for superimposing information onto a location, the identifiers, the attributes, the temporal validity and the precision and confidence that must travel with it, and then the protocol itself, the message structure, the operations for publishing, querying, subscribing to and updating superimposed information, and the requirements on interoperability and on security and privacy. It takes effect on 1 April 2025.

This document specifies the structure of ubiquitous location information, the requirements for location co-location form and information conformal form, and describes the superposition method and superposition Methods of the interface. This document is applicable to the overlay operation of ubiquitous location information in geographic space, and supports common information such as text, graphics, images, audio and video The superposition operation of presentation forms in spatial position.

2 Normative references

The contents of the following documents constitute essential clauses of this document through normative references in this document. For referenced documents without a date, only the version corresponding to that date applies to this document; for referenced documents without a date, the latest version (including all amendments) applies to This document.

GB/T 7408.1-2023 Date and time information exchange representation Part

3 Terms and definitions

The following terms and definitions apply to this document.

3.1 Location A point, or an object, or a person occupies a geometric space. [Source: GB/T 40770-2021, 3.3, modified]

3.2 coordinate One of a sequence of n numbers representing the position of a point in n -dimensional space. NOTE. In a coordinate reference system, the values of coordinates depend on the units chosen. [Source: GB/T 30170-2013, 4.5]

3.3 A coordinate system associated with an object through a datum. NOTE. For geodetic and vertical datums, the reference is the Earth. [Source: GB/T 30170-2013, 4.8]

3.4 Geometric location A position expressed as an ordered tuple of coordinates defined in a particular spatial coordinate reference system. [Source: GB/T 35638-2017, 2.3]