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Geografisk information – Gränssnitt mot kartserver (ISO 19128:2005)

Geographic information – Web map server interface (ISO 19128:2005)

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EUROPEAN STANDARD
NORME EUROPÉENNE
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English Version

Geographic information - Web map server interface (ISO 19128:2005)

Information géographique - Interface de carte du serveur web (ISO 19128:2005)

This European Standard was approved by CEN on 15 December 2007.

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Foreword

The text of ISO 19128:2005 has been prepared by Technical Committee ISO/TC 211 "Geographic information/Geomatics" of the International Organization for Standardization (ISO) and has been taken over as EN ISO 19128:2008 by Technical Committee CEN/TC 287 "Geographic Information", the secretariat of which is held by NEN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by July 2008, and conflicting national standards shall be withdrawn at the latest by July 2008.

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The text of ISO 19128:2005 has been approved by CEN as EN ISO 19128:2008 without any modifications.

SS-EN ISO 19128:2008 (E)

Introduction

A Web Map Service (WMS) produces maps of spatially referenced data dynamically from geographic information. This International Standard defines a “map” to be a portrayal of geographic information as a digital image file suitable for display on a computer screen. A map is not the data itself. WMS-produced maps are generally rendered in a pictorial format such as PNG, GIF or JPEG, or occasionally as vector-based graphical elements in Scalable Vector Graphics (SVG) or Web Computer Graphics Metafile (WebCGM) formats.

This International Standard defines three operations: one returns service-level metadata; another returns a map whose geographic and dimensional parameters are well-defined; and an optional third operation returns information about particular features shown on a map. Web Map Service operations can be invoked using a standard web browser by submitting requests in the form of Uniform Resource Locators (URLs). The content of such URLs depends on which operation is requested. In particular, when requesting a map the URL indicates what information is to be shown on the map, what portion of the Earth is to be mapped, the desired coordinate reference system, and the output image width and height. When two or more maps are produced with the same geographic parameters and output size, the results can be accurately overlaid to produce a composite map. The use of image formats that support transparent backgrounds (e.g. GIF or PNG) allows underlying maps to be visible. Furthermore, individual maps can be requested from different servers. The Web Map Service thus enables the creation of a network of distributed map servers from which clients can build customized maps. Illustrative examples of map request URLs and their resulting maps are shown in Annex G.

This International Standard applies to a Web Map Service instance that publishes its ability to produce maps rather than its ability to access specific data holdings. A basic WMS classifies its geographic information holdings into “Layers” and offers a finite number of predefined “Styles” in which to display those layers. This International Standard supports only named Layers and Styles, and does not include a mechanism for user-defined symbolization of feature data.

NOTE The Open Geospatial Consortium (OGC) Styled Layer Descriptor (SLD) specification [6] defines a mechanism for user-defined symbolization of feature data instead of named Layers and Styles. In brief, an SLD-enabled WMS retrieves feature data from a Web Feature Service [7] and applies explicit styling information provided by the user in order to render a map.

Geographic information — Web map server interface

1 Scope

This International Standard specifies the behaviour of a service that produces spatially referenced maps dynamically from geographic information. It specifies operations to retrieve a description of the maps offered by a server to retrieve a map, and to query a server about features displayed on a map. This International Standard is applicable to pictorial renderings of maps in a graphical format; it is not applicable to retrieval of actual feature data or coverage data values.

2 Conformance

2.1 Conformance classes and requirements

This International Standard defines two conformance classes, one for a basic WMS, and the other for a queryable WMS. Each has two subclasses, one for clients and the other for servers.

2.2 Basic WMS

A basic WMS shall support the basic service elements (see Clause 6), the GetCapabilities operation (see 7.2), and the GetMap operation (see 7.3). To conform to this International Standard, a basic WMS shall satisfy the requirements of A.1 of the Abstract Test Suite in Annex A.

2.3 Queryable WMS

A queryable WMS shall satisfy all the requirements for a basic WMS, and shall also support the GetFeatureInfo operation (see 7.4). To conform to this International Standard, a queryable WMS shall satisfy all requirements of the Abstract Test Suite in Annex A.

3 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 8601:2004, *Data elements and interchange formats — Information interchange — Representation of dates and times*

ISO 19111, *Geographic information — Spatial referencing by coordinates*

ISO 19115:2003, *Geographic information — Metadata*

EPSG (February 2003), *European Petroleum Survey Group Geodesy Parameters*, Lott, R., Ravanas, B., Cain, J., Simonson, G, and Nicolai, R., eds., available at <http://www.epsg.org/>

IETF RFC 2045 (November 1996), *Multipurpose Internet Mail Extensions (MIME) Part One: Format of Internet Message Bodies*, Freed, N. and Borenstein, N., eds., available at <http://www.ietf.org/rfc/rfc2045.txt>

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IETF RFC 2396 (August 1998), *Uniform Resource Identifiers (URI): Generic Syntax*, Berners-Lee, T., Fielding, N., and Masinter, L., eds., available at <http://www.ietf.org/rfc/rfc2396.txt>

IETF RFC 2616 (June 1999), *Hypertext Transfer Protocol – HTTP/1.1*, Gettys, J., Mogul, J., Frystyk, H., Masinter, L., Leach, P., and Berners-Lee, T., eds., available at <http://www.ietf.org/rfc/rfc2616.txt>

UCUM, *Unified Code for Units of Measure*, Schadow, G. and McDonald, C.J. (eds.), version 1.5 <http://aurora.regenstrief.org/UCUM/ucum.html>

XML 1.0, *Extensible Markup Language (XML) 1.0*, World Wide Web Consortium Recommendation, Bray, T., Paoli, J., Sperberg-McQueen, C.M., and Maler, E., eds., available at <http://www.w3.org/TR/>

XML Schema, *XML Schema Part 1: Structures*, World Wide Web Consortium Recommendation, Thompson, H.S., Beech, D., Maloney, M., and Mendelsohn, N., eds., available at <http://www.w3.org/TR/>

4 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

4.1

client

software component that can invoke an **operation** from a **server**

4.2

coordinate reference system

coordinate system that is related to the real world by a datum

[ISO 19111]

4.3

coordinate system

set of mathematical rules for specifying how coordinates are to be assigned to points

[ISO 19111]

4.4

geographic information

information concerning phenomena implicitly or explicitly associated with a location relative to the Earth

[ISO 19101]

4.5

interface

named set of **operations** that characterize the behaviour of an entity

[ISO 19119]

4.6

layer

basic unit of **geographic information** that may be requested as a **map** from a **server**

4.7

map

portrayal of **geographic information** as a digital image file suitable for display on a computer screen

4.8

operation

specification of a transformation or query that an object may be called to execute

[ISO 19119]

4.9

portrayal

presentation of information to humans

[ISO 19117]

4.10

request

invocation of an **operation** by a **client**

4.11

response

result of an **operation** returned from a **server** to a **client**

4.12

server

a particular instance of a service

4.13

service

distinct part of the functionality that is provided by an entity through **interfaces**

[ISO 14252]

4.14

service metadata

metadata describing the **operations** and **geographic information** available at a **server**

5 Abbreviated terms

CDATA	XML Character Data
CRS	Coordinate Reference System
CS	Coordinate System
DCP	Distributed Computing Platform
DTD	Document Type Definition
EPSG	European Petroleum Survey Group
GIF	Graphics Interchange Format
GIS	Geographic Information System
HTTP	Hypertext Transfer Protocol
IANA	Internet Assigned Numbers Authority
IERS	International Earth Rotation Service
IETF	Internet Engineering Task Force
ITRF	International Terrestrial Reference Frame
ITRS	IERS Terrestrial Reference System