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**Artificial intelligence - Agent interconnection - Part 7: Agent
tool invocation**

人工智能 智能体互联 第7部分：智能体工具调用

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Foreword

This document is a standard or guiding technical document. This document conforms to GB/T 1.1-2020 "Standardization Work Guidelines Part

1. Structure and Drafting Rules of Standardization Documents". Drafting is scheduled. This document is Part 7 of GB /Z 185 "Artificial Intelligence - Interconnection of Intelligent Agents". GB /Z 185 has already published the following parts. --Part

3 Flowchart of Agent Tool Update

5.3 Tool Invocation The agent tool invocation flow is shown in Figure

4. The agent should execute according to the following flow.

1. Establish a connection between the tool access and tool service;
2. The intelligent agent understands user requests and analyzes task and tool function requirements based on capabilities such as large language models;
3. The agent selects a tool from the tool list, sends the tool access information, and carries the task information.
4. The tool access provider sends the required tools to the tool service, along with the task information;
5. The tool service calls one or more tools according to the task requirements;
6. The tool service returns the execution result of the tool call to the tool access point;
- g) Step 7, the tool access will send the execution result of the tool call back to the agent;
8. The agent determines whether the task is completed. If completed, the process ends; if not completed, steps 2 to 7 are executed repeatedly. Until the termination requirements are

met.

5 Intelligent Agent Tool Invocation Process

5.1 Obtaining the Tool List The process for acquiring tools for the intelligent agent is shown in Figure

2.The intelligent agent should execute the following process.

- 1.Establish a connection between the tool access and tool service;
- b) Step 2, the tool access request a tool list from the tool service;
- c) Step 3, the tool service synchronizes its supported tool list with the tool access;
- 4.Tool access provides the agent with a list of available tools.

5.2 Tool List Update The agent tool update process is shown in Figure

3.After establishing a connection with the tool service, the agent should follow the process below. implement.

- 1.Update the tool on the client side and send an update reminder to the tool service;
- 2.The tool service sends a tool update reminder to the tool access provider. Upon receiving an update notification, the tool access process should follow the steps outlined in section 5.1 to synchronize the tool list and complete the process. Update the tools list. Figure

6 Agent Interaction; --Part

7.Agent tool calls. 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 and is under the jurisdiction of the National Information Technology Standardization Technical Committee (SAC/TC 28). This document was drafted by: China Electronics Technology Standardization Institute, Xiaomi Communications Technology Co., Ltd., Beijing University of Posts and Telecommunications, and Beijing Qihoo. Technology Co., Ltd., Shanghai Jiao Tong University, Alibaba Cloud Computing Co., Ltd., Beijing University of Aeronautics and Astronautics, Beijing Haohan Deep Information Technology Co., Ltd. Limited Liability Company, Ant Technology Group Co., Ltd., Beijing Volcano Engine Technology Co., Ltd., Jiangsu Jinrong Digital Group Artificial Intelligence Technology Limited Liability Company, Humanoid Robot (Shanghai) Co., Ltd., China Mobile Internet Co., Ltd., Huawei Technologies Co., Ltd., China Telecom Digital Technology Co., Ltd. Limited Company, AsiaInfo Technologies (China) Co., Ltd., Beijing SenseTime Intelligent Technology Co., Ltd., BOE Technology Group Co., Ltd., China Unicom Data Intelligence Co., Ltd., China Mobile Xiong'an Information and Communication Technology Co., Ltd., Inspur Communication Information Systems Co., Ltd., China Electric Power

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With the rapid development of artificial intelligence technology, intelligent agents, as the key carriers for transforming artificial intelligence from a concept into actual productivity, are playing a crucial role in various fields. With increasingly widespread applications, the intelligent agent domain has played a significant role in empowering new industrialization and shaping new types of productivity. However, the current development of the intelligent agent industry faces many challenges. The challenge lies in the interoperability and interconnectivity between different intelligent agents. In the field of protocol-based agent interconnection, internationally recognized technologies include MCP and... While intelligent agent communication protocols such as A2A and ANP exist, no universally agreed-upon solution has been developed, necessitating the formulation of a solution suitable for the development of China's intelligent agent industry. An industry-wide consensus solution. To systematically address the aforementioned issues, guide and regulate the development of intelligent agent interconnection technology, and enhance the interoperability and composability of intelligent agent systems. To improve overall industry efficiency, this guiding technical document is specifically formulated. GB /Z 185 "Artificial Intelligence - Interconnection of Intelligent Agents" aims to define the interconnection of intelligent agents. The technical requirements and processes for interconnection are formulated following the principles of systematicity, advancement, and operability, enabling cross-platform and cross-architecture communication between intelligent agents. GB /Z 185

is proposed to consist of seven parts, providing a unified technical framework and standard basis for interconnection, interoperability and interoperability. --Part

1.Overall Architecture. The purpose is to provide a conceptual model and a functional model for an interconnected intelligent agent environment. --Part

2.Identity Code. The purpose is to define and apply the identity code for intelligent agents, and to provide the code structure and allocation principles. The suggestion is as follows: --Part

3.Identity Management. The aim is to provide a framework and full lifecycle process for identity management in an interconnected agent environment. Describe the technical requirements for identity management. --Part

4.Agent Description. The purpose is to provide a method for describing agents, and to provide methods for registering, modifying, and publishing agent descriptions. The reference process. --Part

5.Agent Discovery. The purpose is to provide a discovery process for agent interconnection. --Part

6.Agent Interaction. The aim is to present the interaction patterns of agents in a massive interconnected world, describing the basic elements of interaction and... Interface definition. --Part

7.Agent Tool Invocation. The aim is to provide a standardized architecture and flow for agents invoking tools based on large models. The process and tools are described, supporting seamless integration of intelligent agents with external tools. AI-powered intelligent agent interconnection Part

7 Agent Tool Invocation

1.Scope This document outlines the overall architecture, invocation process, and data format for agent tool calls. This document applies to the design, development, and application of intelligent agent tool calls.

4.Intelligent Agent Tool Call Overall Architecture Based on user requests, the intelligent agent initiates tool invocations and establishes one-to-one, one-to-many, and many-to-many connections with the tool services in the resource access domain. This enables access to and invocation of the tool library for the resource access domain. The intelligent agent tool invocation architecture is shown in Figure 1. Figure

1.Intelligent Agent Tool Call Architecture Diagram The architecture includes the following functional entities.

a) Intelligent Agent. The intelligent agent understands the user's intent based on capabilities such as large language models, generates intelligent agent tool invocation requests, and