Open Geospatial Consortium

Publication Date: 2012-01-19
Approval Date: 2011-09-07

Document uri: http://www.opengis.net/doc/GeoSMS-core/1.0

Reference number of this document: OGC 11-030r1

Version: 1.0

Category: OGC® Implementation Standard

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OGC®: Open GeoSMS Standard - Core

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Document type: OpenGIS® Standard
Document subtype: Encoding
Document stage: Approved
Document language: English
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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)

b) Hitachi, Ltd.

c) GIS Center, Feng Chia University
vi. Document contributor contact points

All questions regarding this document should be directed to the editor or the contributors:

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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

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. The Open Geospatial Consortium shall not be held responsible for identifying any or all such patent rights.

Recipients of this document are requested to submit, with their comments, notification of any relevant patent claims or other intellectual property rights of which they may be aware that might be infringed by any implementation of the standard set forth in this document, and to provide supporting documentation.
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.


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


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:

<table>
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<th>HTTP/HTTPS URI</th>
<th>Payload</th>
</tr>
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</table>

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 \textbf{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:

\textbf{6.1.1 Requirement 1: HTTP/HTTPS URI (Mandatory)}


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.

\textbf{6.1.2 Requirement 2: Postfix String (Mandatory)}

An Open GeoSMS message \textbf{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 “º” symbol. The values of latitude and longitude SHALL be bounded by ±90° and ±180° 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