C O N F I D E N T I A L

HS2 High Speed 2 Proximity Service

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Revision 1.1

Contents

1. Overview

This document describes the internet interface to access the UK HS2 proximity service hosted by OSS and provided by Groundsure.

The purpose of this service is to determine whether a specified location is within a set distance of any part of the HS2 link.

2. Technical Details

Each request must carry with it either a point location or a polygon defining the area of interest.

The returned data is a simple string as described later.

Co-ordinate System

The x-y co-ordinates must refer to the British National Grid (defined by the Ordnance Survey), and should be supplied as the full figure “Eastings” and “Northings”.

Example: Trafalgar Square:

Eastings (x) = 530000
Northings (y) = 180500

Transfer Protocol

Requests are made using the Hypertext Transfer Protocol (HTTP/1.1) as defined by the Internet Engineering Taskforce (IETF).

The document defining this protocol may be found at either of the following:

http://www.ietf.org/rfc/rfc2616.txt
http://www.w3.org/Protocols/rfc2616

Either the “GET” or “POST” methods can be used for making requests.

Parameters

A standard http GET method requires the construction of a URL defined as:

URL = "http:" "//" host [":" port] [abs_path ["?" query]]

The components of this URL are detailed below.

Host

Two alternative IPv4 addresses are used for fail-over and redundancy in order to increase system reliability. These should be found using dynamic DNS look-ups from the following domains:

mapping1.net (Primary)
mapping2.net (Secondary)

Although RFC 2616 recommends avoiding the use of IP addresses, the current IP addresses may be used in the event of DNS failure. These are:

91.186.17.110 (Primary)
82.69.46.94 (Secondary)

Either of these domains may be used, although the first is considered to be the primary address. If reliability is an important aspect of a system that uses this service, that system should be designed to automatically switch between these if a timely response is not received from any one domain. Typical time-out periods are usually in the range of 30 to 90 seconds. Time-out periods less than this are not recommended.

Port

The default Transmission Control Protocol (TCP) Ports 80 and 443 are used for HTTP and HTTPS respectively. In many cases the port number may be omitted.

Abs_path

This should be the string "**.hs2**" (excluding quotation delimiters).

Query

The query should be constructed as a string such as:

Point search:
"userID=<userID>&passKey=<passkey>&x=<x>&y=<y>"

Polygon search:
"userID=<userID>&passKey=<passkey>&polygon=<x_1>,<y_1>,…<x_n>,<y_n>"

(excluding quotation delimiters)

The next table summarises the available fields.

Field Name	Type	Example
userID	String, mandatory.	
passKey	String, mandatory.	
x	Floating point, use when specifying a point.	384309.6
y	Floating point, use when specifying a point.	301874.2
polygon	Floating point, use when specifying a region.	
Buffer	Floating point. Used to over-ride default buffer, in metres. Optional.	100
SessionID	String, optional.	testsession
*Format**	*Char string, optional.*	*JSON*
*Callback**	*Char string, optional.*	*myCallbackFunction*

* Not currently implemented.

The userID and passKey should be used as supplied. Other parameters are as follows.

There are two formats for the query depending upon whether a point search or a polygon search is being requested.

1. For point searches the query string should be constructed as:

"userID=<userID>&passKey=<passkey>&x=<Eastings>&y=<Northings>"

(excluding quotation delimiters)

2. For area searches, the region of interest is defined by supplying the co-ordinates of the vertices of the polygon. The co-ordinates are 2-dimensional Cartesian x,y pairs. The parameters for a polygon of n vertices are passed as follows:-

polygon=x_1,y_1,x_2,y_2,x_3,y_3,…x_n,y_n

The polygon is always considered to be a closed loop, where the n^{th} point is assumed to link back to the 1^{st} point. A triangle will therefore be specified with 3 points.

For a polygon search the query string should be constructed as:

"userID=<userID>&passKey=<passkey>&polygon=<x_1>,<y_1>,…<x_n>,<y_n>"

(excluding quotation delimiters)

Buffer

Searches are buffered by default to 5000m. This default value can be set to a custom size by specifying the value with the 'buffer' parameter in each call.

SessionID

This is an optional parameter that can be added to each call to aid session tracking.

For example, &sessionID=testSession123

For full details of this see the document entitled "Session ID Registration Service".

Responses

Correct responses to each request is a simple comma-delimited text string, following the document RFC 4180 produced by the Network Working Group.

The self explanatory responses are as follows:-

Location within 5000 metres.
Location greater than 5000 metres.

If a custom buffer has been set, the responses are:-

Location within buffer.
Location outside buffer.

Any response that does not match either of these is indicative of an error, e.g. incorrect user identification or an exception such as system failure, e.g. server over-load (see examples section later).

Notes

In order to increase security, the use of source-IP address restrictions will be made wherever possible.

3. Test Examples

The following strings are complete examples that should return the responses indicated.

Example 1: Failed authentication

Request:

http://mapping1.net/.hs2?userID=imposter&passKey=wrong&x=237000&y=083000

Response:

Failure to authenticate

(Note that there will be no response if IP restrictions are used and not met.)

Example 2: Point search.

Request:

http://mapping1.net/.hs2?userID=<userID>&passKey=<passKey>&x=487000&y=210000

Response:

Location within 5000 metres.

Example 3: Polygon region search.

Request:
http://mapping1.net/.hs2?userID=<userID>&passKey=<passKey>&polygon=236000,82000,237010,83000,237000,83010

Response:

Location greater than 5000 metres.

4. Revision History

Date	Revision	Author	Notes
18 January 2012	1.0 Draft A.	PJH	For review.
15 June 2012	1.1	PJH	Optional custom buffer size.