

# Open Geospatial Consortium Inc.

Date: 2010-02-01

Reference number of this document: OGC 09-142r1

Version: 0.2.1

Category: OGC® Discussion Paper

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## OGC®: Open GeoSMS Specification

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Document type: OpenGIS® Discussion Paper  
Document subtype: Discussion Paper  
Document stage:  
Document language: English

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## **i. Preface**

The Open Geospatial Consortium (OGC) is an international industry consortium of more than 390 companies, government agencies, and universities participating in a consensus process to develop publicly available geo-processing specifications.

The Industrial Technology Research Institute (ITRI), TAIWAN contributed this document into the OGC process by. The purpose of this document is to present the Open GeoSMS specification and to provide examples of its use. Any suggestions and comments are welcome.

## **ii. Document 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.

## **iii. Submitting organizations**

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

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## **iv. Document contributor contact points**

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## v. Revision history

Date	Release	Editor	Primary clauses modified	Description
Sep. 2008	Version .1	Chun-fu Lin	Initial standard Exchangeable location formats for Mobile Device	Sep. 2008
Apr. 2009	Version .2	Zhong-Hung Lee	Section 6	Modified the format. Added AGPS <sup>1</sup> format and replace token item OMIA to GeoSMS
Oct. 2009	Version .2	Zhong-Hung Lee, Jen-Chu Liu, Kuo-Yu Chuang	Section 6 and 7	Overall refinement and adding examples for OGC discussion paper release.
Jan 2010	.2	Carl Reed	Various	Prep for publication as DP

## vi. Changes to the OGC abstract specification

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

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<sup>1</sup> Assisted GPS

## **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 Inc. 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.*

## **Introduction**

The purpose for the Open GeoSMS specification is to facilitate the communication among different LBS devices or applications. Open GeoSMS is designed to be used by Short Message System (SMS) applications on mobile phones or on Personal Navigation Devices (PND) capable of handling SMS. The reason for proposing Open GeoSMS is because Location Based Service (LBS) devices or applications of different brands or from different vendors are often unable to share LBS information with each other and this causes a potential barrier to LBS industry development.

In order to solve this problem in a simple way and without causing too many effort or cost, SMS is the best choice. The convenience of SMS is that user only needs to send SMS in text which follows the Open GeoSMS standard format, and then it's ready to be used. There is no need to change the infrastructure or existing systems. This means they can save money, time, and human resource when using Open GeoSMS. Therefore, two different types of machine from two different companies running in two different systems can communicate using the Open GeoSMS specification.





# OGC®: Open GeoSMS Specification

## 1. Scope

This standard specifies the location formats to be used by SMS for mobile phones and in other systems handling the SMS with location formats produced by mobile phones or LBS services.

## 2. Conformance

## 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, or revisions of, any of these publications do not apply. For undated references, the latest edition of the normative document referred to applies.

[1] OGC 05-008, OGC Web Service Common Specification, version 1.0

## 4. Terms and Definitions

For the purposes of this specification, the definitions specified in Clause 4 of the OWS Common Implementation Specification [OGC 05-008] shall apply. In addition, the following terms and definitions apply.

**Application** (derived from <http://www.opengeospatial.org/resources/?page=glossary>)

Use of capabilities, including hardware, software and data, provided by an information system specific to the satisfaction of a set of user requirements in a given application domain.

**End user** (OGC 07-097)

Members of agencies (e.g. civil or environmental protection agencies) or private companies that are involved in an application domain (e.g. risk management) and that use the applications built by the system users.

**Event**

Any occurring interest that can be observed in a computer.

**System User** (OGC 07-097)

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Provider of services that are used for an application domain as well as IT architects, system developers, integrators and administrators that conceive, develop, deploy and run applications for an application domain.

**User (OGC 07-097)**

Human that can be a system user or end user.

**SMS**

Short Message Service

**WGS84**

The World Geodetic System defines a reference frame for the earth, for use in geodesy and navigation. WGS 84 dating, last revised in 2004, will be valid up to about 2010.

**Open GeoSMS**

An exchangeable short message format for GPS and LBS application.

**5. Conventions**

**Document terms and definitions**

The following specification terms and definitions are used in this document:

- a) shall – verb form used to indicate a requirement to be strictly followed to conform to this specification, from which no deviation is permitted
- b) should – verb form used to indicate desirable ability or use, without mentioning or excluding other possibilities
- c) may – verb form used to indicate an action permissible within the limits of this specification
- d) can – verb form used for statements of possibility
- e) informative – a part of a document that is provided for explanation, but is not required
- f) normative – a part of a standards document that is required
- g) annex – an auxiliary part of a document

## 6. Open GeoSMS format

Format Structure and Definitions						
<i>Field</i>	<b>Prefix (Mandatory)</b>		<b>Latitude (Mandatory)</b>	<b>Longitude (Mandatory)</b>	<b>Format Type (Mandatory)</b>	<b>Payload (Optional)</b>
<i>Item</i>	GeoSMS	Version Number	Latitude under NMEA0183 <sup>2</sup>	Longitude under NMEA0183	format initial name	extra data for special purpose

**Table 1. Format Structure and Definitions**

### **Prefix (Mandatory) :**

has two Items( GeoSMS and Version Number) ; "GeoSMS" is fixed string and always in the first place. After GeoSMS should be Version Number (2 digits) ;

### **Latitude (Mandatory) :**

Latitude property under NMEA0183 ;

### **Longitude (Mandatory) :**

Longitude property under NMEA0183 ;

### **Format Type (Mandatory) :**

Format initial name ;

---

<sup>2</sup> **NMEA 0183** (or **NMEA** for short) is a combined electrical and data specification for communication between marine electronic devices such as echo sounder, sonars, anemometer (wind speed and direction), gyrocompass, autopilot, GPS receivers and many other types of instruments. It has been defined by, and is controlled by, the U.S.-based [National Marine Electronics Association](#)

**Payload (Optional) :**

For special purpose use ;

Open GeoSMS expression as below :

```
GeoSMS/Version Num;Latitude;Longitude;Format Type;Data Section
```

All fields should be separated by **semicolon**, and all items should be separated by **slash**.

### 6.1 Basic Format (Format B)

```
GeoSMS/2;2504.8015,N;12133.9766,E;B;
```

There are four fields separated by semicolon for all location formats defined in this standard.

```
GeoSMS/2;
```

The first field separated by semicolon is the message identifier. This field contains two items, and shall be separated by slash. The first item is fixed as “GeoSMS”, and the second field is the standard version, which is currently “2” as specified in this document.

```
2504.8015,N;
```

The second field is the **latitude** property of the location under **NMEA0183**. For example, “DDMM.mmmm,H”, where DD is degrees, MM is minutes, mmmm is decimal minutes, and H is “N” north of the equator or “S” south of the equator

```
12133.9766,E;
```

The third field is the **longitude** property of the location under **NMEA0183**. This field contains two items separated by comma. For example, “DDDMM.mmmm,H”, where DDD is degrees, MM is minutes, mmmm is decimal minutes, and H is “E” east of Greenwich or “W” west of Greenwich.

```
B;
```

The fourth field is the format identifier. “B” is mean basic format.

## 6.2 AGPS Format (Format A)

```
GeoSMS/2;2504.8015,N;12133.9766,E;A;ID/x/x/...
```

The texts after the fourth field are ID of Base Transceiver Station (BTS). It is used for AGPS purpose for assist when GPS out of signal. "Null" for present no signal for latitude and longitude.

## 6.3 Extended Format (Format E)

```
GeoSMS/2;2504.8015,N;12133.9766,E;E;ID/x/x/...
```

The texts after the fourth field are free for any purpose. It is used for special purpose for individual domain.

\*Please submit your contribution for extended to enrich Open GeoSMS spec.

## 6.4 Point of Interest (POI) Format (Format P)

```
GeoSMS/2;2504.8015,N;12133.9766,E;P;NAME/PHONE/ADDRESS/DESCRIPTION
```

The fourth field "P" is the POI format. The items after the fourth field are name of POI, phone of POI, address of POI, and description of POI. The items of fifth field should follow the order as name, phone, address and description, and all items should be separated by slash.

\*Chinese SMS encoded by UCS2 therefore semicolon and comma could be identified.

## 6.5 Query Format (Format Q)(Optional)

```
GeoSMS/2;Null;Null;Q;ExtraMessage
```

The fourth field “Q” is the query format. The latitude and longitude fields can be a valid value as format B, or filled by “Null” as empty value. This format is used to query the location of a Mobile Node. Extra message can be applied for further information in order to acquire confirmation.

## 7. Example

The following examples help clarify the use of Open GeoSMS.

### Scenario 1:

Mary and Jenny are traveling in Taiwan on vacation. They are planning to split up for two different site-seeing locations. In the afternoon, Mary would like to know where Jenny is and meet her earlier than they had originally planned for dinner. As a result, Mary sends a location query SMS to Jenny instead of making a phone call with a very expensive roaming cost.

This query SMS is in Open GeoSMS format and automatically composed by smart phone application as followed:

	<b>OPEN GeoSMS v2</b>
Prefix	GeoSMS/2
Latitude	Null
Longitude	Null
Format Type	Q
Payload	Meet you for dinner

**Table 2. An example of Query format.**

The corresponding GeoSMS should be:

<b>GeoSMS/2;Null;Null;Q;Meet you for dinner</b>
---

Jenny got Mary’s query and the smart phone application pops up the confirmation for asking if she wants to reply with her her location to this request. Without calling Mary, Jenny replies the query with smart phone application which detects her location automatically. The notification SMS shown below:

	<b>OPEN GeoSMS v2</b>
Prefix	GeoSMS/2
Latitude	2235.739,N
Longitude	12133.851,E
Format Type	B
Payload	Null

**Table 3. An example of Basic format.**

The corresponding Open GeoSMS should be:

<b>GeoSMS/2;2235.739,N;12133.851,E;B;</b>
---

After receiving the replied Open GeoSMS, Mary can locate Jenny and navigate with an offline map application. They certainly can have a great dinner together then.

### **Scenario 2:**

Sam has a flat tire in near an unknown village. It is hard for him to describe where he is and call for towing service. Luckily, he installed a service application on his phone and it sends out his location directly to call center. The Open GeoSMS can be as followed:

	<b>OPEN GeoSMS v2</b>
Prefix	GeoSMS/2
Latitude	2230.978,N
Longitude	12123.566,E
Format Type	E
Payload	TOWING_SERVICE

**Table 4. An example of Extended format.**

The corresponding Open GeoSMS should be:

<b>GeoSMS/2;2230.978,N;12123.566,E;E;TOWING_SERVICE</b>
---

Sam gets a confirmation call immediately from his insurance company and the towing car arrived in time before it is getting dark. Sam thanks to God and to the LBS application on his phone that provided by insurance company.

### Scenario 3:

There is debris flow monitoring system with OGC SWE<sup>3</sup> standards which notifies people while the rainfall exceeds the alert level. Joseph subscribed the alert service which is monitoring the river by her parents' house. During a hurricane that hits his home town, he gets an Open GeoSMS message alerting him when rainfall exceeds the red-alert level. With a pop-up map on his smart phone, Joseph quickly understands which part of river is dangerous and makes an urgent call to his parents. The delivered Open GeoSMS can be:

	<b>OPEN GeoSMS v2</b>
Prefix	GeoSMS/2
Latitude	2220.693,N
Longitude	12133.521,E
Format Type	E
Payload	<b>DEBRIS_FLOW_ALERT</b>

**Table 5. Another example of Extended format.**

The corresponding Open GeoSMS should be:

<b>GeoSMS/2;2220.693,N;12133.521,E;E; DEBRIS_FLOW_ALERT</b>
---

The latitude and longitude described the monitored location of debris flow monitoring system. It helps people to have early response to natural hazards.

---

<sup>3</sup> Sensor Web Enablement