

HJ

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HJ 928-2017

Internet of Things in Environmental Protection -- Framework

环保物联网 总体框架

(English Translation)

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Foreword

This standard is formulated for the purpose of implementing the Law of the People's Republic of China on Environmental Protection and the State Council's Opinions on Strengthening Key Work of Environmental Protection, preventing and controlling environmental pollution, improving the quality of the environment, standardizing and guiding the formulation and application development of environmental internet of things standards.

This standard reference GB/T 33474-2016 "Internet of Things Reference Architecture" concept model and architecture in the preparation.

This standard is released for the first time.

This standard is formulated by the Ministry of Environmental Protection Science and Technology Standards Department and General Office.

This standard is mainly drafted by. Environmental Protection Department Information Center, Beijing Times Electronic Database Engineering Company.

This standard was approved by the Ministry of Environmental Protection on January 2, 2018.

This standard since March 1, 2018 into effect.

This standard is interpreted by the MEP.

Introduction

Environmental Internet of things in the environmental protection industry to introduce IoT technology to achieve scientific management of the system network, belonging to the Internet of Things applications. The overall framework of the environmental internet of things is a conceptual model that describes the main entities of their business functional domains and the concrete realization of their interrelationships in the environmental protection industry based on the reference architecture of the Internet of Things. In the development of environmental IoT standards or system design, the compiler or designer may select some or all of the business functional areas and entities defined by the overall framework, and may also combine and split different business functional domains or entities. At the same time, according to their specific needs, adjust the overall framework does not involve the relevant business functions or entities.

Green Internet of Things Green Internet of Things Green Internet of Things Overall Framework Overall Framework

1 Scope

This standard specifies the conceptual model of environmental internet of things, the architecture and the main content of each domain and its entities.

This standard applies to the design and development of environmental networking system applications. Users mainly engaged in environmental protection IoT research, design, management and application of the relevant units and personnel.

2 Normative references

This standard references the following documents. For undated references, the effective version applies to this standard.

GB/T 33474-2016 Internet of Things Reference Architecture HJ 929-2017 Environmental IoT terminology

3 Terms and definitions

HJ 929-2017 established and the following terms and definitions apply to this standard.

Domain

A specific collection of entities.

[GB/T 33474-2016, Definition 3.1] 3.2 IoT concept model High degree of abstraction and modeling of IoT systems.

[GB/T 33474-2016, Definition 3.2] 3.3 Internet of Things Reference Architecture IoT

reference architecture the overall structure of the Internet of Things system, components, describe the relationship between the different parts.

[GB/T 33474-2016, Definition 3.3]

4 Abbreviations

The following abbreviations apply to this document.

IoT Internet of Things (Internet of Things) VPN Virtual Private Network SOA
Service-Oriented Architecture

5 Green internet of things concept model

Reference GB/T 33474-2016 Chapter 6 concept of the Internet of Things, the conceptual model of environmental IOT consists of environmental user domain, environmental target domain, environmental perception control domain, environmental service delivery domain, environmental management domain and environmental protection data Resource exchange domain composition, shown in Figure 1.

Figure 1 Environmental Internet of Things concept model

An explanation of the conceptual model for environmental internet of things is as follows.

a) Green User Domain Eco User Domain is a collection of eco-IoT users and user systems. Environmental Internet users through the user system and other domains of the entities to obtain the perception and manipulation of the entities in the environmental target object domain.

b) Environmental target object domain Environmental target The target domain is a collection of physical objects that Environmental Internet of Things users expect to acquire or manipulate. surroundings the physical objects in the target object domain may interact with entities (such as sensing devices and control devices) in the environment-aware control domain with non-data-passing Letter interface or data communication interface.

c) Environmental perception control domain Environmental awareness control domain is a collection of all kinds of environmental internet of things system for obtaining information and control objects. Environmental feeling Awareness systems in a control domain provide remote management and services to other domains and provide localized management and services.

d) Environmental Service Delivery Domain Environmental service delivery domain is to achieve environmental business networking services and basic services entity set to meet the user's environmental goals Service requirements for the perception and manipulation of physical objects in an image domain.

e) Environmental Operation Management Domain Environmental management and

operation of environmental management network is the operation and maintenance of IoT systems and information security and other entities. Environmental operation and maintenance management from the rules Chapter system conformity management, technical management of system operation, information security management and other aspects, to ensure the stability of other areas of the Internet of things of environmental protection Set, reliable, safe operation.

f) Environmental data exchange domain Environmental data exchange domain is based on environmental protection IOT system itself and other related system application service needs, to achieve information A collection of resources that exchange and share functionality. The ECO domain can provide the other domains with the missing outside of the system itself Information resources, as well as external information resources to provide other domains.

6 Green IoT architecture

Reference GB/T 33474-2016 Chapter 7 IoT system reference architecture provisions, environmental IoT architecture is based on Environmental concept of the Internet of things model, from the environmental protection industry for the IoT application system perspective, describing the Internet of Things business functions in the field the main entities and their relationship. Green IoT architecture as shown in Figure 2.

Table 1 Green Internet of things in the physical structure of the description

Serial number

Domain name

entity

Physical description Green user domain user According to user types, mainly include.

Government Users. Central and local environmental protection administrative departments, agencies and public institutions;

Business users. enterprises that produce, control and discharge pollutants related to environmental protection and those related to the environmental protection industry;

Public users. Social organizations, research institutes and people involved in environmental protection work.

User system

The user system is an interface system that supports users to access the environmental Internet of Things and uses the environmental Internet of Things service. According to the type of user, the user system mainly includes.

Government user system. users are the user systems of the environmental protection