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Information technology - Rules for the classification and identifiers of cyberspace resources

信息技术 网络空间资源分类和标识符编制规则

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1 Scope

This document specifies the classification of cyberspace resources and the representation of their category identifier codes.

This document applies to the uniform classification and marking of the surveyed entity elements of multi-source surveying and mapping platforms.

2 Normative references

The contents of the following documents constitute indispensable provisions of this document through normative reference in the text. 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 26231-2017 Information technology - Open systems interconnection - National numbering system and operating procedure for object identifiers (OID).

3 Terms and definitions

Cyberspace: the interconnected digital environment made up of networks, services, systems, people, processes, organizations and the things that reside in or pass through the digital environment. Note: it rests mainly on information and communication technology infrastructure carriers such as the internet, telecommunication networks and various control systems and equipment. [Source: ISO/IEC TS 27100:2020, 3.5, modified]

Cyberspace resource: a target within cyberspace that can be detected and perceived by means of network measurement. Example: infrastructure, application services, data resources and the like.

Cyberspace surveying and mapping: the activity of obtaining the position of cyberspace resources and their attribute information by means of network measurement, on the basis of a cyberspace coordinate system, with a cyberspace map as the objective and under a unified cyberspace spatio-temporal datum and resource definition, so as to achieve a multi-scale and multi-dimensional panoramic presentation of cyberspace.

Class: a set of individuals possessing certain necessary conditions.

Methods of linear classification: a method by which the objects of classification are divided successively into a number of levels according to selected attributes or characteristics, each level being further divided into a number of categories. Note: categories at the same level on the same branch stand in a coordinate relation to one another, while categories at different levels stand in a subordinate relation.

4 Abbreviated terms

The following abbreviated terms apply to this document. CDN, content delivery network. GUI, graphical user interface. HTML, hypertext markup language. JSON, JavaScript object notation. OID, object identifier. P2P, peer-to-peer. VPN, virtual private network. XML, extensible markup language.

5.1 Classification of cyberspace resources - General

Cyberspace resources shall be divided, following the linear classification method, into five levels: division, subdivision, major class, medium class and minor class, as shown in Table 1. These comprise 4 divisions, 13 subdivisions, 29 major classes and 97 medium classes; the minor classes are supplemented and extended by each application field according to need. The divisions, subdivisions, major classes, medium classes and minor classes are defined in 5.2 to 5.6.

Table 1 sets out the classification framework, listing for each division the subdivisions it contains, for each subdivision its major classes, for each major class its medium classes,

and leaving the minor class column reserved throughout.

5.2 Divisions

Cyberspace resources comprise four divisions.

Cyberspace infrastructure: as the foundation and support of cyberspace, cyberspace infrastructure provides other resources with guarantees in equipment and technology and does not face the user directly. It mainly has the following characteristics: it acts as the underlying structure that carries cyberspace; and it has definite physical features and forms of organization.

Cyberspace application services: cyberspace application services are the various applications and services provided on the basis of the relevant technologies, including the provision of data storage, manipulation, presentation, communication or other capabilities, these capabilities generally using application layer network protocols. They mainly have the following characteristics: they are applications and services built within cyberspace and need network infrastructure as their foundation; and they run specific network protocols as their support.

Cyberspace data resources: cyberspace data resources are the collections of resources held within cyberspace that satisfy people's need for data; these data resources generally attach to cyberspace application services. They mainly have the following characteristics: they are stored within cyberspace application services and need cyberspace application services as their carrier; and they face the network user.

Cyberspace virtual subjects: cyberspace virtual subjects are the account behaviours held on the internet that have the characteristic of network virtuality; these behaviours need cyberspace application services and data resources in order to be realized. They mainly have the following characteristics: they are realized by relying on cyberspace application services and data resources; and they are the form in which a physical subject exists within cyberspace.

5.3 Subdivisions

The cyberspace infrastructure division contains the following five subdivisions. Autonomous domain: locates cyberspace resources from the point of view of the institution, organization or operator. Network: locates cyberspace resources from the point of view of the topological structure. Intermediate node: acts as intermediate forwarding equipment and as near-end signal conversion equipment, and is responsible for packet forwarding or for signal modulation and demodulation. Terminal node: acts as the starting point from which packets are sent or the end point at which packets are received. Link: reflects the connection state between the several nodes and is the material medium of network information transmission.

The cyberspace application services division contains the following two subdivisions. Unit

service: provides a service of a unitary kind. Integrated service: provides a service by the organic combination of several unitary services.

The cyberspace data resources division contains the following five subdivisions. Code: a computer file whose content can be interpreted by a computer as a program. Text resource: faces the user and is generally presented in the form of writing. Image resource: faces the user, is generally presented in the form of a picture, and is a reproduction by a person of visual perception. Audio resource: faces the user, is a resource form that encodes, records, stores and reproduces sound from an audio signal, and is a reproduction by a person of auditory perception. Video resource: faces the user, is a combination of continuously changing pictures and audio, and exists in the form of streaming media.

The cyberspace virtual subjects division contains the following one subdivision. Network account: this subdivision applies to the means of identity authentication within cyberspace and presents the characteristics of a cyberspace virtual subject.

5.4 Major classes

For the subdivisions under the cyberspace infrastructure division, the major classes are formed according to the level at which the network infrastructure sits in the network architecture and the role it plays. The autonomous domain subdivision carries its subdivision classification forward without further division and contains one major class: autonomous domain. The network subdivision is divided into major classes according to whether it faces only, or mainly, the application layer, and contains two major classes: physical network and overlay network. The intermediate node subdivision is divided into major classes according to the function the node performs in the network architecture, and contains three major classes: routing node, switching node and control node. The terminal node subdivision is divided into major classes according to the function the terminal performs in actual production and daily life, and contains three major classes: client, server side and hybrid node. The link subdivision is divided into major classes according to the transmission medium used by the network, and contains two major classes: wired link and wireless link.

For the subdivisions under the cyberspace application services division, the major classes are formed according to differences in network characteristics. The unit service subdivision is divided into major classes according to the type of port used by the application program and the closeness with which the application program is bound to the port, and contains three major classes. Well-known port services: the port range used by this major class is 0 to 1023, and the binding between the ports of this major class and the application program is close. Registered port services: the port range used by this major class is 1024 to 49151, and the binding between the ports of this major class and the application program is looser. Dynamic or private port services: the port range used by this major class is 49152 to 65535, the binding between the ports of this major class and the application program is the