Liberty ID-SIS Geo-Location MRD - Marketing Requirements Document for Geo-Location Service

Version: 1.0

Editors:
David Castellanos, Ericsson
Rob Lockhart, IEEE-ISTO
Jose-Luis Mariz, Ericsson

Contributors:
Shin Adachi, NTT
Corina Grahm, Ericsson
Jukka Kainulainen, Nokia
Salima Fazal Karim, France Télécom
Kurt Kolok, IEEE-ISTO

Abstract:
This MRD for a Liberty-based geo-location identity service describes the sharing of a user’s geo-location with their service providers. Geo-Location is defined as information referring to a position. Location may be calculated using any sort of positioning mechanism or provided as a stated location. It may be expressed in terms of geographical location in some format (e.g., coordinates) and/or as civil data location (e.g., address).

Filename: liberty-id-sis-geo-location-mrd-v1.0.pdf
This Market Requirements Document (MRD) has been developed by the Geo-Location Services Group of Liberty Alliance to capture the business requirements for a Geo-Location identity service. Liberty Alliance is making this MRD publicly available to the industry at large for review and consideration. This publication does not constitute a commitment by Liberty Alliance, explicit or implied, to develop technical specifications in full compliance with the requirements herein, now or in the future.

Notice

This document has been prepared by Sponsors of the Liberty Alliance. Permission is hereby granted to use the document solely for the purpose educating the public. No rights are granted to prepare derivative works of this Liberty Alliance Publication. Entities seeking permission to reproduce portions of this document for other uses must contact the Liberty Alliance to determine whether an appropriate license for such use is available.

Use of certain elements of this document may require licenses under third party intellectual property rights, including without limitation, patent rights. The Sponsors of and any other contributors to the Liberty Alliance Publication are not and shall not be held responsible in any manner for identifying or failing to identify any or all such third party intellectual property rights. Liberty Alliance Publication is provided "AS IS," and no participant in the Liberty Alliance makes any warranty This of any kind, express or implied, including any implied warranties of merchantability, non-infringement of third party intellectual property rights, and fitness for a particular purpose. Those who are interested in additional Liberty Publications are advised to review the Liberty Alliance Project’s website (http://www.projectliberty.org/) for information concerning any Necessary Claims Disclosure Notices that have been received by the Liberty Alliance Management Board.

Copyright © 2003 - 2008 American Express; Ericsson, France Télécom; Nokia, NTT; Symlabs, Inc.; and Vodafone. All rights reserved.

Liberty Alliance Project
Licensing Administrator
c/o IEEE-ISTO
445 Hoes Lane
Piscataway, NJ 08855-1331, USA
info@projectliberty.org
Table of Contents

1 Introduction............................................................................................................4
2 Requirements ........................................................................................................6
  2.1 Derived Infrastructure Requirements.................................................................7
3 SP Requests Principal’s Geographic Location to LP (General Use Case)...........8
  3.1 Main Description ...............................................................................................8
  3.2 Targeted Scenarios ............................................................................................8
  3.3 Dependencies with Other Use Cases .................................................................8
  3.4 Details ...............................................................................................................8
  3.5 Graphical Description ......................................................................................9
4 SP Subscribes to Principal’s Geographic Location to LP................................10
  4.1 Main Description ..............................................................................................10
  4.2 Targeted Scenarios ..........................................................................................10
  4.3 Business Justification ......................................................................................10
  4.4 Dependencies with Other Use Cases ...............................................................10
  4.5 Details ..............................................................................................................10
  4.6 Graphical description .....................................................................................11
5 SP Unsubscribes to Principal’s Geographic Location to LP............................12
  5.1 Main Description ..............................................................................................12
  5.2 Targeted Scenarios ..........................................................................................12
  5.3 Business Justification ......................................................................................12
  5.4 Dependencies with Other Use Cases ...............................................................12
  5.5 Details ..............................................................................................................12
  5.6 Graphical description .....................................................................................13
6 Principal Requests Geographic Location from Another Principal...............14
  6.1 Main Description ..............................................................................................14
  6.2 Targeted Scenarios ..........................................................................................14
  6.3 Business Justification ......................................................................................14
  6.4 Dependencies with Other Use Cases ...............................................................14
  6.5 Details ..............................................................................................................14
  6.6 Graphical Description .....................................................................................16
7 New Glossary Terms............................................................................................17
  7.1 Term..................................................................................................................17
8 References..........................................................................................................18
1 Introduction

A Liberty-based geo-location identity service enables the sharing of a user’s geo-location with their service providers. Geo-Location is defined as information referring to a position. Location may be calculated using any sort of positioning mechanism or provided as a stated location. It may be expressed in terms of geographical location in some format (e.g., coordinates) and/or as civil data location (e.g., address).

Without the calculation of the location by the Liberty-based location identity service, the user would either have to manually enter his location (if enabled by the terminal and network interaction capabilities); the service provider would reference a default location; or, in cases where the user is not aware of his location, the service could not be provided.

There are also cases in which the user to be tracked is an object. It is also possible that the entity exposing its location information is a group. Users shall be able to request location information from another user through the mediation of their respective location providers and service providers.

Location providers can also be realized in client implementations based on existing specific infrastructure support (LUAD-WSP). See [LibertyGlossary-v1.4] for definitions of the acronyms and initialisms used in this document that are not defined in Section 7.

See Figure 1, below, for a generic description of all the above referenced possible interactions.

Note the following:

- Principal-1 can also be an object;
- Device and WSP (location provider) can be combined into a unified LUAD-WSP implementation; and
- The names spaces by which Principal-2 and location provider refer to Principal-1 are different, so some linkage is achieved by a Principal-to-Principal referencing mechanism.

SPs can request geo-location information in their preferred format out of those supported in this identity service specification. The LP can then respond with the supported formats by that specific LP, trying to match at the maximum degree the S-requested format and accuracy.
For example, a location service would enable a user to benefit from location-specific weather, news, travel, currency, time zone advisory, and other services offered by the service providers. A location service would also enable services that provide information about, and directions to, nearby facilities such as restaurants, gas stations, ATM machines, public transit, points of interest, etc.

The goal of the Liberty Alliance ID-SIS Geo-Location MRD is to define interoperability standards for securely sharing location information with and between service providers. Regardless of the user’s chosen location service provider, other service providers can offer location-specific services without requiring specific infrastructure for each location service provider. Policies are as well-enabled to control the distribution of location information, such as user policies to set personal privacy conditions, avoid spam, and also legal authorities policies to enforce the regulatory framework.

Liberty Alliance standards therefore provide a number of qualities, as described above, to location information exchange being carried out via various protocols. However, such protocols, themselves, are out of the scope of the Alliance work, though some alignment is necessary to be able to utilize the Liberty-specified framework.
## 2 Requirements

<table>
<thead>
<tr>
<th>Req#</th>
<th>UC #</th>
<th>Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Generic</td>
<td>LP registers at DS as provider of (specific) Principal’s positioning data.</td>
</tr>
<tr>
<td>2</td>
<td>Generic</td>
<td>LP de-registers at DS as provider of (specific) Principal’s positioning data.</td>
</tr>
<tr>
<td>3</td>
<td>Generic</td>
<td>SP finds out provider of (specific) Principal’s positioning data.</td>
</tr>
<tr>
<td>4</td>
<td>3, 6</td>
<td>SP queries for (specific) Principal’s positioning data. Another Principal can request (specific) Principal’s positioning data through the SP the requestor Principal is accessing for services.</td>
</tr>
<tr>
<td>5</td>
<td>Generic</td>
<td>[LibertyPh2-MRD] Phase 2 interaction service maybe used in order to query user for (specific) positioning data and/or user consent to specific actions (e.g., SP access/subscription to Principal’s positioning data).</td>
</tr>
<tr>
<td>6</td>
<td>4</td>
<td>SP subscribes (event-/time-based) to (specific) Principal’s positioning data at LP.</td>
</tr>
<tr>
<td>7</td>
<td>5</td>
<td>SP unsubscribes from (specific) Principal’s positioning data at LP.</td>
</tr>
</tbody>
</table>

### Core Geo-Location Attributes

8  Generic  Mechanism to enable Principals to share the following core Geo-Location information in an interoperable manner. The list of relevant Geo-Location attributes are:

- **Position Data**
  - Timestamp,
  - Position shape,
  - Altitude (optional),
  - Altitude accuracy (optional),
  - Speed (optional),
  - Direction (optional), and
  - Level of confidence (optional).

- **Civil Data** (optional)
  - Attributes from civil data as defined in the [LibertyIDPP] service, address data format.

8a Generic  All attributes standardized for this profile are NOT required to be present at all times in every profile.

8b Generic  For each of the above geo-location attributes, the specification must specify the names and semantics of the attribute schemas to enable interoperability.


### 2.1 Derived Infrastructure Requirements

From the geo-location service requirements, the following infrastructure requirements are derived as described in the indicated MRDs so that such infrastructure will support the service-intended usage:

- Principal-to-Principal referencing (see “People Service” in [LibertyIDWSF2.0-MRD]),
- Subscription and notification (see “Subscription and Notification” in [LibertyIDWSF2.0-MRD]),
- Groups and roles (see “People Service” in [LibertyIDWSF2.0-MRD]), and
- Transaction accounting (see [LibertyTA-MRD]).
3 SP Requests Principal’s Geographic Location to LP (General Use Case)

3.1 Main Description
An SP requests a Principal’s geographic positioning data attributes.

3.2 Targeted Scenarios
B2C, B2B

3.3 Dependencies with Other Use Cases
- [LibertyPh1-MRD] Phase 1 Federation and SSO related UCs.
- [LibertyPh2-MRD] Phase 2 AP registration at DS, SP DS Lookup, and SP requests of attributes to AP related UCs.

3.4 Details

<table>
<thead>
<tr>
<th>Title/ID</th>
<th>SP Requests Geographic Location to LP</th>
</tr>
</thead>
</table>
| Pre conditions | 1. Principal has an account with an IdP.  
2. Principal’s account is federated to SP (i.e., Principal has given permission for Principal’s identity to be shared with the SP).  
3. Principal is authenticated by Principal’s IdP.  
4. Principal has attributes at an LP and has selected LP as provider of his/her positioning data (i.e., LP has registered at DS).  
5. Permissions for these attributes are available at LP.  
6. Principal is accessing SP and has presented an authentication assertion with Principal’s DS indicator. |
| Constituents | Principal, DS, SP, LP |
| Use case | 1. SP issues a query to Principal’s DS requesting Principal’s LP.  
2. DS replies with information so SP can reach LP.  
3. SP contacts LP requesting specific Principal’s positioning data.  
4. LP evaluates applicable permission policies.  
5. LP returns Principal’s geographical positioning data to SP. |
| Post conditions | SP receives Principal’s geographical positioning data. |
| Alternate courses of action | Principal may not have an account at SP or might have a privacy policy set for anonymity in exposing location information. SP then would still be able to perform anonymous authentication requests and perform further requests of Principal’s positioning data. |
LP may decide not to provide requested information to SP …
1. Requested data or permissions to disclose it is not available at LP.
   a. [LibertyPh2-MRD] Phase 2 Interaction service could be used in order to get info.
   b. Latest available value could be provided instead.
2. Incompatible Usage Directives.
3. Any error occurred at DS lookup or during actual attribute request to LP.

### 3.5 Graphical Description

![Graphical Description](image)

The geo-location information is made Available, through various means, to the LP.

**Figure 2. UC-4**
4 SP Subscribes to Principal’s Geographic Location to LP

4.1 Main Description
SP subscribes to changes or periodic updates of Principal’s positioning data.

4.2 Targeted Scenarios
B2C, B2B

4.3 Business Justification
SPs may need Principal’s position to offer a location-based service on a periodic basis or based on changes of Principal’s location.

4.4 Dependencies with Other Use Cases
• [LibertyPh1-MRD] Phase 1 Federation and SSO related UCs.
• [LibertyPh2-MRD] Phase 2 AP registration at DS, SP DS Lookup, and SP requests of attributes to AP related UCs.

4.5 Details

<table>
<thead>
<tr>
<th>Title/ID</th>
<th>SP Subscribes to Principal’s Geographic Location to LP</th>
</tr>
</thead>
</table>
| Pre conditions | 1. Principal has an account with an IdP.  
2. Principal’s account is federated to SP (i.e., Principal has given permission for Principal’s identity to be shared with the SP).  
3. Principal is authenticated by Principal’s IdP.  
4. Principal has attributes at an LP and has selected LP as provider of his/her positioning data (i.e., LP has registered at DS).  
5. Permissions for these attributes are available at LP.  
6. Permissions for SP subscription to Principal’s position data are also available at LP.  
7. Principal is accessing SP and has presented an authentication assertion with Principal’s DS indicator. |
| Constituents | Principal, DS, SP, LP |
| Use case | 1. SP issues a query to Principal’s DS requesting Principal’s LP.  
2. DS replies with information so SP can reach LP.  
3. SP requests LP to subscribe to (specific) Principal’s positioning data. Subscription could be either or both: |
4. On a periodic basis (e.g., every hour during x period of time), and/or
b. An event-based subscription (e.g., from every single location change to less fine-grained location changes).

4. LP accepts SP subscription to Principal’s positioning data.
5. When conditions for subscription are met, LP sends requested Principal’s geographical data to SP.

<table>
<thead>
<tr>
<th><strong>Post conditions</strong></th>
<th>SP receives Principal’s positioning data when conditions of subscription are met.</th>
</tr>
</thead>
</table>

**Alternate courses of action**

Principal may not have an account at SP.

It might not be possible for LP to process subscription request since Principal’s permission to let SP subscribe to his/her (specific) positioning data is not available. However, the [LibertyPh2-MRD] Phase 2 Interaction service could be used in order to get user consent.

### 4.6 Graphical description

![Figure 3. UC-5](image)

The geo-location information is made Available, through various means, to the LP.
5 SP Unsubscribes to Principal’s Geographic Location to LP

5.1 Main Description

SP unsubscribes to Principal’s positioning data.

5.2 Targeted Scenarios

B2C, B2B

5.3 Business Justification

SP and/or LP may decide to terminate subscription to Principal’s positioning data. This could be triggered by Principal’s initiative.

5.4 Dependencies with Other Use Cases

Please see the use case in Section 4 of this document.

5.5 Details

<table>
<thead>
<tr>
<th>Title/ID</th>
<th>SP Unsubscribes to Principal’s Geographic Location to LP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre conditions</td>
<td>1. SP has subscribed to Principal’s positioning data at LP.</td>
</tr>
<tr>
<td>Constituents</td>
<td>Principal, DS, SP, LP</td>
</tr>
<tr>
<td>Use case</td>
<td>1. SP requests LP to unsubscribe from Principal’s positioning data.</td>
</tr>
<tr>
<td></td>
<td>2. LP confirms SP is now unregistered from Principal’s positioning data.</td>
</tr>
<tr>
<td>Post conditions</td>
<td>SP unsubscribes from Principal’s positioning data at LP.</td>
</tr>
<tr>
<td>Alternate courses of action</td>
<td>SP triggers this action due to a Principal’s request while in SP or due to internal SP decision. LP may also unilaterally originate this action with or without Principal’s intervention at LP.</td>
</tr>
</tbody>
</table>
5.6 Graphical description

The geo-location information is made available, through various means, to the LP.

Figure 4. UC-6
6 Principal Requests Geographic Location from Another Principal

6.1 Main Description

A Principal requests through its SP another Principal’s geographic positioning data attributes from its respective LP.

6.2 Targeted Scenarios

C2C, B2B

6.3 Business Justification

Principals might be interested in another Principal’s position as part of one of the services being offered to them.

6.4 Dependencies with Other Use Cases

- [LibertyPh1-MRD] Phase 1 Federation and SSO related UCs.
- [LibertyPh2-MRD] Phase 2 AP registration at DS, SP DS Lookup and SP requests of attributes to AP related UCs.

6.5 Details

<table>
<thead>
<tr>
<th>Title/ID</th>
<th>Principal Requests Geographic Location from Another Principal</th>
</tr>
</thead>
</table>
| Pre conditions | 1. Principal-1 has an account with an IdP.  
2. Principal-1’s account is federated to SP (Principal has given permission for Principal’s identity to be shared by Principal’s IdP).  
3. Principal-1 is authenticated by Principal’s IdP.  
4. Principal-1 has attributes at an LP and has selected LP as provider of his/her positioning data (i.e., LP has registered at DS).  
5. Permissions for these attributes are available at LP.  
6. Principal-1 is accessing SP and has presented an authentication assertion with Principal’s DS indicator.  
7. Principal-2 is receiving service from SP.  
8. Principal-2 and SP know Principal-1 as P1-sp.  
9. Principal-1 is known by LP as P1-lp.  
10. P1-sp information is linked to P1-lp. |
| Constituents | Principal, DS, SP, LP |
### Use case

1. Principal-2 queries P1-sp’s positioning data.
2. SP issues a query to P1-sp’s DS requesting Principal-1’s LP.
3. DS replies with information so SP can reach LP with P1-lp’s information.
4. SP contacts LP requesting specific P1-lp positioning data.
5. LP evaluates applicable permission policies.
6. LP returns Principal-1’s geographical positioning data to SP.
7. SP returns Principal-1’s geographical positioning data to Principal-2.

### Post conditions

SP receives Principal-1’s geographical positioning data and delivers it to Principal-2 under SP service execution conditions.

### Alternate courses of action

Principal-1 may not have an account at SP, or might have a privacy policy set for anonymity in exposing location information. SP then would be still able to perform anonymous authentication requests and perform further requests of Principal-1’s positioning data.

LP may decide not to provide requested information to SP …

1. Requested data or permissions to disclose it not available at LP.
   - [LibertyPh2-MRD] Phase 2 Interaction service could be used in order to get the information.
   - Latest available value could be provided instead.
2. Incompatible Usage Directives.
3. Any error occurred at DS lookup or during actual attribute request to LP.
6.6 Graphical Description

The geo-location information is made available, through various means, to the LP Device Principle

Location Provider (wsp)

DS
(LP-Pseudo-P1)
(SP-Pseudo-P1)
Linkage

(LP-Pseudo-P1) Query

Access Service (Principal-1 location,
SP-P1)

Principal1 (LP-P1)

Response

Device

Principal2

Access Service

Figure 5. UC-7
7 New Glossary Terms

7.1 Term

Geo-Location  Information referring to a position.

LP  Location Provider.
8 References

http://projectliberty.org/liberty/content/download/1233/8003/file/liberty-glossary-v1.4.pdf


http://projectliberty.org/liberty/content/download/2204/14665/file/liberty-phase-1-mrd-v1.0.pdf

http://projectliberty.org/liberty/content/download/2206/14678/file/liberty-phase-2-mrd-v1.0.pdf