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SERIES Q: SWITCHING AND SIGNALLING

Signalling requirements and protocols for the NGN – Service and session control protocols – supplementary services

Protocol for GeoSMS

Recommendation ITU-T Q.3615

International Telecommunication Union

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Recommendation ITU-T Q.3615

Protocol for GeoSMS

Summary

Recommendation ITU-T Q.3615 standardizes the communication of location information between various location-based services (LBSs) over short message service (SMS). The protocol for GeoSMS can be supported by existing telecommunication network infrastructures, further facilitating the advantage of interoperability.

History

Edition	Recommendation	Approval	Study Group	Unique ID*
1.0	ITU-T Q.3615	2015-04-29	11	11.1002/1000/12218

Keywords

GeoSMS, LBS, location-based service, SMS, short message service.

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* To access the Recommendation, type the URL http://handle.itu.int/ in the address field of your web browser, followed by the Recommendation's unique ID. For example, http://handle.itu.int/11.1002/1000/11830-en.

FOREWORD

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Recommendation ITU-T Q.3615

Protocol for GeoSMS

1 Scope

This Recommendation defines the protocol for GeoSMS which is used to encode location information in a plain text message. GeoSMS can be sent in a short message service (SMS) message – a capability provided by telecommunication networks. Thus, GeoSMS not only facilitates the interoperability of SMS, but also standardizes the communication of location content between different location-based services (LBSs), while still maintaining human readability of the content. That is, any application or service can simply encode the location information into an SMS message with this Recommendation.

2 References

The following ITU-T Recommendations and other references contain provisions which, through reference in this text, constitute provisions of this Recommendation. At the time of publication, the editions indicated were valid. All Recommendations and other references are subject to revision; users of this Recommendation are therefore encouraged to investigate the possibility of applying the most recent edition of the Recommendations and other references listed below. A list of the currently valid ITU-T Recommendations is regularly published. The reference to a document within this Recommendation does not give it, as a stand-alone document, the status of a Recommendation.

[IETF RFC 3986] IETF RFC 3986 (2005), *Uniform Resource Identifier (URI): Generic Syntax*.

[IETF RFC 7230] IETF RFC 7230 (2014), *Hypertext Transfer Protocol (HTTP/1.1): Message Syntax and Routing.*

[OGC 11-030r1] Open Geospatial Consortium, OGC 11-030r1 (2012), *OGC: Open GeoSMS Standard – Core*.

3 Definitions

3.1 Terms defined elsewhere

None.

3.2 Terms defined in this Recommendation

This Recommendation defines the following term:

3.2.1 GeoSMS: A message format of plain text, with geospatial information encoded that can be sent as an SMS message.

4 Abbreviations and acronyms

This Recommendation uses the following abbreviations and acronyms:

app application

HTTP Hypertext Transfer Protocol

HTTPS Hypertext Transfer Protocol Secure

LBS Location-Based Service

SMS Short Message Service

URI Uniform Resource Identifier

WGS84 World Geodetic System 1984

5 Conventions

None.

6 The encoding protocol for GeoSMS

The structure of GeoSMS is shown in Table 6-1. The composed plain text of GeoSMS can be sent via short message service (SMS) already supported by telecommunication networks. This Recommendation adopts the structure defined in [OGC 11-030r1].

NOTE 1 – The length of a GeoSMS message is not limited; longer messages can be supported by multiple SMS features by most of telecommunication networks and mobile devices.

Table 6-1 – Structure of GeoSMS

Element 1: **URI with HTTP or HTTPS**	Element 2: **Query string with location parameter**	Element 3: **Optional parameter(s)**	Element 4: **Postfix string**
Element 5: **Payload**			

There are five elements for GeoSMS. Element 1, Element 2, Element 3 and Element 4 compose the first line of the GeoSMS message structure. This first line is essential to the protocol for GeoSMS and conformance to [IETF RFC 3986] is required. Element 5 is an optional freestyle text field.

NOTE 2 – For uniform resource identifier (URI) specific terminology, reference shall conform to [IETF RFC 3986].

6.1 Element 1: URI with HTTP or HTTPS scheme

GeoSMS begins with a URI with a hypertext transfer protocol (HTTP) or HTTP secure (HTTPS) scheme. This URI conforms to [IETF RFC 7230]. This URI usually ends with a web service method that can handle Element 2, Element 3 and Element 4.

6.2 Element 2: Query string with location parameter

The syntax of Element 2 is defined as follows:

"?*location_identifier=latitude,longitude*"

The location information in GeoSMS is encoded in a query string. This query string starts with a question mark, "?", and is followed by a *location_identifier*. The name of the *location_identifier* can be any valid string that conforms to [IETF RFC 3986]. The recommended name for *location_identifier* in GeoSMS is "geo".

Two parameters, also called coordinates, are required for a *location_identifier*. These two parameters are *latitude* and *longitude,* which are in the [b-WGS 84] datum.

Both latitude and longitude are described using the decimal degree format without the symbol "°". The values of latitude and longitude are bounded by ±90° and ±180°, respectively. Positive latitudes are north of the equator and negative latitudes are south of the equator. Positive longitudes are east of the prime meridian and negative longitudes are west of the prime meridian. Latitude and longitude are expressed in that sequence: latitude before longitude.

The symbol "=" is used to represent the assignment of location information to the *location_identifier*, and "," is used as the separator for the two parameters.

6.3 Element 3: Optional parameter(s)

There can be none, one or more than one optional parameter(s) that start with "&" in Element 3. The *name* of optional parameter (if any) shall conform to [IETF RFC 3986]. Optional parameter(s) can be presented with or without a *value* assignment. Each optional parameter (if any) can be added in Element 3 to GeoSMS using the following syntax:

"&*name*"

or

"&*name=value*"

6.4 Element 4: Postfix string

Element 4 is a postfix string at the end of the first line defined by GeoSMS. "GeoSMS" is defined as the postfix string. An additional *geosms_value* can be freely assigned for implementation purposes. Element 4 is defined as using the following syntax:

"&GeoSMS"

or

"&GeoSMS=*geosms_value*"

6.5 Element 5: Payload

Element 5 is optional and is usually used for further description of a GeoSMS message. If Element 5 exists in a GeoSMS message, it will start from the second line of the GeoSMS message, and can be freestyle plain text.

Appendix I

Use cases of GeoSMS

(This appendix does not form an integral part of this Recommendation.)

The following are four use cases using the protocol of GeoSMS.

NOTE – The following four use case examples are fictitious; they are intended to illustrate the use of the GeoSMS protocol.

I.1 Use case 1: GeoSMS with no optional parameter (Element 3)

Chuang was born deaf and is not able to speak very well. He feels ill in a park near lake Geneva. How can he quickly inform a friend or an emergency responder of his urgent situation? He can report his location and situation with an application (app) conformant to this Recommendation. The app composes a plain text message with the five-element structure described in clause 6.

http://maps.mapprovider.com/maps	?q=46.221465,6.153052		&GeoSMS
I am Chuang. I am feeling ill and urgently need some help!			

The following plain text message conforms to the protocol for GeoSMS. The app sends the message via the SMS service on his mobile phone.

http://maps.mapprovider.com/maps?q=46.221465,6.153052&GeoSMS

I am Chuang and I need some help due to an emergency situation.

The receiver might be an emergency responder or Chuang's friend depending on the addressee of the message as defined by the user through the application. The receiver will know the location and the status of Chuang's situation, in a short period of time, thanks to the location that was encoded in the GeoSMS message.

I.2 Use case 2: GeoSMS with optional parameter (Element 3)

The following is an example of a GeoSMS query string using an optional element to specify an emergency and disaster management case for this Recommendation.

http://mymeetup.com/meetup	?geo=24.251,121.162	&app=MeetUp	&GeoSMS
Let's meet up at 14:20			

The plain text message, with the elements defined in this Recommendation, is composed as a GeoSMS message. It can later be sent by the app via SMS. The user sends the message to a friend saying, "Let's meet up at 14:20", in the same way that SMS is used today for messaging friends. The difference here is that the GeoSMS message has embedded location information.

http://mymeetup.com/meetup?geo=24.251,121.162&app=MeetUp&GeoSMS

Let's meet up at 14:20

The optional parameter in this use case is used to specify which application sent the GeoSMS message. In this case, the web service hosted by mymeetup.com recognizes that the source app is MeetUp.

I.3 Use case 3: GeoSMS with postfix string value (Element 4)

This case is an example of a GeoSMS message with a value for a postfix string. Here, "EDM" is defined as a service provider for emergency and disaster management.

http://maps.geosms.cc/show/map	?geo=23.9572,120.6860		&GeoSMS=EDM
Landslide occurred at 172K of Highway No. 8! Please avoid this route!!			

This GeoSMS message can be sent as an emergency notification to receivers that are near the location of the emergency.

http://maps.geosms.cc/show/map?geo=23.9572,120.6860&GeoSMS=EDM

Landslide occurred at 172K of Highway No. 8! Please avoid this route!!

This message can be sent to a subscriber's mobile phone or it can be broadcast to devices of people in the immediate area. GeoSMS works even for phones that have no app installed. On a smart phone or personal navigation device, service providers can leverage this message to reroute the planned route because the value of the postfix string in the GeoSMS message indicates that this GeoSMS message contains an emergency notification.

I.4 Use case 4: GeoSMS with no payload (Element 5)

This use case can be used for vehicle tracking. The location tracker on a vehicle sends its position with GeoSMS periodically when the vehicle is moving.

http://yourcar.com/show	?geo=23.9572,120.6860	&ID=MIA5678	&GeoSMS

The following GeoSMS message describes the location of the vehicle and its car ID.

http://yourcar.com/show?geo=23.9572,120.6860&ID=MIA5678&GeoSMS

The GeoSMS message without payload is usually adopted for machine-to-machine or service-to-service scenarios.

Bibliography

[b-WGS84] World Geodetic System 1984 (WGS84), *World Geodetic System (WGS) established in 1984 and last revised in 2004*.http://spatialreference.org/ref/epsg/wgs-84/

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