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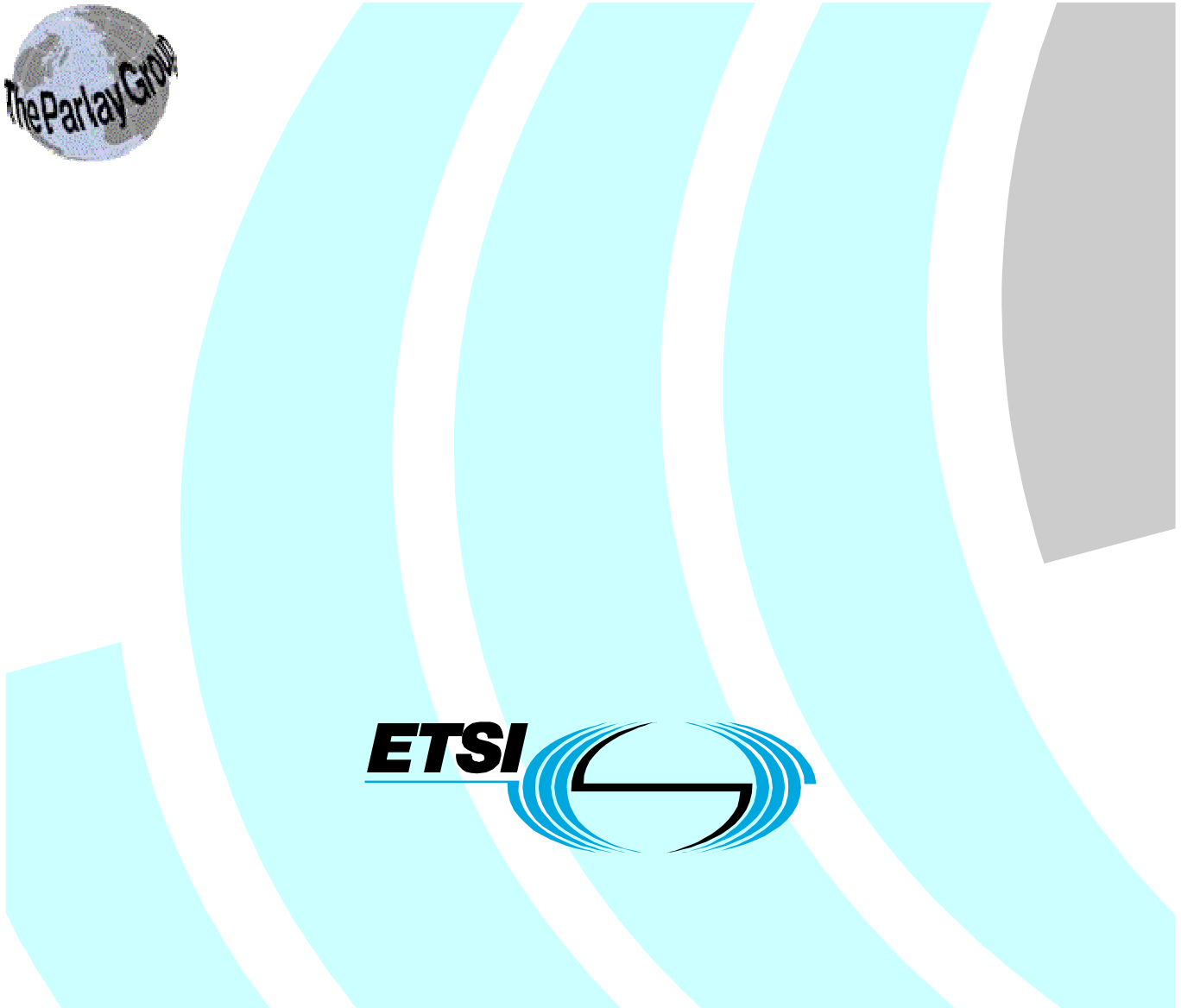
Technical Report

Open Service Access (OSA); Mapping of Parlay X Web Services to Parlay/OSA APIs; Part 9: Terminal Location Mapping; Sub-part 1: Mapping to Mobility User Location



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Contents

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Foreword

This Technical Report (TR) has been produced by ETSI Technical Committee Telecommunications and Internet converged Services and Protocols for Advanced Networking (TISPAN).

The present document is part 9, sub-part 1 of a multi-part deliverable covering Open Service Access (OSA); Mapping of Parlay X Web Services to Parlay/OSA APIs, as identified below:

Part 1: "Common Mapping";

Part 2: "Third Party Call Mapping";

Part 3: "Call Notification Mapping";

Part 4: "Short Messaging Mapping";

Part 5: "Multimedia Messaging Mapping";

Part 6: "Payment Mapping";

Part 7: "Account Management Mapping";

Part 8: "Terminal Status Mapping";

Part 9: "Terminal Location Mapping";

Sub-part 1: "Mapping to Mobility User Location";

Sub-part 2: "Mapping to Mobility User Location CAMEL";

Part 10: "Call Handling Mapping";

Part 11: "Audio Call Mapping";

Part 12: "Multimedia Conference Mapping";

Part 14: "Presence Mapping".

NOTE: Part 13 has not been provided as there is currently no defined mapping between ES 202 391-13 [5] and the Parlay/OSA APIs. If a mapping is developed, it will become part 13 of this series.

The present document has been defined jointly between ETSI, The Parlay Group (http://www.parlay.org) and the 3GPP.

1 Scope

The present document specifies the mapping of the Parlay X Terminal Location Web Service to the Mobility User Location Service Capability Feature (SCF).

The Parlay X Web Services provide powerful yet simple, highly abstracted, imaginative, telecommunications functions that application developers and the IT community can both quickly comprehend and use to generate new, innovative applications.

The Open Service Access (OSA) specifications define an architecture that enables application developers to make use of network functionality through an open standardized interface, i.e. the Parlay/OSA APIs.

2 References

For the purposes of this Technical Report (TR), the following references apply:

[1] ETSI TR 121 905: "Universal Mobile Telecommunications System (UMTS); Vocabulary for 3GPP Specifications (3GPP TR 21.905)".

[2] W3C Recommendation (2 May 2001): "XML Schema Part 2: Datatypes".

NOTE: Available at http://www.w3.org/TR/2001/REC-xmlschema-2-20010502/.

[3] ETSI TR 102 397-1: " Open Service Access (OSA); Mapping of Parlay X Web Services to Parlay/OSA APIs; Part 1: Common Mapping".

[4] ISO 6709: "Standard representation of latitude, longitude and altitude for geographic point locations".

[5] ETSI ES 202 391-13: "Open Service Access (OSA); Parlay X Web Services; Part 13: Address List Management".

3 Definitions and abbreviations

3.1 Definitions

For the purposes of the present document, the terms and definitions given in TR 102 397-1 [3] apply.

3.2 Abbreviations

For the purposes of the present document, the abbreviations given in TR 102 397-1 [3] apply.

4 Mapping description

The Terminal Location capability can be implemented with Parlay/OSA Mobility User Location.

It is applicable to ETSI OSA 1.x/2.x/3.x, Parlay/OSA 3.x/4.x/5.x and 3GPP Releases 4 to 6.

5 Sequence diagrams

5.1 Single address query

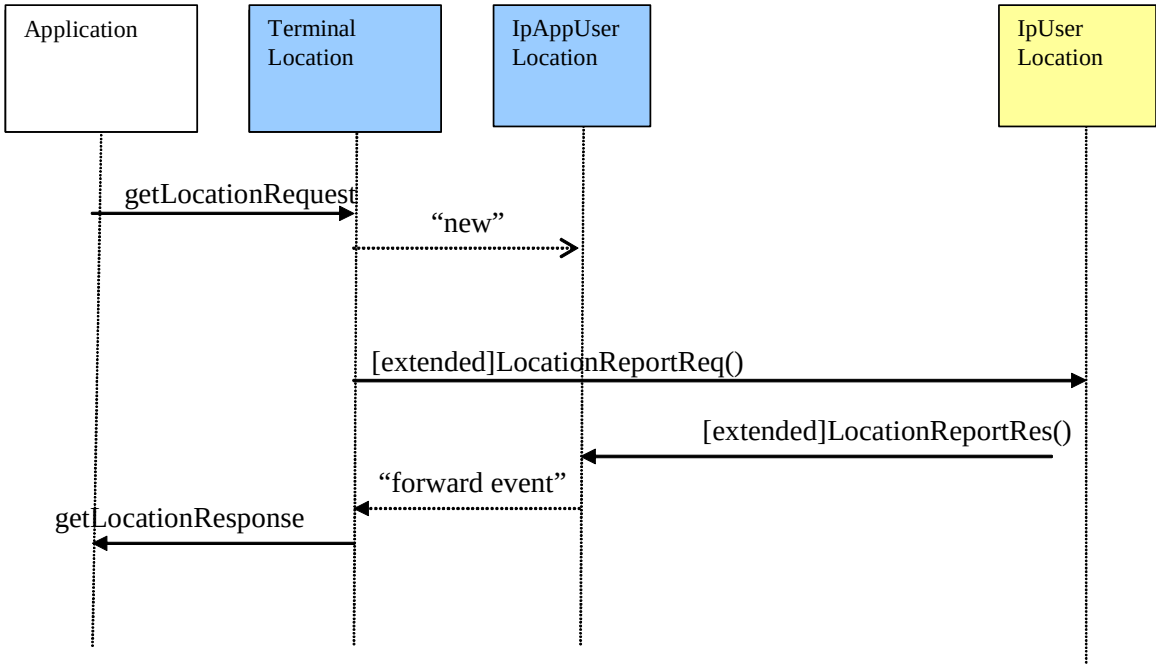

Figure 1

5.2 Group query

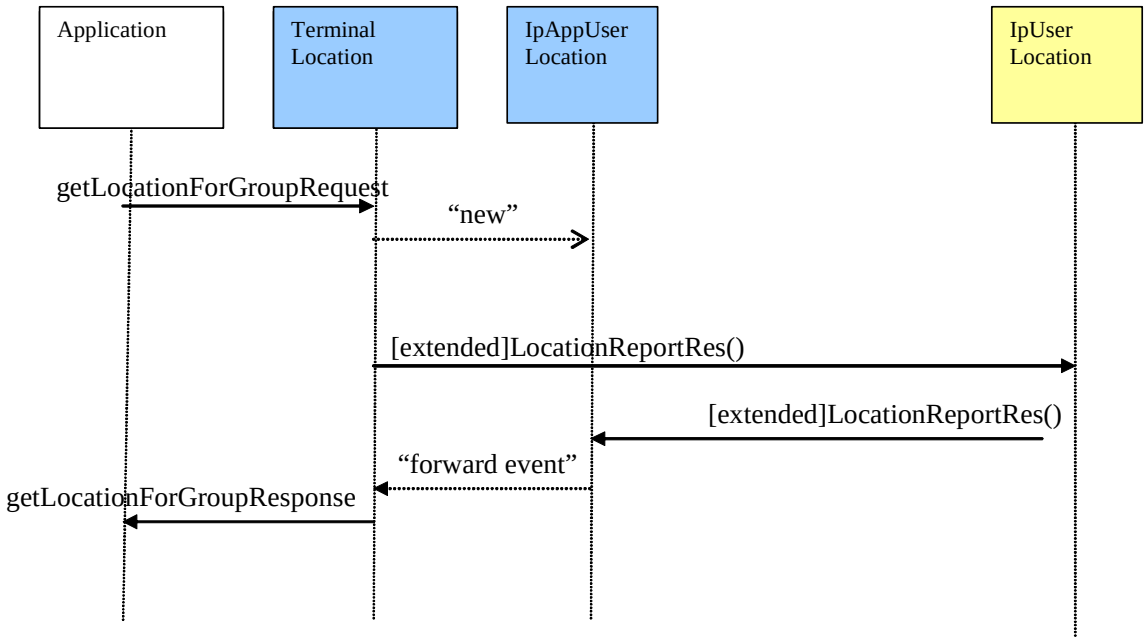

Figure 2

5.3 Notification

In the following sequence diagram, the yellow highlighted sub-sequence represents optional actions initiated by the Terminal Location web service, if the **checkImmediate** flag in the **startGeographicalNotificationRequest** message is enabled.

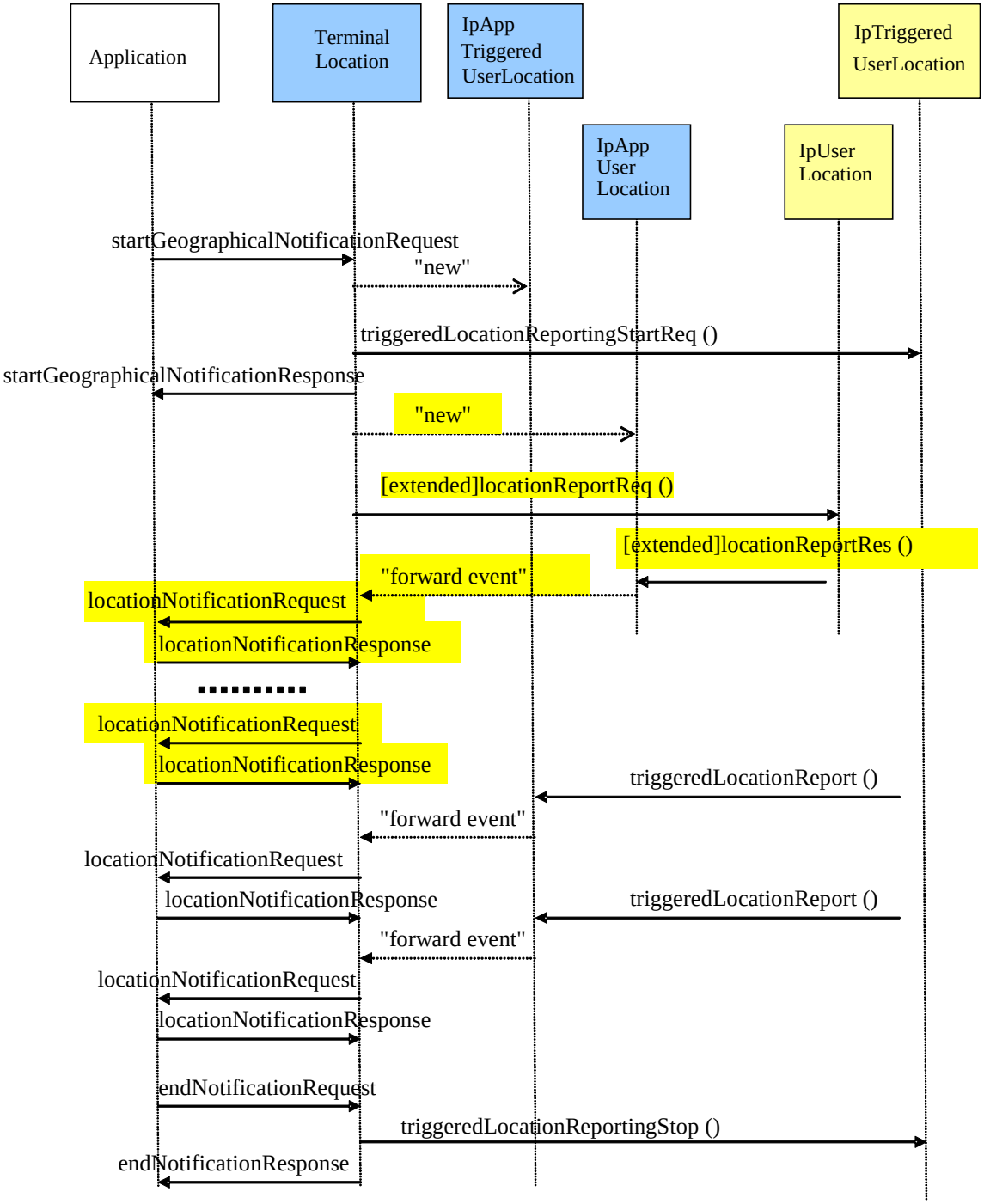

Figure 3

5.4 Periodic notification

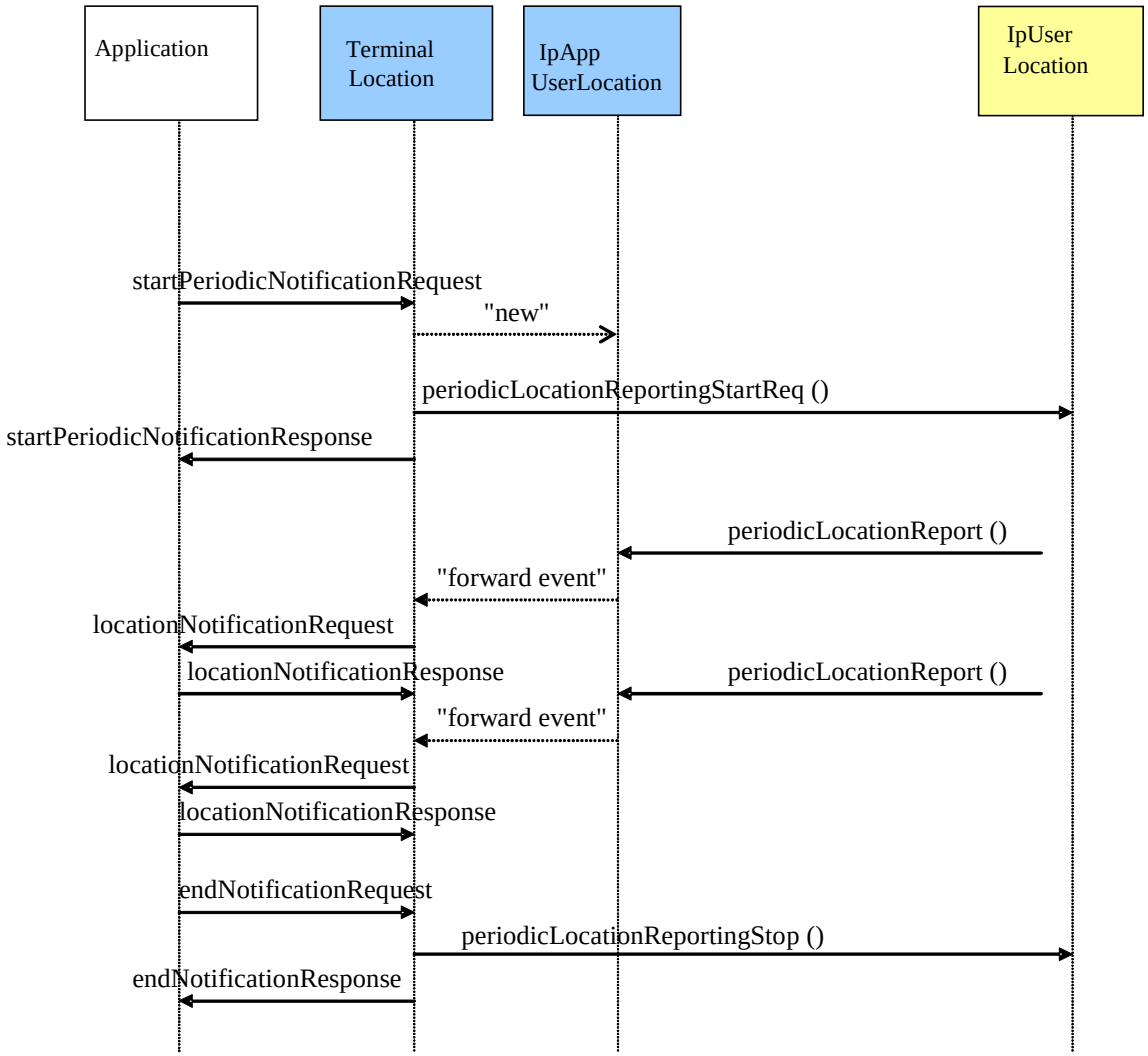

Figure 4

6 Detailed mapping information

6.1 Operations

6.1.1 getLocation

The sequence diagram in clause 5.1 illustrate the flow for this operation.

A synchronous service from the Parlay X client's point of view is mapped onto an asynchronous service from the Parlay client's point of view. It is mapped to the following Parlay/OSA methods:

- `IpUserLocation.extendedLocationReportReq;`
- `IpAppUserLocation.extendedLocationReportRes;`
- `IpAppUserLocation.extendedLocationReportErr.`

As shown in clause 5.1, an alternative mapping is possible where underlying network capabilities may be limited; for example altitude location information is not available. This mapping is to the following Parlay/OSA methods:

- `IpUserLocation.locationReportReq;`
- `IpAppUserLocation.locationReportRes;`
- `IpAppUserLocation.locationReportErr.`

6.1.1.1 Mapping to `IpUserLocation.extendedLocationReportReq`

The `IpUserLocation.extendedLocationReportReq` method is invoked with the following parameters.

Name	Type	Comment
appLocation	IpAppUserLocationRef	Not mapped . Reference to callback (internal).
users	TpAddressSet	Specifies a single address, which is constructed based on the URI provided in the **address** part of the **getLocationRequest** message, mapped as described in TR 102 397-1 [3].
request	TpLocationRequest	Specifies among others the requested location type, accuracy, response time and priority. See the discussion in clause 6.1.1.2 for mapping details.

The **acceptableAccuracy** part of the **getLocationRequest** message is not mapped to the `IpUserLocation.extendedLocationReportReq` method. Instead is is used to filter location information contained in the `IpAppUserLocation.extendedLocationReportRes` method, as described in clause 6.1.1.3.

The result from `IpUserLocation.extendedLocationReportReq` is of type `TpAssignmentID` and is used internally to correlate the callbacks. It is not mapped to the Parlay X interface.

Parlay exceptions thrown by `IpUserLocation.extendedLocationReportReq` are mapped to Parlay X exceptions as defined in clause 6.2.

6.1.1.2 Mapping to `TpLocationRequest`

The `request` parameter is constructed as follows.

Name	Type	Comment
RequestedAccuracy	TpFloat	Requested accuracy in meters. It is constructed using the value of the **requestedAccuracy** part.
RequestedResponse Time	TpLocationResponseTime	Not mapped. [Requested response time as a classified requirement or as an absolute timer. Assigned any of the supported values: `P_M_NO_DELAY, P_M_LOW_DELAY, P_M_DELAY_TOLERANT or P_M_USE_TIMER_VALUE`].
AltitudeRequested	TpBoolean	Altitude request flag. It is constructed using the value of the the web service policy **AltitudeSometimesAvailable**.
Type	TpLocationType	Not mapped. [The kind of location that is requested. Assigned either of the following values: `P_M_CURRENT` or `P_M_CURRENT_OR_LAST_KNOWN`].
Priority	TpLocationPriority	Not mapped. [Priority of location request. Assigned any of the supported values: `P_M_NORMAL` or `P_M_HIGH`].
RequestedLocation Method	TpString	Not mapped. [The kind of location method that is requested. Assigned any of the supported values: "`Time of Arrival`", "`Timing Advance`", "`GPS`", "`User Data Lookup`" or "`Any Time Interrogation`".].

6.1.1.3 Mapping from IpAppUserLocation.extendedLocationReportRes

The IpAppUserLocation.extendedLocationReportRes method is invoked with the following parameters.

Name	Type	Comment
assignmentId	TpAssignmentID	Not mapped. [The value provide in the result from IpUserLocation.extendedLocationReportReq].
locations	TpUserLocation ExtendedSet	Specifies the location of a single user. If the location data is valid, then it is mapped to the **result** part of the **getLocationResponse** message, which is a **LocationInfo** structure. If the location data is invalid, a Parlay X exception is raised. Determining the validity of the location data is described below.

The TpUserLocationExtended structure is mapped to the **LocationInfo** structure, or a Parlay X exception, as follows.

Name	Type	Comment
TpUserLocation Extended:StatusCode	TpMobilityError	If this element value is other than P_M_OK, then the location retrieval attempt has failed and the element error value is mapped to a Parlay X exception as defined in clause 6.2.
TpUserLocation Extended:UserID	TpAddress	This element is mapped to the **LocationInfo**:**Address** element, but only if the StatusCode element value is P_M_OK.
TpUserLocation Extended:Locations	TpUIExtendedDataSet	This element is present only if the StatusCode element value is P_M_OK. If present it is mapped to the elements of **LocationInfo** as detailed in clause 6.1.1.4. • However, if the mapped **Accuracy** value is greater than the value of the **acceptableAccuracy** part of the original **getLocationRequest** message, then the Parlay X exception **SVC0200: Accuracy out of limit** is returned instead.

6.1.1.4 Mapping from TpUIExtendedDataSet

The locations:Locations parameter consists of a single set element (of type TpUIExtendedData). The component fields of this element are mapped to the **LocationInfo** element as follows.

Name	Type	Comment
GeographicalPosition	TpGeographicalPosition	Specification of a position and an area of uncertainty. It is mapped to the elements of **LocationInfo** as follows: • Longitude maps to **Longitude;** • Latitude maps to **Latitude;** • TypeOfUncertaintyShape and all other related elements of the GeographicalPosition field map to **Accuracy**.
TerminalType	TpTerminalType	Not mapped. [Kind of terminal.]
AltitudePresent	TpBoolean	Not mapped. [Flag indicating if the altitude is present.]
Altitude	TpFloat	Specifies a decimal altitude in meters, which is mapped to the **Altitude** element of **LocationInfo**.
UncertaintyAltitude	TpFloat	Not mapped. [Uncertainty of the altitude.]
TimestampPresent	TpBoolean	Not mapped. [Flag indicating if the timestamp is present.]
Timestamp	TpDateAndTime	Specifies a timestamp indicating when the position was measured, which is mapped to the **Timestamp** element of **LocationInfo**.
UsedLocationMethod	TpString	Not mapped. [Specifies which location method was used.]

6.1.1.5 Mapping from `IpAppUserLocation.extendedLocationReportErr`

The `IpAppUserLocation.extendedLocationReportErr` method is invoked with the following parameters.

Name	Type	Comment
assignmentId	TpAssignmentID	Not mapped. [The value provide in the result from `IpUserLocation.extendedLocationReportReq`].
cause	TpMobilityError	Specifies the error and additional information that led to the failure. The error value/information is mapped to a Parlay X exception as defined in clause 6.2.
diagnostic	TpMobilityDiagnostic	

6.1.1.6 Alternative mapping to `IpUserLocation.locationReportReq`

The `IpUserLocation.locationReportReq` method is invoked with the following parameters.

Name	Type	Comment
appLocation	IpAppUserLocationRef	Not mapped . Reference to callback (internal).
users	TpAddressSet	Specifies a single address, which is constructed based on the URI provided in the **address** part of the **getLocationRequest** message, mapped as described in TR 102 397-1 [3].

The **requestedAccuracy** and **acceptableAccuracy** parts of the **getLocationRequest** message are not mapped to the `IpUserLocation.locationReportReq` method. The **acceptableAccuracy** part is used to filter location information contained in the `IpAppUserLocation.locationReportRes` method, as described in clause 6.1.1.7.

The result from `IpUserLocation.locationReportReq` is of type `TpAssignmentID` and is used internally to correlate the callbacks. It is not mapped to the Parlay X interface.

Parlay exceptions thrown by `IpUserLocation.locationReportReq` are mapped to Parlay X exceptions as defined in clause 6.2.

6.1.1.7 Alternative mapping from `IpAppUserLocation.locationReportRes`

The `IpAppUserLocation.locationReportRes` method is invoked with the following parameters.

Name	Type	Comment
assignmentId	TpAssignmentID	Not mapped. [The value provide in the result from `IpUserLocation.locationReportReq`].
locations	TpUserLocationSet	Specifies the location of a single user. If the location data is valid, then it is mapped to the **result** part of the **getLocationResponse** message, which is a **LocationInfo** structure. If the location data is invalid, a Parlay X exception is raised. Determining the validity of the location data is described below.

The TpUserLocation structure is mapped to the **LocationInfo** structure, or a Parlay X exception, as follows.

Name	Type	Comment
TpUserLocation: StatusCode	TpMobilityError	If this element value is other than P_M_OK, then the location retrieval attempt has failed and the element error value is mapped to a Parlay X exception as defined in clause 6.2.
TpUserLocation: UserID	TpAddress	This element is mapped to the **LocationInfo**:**Address** element, but only if the StatusCode element value is P_M_OK.
TpUserLocation: GeographicalPosition	TpGeographical Position	This element is present only if the StatusCode element value is P_M_OK. If present it specifies a position and an area of uncertainty. It is mapped to the elements of **LocationInfo** as follows: • Longitude maps to **Longitude;** • Latitude maps to **Latitude;** • TypeOfUncertaintyShape and all other related elements of the GeographicalPosition field map to **Accuracy**. • However, if the mapped **Accuracy** value is greater than the value of the **acceptableAccuracy** part of the original **getLocationRequest** message, then the Parlay X exception **SVC0200: Accuracy out of limit** is returned instead.

Note that there is no mapping to the **LocationInfo**:**Altitude** and **LocationInfo**:**Timestamp** elements of the **result** part of the **getLocationResponse** message.

6.1.1.8 Alternative mapping from IpAppUserLocation.locationReportErr

The IpAppUserLocation.locationReportErr method is invoked with the following parameters.

Name	Type	Comment
assignmentId	TpAssignmentID	Not mapped. [The value provide in the result from IpUserLocation.locationReportReq].
cause	TpMobilityError	Specifies the error and additional information that led to the failure. The error value/information is mapped to a Parlay X exception as defined in clause 6.2.
diagnostic	TpMobilityDiagnostic	

6.1.2 getLocationForGroup

The sequence diagram in clause 5.2 illustrate the flow for this operation.

A synchronous service from the Parlay X client's point of view is mapped onto an asynchronous service from the Parlay client's point of view. It is mapped to the following Parlay/OSA methods:

- IpUserLocation.extendedLocationReportReq;
- IpAppUserLocation.extendedLocationReportRes;
- IpAppUserLocation.extendedLocationReportErr.

As shown in clause 5.2, an alternative mapping is possible where underlying network capabilities may be limited; for example altitude location information is not available. This mapping is to the following Parlay/OSA methods:

- IpUserLocation.locationReportReq;
- IpAppUserLocation.locationReportRes;
- IpAppUserLocation.locationReportErr.

6.1.2.1 Mapping to `IpUserLocation.extendedLocationReportReq`

The `IpUserLocation.extendedLocationReportReq` method is invoked with the following parameters.

Name	Type	Comment
appLocation	IpAppUserLocationRef	Not mapped . Reference to callback (internal).
users	TpAddressSet	Specifies multiple addresses. Each address is constructed based on the URI provided in the **addresses** part of the **getLocationForGroupRequest** message, mapped as described in TR 102 397-1 [3].
request	TpLocationRequest	Specifies among others the requested location type, accuracy, response time and priority. See the discussion in clause 6.1.1.2 for mapping details.

The **acceptableAccuracy** part of the **getLocationForGroupRequest** message is not mapped to the `IpUserLocation.extendedLocationReportReq` method. Instead is is used to filter location information contained in the `IpAppUserLocation.extendedLocationReportRes` method, as described in clause 6.1.2.2.

The result from `IpUserLocation.extendedLocationReportReq` is of type `TpAssignmentID` and is used internally to correlate the callbacks. It is not mapped to the Parlay X interface.

Parlay exceptions thrown by `IpUserLocation.extendedLocationReportReq` are mapped to Parlay X exceptions as defined in clause 6.2.

6.1.2.2 Mapping from `IpAppUserLocation.extendedLocationReportRes`

The `IpAppUserLocation.extendedLocationReportRes` method is invoked with the following parameters.

Name	Type	Comment
assignmentId	TpAssignmentID	Not mapped. [The value provide in the result from `IpUserLocation.extendedLocationReportReq`].
locations	TpUserLocation ExtendedSet	Specifies the location of multiple users. It is mapped to the **result** part of the **getLocationForGroupResponse** message, which is a set of **LocationData** structures.

Each `TpUserLocationExtended` structure is mapped to a **LocationData** structure as follows.

Name	Type	Comment
TpUserLocation Extended:UserID	TpAddress	Mapped to the **LocationData**:**LocationInfo**:**Address** element.
TpUserLocation Extended:StatusCode	TpMobilityError	If this element value is other than `P_M_OK`, then the location retrieval attempt has failed for this user and the element error value is mapped to a Parlay X exception as defined in clause 6.2. This Parlay X exception is returned in the **LocationData**:**ErrorInformation** element and the **LocationData**:**ReportStatus** element is assigned a value of **Error**.
TpUserLocation Extended:Locations	TpUIExtendedDataSet	This element is present only if the `StatusCode` element value is `P_M_OK`. If present it is mapped to the **LocationData**:**LocationInfo** element as detailed in clause 6.1.1.4; in addition the **LocationData**:**ReportStatus** element is assigned a value of **Retrieved**. • However, if the mapped **Accuracy** value is greater than the value of the **acceptableAccuracy** part of the original **getLocationForGroupRequest** message, then the Parlay X exception **SVC0200: Accuracy out of limit** is returned instead in the **LocationData**:**ErrorInformation** element and the **LocationData**:**ReportStatus** element is re-assigned a value of **Error**.

In the event that a a `TpUserLocationExtended` element is missing for a requested address in the original request, then a **LocationData** element is included in the **result** part of the **getStatusForGroupResponse** message. This **LocationData** element contains the following values:

- LocationData:ReportStatus value = NotRetrieved.
- LocationData: LocationInfo:Address value = the missing address.

6.1.2.3 Mapping from `IpAppUserLocation.extendedLocationReportErr`

The `IpAppUserLocation.extendedLocationReportErr` method is invoked with the following parameters.

Name	Type	Comment
assignmentId	TpAssignmentID	Not mapped. [The value provide in the result from `IpUserLocation.extendedLocationReportReq`].
cause	TpMobilityError	Specifies the error and additional information that led to the failure. The error value/information is mapped to a Parlay X exception as defined in clause 6.2.
diagnostic	TpMobilityDiagnostic	

6.1.2.4 Alternative mapping to `IpUserLocation.locationReportReq`

The `IpUserLocation.locationReportReq` method is invoked with the following parameters.

Name	Type	Comment
appLocation	IpAppUserLocationRef	Not mapped . Reference to callback (internal).
users	TpAddressSet	Specifies multiple addresses. Each address is constructed based on the URI provided in the **addresses** part of the **getLocationForGroupRequest** message, mapped as described in TR 102 397-1 [3].

The **requestedAccuracy** and **acceptableAccuracy** parts of the **getLocationForGroupRequest** message are not mapped to the `IpUserLocation.locationReportReq` method. The **acceptableAccuracy** part is used to filter location information contained in the `IpAppUserLocation.locationReportRes` method, as described in clause 6.1.2.5.

The result from `IpUserLocation.locationReportReq` is of type `TpAssignmentID` and is used internally to correlate the callbacks. It is not mapped to the Parlay X interface.

Parlay exceptions thrown by `IpUserLocation.locationReportReq` are mapped to Parlay X exceptions as defined in clause 6.2.

6.1.2.5 Alternative mapping from `IpAppUserLocation.locationReportRes`

The `IpAppUserLocation.locationReportRes` method is invoked with the following parameters.

Name	Type	Comment
assignmentId	TpAssignmentID	Not mapped. [The value provide in the result from `IpUserLocation.locationReportReq`].
locations	TpUserLocationSet	Specifies the location of multiple users. It is mapped to the **result** part of the **getLocationForGroupResponse** message, which is a set of **LocationData** structures.

Each `TpUserLocation` structure is mapped to a **LocationData** structure as follows.

Name	Type	Comment
TpUserLocation: StatusCode	TpMobilityError	If this element value is other than `P_M_OK`, then the location retrieval attempt has failed for this user and the element error value is mapped to a Parlay X exception as defined in clause 6.2. This Parlay X exception is returned in the **LocationData**:**ErrorInformation** element and the **LocationData**:**ReportStatus** element is assigned a value of **Error**.
TpUserLocation: UserID	TpAddress	Mapped to the **LocationData**:**LocationInfo**:**Address** element.
TpUserLocation: GeographicalPosition	TpGeographical Position	This element is present only if the `StatusCode` element value is `P_M_OK`. If present it specifies a position and an area of uncertainty. It is mapped to the elements of **LocationData**:**LocationInfo** as follows; in addition the **LocationData**:**ReportStatus** element is assigned a value of **Retrieved**. • `Longitude` maps to **Longitude**. • `Latitude` maps to **Latitude**. • `TypeOfUncertaintyShape` and all other related elements of the `GeographicalPosition` field map to **Accuracy**. • However, if the mapped **Accuracy** value is greater than the value of the **acceptableAccuracy** part of the original **getLocationForGroupRequest** message, then the Parlay X exception **SVC0200: Accuracy out of limit** is returned instead in the **LocationData**:**ErrorInformation** element and the **LocationData**:**ReportStatus** element is re-assigned a value of **Error**.

Note that there is no mapping to the **LocationInfo**:**Altitude** and **LocationInfo**:**Timestamp** elements of the **result** part of the **getLocationResponse** message.

In the event that a a `TpUserLocation` element is missing for a requested address in the original request, then a **LocationData** element is included in the **result** part of the **getStatusForGroupResponse** message. This **LocationData** element contains the following values:

- LocationData:ReportStatus value = NotRetrieved.
- LocationData: LocationInfo:Address value = the missing address.

6.1.2.6 Alternative mapping from `IpAppUserLocation.locationReportErr`

The `IpAppUserLocation.locationReportErr` method is invoked with the following parameters.

Name	Type	Comment
assignmentId	TpAssignmentID	Not mapped. [The value provide in the result from `IpUserLocation.locationReportReq`].
cause	TpMobilityError	Specifies the error and additional information that led to the failure. The error value/information is mapped to a Parlay X exception as defined in clause 6.2.
diagnostic	TpMobilityDiagnostic	

6.1.3 getTerminalDistance

This operation is mapped to the same Parlay operations as the **getLocation** operation. The only difference between the operations is in the final distance calculation and the information presented to the caller.

A synchronous service from the Parlay X client's point of view is mapped onto an asynchronous service from the Parlay client's point of view. It is mapped to the following Parlay/OSA methods:

- `IpUserLocation.extendedLocationReportReq;`
- `IpAppUserLocation.extendedLocationReportRes;`
- `IpAppUserLocation.extendedLocationReportErr.`

An alternative mapping is possible to the following Parlay/OSA methods:

- `IpUserLocation.locationReportReq;`
- `IpAppUserLocation.locationReportRes;`
- `IpAppUserLocation.locationReportErr.`

6.1.3.1 Mapping to `IpUserLocation.extendedLocationReportReq`

The `IpUserLocation.extendedLocationReportReq` method is invoked with the following parameters.

Name	Type	Comment
appLocation	IpAppUserLocationRef	Not mapped . Reference to callback (internal).
users	TpAddressSet	Specifies a single address, which is constructed based on the URI provided in the **address** part of the **getTerminalDistanceRequest** message, mapped as described in TR 102 397-1 [3].
request	TpLocationRequest	Specifies among others the requested location type, accuracy, response time and priority. See the discussion in clause 6.1.3.2 for mapping details.

The **latitude** and **longitude** parts of the **getTerminalDistanceRequest** message are not mapped to the `IpUserLocation.extendedLocationReportReq` method. Instead they are used to compute distance information using the latitude and longitude location information returned in the `IpAppUserLocation.extendedLocationReportRes` method, as described in clause 6.1.3.3.

The result from `IpUserLocation.extendedLocationReportReq` is of type `TpAssignmentID` and is used internally to correlate the callbacks. It is not mapped to the Parlay X interface.

Parlay exceptions thrown by `IpUserLocation.extendedLocationReportReq` are mapped to Parlay X exceptions as defined in clause 6.2.

6.1.3.2 Mapping to `TpLocationRequest`

The `request` parameter is constructed as follows.

Name	Type	Comment
RequestedAccuracy	TpFloat	Not mapped. [Requested accuracy in meters. It is constructed using any value that conforms with the **MinimumAccuracy** web service policy.
RequestedResponse Time	TpLocationResponseTime	Not mapped. [Requested response time as a classified requirement or as an absolute timer. Assigned any of the supported values: `P_M_NO_DELAY, P_M_LOW_DELAY, P_M_DELAY_TOLERANT` or `P_M_USE_TIMER_VALUE`].
AltitudeRequested	TpBoolean	Altitude request flag. It is assigned the value "False"
Type	TpLocationType	Not mapped. [The kind of location that is requested. Assigned either of the following values: `P_M_CURRENT` or `P_M_CURRENT_OR_LAST_KNOWN`].
Priority	TpLocationPriority	Not mapped. [Priority of location request. Assigned any of the supported values: `P_M_NORMAL` or `P_M_HIGH`].
RequestedLocation Method	TpString	Not mapped. [The kind of location method that is requested. Assigned any of the supported values: "`Time of Arrival`", "`Timing Advance`", "`GPS`", "`User Data Lookup`" or "`Any Time Interrogation`".]

6.1.3.3 Mapping from `IpAppUserLocation.extendedLocationReportRes`

The `IpAppUserLocation.extendedLocationReportRes` method is invoked with the following parameters.

Name	Type	Comment
assignmentId	TpAssignmentID	Not mapped. [The value provide in the result from `IpUserLocation.extendedLocationReportReq`].
locations	TpUserLocation ExtendedSet	• Specifies the location of a single user. If the location data is valid, then it is mapped to the **result** part of the **getTerminalDistanceResponse** message. If the location data is invalid, a Parlay X exception is raised. Determining the validity of the location data is described below.

The `TpUserLocationExtended` structure is mapped to the **result** part of the **getTerminalDistanceResponse** message, or a Parlay X exception, as follows.

Name	Type	Comment
TpUserLocationExtended:StatusCode	TpMobilityError	If this element value is other than `P_M_OK`, then the location retrieval attempt has failed and the element error value is mapped to a Parlay X exception as defined in clause 6.2.
TpUserLocationExtended:UserID	TpAddress	`This element` is not mapped, but is the same value as the `users` parameter of the `IpUserLocation.extendedLocationReportReq` method.
TpUserLocationExtended:Locations	TpUIExtendedDataSet	This element is present only if the `StatusCode` element value is `P_M_OK`. If present, only the `GeographicalPosition` field is mapped, as follows: • `Longitude` and `Latitude` values are compared with the values of the **latitude** and **longitude** parts of the **getTerminalDistanceRequest** message to derive a distance value in meters for the **result** part of the **getTerminalDistanceResponse** message. • `TypeOfUncertaintyShape` and all other related elements of the `GeographicalPosition` field are used to derive an accuracy value that is compared with the value of the **MinimumAcceptableAccuracy** web service policy. --If the derived accuracy is unacceptable, then the Parlay X exception **SVC0200: Accuracy out of limit** is returned instead.

6.1.3.4 Mapping from IpAppUserLocation.extendedLocationReportErr

The IpAppUserLocation.extendedLocationReportErr method is invoked with the following parameters.

Name	Type	Comment
assignmentId	TpAssignmentID	Not mapped. [The value provide in the result from IpUserLocation.extendedLocationReportReq].
cause	TpMobilityError	Specifies the error and additional information that led to the failure. The error value/information is mapped to a Parlay X exception as defined in clause 6.2.
diagnostic	TpMobilityDiagnostic	

6.1.3.5 Alternative mapping to IpUserLocation.locationReportReq

The IpUserLocation.locationReportReq method is invoked with the following parameters.

Name	Type	Comment
appLocation	IpAppUserLocationRef	Not mapped . Reference to callback (internal).
users	TpAddressSet	Specifies a single address, which is constructed based on the URI provided in the **address** part of the **getTerminalDistanceRequest** message, mapped as described in TR 102 397-1 [3].

The **latitude** and **longitude** parts of the **getTerminalDistanceRequest** message are not mapped to the IpUserLocation.locationReportReq method. Instead they are used to compute distance information using the latitude and longitude location information returned in the IpAppUserLocation.locationReportRes method, as described in clause 6.1.3.6.

The result from IpUserLocation.locationReportReq is of type TpAssignmentID and is used internally to correlate the callbacks. It is not mapped to the Parlay X interface.

Parlay exceptions thrown by IpUserLocation.locationReportReq are mapped to Parlay X exceptions as defined in clause 6.2.

6.1.3.6 Alternative mapping from IpAppUserLocation.locationReportRes

The IpAppUserLocation.locationReportRes method is invoked with the following parameters.

Name	Type	Comment
assignmentId	TpAssignmentID	Not mapped. [The value provide in the result from IpUserLocation.locationReportReq].
locations	TpUserLocationSet	Specifies the location of a single user. If the location data is valid, then it is mapped to the **result** part of the **getTerminalDistanceResponse** message. If the location data is invalid, a Parlay X exception is raised. Determining the validity of the location data is described below.

The TpUserLocation structure is mapped to the **result** part of the **getTerminalDistanceResponse** message, or a Parlay X exception, as follows.

Name	Type	Comment
TpUserLocation: StatusCode	TpMobilityError	If this element value is other than P_M_OK, then the location retrieval attempt has failed and the element error value is mapped to a Parlay X exception as defined in clause 6.2.
TpUserLocation: UserID	TpAddress	This element is not mapped, but is the same value as the users parameter of the IpUserLocation.locationReportReq method.
TpUserLocation: GeographicalPosition	TpGeographical Position	This element is present only if the StatusCode element value is P_M_OK. If present, it specifies a position and an area of uncertainty. It is mapped as follows: • Longitude and Latitude values are compared with the values of the **latitude** and **longitude** parts of the **getTerminalDistanceRequest** message to derive a distance value in meters for the **result** part of the **getTerminalDistanceResponse** message • TypeOfUncertaintyShape and all other related elements of the GeographicalPosition field are used to derive an accuracy value that is compared with the value of the **MinimumAcceptableAccuracy** web service policy. • If the derived accuracy is unacceptable, then the Parlay X exception **SVC0200: Accuracy out of limit** is returned instead.

6.1.3.7 Alternative mapping from IpAppUserLocation.locationReportErr

The IpAppUserLocation.locationReportErr method is invoked with the following parameters.

Name	Type	Comment
assignmentId	TpAssignmentID	Not mapped. [The value provide in the result from IpUserLocation.locationReportReq].
cause	TpMobilityError	Specifies the error and additional information that led to the failure. The error value/information is mapped to a Parlay X exception as defined in clause 6.2.
diagnostic	TpMobilityDiagnostic	

6.1.4 startGeographicalNotification, locationNotification, locationError

The sequence diagram in clause 5.3 illustrates the flow of events when a client establishes a location notification request.

The Parlay X **startGeographicalNotification** service is mapped onto an invocation of the Parlay IpTriggeredUserLocation.triggeredLocationReportingStartReq service, establishing a location notification request. When network events occur, the Parlay notification services IpAppTriggeredUserLocation.triggeredLocationReport and IpAppTriggeredUserLocation.triggeredLocationReportErr occur. These are mapped onto the Parlay X **locationNotification** and **locationError** notification services.

If the **checkImmediate** part is set to true, then terminal status is checked immediately after establishment of the status notification request. If the vendor implementation of the Parlay/OSA API does not implicitly perform this immediate check, then the check must be explicitly performedusing the same Parlay/OSA services as described in clause 6.1.2 ,i.e. IpUserLocation.[extended]LocationReportReq. The associated Parlay notification services IpAppUserLocation.[extended]LocationReportRes and IpAppUserLocation. [extended]LocationReportErr are also mapped onto the Parlay X **locationNotification** and **locationError** notification services.

If the value of the **duration** part exceeds the time allowed in the web service **MaximumNotificationDuration** policy, then the value in the service policy will be used. If the notification period (**duration**) ends before all of the notifications (**count**) have been delivered, then the notification terminates. In all cases, when the notifications have run their course (by **duration** or **count**), an end of notifications message (**locationEndRequest** message) will be provided to the application and the IpTriggeredUserLocation.triggeredLocationReportingStop method will be invoked.

The Geographical Notification related operations are mapped to/from the following Parlay/OSA methods:

- `IpTriggeredUserLocation.triggeredLocationReportingStartReq;`
- `IpUserLocation.[extended]LocationReportReq` (i.e. for the **checkImmediate** function);
- `IpTriggeredUserLocation.triggeredLocationReportingStop;`
- `IpAppTriggeredUserLocation.triggeredLocationReport;`
- `IpAppTriggeredUserLocation.triggeredLocationReportErr;`
- `IpAppUserLocation.[extended]LocationReportRes` (i.e. for the **checkImmediate** function);
- `IpAppUserLocation.[extended]LocationReportErr` (i.e. for the **checkImmediate** function).

6.1.4.1 Mapping to `IpTriggeredUserLocation.triggeredLocationReportingStartReq`

The `IpTriggeredUserLocation.triggeredLocationReportingStartReq` method is invoked with the following parameters.

Name	Type	Comment
appLocation	IpAppTriggeredUser LocationRef	Reference to callback for receiving notifications. Correlated internally with the endpoint for the corresponding Parlay X location notification service specified in the **reference** part of the **startGeographicalNotificationRequest** message.
users	TpAddressSet	Specifies a set of addresses for which the location shall be reported. They are constructed from the URIs provided in the **addresses** part of the **startGeographicalNotificationRequest** message, mapped as described in TR 102 397-1 [3].
request	TpLocationRequest	Specifies among others the requested location type, accuracy, response time and priority. See the discussion in clause 6.1.3.2 for mapping details.
triggers	TpLocationTriggerSet	Specifies the trigger conditions. See the discussion in clause 6.1.4.2 for mapping details.

The result from `IpTriggeredUserLocation.triggeredLocationReportingStartReq` is of type `TpAssignmentID` and is used internally to correlate the callbacks. It is correlated internally with the endpoint for the corresponding Parlay X location notification service specified in the **reference** part of the **startGeographicalNotificationRequest** message.

Parlay exceptions thrown by `IpTriggeredUserLocation.triggeredLocationReportingStartReq` are mapped to Parlay X exceptions as defined in clause 6.2.

6.1.4.2 Mapping to `TpLocationTriggerSet`

The `triggers` parameter consists of a single set element, which is constructed as follows.

Name	Type	Comment
Longitude	TpFloat	Longitude of the position used in the trigger. It is set to the value of the **longitude** part.
Latitude	TpFloat	Latitude of the position used in the trigger. It is set to the value of the **latitude** part.
AreaSemiMajor	TpFloat	Semi major of ellipse area used in the trigger. It is set to the value of the **radius** part.
AreaSemiMinor	TpFloat	Semi minor of ellipse area used in the trigger. It is set to the value of the **radius** part.
AngleOfSemiMajor	TpInt32	Angle of the semi major of the ellipse area used in the trigger. It is assigned a value of zero.
Criterion	TpLocationTriggerCriteria	Trigger criteria with regard to the ellipse area. It is set to the value of the **criteria** part.
ReportingInterval	TpDuration	Duration between generated location reports. It is constructed from the value of the **frequency** part, provided this value conforms with the value of the **MaximumNotificationFrequency** web service policy. If it does not conform, then the policy value is assigned instead.

6.1.4.3 Mapping to `IpUserLocation.extendedLocationReportReq`

If the **checkImmediate** part of the **startGeographicalNotificationRequest** message is set to true, then terminal status is checked immediately after establishment of the status notification request. If the vendor implementation of the Parlay/OSA API does not implicitly perform this immediate check, then the check must be explicitly invoked.

The `IpUserLocation.extendedLocationReportReq` method is invoked with the following parameters.

Name	Type	Comment
appLocation	IpAppUserLocationRef	Reference to callback (internal), which is correlated with the endpoint for the corresponding Parlay X location notification service specified in the **reference** part of the **startGeographicalNotificationRequest** message.
users	TpAddressSet	Specifies a set of addresses for which the location shall be reported. They are constructed from the URIs provided in the **addresses** part of the **startGeographicalNotificationRequest** message, mapped as described in TR 102 397-1 [3].
request	TpLocationRequest	Specifies among others the requested location type, accuracy, response time and priority. See the discussion in clause 6.1.3.2 for mapping details.

The result from `IpUserLocation.extendedLocationReportReq` is of type `TpAssignmentID` and is used internally to correlate the callbacks. It is correlated internally with the endpoint for the corresponding Parlay X location notification service specified in the **reference** part of the **startGeographicalNotificationRequest** message.

A Parlay exception thrown by `IpUserLocation.extendedLocationReportReq` is mapped to a Parlay X exception as defined in clause 6.2. This Parlay X exception is reported to the Parlay X application (at the endpoint specified in the **reference** part of the **startGeographicalNotificationRequest** message) in the **reason** part of a **locationErrorRequest** message. The **address** part of this message is null, indicating that the error applies to the whole notification. The **correlator** part of this message is also derived from the **reference** part of the **startGeographicalNotificationRequest** message.

6.1.4.4 Mapping to `IpTriggeredUserLocation.triggeredLocationReportingStop`

When the notifications have run their course (by **duration** or **count**), the `IpTriggeredUserLocation.triggeredLocationReportingStop` method will be invoked with the following parameters.

Name	Type	Comment
stopRequest	TpMobilityStop AssignmentData	Specifies that the whole of the assignment shall be stopped, as follows: • AssignmentId = the result from the`IpTriggeredUserLocation.triggeredLocationReportingStartReq` method invocation • StopScope = `P_M_ALL_IN_ASSIGNMENT` • Users = null set.

Irrespective of the result returned from this method invocation, the **locationEndRequest** message is sent to the Parlay X application (at the endpoint specified in the **reference** part of the **startGeographicalNotificationRequest** message)

6.1.4.5 Mapping from `IpAppTriggeredUserLocation.triggeredLocationReport`

The `IpAppTriggeredUserLocation.triggeredLocationReport` method is invoked with the following parameters.

Name	Type	Comment
assignmentId	TpAssignmentID	Not mapped. [The value provide in the result from the `IpTriggeredUserLocation.triggeredLocationReportingStartReq`].
location	TpUserLocation Extended	Specifies the location of a single user. If the location data is valid, then it is mapped to the **data** part of a **locationNotificationRequest** message, which is a **LocationInfo** structure. If the location data is invalid, then notifications for this user are cancelled and a Parlay X exception is returned in the **reason** part of a **locationErrorRequest** message. Both message types are delivered to the Parlay X application at the endpoint specified in the **reference** part of the **startGeographicalNotificationRequest** message; the latter also defines the value of the **correlator** part of both message types. Determining the validity of the location data is described below.

The `TpUserLocationExtended` structure is mapped to the **LocationInfo** structure, or a Parlay X exception, as follows.

Name	Type	Comment
TpUserLocation Extended: StatusCode	TpMobilityError	If this element value is other than `P_M_OK`, then the location retrieval attempt has failed and the element error value is mapped to a Parlay X exception as defined in clause 6.2. • This Parlay X exception is reported to the Parlay X application in the **reason** part of a **locationErrorRequest** message.
TpUserLocation Extended:UserID	TpAddress	This element is mapped to either the **data** part of a **locationNotificationRequest** message, i.e. the **LocationInfo**:**Address** element or the **address** part of a **locationErrorRequest** message.
TpUserLocation Extended:Locations	TpUIExtendedDataSet	This element is present only if the `StatusCode` element value is `P_M_OK`. If present it is mapped to the **data** part of a **locationNotificationRequest** message as detailed in clause 6.1.1.4. • However, if the mapped **Accuracy** value does not conform with the value of the **MinimumAcceptableAccuracy** web service policy, then the Parlay X exception **SVC0200: Accuracy out of limit** is returned instead in the **reason** part of a **locationErrorRequest** message.
criterion	TpLocationTrigger Criteria	Specifies the criterion that triggered the report. If the other location data is valid, thenit is mapped to the **criteria** part of a **locationNotificationRequest** message. Otherwise, it is ignored.

6.1.4.6 Mapping from `IpAppTriggeredUserLocation.triggeredLocationReportErr`

The `IpAppTriggeredUserLocation.triggeredLocationReportErr` method is invoked with the following parameters.

Name	Type	Comment
assignmentId	TpAssignmentID	Not mapped. [The value provide in the result from `IpTriggeredUserLocation.triggeredLocationReportingStartReq`].
cause	TpMobilityError	Specifies the error and additional information that led to the failure. The error value/information is mapped to a Parlay X exception as defined in clause 6.2. • This Parlay X exception is reported to the Parlay X application (at the endpoint specified in the **reference** part of the **startGeographicalNotificationRequest** message) in the **reason** part of a **locationErrorRequest** message. The **address** part of this message is null, indicating that the error applies to the whole notification. The **correlator** part of this message is also derived from the **reference** part of the **startGeographicalNotificationRequest** message.
diagnostic	TpMobilityDiagnostic	

6.1.4.7 Mapping from `IpAppUserLocation.extendedLocationReportRes`

The `IpAppUserLocation.extendedLocationReportRes` method is invoked with the following parameters.

Name	Type	Comment
assignmentId	TpAssignmentID	Not mapped. [The value provide in the result from `IpUserLocation.extendedLocationReportReq`].
locations	TpUserLocation ExtendedSet	Specifies the location of multiple users. For each user, if the location data is valid, then it is mapped to the **data** part of a **locationNotificationRequest** message, which is a **LocationInfo** structure. For each user with invalid location data, the notifications for this user are cancelled and a Parlay X exception is returned in the **reason** part of a **locationErrorRequest** message. Both message types are delivered to the Parlay X application at the endpoint specified in the **reference** part of the **startGeographicalNotificationRequest** message; the latter also defines the value of the **correlator** part of both message types. Determining the validity of the location data for each user is described below.

Each `TpUserLocationExtended` structure is mapped to a **LocationInfo** structure, or a Parlay X exception, as follows.

Name	Type	Comment
TpUserLocation Extended: StatusCode	TpMobilityError	If this element value is other than `P_M_OK`, then the location retrieval attempt has failed for this user and the element error value is mapped to a Parlay X exception as defined in clause 6.2. • This Parlay X exception is reported to the Parlay X application in the **reason** part of a **locationErrorRequest** message.
TpUserLocation Extended:UserID	TpAddress	This element is mapped to either the **data** part of a **locationNotificationRequest** message, i.e. the **LocationInfo**:**Address** element, or the **address** part of a **locationErrorRequest** message.
TpUserLocation Extended:Locations	TpUIExtendedDataSet	This element is present only if the `StatusCode` element value is `P_M_OK`. If present it is mapped to the **data** part of a **locationNotificationRequest** message as detailed in clause 6.1.1.4. • However, if the mapped **Accuracy** value does not conform with the value of the **MinimumAcceptableAccuracy** web service policy, then the Parlay X exception **SVC0200: Accuracy out of limit** is returned instead in the **reason** part of a **locationErrorRequest** message.

Note that, for this explicit implementation of the "check immediate" capability, there is no mapping from the parameters of the `IpAppUserLocation.extendedLocationReportRes` method to the **criteria** part of a **locationNotificationRequest** message.

6.1.4.8 Mapping from `IpAppUserLocation.extendedLocationReportErr`

The `IpAppUserLocation.extendedLocationReportErr` method is invoked with the following parameters.

Name	Type	Comment
assignmentId	TpAssignmentID	Not mapped. [The value provide in the result from `IpUserLocation.extendedLocationReportReq`].
cause	TpMobilityError	Specifies the error and additional information that led to the failure. The error value/information is mapped to a Parlay X exception as defined in clause 6.2. • This Parlay X exception is reported to the Parlay X application (at the endpoint specified in the **reference** part of the **startGeographicalNotificationRequest** message) in the **reason** part of a **locationErrorRequest** message. The **address** part of this message is null, indicating that the error applies to the whole notification. The **correlator** part of this message is also derived from the **reference** part of the **startGeographicalNotificationRequest** message.
diagnostic	TpMobilityDiagnostic	

6.1.4.9 Alternative mapping to `IpUserLocation.locationReportReq`

If the **checkImmediate** part of the **startGeographicalNotificationRequest** message is set to true, then terminal status is checked immediately after establishment of the status notification request. If the vendor implementation of the Parlay/OSA API does not implicitly perform this immediate check, then the check must be explicitly invoked. One option is to invoke the `IpUserLocation.extendedLocationReportReq` method, as described in clause 6.1.4.3. An alternative, discussed here and in the following clauses, is to invoke the `Ip(App)UserLocation.locationReportReq/Res/Err` methods.

The `IpUserLocation.locationReportReq` method is invoked with the following parameters.

Name	Type	Comment
appLocation	IpAppUserLocationRef	Reference to callback (internal), which is correlated with the endpoint for the corresponding Parlay X location notification service specified in the **reference** part of the **startGeographicalNotificationRequest** message.
users	TpAddressSet	Specifies a set of addresses for which the location shall be reported. They are constructed from the URIs provided in the **addresses** part of the **startGeographicalNotificationRequest** message, mapped as described in TR 102 397-1 [3].

The result from `IpUserLocation.locationReportReq` is of type `TpAssignmentID` and is used internally to correlate the callbacks. It is correlated internally with the endpoint for the corresponding Parlay X location notification service specified in the **reference** part of the **startGeographicalNotificationRequest** message.

A Parlay exception thrown by `IpUserLocation.locationReportReq` is mapped to a Parlay X exception as defined in clause 6.2. This Parlay X exception is reported to the Parlay X application (at the endpoint specified in the **reference** part of the **startGeographicalNotificationRequest** message) in the **reason** part of a **locationErrorRequest** message. The **address** part of this message is null, indicating that the error applies to the whole notification. The **correlator** part of this message is also derived from the **reference** part of the **startGeographicalNotificationRequest** message.

6.1.4.10 Alternative mapping from `IpAppUserLocation.locationReportRes`

The `IpAppUserLocation.locationReportRes` method is invoked with the following parameters.

Name	Type	Comment
assignmentId	TpAssignmentID	Not mapped. [The value provide in the result from `IpUserLocation.locationReportReq`].
locations	TpUserLocationSet	Specifies the location of multiple users. For each user, if the location data is valid, then it is mapped to the **data** part of a **locationNotificationRequest** message, which is a **LocationInfo** structure. For each user with invalid location data, the notifications for this user are cancelled and a Parlay X exception is returned in the **reason** part of a **locationErrorRequest** message. Both message types are delivered to the Parlay X application at the endpoint specified in the **reference** part of the **startGeographicalNotificationRequest** message; the latter also defines the value of the **correlator** part of both message types. Determining the validity of the location data for each user is described below.

Each `TpUserLocation` structure is mapped to a **LocationInfo** structure, or a Parlay X exception, as follows.

Name	Type	Comment
TpUserLocation: StatusCode	TpMobilityError	If this element value is other than `P_M_OK`, then the location retrieval attempt has failed for this user and the element error value is mapped to a Parlay X exception as defined in clause 6.2. • This Parlay X exception is reported to the Parlay X application in the **reason** part of a **locationErrorRequest** message.
TpUserLocation: UserID	TpAddress	This element is mapped to either the **data** part of a **locationNotificationRequest** message, i.e. the **LocationInfo**:**Address** element, or the **address** part of a **locationErrorRequest** message.
TpUserLocation: GeographicalPosition	TpGeographical Position	This element is present only if the `StatusCode` element value is `P_M_OK`. If present it specifies a position and an area of uncertainty. It is mapped to the **data** part of a **locationNotificationRequest** message (i.e. elements of **LocationInfo**) as follows. • `Longitude` maps to **Longitude**. • `Latitude` maps to **Latitude**. • `TypeOfUncertaintyShape` and all other related elements of the `GeographicalPosition` field map to **Accuracy**. • However, if the mapped **Accuracy** value does not conform with the value of the **MinimumAcceptableAccuracy** web service policy, then the Parlay X exception **SVC0200: Accuracy out of limit** is returned instead in the **reason** part of a **locationErrorRequest** message.

Note that there is no mapping to the **Altitude** and **Timestamp** elements of the **LocationInfo** instances returned in the **data** part of the **locationNotificationRequest** message.

Note also that, for this explicit implementation of the "check immediate" capability, there is no mapping from the parameters of the `IpAppUserLocation.locationReportRes` method to the **criteria** part of a **locationNotificationRequest** message.

6.1.4.11 Alternative mapping from `IpAppUserLocation.locationReportErr`

The `IpAppUserLocation.locationReportErr` method is invoked with the following parameters.

Name	Type	Comment
assignmentId	TpAssignmentID	Not mapped. [The value provide in the result from `IpUserLocation.locationReportReq`].
cause	TpMobilityError	Specifies the error and additional information that led to the failure. The error value/information is mapped to a Parlay X exception as defined in clause 6.2. • This Parlay X exception is reported to the Parlay X application (at the endpoint specified in the **reference** part of the **startGeographicalNotificationRequest** message) in the **reason** part of a **locationErrorRequest** message. The **address** part of this message is null, indicating that the error applies to the whole notification. The **correlator** part of this message is also derived from the **reference** part of the **startGeographicalNotificationRequest** message.
diagnostic	TpMobilityDiagnostic	

6.1.5 startPeriodicNotification, locationNotification, locationError

The sequence diagram in clause 5.4 illustrates the flow of events when a client establishes a periodic location notification request.

The Parlay X **startPeriodicNotification** service is mapped onto an invocation of the Parlay `IpUserLocation.periodicLocationReportingStartReq` service, establishing a periodic location notification request. When network events occur, the Parlay notification services `IpAppUserLocation.periodicLocationReport` and `IpAppUserLocation.periodicLocationReportErr` occur. These are mapped onto the Parlay X **locationNotification** and **locationError** notification services.

If the value of the **duration** part exceeds the time allowed in the web service **MaximumNotificationDuration** policy, then the value in the service policy will be used. When the notifications have run their course (by **duration**), an end of notifications message (**locationEndRequest** message) will be provided to the application and the `IpUserLocation.periodicLocationReportingStop` method will be invoked.

The Periodic Notification related operations are mapped to/from the following Parlay/OSA methods:

- `IpUserLocation.periodicLocationReportingStartReq;`
- `IpUserLocation.periodicLocationReportingStop;`
- `IpAppUserLocation.periodicLocationReport;`
- `IpAppUserLocation.periodicLocationReportErr.`

6.1.5.1 Mapping to `IpUserLocation.periodicLocationReportingStartReq`

The `IpUserLocation.periodicLocationReportingStartReq` method is invoked with the following parameters.

Name	Type	Comment
appLocation	IpAppUser LocationRef	Reference to callback for receiving notifications. Correlated internally with the endpoint for the corresponding Parlay X location notification service specified in the **reference** part of the **startPeriodicNotificationRequest** message.
users	TpAddressSet	Specifies a set of addresses for which the location shall be reported. They are constructed from the URIs provided in the **addresses** part of the **startPeriodicNotificationRequest** message, mapped as described in TR 102 397-1 [3].
request	TpLocationRequest	Specifies among others the requested location type, accuracy, response time and priority. See the discussion in clause 6.1.1.2 for mapping details.
reportingInterval	TpDuration	Specifies the requested interval in seconds between the reports. It is derived from the value of the **frequency** part.

The result from `IpUserLocation.periodicLocationReportingStartReq` is of type `TpAssignmentID` and is used internally to correlate the callbacks. It is correlated internally with the endpoint for the corresponding Parlay X location notification service specified in the **reference** part of the **startPeriodicNotificationRequest** message.

Parlay exceptions thrown by `IpUserLocation.periodicLocationReportingStartReq` are mapped to Parlay X exceptions as defined in clause 6.2.

6.1.5.2 Mapping to `IpUserLocation.periodicLocationReportingStop`

When the notifications have run their course (by **duration**), the `IpUserLocation.periodicLocationReportingStop` method will be invoked with the following parameters.

Name	Type	Comment
stopRequest	TpMobilityStop AssignmentData	Specifies that the whole of the assignment shall be stopped, as follows: • AssignmentId = the result from the `IpUserLocation.periodicLocationReportingStartReq` method invocation • StopScope = `P_M_ALL_IN_ASSIGNMENT` • Users = null set.

Irrespective of the result returned from this method invocation, the **locationEndRequest** message is sent to the Parlay X application (at the endpoint specified in the **reference** part of the **startPeriodicNotificationRequest** message).

6.1.5.3 Mapping from `IpAppUserLocation.periodicLocationReport`

The `IpAppUserLocation.periodicLocationReport` method is invoked with the following parameters.

Name	Type	Comment
assignmentId	TpAssignmentID	Not mapped. [The value provide in the result from the `IpUserLocation.periodicLocationReportingStartReq`].
locations	TpUserLocation ExtendedSet	• Specifies the location of one or more users. For each user, if the location data is valid, then it is mapped to the **data** part of a **locationNotificationRequest** message, which is a **LocationInfo** structure. For each user with invalid location data, the notifications for this user are cancelled and a Parlay X exception is returned in the **reason** part of a **locationErrorRequest** message. Both message types are delivered to the Parlay X application at the endpoint specified in the **reference** part of the **startPeriodicNotificationRequest** message; the latter also defines the value of the **correlator** part of both message types. Determining the validity of the location data for each user is described below.

Each `TpUserLocationExtended` structure is mapped to a **LocationInfo** structure, or a Parlay X exception, as follows.

Name	Type	Comment
TpUserLocation Extended: StatusCode	TpMobilityError	If this element value is other than `P_M_OK`, then the location retrieval attempt has failed and the element error value is mapped to a Parlay X exception as defined in clause 6.2. • This Parlay X exception is reported to the Parlay X application in the **reason** part of a **locationErrorRequest** message.
TpUserLocation Extended:UserID	TpAddress	This element is mapped to either the **data** part of a **locationNotificationRequest** message, i.e. the **LocationInfo**:**Address** element, or the **address** part of a **locationErrorRequest** message.
TpUserLocation Extended:Locations	TpUIExtendedDataSet	This element is present only if the `StatusCode` element value is `P_M_OK`. If present it is mapped to the **data** part of a **locationNotificationRequest** message as detailed in clause 6.1.1.4. • However, if the mapped **Accuracy** value does not conform with the value of the **MinimumAcceptableAccuracy** web service policy, then the Parlay X exception **SVC0200: Accuracy out of limit** is returned instead in the **reason** part of a **locationErrorRequest** message.

6.1.5.4 Mapping from IpAppUserLocation.periodicLocationReportErr

The IpAppUserLocation.periodicLocationReportErr method is invoked with the following parameters.

Name	Type	Comment
assignmentId	TpAssignmentID	Not mapped. [The value provide in the result from IpUserLocation.periodicLocationReportingStartReq].
cause	TpMobilityError	Specifies the error and additional information that led to the failure. The error value/information is mapped to a Parlay X exception as defined in clause 6.2. • This Parlay X exception is reported to the Parlay X application (at the endpoint specified in the **reference** part of the **startPeriodicNotificationRequest** message) in the **reason** part of a **locationErrorRequest** message. The **address** part of this message is null, indicating that the error applies to the whole notification. The **correlator** part of this message is also derived from the **reference** part of the **startPeriodicNotificationRequest** message.
diagnostic	TpMobilityDiagnostic	

6.1.6 endNotification

The sequence diagrams in clauses 5.3 and 5.4 also illustrate the flow of events when a location notification request, or a periodic location notification request is terminated.

6.1.6.1 Mapping to IpTriggeredUserLocation.triggeredLocationReporting Stop

In the case of a geographical location notification, the Parlay X **endNotification** service is mapped onto an invocation of the Parlay IpTriggeredUserLocation.triggeredLocationReportingStop service, terminating the notification request.

This method is invoked with the following parameters.

Name	Type	Comment
stopRequest	TpMobilityStop AssignmentData	Specifies that the whole of the assignment shall be stopped, as follows: • AssignmentId = the result from theIpTriggeredUserLocation.triggeredLocationReportingStartReq method invocation • StopScope = P_M_ALL_IN_ASSIGNMENT • Users = null set.

Parlay exceptions thrown by IpTriggeredUserLocation.triggeredLocationReportingStop are mapped to Parlay X exceptions as defined in clause 6.2.

6.1.6.2 Mapping to IpUserLocation.periodicLocationReportingStop

In the case of a periodic location notification, the Parlay X **endNotification** service is mapped onto an invocation of the Parlay IpUserLocation.periodicLocationReportingStop service, terminating the notification request.

This method is invoked with the following parameters.

Name	Type	Comment
stopRequest	TpMobilityStop AssignmentData	Specifies that the whole of the assignment shall be stopped, as follows: • AssignmentId = the result from the IpUserLocation. periodicLocationReportingStartReq method invocation • StopScope = P_M_ALL_IN_ASSIGNMENT • Users = null set.

Parlay exceptions thrown by `IpUserLocation.periodicLocationReportingStop` are mapped to Parlay X exceptions as defined in clause 6.2.

6.1.7 locationEnd

The **locationEnd** notification is called when the notification ends due to the end of the duration being met, or when the count of notifications has been delivered, as described in clauses 6.1.4.4 and 6.1.5.2. The notification does not occur when the notification is deliberately ended or in the case of an error. There is no mapping from Parlay/OSA for this capability.

6.2 Exceptions

6.2.1 Mapping from `TpMobilityError`

The following table indicates how `TpMobilityError` values are mapped to Parlay X exceptions.

Value	Service Exception	Notes
P_M_SYSTEM_FAILURE	SVC0001	With error number
P_M_UNAUTHORIZED_NETWORK	SVC0001	With error number
P_M_UNAUTHORIZED_APPLICATION	SVC0001	With error number: i.e. including the value of `TpMobilityDiagnostic`, if available
P_M_UNKNOWN_SUBSCRIBER	SVC0002	
P_M_ABSENT_SUBSCRIBER	SVC0002	
P_M_POSITION_METHOD_FAILURE	SVC0001	With error number: i.e. including the value of `TpMobilityDiagnostic`, if available

6.2.2 Mapping from Parlay/OSA Method Exceptions

In addition to the common mapping of Parlay/OSA API method exceptions to Parlay X Web Service exceptions, which is defined in TR 102 397-1 [3], there are the following service-specific exception mappings:

Parlay/OSA Exception	Service Exception	Notes
P_REQUESTED_ACCURACY_CANNOT_BE_ DELIVERED	SVC0200	
P_REQUESTED_RESPONSE_TIME_CANNOT_ BE_DELIVERED	SVC0001	With error number
P_TRIGGER_CONDITIONS_NOT_SUBSCRIBED	SVC0001	With error number
P_INVALID_REPORTING_INTERVAL	SVC0001	With error number

7 Additional notes

No additional notes.

History

Document history		
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