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PNO-ISC/SPEC/013

Emergency Location Information Interface

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PNO-ISC SPECIFICATION NUMBER 013
Emergency Location Information Interface

NETWORK INTEROPERABILITY CONSULTATIVE COMMITTEE

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London EC4M 7JJ

0.2 Normative Information

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0.4 History

Revision	Date of Issue	Description
Issue 1	November 2002	First published issue

0.5 Issue Control

SECTION	ISSUE	DATE
All	Issue 1	November 2002

0.6 References

- [1] Location Inter-operability Forum (LIF) Mobile Location Protocol
LIF TS 101 v3.0.0, 6 June 2002
Available at <http://www.locationforum.org>
- [2] Extensible Markup Language (XML) 1.0
W3C Recommendation: REC-xml-19980210
Available at <http://www.w3c.org>
- [3] Hypertext Transfer Protocol – HTTP/1.1
RFC 2068, June 1999
Available at <http://www.w3c.org>

0.7 Glossary of terms

0.7.1 Abbreviations

0.7.2 Definitions

This specification uses the following definitions of terms

Required	The sending node shall include elements marked required. The receiving node shall interpret all elements marked required.
Not Required	The sending may send parameters marked not required, but should not expect interpretation by the receiving node. The receiving node may interpret elements marked not required
Construction	A Construction is a protocol element that consists of one or more sub-elements.

0.8 Scope

This specification defines the interface to be used between mobile network operators and emergency handling authorities within the UK to transport location information associated with 999/112 voice calls. Two services are defined;

- **Emergency Location Immediate Service** – This is a service used for querying of the location of a mobile subscriber that has initiated an emergency call. The response to this service is required immediately (within a set time).
- **Emergency Location Reporting Service** – This is a service that is used when the wireless network automatically initiates the positioning at an emergency call. The position and related data is then sent to the emergency application from the location server. Which application and its address are defined in the location server.

This specification;

- Identifies the sections of the LIF specification TS101 v3.0.0 that are applicable to the emergency location information services
- does not identify how the mobile network operator determines location,
- does not identify how the location information is passed between the Emergency Operator and the appropriate Emergency Authority
- does not describe how the emergency call is established.

Figure 1 shows diagrammatically the scope of this specification.

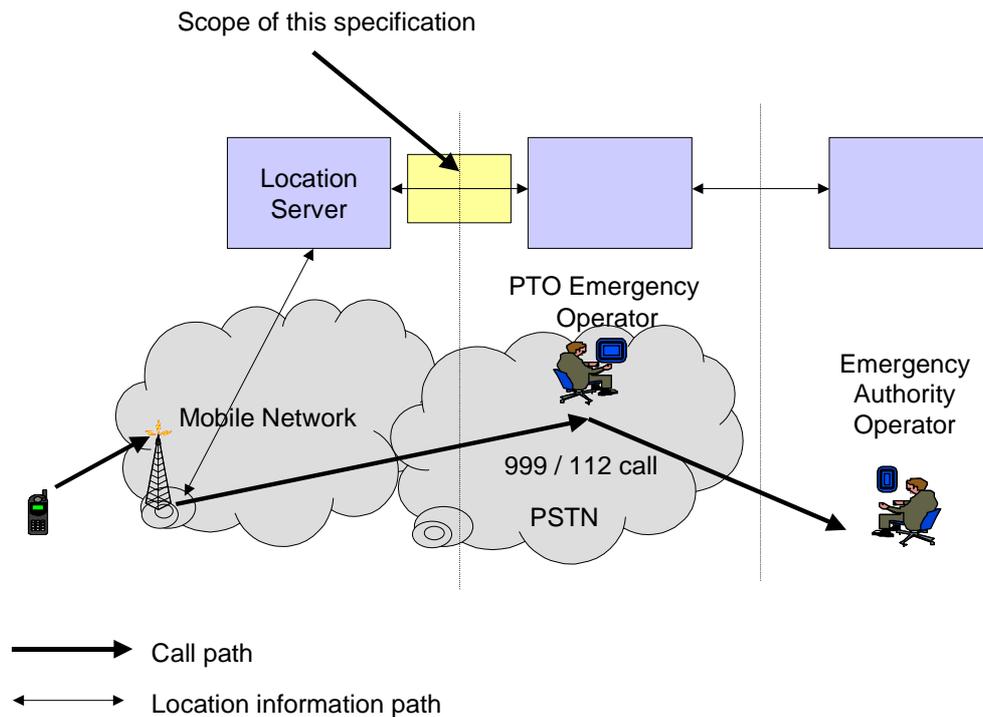


Figure 1 – Scope of this specification

1 LIF TS 101 v3.0.0 Endorsement

This specification is based on the interface defined by the Location Inter-operability Forum (LIF). The following table identifies sections within the LIF specification, and clarifies which options are applicable to a UK emergency location information service.

This specification identifies the minimum requirement. Elements not explicitly detailed in this section should be considered to be 'Not required'. Additional optional elements may be implemented on a bilateral basis.

LIF TS 101 [1] section	Title	Comment
1	Revision History	
2	Introduction	
3	General	
3.3	MLP extension mechanism	Required
4	Mobile Location Service Definitions	
4.1	Transport Protocol Layer Definitions	Required (See endorsement of Annex B)
4.2	Element Layer Definitions	
4.2.1	Identity Element Definitions	<p>The following elements are required to be supported, and where an element is a construction, which elements are required to be supported within the construction;</p> <ul style="list-style-type: none"> • msid • msids <ul style="list-style-type: none"> ○ msid <p>One msid element shall be included in an msids element)</p>
4.2.3	Location Element Definitions	<p>The following elements are required to be supported, and where an element is a construction, which elements are required to be supported within the construction;</p> <ul style="list-style-type: none"> • eme_pos <ul style="list-style-type: none"> ○ msid ○ pd ○ poserr • pd <ul style="list-style-type: none"> ○ time ○ shape ○ lev_conf • poserr <ul style="list-style-type: none"> ○ result ○ time • result • time • lev_conf

LIF TS 101 [1] section	Title	Comment
4.2.4	Shape Element Definitions	<p>The following elements are required to be supported, and where an element is a construction, which elements are required to be supported within the construction;</p> <ul style="list-style-type: none"> • shape <ul style="list-style-type: none"> ○ EllipticalArea • angularUnit • angle • coord <ul style="list-style-type: none"> ○ X ○ Y • X • Y • EllipticalArea <ul style="list-style-type: none"> ○ coord ○ angle ○ semiMajor ○ semiMinor ○ angularUnit • semiMajor • semiMinor
4.2.7	Context Element Definitions	<p>The following elements are required to be supported, and where an element is a construction, which elements are required to be supported within the construction;</p> <ul style="list-style-type: none"> • client <ul style="list-style-type: none"> ○ id ○ pwd ○ requestmode • id • pwd • requestmode • servicetype
4.3	Service Layer Definitions	
4.3.1	Header Components	
4.3.1.1	Context DTD	<p>The following elements are required to be supported, and where an element is a construction, which elements are required to be supported within the construction;</p> <ul style="list-style-type: none"> • hdr <ul style="list-style-type: none"> ○ client
4.3.3	Emergency Location Immediate Service	Required
4.3.3.1	Emergency Location Immediate Request DTD	<p>The eme_lir shall contain the following element</p> <ul style="list-style-type: none"> • msids
4.3.3.2	Emergency Location Immediate Answer DTD	<p>The eme_lia shall contain the following elements</p> <ul style="list-style-type: none"> • eme_pos, or • result • caller_location (optional)
4.3.5	Emergency Location Reporting Service	Required
4.3.5.1	Emergency Location Report DTD	<p>The emerep shall contain the following elements</p> <ul style="list-style-type: none"> • eme_event • caller_location (optional)
4.3.7	General Error Message Definition	<p>The gem shall contain the following elements</p> <ul style="list-style-type: none"> • result
5	Elements and attributes in DTD	
5.4	angle	Required
5.5	angularUnit	Required
5.17	EllipticalArea	Required
5.18	eme_event	Required
5.18.1	eme_trigger	Required
5.23	id	Required

LIF TS 101 [1] section	Title	Comment
5.27	lev_conf	Required
5.37	msid	Required
5.37.1	Type	Type shall be "MSISDN"
5.37.2	enc	Enc shall be "ASC"
5.49	pwd	Required
5.54	result	Required
5.55	semiMajor	Required
5.56	semiMinor	Required
5.58	requestmode	Required
5.58.1	type	Type shall be "PASSIVE"
5.66	time	Required
5.72	X	Required
5.73	Y	Required
5.75	Service attributes	
5.75.2	ver	Required
6	Result codes and error codes	
6.1	Result codes	Required
7	References	
	References (Normative)	
	References (Informative)	
8	Appendix A (informative) : Adaptation to 3GPP LCS	
9	Appendix B – HTTP mapping	The lif-mlp-s (9211/tcp) port shall be used. Nodes shall support out of sequence acknowledgements to HTTP posts.
9.2.1	Service Initiation DTD	The svc_init shall contain the following elements <ul style="list-style-type: none"> • hdr • eme_lir
9.2.2	Service Result DTD	The svc_result shall contain the following elements <ul style="list-style-type: none"> • eme_lia • emerep

2 PNO-ISC MLP Extension

This section details an optional PNO-ISC MLP extension. This provides a simple mechanism to transport name information and a freeform textual description of location.

Support of this extension is not mandatory.

2.1 Data Type Definition

```

<!pno-isc_MLP_extension -->

<!ENTITY      % extension.param      ",caller_location?"

<!ELEMENT     caller_location        (customer_name?, line1?, line2?, line3?, line4?,
line5?, line6?, postcode?)>
<!ELEMENT     customer_name          (#PCDATA)>
<!ELEMENT     line1                   (#PCDATA)>
<!ELEMENT     line2                   (#PCDATA)>
<!ELEMENT     line3                   (#PCDATA)>
<!ELEMENT     line4                   (#PCDATA)>
<!ELEMENT     line5                   (#PCDATA)>
<!ELEMENT     line6                   (#PCDATA)>
<!ELEMENT     postcode                (#PCDATA)>

```

2.2 Elements and attributes

2.2.1 customer_name

Description:	
Specifies the name of the customer associated with the geographic info	
Format:	Char String
Defined values:	-
Default value:	-
Example:	<customer_name>Mr Benn</customer_name>
Note:	

2.2.2 line1

Description:	
Specifies a line of text providing a freeform textual description of the associated location information	
Format:	Char String
Defined values:	-
Default value:	-
Example 1:	<line1>52 Festive Road</line1>
Example 2:	<line1>Heathrow Terminal 4 Check In Desks</line1>
Note: No formatting of the address should be assumed i.e. a full postal address could be defined using one line element, or split over several lines using the line1, line2, line3 etc elements.	

2.2.3 line2
As 2.2.2

2.2.4 line3
As 2.2.2

2.2.5 line4
As 2.2.2

2.2.6 line5
As 2.2.2

2.2.7 line6
As 2.2.2

2.2.8 postcode

Description:	
Specifies the postcode associated with the location information	
Format:	Char String
Defined values:	-
Default value:	-
Example:	<postcode>SW1 1AA</postcode>
Note: Can be used in the case that the postcode is known (e.g. in-building, pico cell coverage)	

2.3 Example usage of extension

```

<!DOCTYPE svc_init SYSTEM "MLP_SVC_RESULT_300.DTD" [
<!ENTITY % extension SYSTEM " pno-isc_mlp_extension.dtd"> %extension;]>
<svc_result ver="3.0.0">
  <eme_lia ver="3.0.0">
    <eme_pos>
      <msid type="MSISDN">447770123123</msid>
      <pd>
        <time utc_off="+0100">20020702115712</time>
        <shape>
          <EllipticalArea>
            <coord>
              <X>N51.459</X>
              <Y>W0.448</Y>
            </coord>
            <angle>90.00</angle>
            <semiMajor>50</semiMajor>
            <semiMinor>25</semiMinor>
          </EllipticalArea>
        </shape>
        <lev_conf>80</lev_conf>
      </pd>
    </eme_pos>
    <caller_location >
      <line1>Heathrow Terminal 4 check-in desks</line1>
    </caller_location >
  </eme_lia>
</svc_result>

```

Appendix A – Example Messages

This appendix provides example message formats associated with the defined sub-set of the LIF specification described in this document.

A.1 Emergency Location Immediate Request

```
<?xml version="1.0" ?>
<!DOCTYPE svc_init SYSTEM "MLP_SVC_INIT_300.DTD">
<svc_init ver="3.0.0">
  <hdr ver="3.0.0">
    <client>
      <id>emergency operator</id>
      <pwd>bigcrash</pwd>
      <requestmode type="PASSIVE"/>
    </client>
  </hdr>
  <eme_lir ver="3.0.0">>

    <msids>
      <msid type="MSISDN">447770123123</msid>

    </msids>
  </eme_lir
</svc_init>
```

Service initiation for MLP Version 3.0.0
Header for MLP Version 3.0.0
Who is requesting this location fix
Emergency operator registered user name for login
Emergency operator password for login
Its not the ACTIVE user requesting a location fix

Emergency Location Immediate Request for MLP
Version 3.0.0
Identifier of device to be located
Identifier is a MSISDN formatted as Country Code +
Phone Number (GSM/3GPP should conform to 3GPP
CN TS 23.003)

A.2 Emergency Location Immediate Answer – Valid Response

```
<?xml version="1.0" ?>
<!DOCTYPE svc_init SYSTEM "MLP_SVC_RESULT_300.DTD">
<svc_result ver="3.0.0">
  <eme_lia ver="3.0.0">

    <eme_pos>
      <msid type="MSISDN">447770123123</msid>

      <pd>
        <time utc_off="+0100">20020702115712</time>

        <shape>
          <EllipticalArea">

            <coord>
              <X>N51.514</X>
              <Y>W0.102</Y>
            </coord>
            <angle>90.00</angle>

            <semiMajor>50</semiMajor>
            <semiMinor>25</semiMinor>
          </ EllipticalArea >
        </shape>
        <lev_conf>80</lev_conf>

      </pd>
    </eme_pos>
    <caller_location >
      <line1>2nd Floor</line1>

      <line2>Oftel</line2>
      <line3>50 Ludgate Hill</line3>
      <line4>London</line4>
      <postcode>EC4M 7JJ</postcode>
    </caller_location >
  </eme_lia>
</svc_result>
```

Service result for MLP Version 3.0.0
Emergency Location Immediate Answer for MLP
Version 3.0.0
Position answer
Position is for this MSISDN (formatted as Country
Code + Phone Number) (GSM/3GPP should
conform to 3GPP CN TS 23.003)
Position description
Local Date and Time of phone when position was
measured.
Shape of uncertainty area
It's an ellipse (on the WGS-84 co-ordinate
reference system as default).
Coordinate of the centre of the ellipse
Latitude in decimal degrees prefixed with N or S
Longitude in decimal degrees prefixed with E or W
Angle in degrees of rotation of the ellipse
measured clockwise from north
Length of semiMajor axis in metres
Length of semiMinor axis in metres

Indicates the probability as a percentage that the
phone is located within the position area defined

Freeform textual description of location (e.g.
derived
from pico cell coverage)

A.3 Emergency Location Immediate Answer – Error Response

<pre><?xml version="1.0" ?> <!DOCTYPE svc_init SYSTEM "MLP_SVC_RESULT_300.DTD"> <svc_result ver="3.0.0"> <eme_lia ver="3.0.0"> <eme_pos> <msid type="MSISDN">447770123123</msid> <poserr> <result resid="004"> UNKNOWN SUBSCRIBER </result> <add_info>This space left blank</add_info> <time utc_off="±0100">20020702115712</time> </poserr> </eme_pos> </eme_lia> </svc_result></pre>	<p>Service result for MLP Version 3.0.0 Emergency Location Immediate Answer for MLP Version 3.0.0</p> <p>Position answer Position is for this MSISDN (formatted as Country Code + Phone Number) (GSM/3GPP should conform to 3GPP CN TS 23.003)</p> <p>Error code number and error code text</p> <p>Additional information about the result Local Date and Time of phone when position attempt was made</p>
--	--

END OF PNO-ISC/SPEC/013