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i. Abstract

The OpenGIS® Open GeoSMS standard defines an encoding for location enabling a text message to be communicated using a Short Messages System (SMS).

ii. Keywords

ogcdoc, sms, Open GeoSMS

iii. Preface

The Industrial Technology Research Institute (ITRI), Taiwan contributed this standard to the OGC. This document describes the “Core” or fundamental set of requirements for a geo enabled SMS: Open GeoSMS. This standard specifies the format structure of an Open GeoSMS request as well as the abstract conformance test suite (Annex A). A supporting informative document with numerous examples and extensions is available [OGC 09-142r7].

iv. Document terms and definitions

This document uses the standard terms defined in Subclause 5.3 of [OGC 06-121r3], which is based on the ISO/IEC Directives, Part 2, “Rules for the structure and drafting of International Standards”. In particular, the word “**SHALL**” (not “must”) is the verb form used to indicate a requirement to be strictly followed to conform to this standard.

v. Submitting organizations

The following organizations submitted this document to the Open Geospatial Consortium Inc.

- a) Industrial Technology Research Institute (ITRI)
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vii. Changes to the OGC abstract specification

The OpenGIS® Abstract Specification does not require changes to accommodate the technical contents of this document.

viii. Forward

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1. Introduction

Short Message Service (SMS) [7] is the text communication service component of phone, web or mobile communication systems. SMS uses standardized communications protocols that allow the exchange of short text messages between fixed line or mobile phone devices.

The function of the OGC Open GeoSMS encoding standard is to facilitate communication of location content using the extended Short Message Service feature between different LBS (Location-Based Service) devices or applications for achieving interoperable communications while still maintaining human readability of the content. Namely, any application or service can simply leverage an extended SMS message using the Open GeoSMS format.

This standard assumes that SMS is the most common communication mechanism between mobile phones and PNDs(Personal Navigation Device). By leveraging SMS, this standard uses an existing, widely supported transportation protocol and delivery encoding. The Open GeoSMS standard defines an extended format of the SMS with simple location content for achieving interoperable communications while still maintaining human readability of the content. Any application or service can simply send an extended SMS message using the Open GeoSMS format. The target client device receives this location enabled SMS message and then can further process the content, such as for a map display. No extra hardware or communication infrastructure is required for implementing this standard.

2. Conformance

Conformance and Interoperability for the Core part of the Open GeoSMS standard may be checked using the relevant tests specified in Annex A (normative).

3. Normative references

The following normative documents contain provisions that, through reference in this text, constitute provisions of this document. For dated references, subsequent amendments to, revisions of, or any of these publications do not apply. For undated references, the latest edition of the normative document referred to applies.

- [1] OGC 06-121r9, OGC Web Service Common Standard, version 2.0.0, April 2010.
- [2] OGC 06-042, OpenGIS® Web Map Service Implementation Specification, version 1.3.0, 2006.
- [3] WGS 84 Earth Gravitational Model website, available at <<http://earth->

info.nga.mil/GandG/wgs84/gravitymod/egm2008/egm08_wgs84.html>.

- [4] T. Berners-Lee, R. Fielding, and L. Masinter, “Uniform Resource Identifiers (URI): Generic Syntax”, IETF RFC 3986, January 2005, available at <<http://www.ietf.org/rfc/rfc3986.txt>>.
- [5] R. Fielding, J. Gettys, J. Mogul, H. Frystyk, L. Masinter, P. Leach, and T. Berners-Lee, “Hypertext Transfer Protocol -- HTTP/1.1”, IETF RFC 2616, June 1999, available at <<http://www.ietf.org/rfc/rfc2616.txt>>.
- [6] E. Rescorla, “HTTP over TLS”, IETF RFC 2818, May 2000, available at <<http://www.ietf.org/rfc/rfc2818.txt>>.
- [7] 3GPP TS 23.040 V10.0.0, “Technical realization of the Short Message Service (SMS)”, March 2011, available at <<http://www.3gpp.org/ftp/Specs/html-info/23040.htm>>.

4. Terms and Definitions

For the purposes of this standard, the definitions specified in Clause 4 of the OWS Common Implementation Specification [1], in the Web Map Service Implementation Standard [2] shall apply. In addition, the following terms and definitions apply.

4.1. Open GeoSMS

An exchangeable short message format with the geospatial information for GPS and LBS applications

5. Abbreviated terms

AGPS Assisted Global Position System

CRS Coordinate Reference System

EPSG European Petroleum Survey Group

HTTP Hypertext Transfer Protocol

HTTPS Hypertext Transfer Protocol Secure

OGC Open Geospatial Consortium

POI Point of Interest

SMS Short Message Service

URI Uniform Resource Identifier

URL Uniform Resource Locator

6. Open GeoSMS Format

The Open GeoSMS expression uses the following structure:



An example of an Open GeoSMS message is:

`http://maps.geosms.cc/showmap?location=23.9572,120.6860&GeoSMS`
Debris flow alert! Use emergency evacuation route now!

The requirements are now described.

6.1 Open GeoSMS Requirements Class

The first line of an Open GeoSMS message **SHALL** always be an http/https URI that is conformant with [5] [6] and specifies the server that will process the SMS string. The http/https uri has as the first parameter in the query string the location value (coordinates) and a postfix in the query string as “&GeoSMS”. The “&GeoSMS” indicates the end of the required elements in the Open GeoSMS query string.

Detailed requirements are as follows:

6.1.1 Requirement 1: HTTP/HTTPS URI (Mandatory)

An Open GeoSMS message **SHALL** have *only* an http/https URI in conformance with [5] [6] in the first line.

For interoperability, an http/https URI in conformance with [5] [6] is included in an Open GeoSMS to offer further web services. The http/https URI is supported by most web services and mobile devices. In an Open GeoSMS message, the major propose of an http/https URI is to provide user access to various web services via http/https URI linking to a map service, an advertisement service, or some other additional service from the telecom provider. Therefore, an Open GeoSMS payload provides not only the geospatial information (coordinates), but also supports possible extensions of the Open GeoSMS for new business models or web services in the future.

6.1.2 Requirement 2: Postfix String (Mandatory)

An Open GeoSMS message **SHALL** have a post-fixed string “&GeoSMS” in the http/https URI, which is distinct from the original http/https URI. For an extended implementation of Open GeoSMS, the post-fixed string can be

revised to “&GeoSMS=OP”, where OP is optional and represents an operation description to identify a specific operation for a specific application. Some optional extensions are specified in subclause of chapter 7.2 in the companion informative document for Open GeoSMS [OGC 09-142r7].

6.1.3 Requirement 3: Location Parameter (Mandatory)

An Open GeoSMS message **SHALL** have the location information in the format geo=latitude,longitude as the first parameter in the query string of the valid http/https URI. The parameter element name “geo” is recommended for this parameter, although it is not mandatory.

6.1.4 Requirement 4: All coordinates shall be in WGS 84

Coordinate values **SHALL** be expressed as 2d latitude and longitude in the WGS 84 datum as defined in EPSG 4326 (http://nsidc.org/data/atlas/epsg_4326.html) .

Coordinates **SHALL** be described using the decimal degree format without the “°” symbol. The values of latitude and longitude **SHALL** be bounded by $\pm 90^\circ$ and $\pm 180^\circ$ respectively. Positive latitudes are north of the equator, negative latitudes are south of the equator. Positive longitudes are east of the Prime Meridian; negative longitudes are west of the Prime Meridian. Latitude and longitude are expressed in that sequence, namely latitude before longitude. For example, the location parameter may be shown as “geo=23.9572,120.6860” where 23.9572 is the latitude and 120.6860 is the longitude.

6.2 Optional Elements

6.2.1 Option 1: Payload

An Open GeoSMS message **MAY** have free style text included in the payload. The free text component of the Open GeoSMS message shall be lines following the http/https URI expression in the first line.

7. Open GeoSMS Examples

7.1 A simple example with no optional elements

Sam had a flat tire near an unknown village. Sam could not describe where he was to the towing service. Luckily, he installed an Open GeoSMS service application on his phone and that application sent out his location directly to a call center. The corresponding Open GeoSMS could be:

```
http://maps.geosms.cc/showmap?geo=23.9572,120.6860&GeoSMS
I NEED TOWING SERVICE NOW
```

Sam receives a confirmation call immediately from his insurance company and the tow truck arrived before dark.

7.2 An example with optional elements.

The following is an example of an Open GeoSMS query string with an optional element to specify a Point Of Interest (POI). The optional elements are defined in the Open GeoSMS companion document.

<http://maps.geosms.cc/showmap?location=23.9572,120.6860&zoom=3&GeoSMS=P>

NAME

PHONE

ADDRESS

DESCRIPTION

Annex - Abstract Test Suite and Conformance Testing (normative)

Specific conformance tests for an Open GeoSMS need to be defined on the concrete service level in order to ensure full interoperability. Thus, the abstract test suite defined herein only ensures general interoperability. A Core part of Open GeoSMS implementation shall satisfy the following characteristics to be minimally conformant with this encoding standard.

A.1. Open GeoSMS Format Test

- a) Test Purpose: To verify that the format of an SMS is conformant with the mandatory requirements of Open GeoSMS.
- b) Test Method: To verify that the first line of an SMS shall be an http/https URI with the postfix as “&GeoSMS” and the valid location value for the first parameter that is conformant with Requirement 1, 2 and 3 in chapter 5.1.
- c) Test Example: The following example conforms to a valid Open GeoSMS.
`http://maps.geosms.cc/showmap?geo=23.9572,120.6860&GeoSMS`
- d) Reference: Subclause of chapter 5.1 according to Requirement 1, 2 and 3.
- e) Test Type: Basic and Conformance