GENIVI MapViewer API

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This document has been accepted for the GENIVI Gemini Release by the Expert Group Location Based Services (EG-LBS).

Abstract:
This document describes the API of the MapViewer Abstract Component.

Keywords:
NavigationAPIs, MapViewer.

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1 Change History

Version	Date	Author	Change
0.1	27 Feb 2012	Marco Residori (XS Embedded)	Document Created
0.2	19 Mar 2012	Marco Residori (XS Embedded)	Updated sequence diagrams. Updated *Interfaces* chapter.
0.3	21 Mar 2012	Marco Residori (XS Embedded)	Updated *Interfaces* chapter.
1.0	22 Mar 2012	Marco Residori (XS Embedded)	System Architecture Team (SAT) approval.
2.0 (beta)	07 Jun 2013	Marco Residori (XS Embedded)	Updated API description. API Version 2.0.
2.0	17 Jun 2013	Marco Residori (XS Embedded)	Updated API description. API fixes: GT-2651. API Version 2.0 (*gemini-final* tag)
3.0.0	21 Jan 2014	Marco Residori (XS Embedded)	Updated API description. API Version 3.0.0.
3.0.1	22 May 2014	Marco Residori (XS Embedded)	Updated copyright notes.

2 Introduction

This document describes the MapViewer API.

3 Terminology

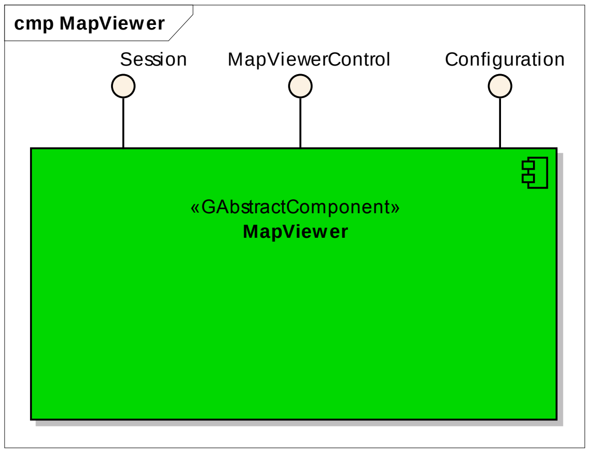
Term	***Description***
TargetPoint	Point the camera looks at. If the map viewer is set to follow the car position, it coincides with the vehicle position.

4 Requirements

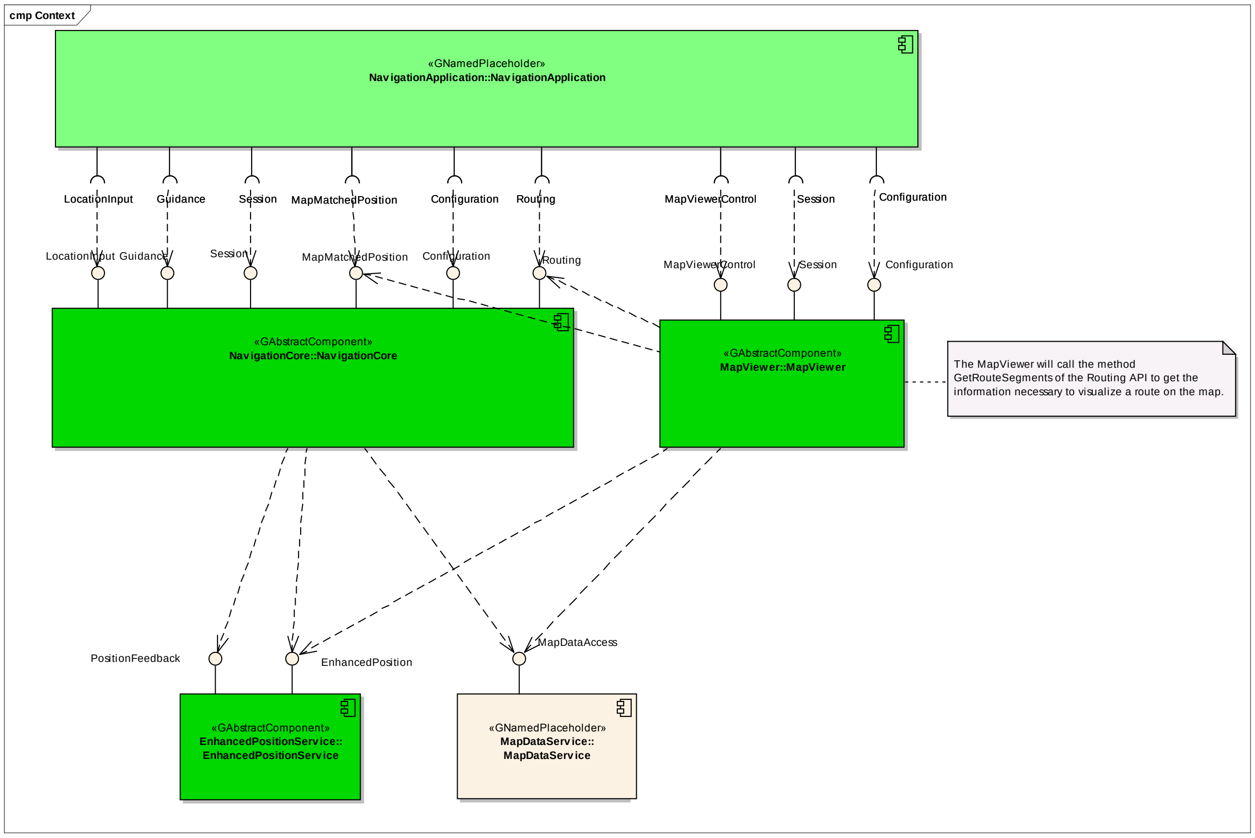
- Ease of Development
- Extensibility
- Multi-client Behavior
- Simplicity

5 Architecture

5.1 Interfaces



5.2 Interaction with other Components



6 API

6.1 D-Bus

The MapViewer interfaces are D-Bus interfaces. They are defined using the D-Bus introspection data format, which is nothing but an IDL expressed in XML format.

For more information about the D-Bus data types please refer to the following website:
http://dbus.freedesktop.org/doc/dbus-specification.html#message-protocol-signatures

For more information about the D-Bus introspection data format, please refer to the following website:
http://dbus.freedesktop.org/doc/dbus-specification.html#introspection-format

6.2 Git Repository

The MapViewer interfaces can be found in the GENIVI Git repository at:
https://git.genivi.org/git/gitweb.cgi?p=navigation;a=tree;f=MapViewer/api

6.3 Naming Convention

Element	**Description**	**Example**
Interface File	genivi.<component name in lowercase character>.<interface name in lowercase characters>	genivi.navigationcore.mapviewer control.xml
Methods/Signal/Properties	Camel case naming convention. First letter uppercase	CreateMapViewInstance
Arguments	Camel case naming convention. First letter lowercase	scaleID

6.4 Data Types Convention

D-bus types code are used. Please refer to the following webpage for more information:

http://dbus.freedesktop.org/doc/dbus-specification.html

Element	**D-Bus Data Type Code**	**Example**
Enumerators	q (uint16)	
Handles	y (uint8)	
Maps	a{qv}	Dictionary of tuples (key, value) The key is expressed as an enumerator

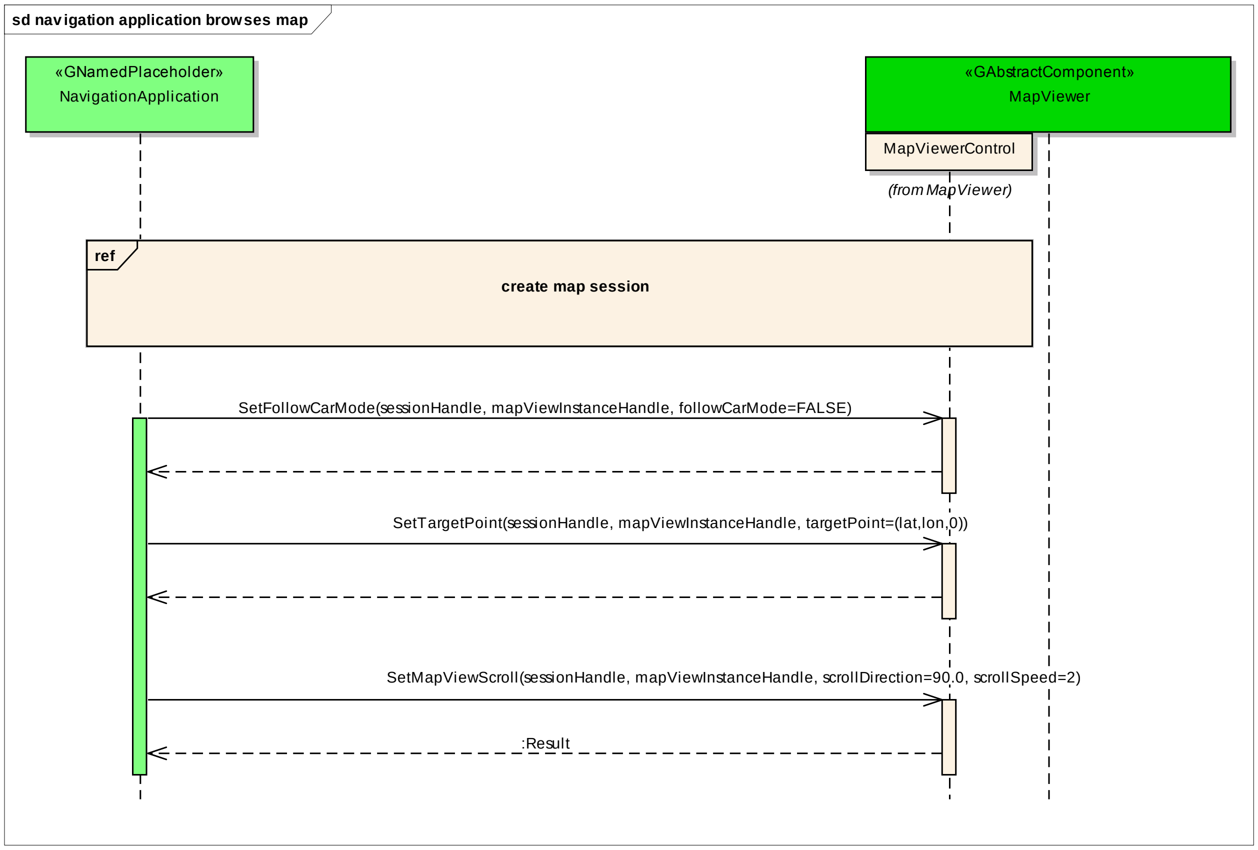
6.5 Errors

Error Type	Description	Example	Error Documentation	Note
User Error	Error caused by user actions	The user tries to start route guidance, although guidance is already running	Application specific error string documented in the XML file	Can occur in final product
Hardware Error	Error related to hardware/database related problems	No map data	Application specific error string documented in the XML file	Can occur in final product
Protocol Error	Error caused by wrong sequence of commands	Wrong sequence of commands to enter destination	Standard D-Bus error string	Should not occur in final product
Bus Error	D-Bus communication error	Bus busy	Standard D-Bus error string	Can occur in final product
Programming Error	Programming Error	Invalid parameters	Standard D-Bus error string and debug messages	Should not occur in production code

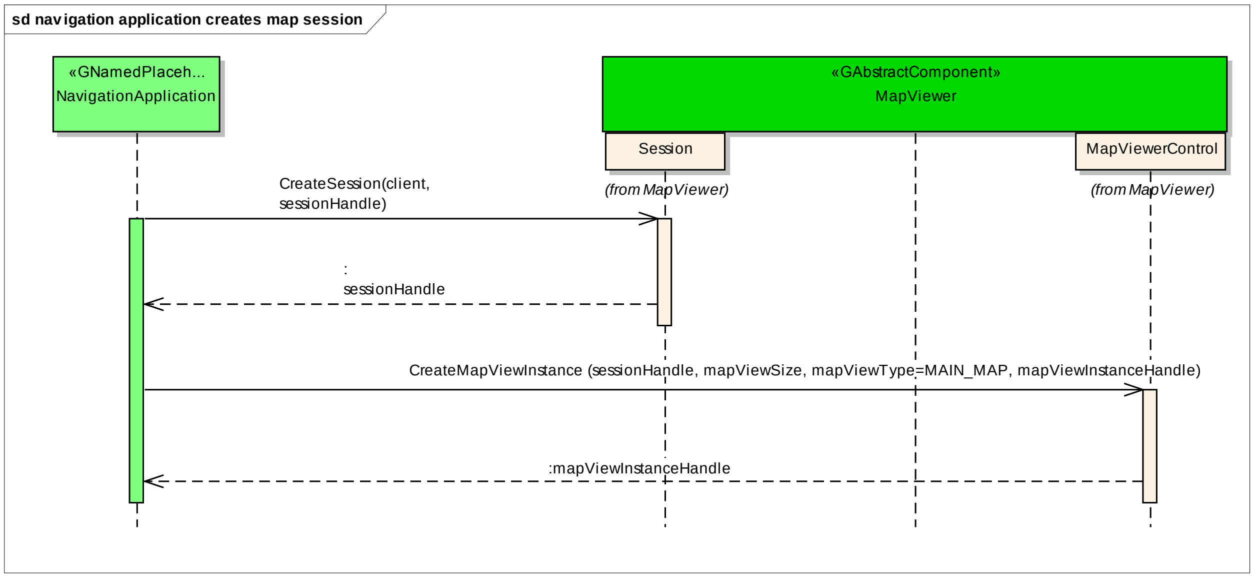
Only application-specific errors are documented directly in the interfaces (XML files). For all other errors, standard D-Bus strings are used. These kinds of strings are not documented in the interfaces. It is implicitly assumed that every method may return a standard D-Bus error string.

6.6 *Sequence Diagrams*

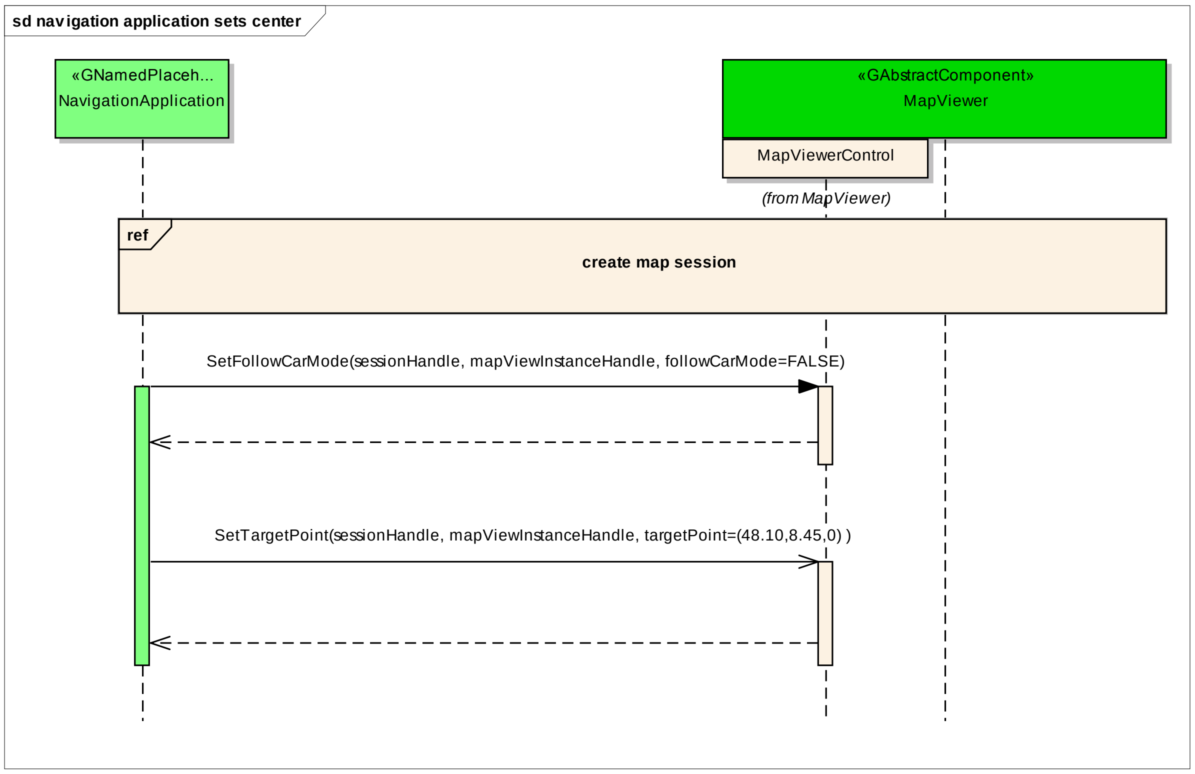
6.6.1 navigation application browses map


sd navigation application browses map
«GNamedPlaceholder»
NavigationApplication
«GAbstractComponent»
MapViewer
MapViewerControl
(from MapViewer)
ref
create map session
SetFollowCarMode(sessionHandle, mapViewInstanceHandle, followCarMode=FALSE)
SetTargetPoint(sessionHandle, mapViewInstanceHandle, targetPoint=(lat,lon,0))
SetMapViewScroll(sessionHandle, mapViewInstanceHandle, scrollDirection=90.0, scrollSpeed=2)
:Result

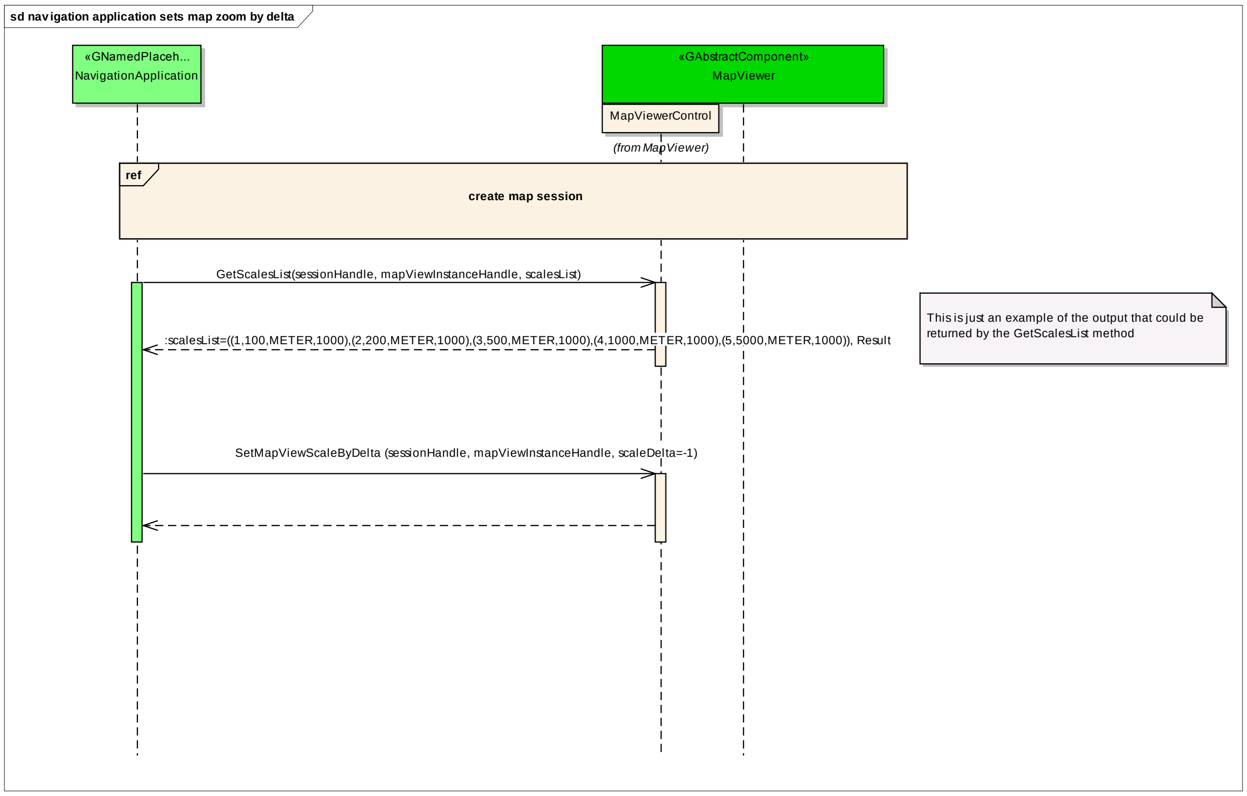
6.6.2 navigation application creates map session


sd navigation application creates map session
«GNamedPlaceh...
NavigationApplication
«GAbstractComponent»
MapViewer
Session
(from MapViewer)
MapViewerControl
(from MapViewer)
CreateSession(client, sessionHandle)
: sessionHandle
CreateMapViewInstance (sessionHandle, mapViewSize, mapViewType=MAIN_MAP, mapViewInstanceHandle)
:mapViewInstanceHandle

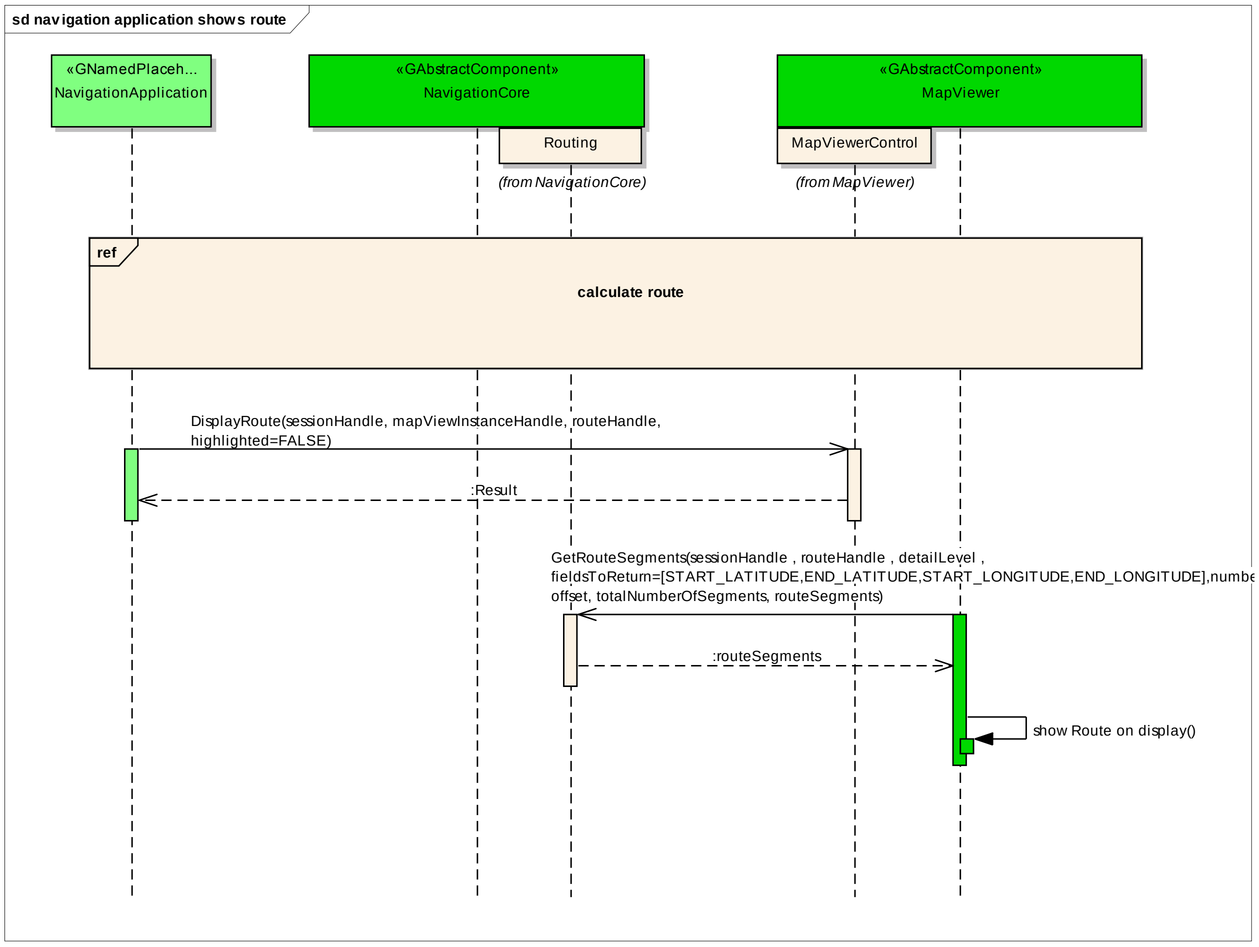
6.6.3 navigation application sets center


sd navigation application sets center
«GNamedPlaceh...
NavigationApplication
«GAbstractComponent»
MapViewer
MapViewerControl
(from MapViewer)
ref
create map session
SetFollowCarMode(sessionHandle, mapViewInstanceHandle, followCarMode=FALSE)
SetTargetPoint(sessionHandle, mapViewInstanceHandle, targetPoint=(48.10,8.45,0))

6.6.4 navigation application sets map zoom by delta


sd navigation application sets map zoom by delta
«GNamedPlaceh...
NavigationApplication
«GAbstractComponent»
MapViewer
MapViewerControl
(from MapViewer)
ref
create map session
GetScalesList(sessionHandle, mapViewInstanceHandle, scalesList)
:scalesList=((1,100,METER,1000),(2,200,METER,1000),(3,500,METER,1000),(4,1000,METER,1000),(5,5000,METER,1000)), Result
This is just an example of the output that could be returned by the GetScalesList method
SetMapViewScaleByDelta (sessionHandle, mapViewInstanceHandle, scaleDelta=-1)

6.6.5 navigation application shows route


sd navigation application shows route
«GNamedPlaceh...
NavigationApplication
«GAbstractComponent»
NavigationCore
Routing
(from NavigationCore)
«GAbstractComponent»
MapViewer
MapViewerControl
(from MapViewer)
ref
calculate route
DisplayRoute(sessionHandle, mapViewInstanceHandle, routeHandle, highlighted=FALSE)
:Result
GetRouteSegments(sessionHandle , routeHandle , detailLevel , fieldsToReturn=[START_LATITUDE,END_LATITUDE,START_LONGITUDE,END_LONGITUDE],numbe
offset, totalNumberOfSegments, routeSegments)
:routeSegments
show Route on display()

6.7 Interfaces

interface *org.genivi.mapviewer.MapViewerControl*

version 3.0.0 (21-01-2014)

MapViewerControl = This interface offers functions to control the MapViewer

---

GetVersion = This method returns the API version implemented by the server application

method `GetVersion`

version = struct(major,minor,micro,date)

major = when the major changes, then backward compatibility with previous releases is not granted

minor = when the minor changes, then backward compatibility with previous releases is granted, but something changed in the implementation of the API (e.g. new methods may have been added)

micro = when the micro changes, then backward compatibility with previous releases is granted (bug fixes or documentation modifications)

date = release date (e.g. 21-06-2011)

out **(qqqs)** `version`

CreateMapViewInstance = This method creates a new map instance

Note: when a map instance is created, it is set to 'not visible' by default

method `CreateMapViewInstance`

sessionHandle = Session handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value

in **u** `sessionHandle`

mapViewSize = struct(horizontalSize,verticalSize) of the map instance in pixels.

horizontalSize = horizontal size of the map instance in pixels

verticalSize = vertical size of the map instance in pixels

in **(qq)** `mapViewSize`

mapViewType = enum(INVALID,MAIN_MAP,SPLIT_SCREEN, ...)

Note: to be used in case that a specific position of the map instance with respect to the display viewport is required

For example, if the instance 1 is of type MAIN_MAP and the instance 2 is of type SPLIT_SCREEN, the offset of the map instances

with respect to the display viewport could be (0;0) and (hres/2;0) respectively

in **q** `mapViewType`

mapViewInstanceHandle = Map instance handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value

out **u** `mapViewInstanceHandle`

This error is generated if no more map view instance handles are available

error *`org.genivi.mapviewer.MapViewerControl.Error.NoMoreMapViewInstanceHandles`*

ReleaseMapViewInstance = This method releases (i.e. destroys) a given map instance. Only invisible map instances can be released

method `ReleaseMapViewInstance`

sessionHandle = Session handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value

in **u** `sessionHandle`

mapViewInstanceHandle = Map instance handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value
in **u** `mapViewInstanceHandle`

This error is generated if an application tries to delete a map view instance handle that is not available
error *`org.genivi.mapviewer.MapViewerControl.Error.MapViewInstanceNotAvailable`*

GetMapViewType = This method returns the map type of a map instance as it was set using CreateMapViewInstance
method `GetMapViewType`

mapViewInstanceHandle = Map instance handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value
in **u** `mapViewInstanceHandle`

mapViewType = enum(INVALID,MAIN_MAP,SPLIT_SCREEN, ...)
out **q** `mapViewType`

GetSupportedMapViewTypes = This method retrieves the supported map view types
method `GetSupportedMapViewTypes`

mapViewTypeList = array[mapViewType]
mapViewType = enum(INVALID,MAIN_MAP,SPLIT_SCREEN, ...)
out **aq** `mapViewTypeList`

SetTargetPoint = This method sets the position of the point the camera is always aimed at
Note: the target point is typically visualized in the center of the map
method `SetTargetPoint`

sessionHandle = Session handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value
in **u** `sessionHandle`

mapViewInstanceHandle = Map instance handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value
in **u** `mapViewInstanceHandle`

targetPoint = (lat,lon,alt)
lat = latitude in format %3.6f. Range[-90:+90]
lon = longitude in format %3.6f. Range[-180:+180]
alt = altitude to the ground in meters
in **(ddi)** `targetPoint`

GetTargetPoint = This method retrieves the target point position
Note: if the FollowCar mode is active, the this method will return the current vehicle position
method `GetTargetPoint`

mapViewInstanceHandle = Map instance handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value
in **u** `mapViewInstanceHandle`

targetPoint = (lat,lon,alt)
lat = latitude in format %3.6f. Range[-90:+90]
lon = longitude in format %3.6f. Range[-180:+180]
alt = altitude to the ground in meters
out **(ddi)** `targetPoint`

SetFollowCarMode = This method sets the FollowCar mode

Note: if the FollowCar is activated, the current car position is interpreted as target point position

method `SetFollowCarMode`

> *sessionHandle = Session handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value*
>
> *in* **u** `sessionHandle`
>
> *mapViewInstanceHandle = Map instance handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value*
>
> *in* **u** `mapViewInstanceHandle`
>
> *followCarMode = flag. If true, the current car position is interpreted as position of the point the camera must look at*
>
> *in* **b** `followCarMode`

GetFollowCarMode = This method returns the current FollowCar-mode

method `GetFollowCarMode`

> *mapViewInstanceHandle = Map instance handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value*
>
> *in* **u** `mapViewInstanceHandle`
>
> *followCarMode = flag. If true, the current car position is interpreted as position of the point the camera must look at*
>
> *out* **b** `followCarMode`

SetCameraPosition = This method sets the coordinates of the point at which the camera must be positioned

Note: the camera heading will be automatically set in such a way, that the camera is aimed at the view point

method `SetCameraPosition`

> *sessionHandle = Session handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value*
>
> *in* **u** `sessionHandle`
>
> *mapViewInstanceHandle = Map instance handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value*
>
> *in* **u** `mapViewInstanceHandle`
>
> *position = (lat,lon,alt)*
>
> *lat = latitude in format %3.6f. Range[-90:+90]*
>
> *lon = longitude in format %3.6f. Range[-180:+180]*
>
> *alt = altitude to the ground in meters*
>
> *in* **(ddi)** `position`

GetCameraPosition = This method returns the coordinates of the point at which the camera is positioned

method `GetCameraPosition`

> *mapViewInstanceHandle = Map instance handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value*
>
> *in* **u** `mapViewInstanceHandle`
>
> *position = (lat,lon,alt)*
>
> *lat = latitude in format %3.6f. Range[-90:+90]*
>
> *lon = longitude in format %3.6f. Range[-180:+180]*
>
> *alt = altitude to the ground in meters*
>
> *out* **(ddi)** `position`

SetCameraHeadingAngle = This method sets the map view heading angle
Note: the camera position will be automatically set in such a way, that it looks at the currently selected target point
method `SetCameraHeadingAngle`

> *sessionHandle = Session handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value*
> *in* **u** `sessionHandle`
>
> *mapViewInstanceHandle = Map instance handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value*
> *in* **u** `mapViewInstanceHandle`
>
> *heading = heading angle in degrees. Range [0:360]*
> *The angle in degrees between projection on the ground plane of the line through the center of the screen and the top-centre of the screen, and the North direction*
> *0 degrees means that the map view is oriented such that North is at the top of the screen*
> *Degrees are measured clockwise such that 90 degrees correspond to the East direction*
> *in* **i** `heading`

SetCameraHeadingToTarget = This method sets the camera heading in such a way, that the camera always looks at a given target
Note: the camera position will be automatically set in such a way, that it aims at the current view point
method `SetCameraHeadingToTarget`

> *sessionHandle = Session handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value*
> *in* **u** `sessionHandle`
>
> *mapViewInstanceHandle = Map instance handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value*
> *in* **u** `mapViewInstanceHandle`
>
> *target = struct(lat,lon)*
> *lat = latitude of the point towards which the map vertical axis must be aligned in format %3.6f. Range[-90:+90]*
> *lon = longitude of the point towards which the map vertical axis must be aligned in format %3.6f. Range[-180:+180]*
> *in* **(dd)** `target`

SetCameraHeadingTrackUp = This method sets the camera heading in such a way, that the camera always looks in the direction in which the car is moving
method `SetCameraHeadingTrackUp`

> *sessionHandle = Session handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value*
> *in* **u** `sessionHandle`
>
> *mapViewInstanceHandle = Map instance handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value*
> *in* **u** `mapViewInstanceHandle`

GetCameraHeading = This method returns the current camera heading
method `GetCameraHeading`

> *mapViewInstanceHandle = Map instance handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value*
> *in* **u** `mapViewInstanceHandle`
>
> *headingType = enum(INVALID,CONSTANT_ANGLE,TRACK_UP,TOWARDS_TARGET, ...)*
> *out* **q** `headingType`

headingAngle = heading angle in degrees measured from the North axis clockwise. Range[0:360]
Note: meaningful only if heading != TOWARDS_TARGET, otherwise it is just a dummy value and must be set to 0
out **i** `headingAngle`

headingTarget = struct(lat,lon)
lat = latitude of the point towards which the map vertical axis must be aligned in format %3.6f. Range[-90:+90]
lon = longitude of the point towards which the map vertical axis must be aligned in format %3.6f. Range[-180:+180]
Note: meaningful only if heading = TOWARDS_TARGET, otherwise it is just a dummy value and must be set to (0,0)
out **(dd)** `target`

SetCameraTiltAngle = This method sets the camera tilt angle
method `SetCameraTiltAngle`

sessionHandle = Session handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value
in **u** `sessionHandle`

mapViewInstanceHandle = Map instance handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value
in **u** `mapViewInstanceHandle`

tilt = tilt angle in degrees. Range [-180:180]
Example: 0 = down (straight down to the ground plane), 90 = front (parralel to the ground plane), 180 = top (straight up to the sky)
Negative angles [0:-180] result in an upside down view
in **i** `tilt`

GetMapViewTiltAngle = This method returns the camera tilt angle
method `GetCameraTiltAngle`

mapViewInstanceHandle = Map instance handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value
in **u** `mapViewInstanceHandle`

tilt = tilt angle in degrees. Range [-180:180]
Example: 0 = down (straight down to the ground plane), 90 = front (parralel to the ground plane), 180 = top (straight up to the sky)
Negative angles [0:-180] result in an upside down view
out **i** `tilt`

[Optional]
SetCameraRollAngle = This method sets the camera roll angle
method `SetCameraRollAngle`

sessionHandle = Session handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value
in **u** `sessionHandle`

mapViewInstanceHandle = Map instance handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value
in **u** `mapViewInstanceHandle`

roll = roll angle in degrees. Range [-180:180]
in **i** `roll`

[Optional]

GetCameraRollAngle = This method returns the camera roll angle

method `GetCameraRollAngle`

> *mapViewInstanceHandle = Map instance handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value*
>
> *in* **u** `mapViewInstanceHandle`
>
> *roll = roll angle in degrees. Range [-180:180]*
>
> *out* **i** `roll`

SetCameraDistanceFromTargetPoint = This method sets the mode and the camera distance from the target point

Note: this method can be used to zoom in and out

method `SetCameraDistanceFromTargetPoint`

> *sessionHandle = Session handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value*
>
> *in* **u** `sessionHandle`
>
> *mapViewInstanceHandle = Map instance handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value*
>
> *in* **u** `mapViewInstanceHandle`
>
> *distance = distance from the view point in meters*
>
> *in* **u** `distance`

GetCameraDistanceFromTargetPoint = This method gets the mode and the camera distance from the target point

method `GetCameraDistanceFromTargetPoint`

> *mapViewInstanceHandle = Map instance handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value*
>
> *in* **u** `mapViewInstanceHandle`
>
> *distance = distance from the view point in meters*
>
> *out* **u** `distance`

SetMapViewScaleMode = This method sets the scaling mode.

method `SetMapViewScaleMode`

> *sessionHandle = Session handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value*
>
> *in* **u** `sessionHandle`
>
> *mapViewInstanceHandle = Map instance handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value*
>
> *in* **u** `mapViewInstanceHandle`
>
> *scaleMode = enum(AUTOMATIC,MANUAL,HYBRID)*
> *scaleMode = AUTOMATIC, adjusts the camera distance automatically (e.g. depending on the speed)*
> *scaleMode = MANUAL, the camera distance is specified by the argument 'distance'*
> *scaleMode = HYBRID, e.g. AUTOMATIC depending on the proximity to the target, MANUAL otherwise*
>
> *in* **q** `scaleMode`

GetMapViewScaleMode = This method gets the scaling mode.

method `GetMapViewScaleMode`

mapViewInstanceHandle = Map instance handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value

in **u** `mapViewInstanceHandle`

scaleMode = enum(AUTOMATIC,MANUAL,HYBRID)

scaleMode = AUTOMATIC, adjusts the camera distance automatically (e.g. depending on the speed)

scaleMode = MANUAL, the camera distance is specified by the argument 'distance'

scaleMode = HYBRID, e.g. AUTOMATIC depending on the proximity to the target, MANUAL otherwise

out **q** `scaleMode`

GetSupportedMapViewScaleModes = This method gets the supported scaling modes.

method `GetSupportedMapViewScaleModes`

mapViewInstanceHandle = Map instance handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value

in **u** `mapViewInstanceHandle`

scaleModeList = array[scaleMode]

scaleMode = enum(AUTOMATIC,MANUAL,HYBRID)

scaleMode = AUTOMATIC, adjusts the camera distance automatically (e.g. depending on the speed)

scaleMode = MANUAL, the camera distance is specified by the argument 'distance'

scaleMode = HYBRID, e.g. AUTOMATIC depending on the proximity to the target, MANUAL otherwise

out **aq** `scaleModeList`

MapViewScaleChanged = This signal is emitted when the mapview scale changes

signal `MapViewScaleChanged`

mapViewInstanceHandle = Map instance handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value

out **u** `mapViewInstanceHandle`

scaleID = scale identifier. Range[0:256]

out **y** `scaleID`

isMinMax = enum(INVALID,MIN,MAX,MID, ...)

MIN = scale ID minimal value

MID = scale ID intermediate value

MAX = scale ID maximal value

out **q** `isMinMax`

AddMapViewScaleChangedListener = This method adds a listener which is notified when map view scale changes.

method `AddMapViewScaleChangedListener`

RemoveMapViewScaleChangedListener = This method removes a listener which is notified when map view scale changes.

method `RemoveMapViewScaleChangedListener`

SetCameraHeight = This method sets the camera height

Note: this method is a subset of SetCameraPosition

method `SetCameraHeight`

sessionHandle = Session handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value

in **u** `sessionHandle`

mapViewInstanceHandle = Map instance handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value
in **u** `mapViewInstanceHandle`

height = height from the ground in meters
in **u** `height`

GetCameraHeight = This method gets the camera height
Note: this method is a subset of GetCameraPosition
method `GetCameraHeight`

mapViewInstanceHandle = Map instance handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value
in **u** `mapViewInstanceHandle`

height = height from the ground in meters
out **u** `height`

SetMapViewPerspective = This method sets the map perspective
method `SetMapViewPerspective`

sessionHandle = Session handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value
in **u** `sessionHandle`

mapViewInstanceHandle = Map instance handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value
in **u** `mapViewInstanceHandle`

perspective = enum(INVALID,2D,3D, ...)
in **q** `perspective`

GetMapViewPerspective = This method returns the current map perspective
method `GetMapViewPerspective`

mapViewInstanceHandle = Map instance handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value
in **u** `mapViewInstanceHandle`

perspective = enum(INVALID,2D,3D, ...)
out **q** `perspective`

GetSupportedMapViewPerspectives = This method retrieves the supported mapview perspectives
method `GetSupportedMapViewPerspectives`

perspectiveList = array[perspective]
perspective = enum(INVALID,2D,3D, ...)
out **aq** `perspectiveList`

SetMapViewObjectVisibility = This method specifies the type of objects to show on the map.
method `SetMapViewObjectVisibility`

sessionHandle = Session handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value

in **u** `sessionHandle`

mapViewInstanceHandle = Map instance handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value
in **u** `mapViewInstanceHandle`

objectVisibilityList = array[objectVisibility]
objectVisibility = dictionary[key,value]
key = enum[BUILDINGS,TERRAIN, ...]
value = value of type 'b'; if true the objects are shown else they are not shown
in **a{qb}** `objectVisibilityList`

GetMapViewObjectVisibility = This method gets the type of objects shown on the map.
method `GetMapViewObjectVisibility`

mapViewInstanceHandle = Map instance handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value
in **u** `mapViewInstanceHandle`

objectVisibilityList = array[objectVisibility]
objectVisibility = dictionary[key,value]
key = enum[BUILDINGS,TERRAIN, ...]
value = value of type 'b'; if true the objects are shown else they are not shown
out **a{qb}** `objectVisibilityList`

GetSupportedMapViewObjectVisibilities = This method gets the supported object visibilities.
method `GetSupportedMapViewObjectVisibilities`

mapViewInstanceHandle = Map instance handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value
in **u** `mapViewInstanceHandle`

objectVisibilityList = array[objectVisibility]
objectVisibility = enum[BUILDINGS,TERRAIN, ...]
out **aq** `objectVisibilityList`

GetScaleList = This method returns a list of supported map scales
Note: a mapscale consists of an unique ID, a ScaleValue, a ScaleUnit and a number of MillimetesPerPixel
method `GetScaleList`

mapViewInstanceHandle = Map instance handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value
in **u** `mapViewInstanceHandle`

scaleList = array[struct(scaleId,scaleValue,scaleUnit,millimetersPerPixel)]
scaleId = scale identifier. Range [0:256]
scaleValue = scale value. It can assume values like 100, 200, 1000, ...
scaleUnit = unit of measurement. It is an enum(INVALID,METER,KM,MILE,YARD,FOOT, ...)
millimetersPerPixel = number indicating the number of millimeters per pixel
Example: ((1,100,METER,1000),(2,200,METER,1000),(3,500,METER,1000), ...)
out **a(qqqu)** `scaleList`

SetMapViewScale = This method sets the map scale by specifying a ScaleID
method `SetMapViewScale`

sessionHandle = Session handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value
in **u** `sessionHandle`

mapViewInstanceHandle = Map instance handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value
in **u** `mapViewInstanceHandle`

scaleID = scale identifier. Range[0:256]
in **q** `scaleID`

SetMapViewScaleByDelta = This method sets the map scale by specifying a delta value with respect to the currently set ScaleID
method `SetMapViewScaleByDelta`

sessionHandle = Session handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value
in **u** `sessionHandle`

mapViewInstanceHandle = Map instance handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value
in **u** `mapViewInstanceHandle`

scaleDelta = This parameter can have either positive or negative values. '0' means no change. Positive values indicate larger scales
in **n** `scaleDelta`

SetMapViewScaleByMetersPerPixel = This method sets the map scale by specifying the number of meters that a pixel represents
method `SetMapViewScaleByMetersPerPixel`

sessionHandle = Session handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value
in **u** `sessionHandle`

mapViewInstanceHandle = Map instance handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value
in **u** `mapViewInstanceHandle`

metersPerPixel = meters per pixel
in **d** `metersPerPixel`

GetMapViewScale = This method returns the currently used map scale
method `GetMapViewScale`

mapViewInstanceHandle = Map instance handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value
in **u** `mapViewInstanceHandle`

scaleID = scale identifier. Range[0:256]
out **y** `scaleID`

isMinMax = enum(INVALID,MIN,MAX,MID, ...)
MIN = scale ID minimal value
MID = scale ID intermediate value
MAX = scale ID maximal value
out **q** `isMinMax`

SetMapViewBoundingBox = This method sets the map bounding box
method `SetMapViewBoundingBox`

> *sessionHandle = Session handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value*
> *in* **u** `sessionHandle`
>
> *mapViewInstanceHandle = Map instance handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value*
> *in* **u** `mapViewInstanceHandle`
>
> *boundingBox = struct(top-left-corner,bottom-right-corner)*
> *top-left-corner = struct(lat,lon)*
> *bottom-right-corner = struct(lat,lon)*
> *lat = latitude in format %3.6f. Range[-90:+90]*
> *lon = longitude in format %3.6f. Range[-180:+180]*
> *in* **((dd)(dd))** `boundingBox`

GetMapViewBoundingBox = This method returns the bounding box of a given map instance
method `GetMapViewBoundingBox`

> *mapViewInstanceHandle = Map instance handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value*
> *in* **u** `mapViewInstanceHandle`
>
> *boundingBox = struct(top-left-corner,bottom-right-corner)*
> *top-left-corner = struct(lat,lon)*
> *bottom-right-corner = struct(lat,lon)*
> *lat = latitude in format %3.6f. Range[-90:+90]*
> *lon = longitude in format %3.6f. Range[-180:+180]*
> *out* **((dd)(dd))** `boundingBox`

SetMapViewSaveArea = This methods defines the area that the HMI guarantees not to cover with other windows or user interface elements
method `SetMapViewSaveArea`

> *sessionHandle = Session handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value*
> *in* **u** `sessionHandle`
>
> *mapViewInstanceHandle = Map instance handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value*
> *in* **u** `mapViewInstanceHandle`
>
> *boundingBox = struct(rect-left,rect-right,rect-top,rect-bottom)*
> *rect-left = covered area on the left. Range [0:1]*
> *rect-right = covered area on the right. Range [0:1]*
> *rect-top = covered area on top. Range [0:1]*
> *rect-bottom = covered area at the bottom. Range [0:1]*
> *Note: 0.0 means there is no covered area (offset) from that side*
> *When all four parameters are 0 then the save area is equal to the viewport area (being the default)*
> *in* **(dddd)** `saveArea`

SetMapViewSaveArea = This methods defines the area that the HMI guarantees not to cover with other windows or user interface elements
method `GetMapViewSaveArea`

> *mapViewInstanceHandle = Map instance handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value*

in **u** `mapViewInstanceHandle`

boundingBox = struct(rect-left,rect-right,rect-top,rect-bottom)
rect-left = covered area on the left. Range [0:1]
rect-right = covered area on the right. Range [0:1]
rect-top = covered area on top. Range [0:1]
rect-bottom = covered area at the bottom. Range [0:1]
Note: 0.0 means there is no covered area (offset) from that side
When all four parameters are 0 then the save area is equal to the viewport area (being the default)
out **(dddd)** `saveArea`

SetMapViewPan = This method pans a given map instance
method `SetMapViewPan`

sessionHandle = Session handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value
in **u** `sessionHandle`

mapViewInstanceHandle = Map instance handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value
in **u** `mapViewInstanceHandle`

panningAction = enum(PAN_START,PAN_TO,PAN_END)
PAN_START, start panning the map at the specified screen coordinate identified by the arguments 'x' and 'y'
PAN_TO, pan the map to the specified screen coordinate identified by the arguments 'x' and 'y'; it has no effect before PAN_START or after PAN_END
PAN_END, pan the map to the specified screen coordinate identified by the arguments 'x' and 'y' and end panning; it has no effect before PAN_START
in **q** `panningAction`

pixelCoordinates = array[struct(x,y)]
x = x-coordinate (x=0 indicates the first left pixel of the map view)
y = y-coordinate (y=0 indicates the first top pixel of the map view)
in **a(qq)** `pixelCoordinates`

GetMapViewPan
This method is meant for debugging purposes
method `GetMapViewPan`

mapViewInstanceHandle = Map instance handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value
in **u** `mapViewInstanceHandle`

valueToReturn = enum(PAN_START,PAN_TO,PAN_END)
in **q** `valueToReturn`

pixelCoordinates = array[struct(x,y)]
x = x-coordinate (x=0 indicates the first left pixel of the map view)
y = y-coordinate (y=0 indicates the first top pixel of the map view)
in **a(qq)** `pixelCoordinates`

SetMapViewRotation = This method rotates the map
method `SetMapViewRotation`

sessionHandle = Session handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value
in **u** `sessionHandle`

mapViewInstanceHandle = Map instance handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value
in **u** `mapViewInstanceHandle`

rotationAngle = rotation angle in degrees measured from the North axis clockwise. Range[0:360]
in **i** `rotationAngle`

rotationAnglePerSecond = partial rotation for each second
The value can be set implement a smooth rotation
If rotationAnglePerSecond = rotationAngle it means that the rotation must be instantaneous
in **i** `rotationAnglePerSecond`

GetMapViewRotation = This method is particularly interesting for debugging purposes
method `GetMapViewRotation`

mapViewInstanceHandle = Map instance handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value
in **u** `mapViewInstanceHandle`

rotationAngle = rotation angle in degrees measured from the North axis clockwise. Range[0:360]
out **i** `rotationAngle`

rotationAnglePerFrame = partial rotation for each map frame in degrees
out **i** `rotationAnglePerFrame`

SetMapViewVisibilityMode = This method sets the current visibility mode
method `SetMapViewVisibilityMode`

sessionHandle = Session handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value
in **u** `sessionHandle`

mapViewInstanceHandle = Map instance handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value
in **u** `mapViewInstanceHandle`

visibilityMode = enum(INVALID,VISIBLE,INVISIBLE,FROZEN, ...)
in **q** `visibilityMode`

GetMapViewVisibilityMode = This method returns the current visibility mode
method `GetMapViewVisibilityMode`

mapViewInstanceHandle = Map instance handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value
in **u** `mapViewInstanceHandle`

visibilityMode = enum(INVALID,VISIBLE,INVISIBLE,FROZEN, ...)
out **q** `visibilityMode`

GetSupportedMapViewVisibilityModes = This method retrieves the supported mapview visibility modes
method `GetSupportedMapViewVisibilityModes`

visibilityModeList = array[visibilityMode]
visibilityMode = enum(INVALID,VISIBLE,INVISIBLE,FROZEN, ...)
out **aq** `visibilityModeList`

MapViewVisibilityChanged = This signal is emitted when the MapView visibility changes
signal `MapViewVisibilityChanged`

> *mapViewInstanceHandle = Map instance handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value*
> *out* **u** `mapViewInstanceHandle`
>
> *visibilityMode = enum(INVALID,VISIBLE,INVISIBLE,FROZEN, ...)*
> *out* **q** `visibilityMode`

SetMapViewPerformanceLevel = This method sets the perfomance level of a given map instance
Note: it can be used to set the MapView in application specific performance mode (e.g. low CPU-usage or low memory-usage)
method `SetMapViewPerformanceLevel`

> *sessionHandle = Session handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value*
> *in* **u** `sessionHandle`
>
> *mapViewInstanceHandle = Map instance handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value*
> *in* **u** `mapViewInstanceHandle`
>
> *performanceLevel = enum(INVALID,LEVEL1,LEVEL2,LEVEL3,LEVEL4,LEVEL5, ...)*
> *Note: performance levels are application specific*
> *in* **q** `performanceLevel`

GetMapViewPerformanceLevel = This method returns the perfomance level of a given map instance
method `GetMapViewPerformanceLevel`

> *mapViewInstanceHandle = Map instance handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value*
> *in* **u** `mapViewInstanceHandle`
>
> *performanceLevel = enum(INVALID,LEVEL1,LEVEL2,LEVEL3,LEVEL4,LEVEL5, ...)*
> *out* **q** `performanceLevel`

GetSupportedMapViewPerformanceLevels = This method retrieves the supported perfomance levels
method `GetSupportedMapViewPerformanceLevels`

> *performanceLevelList = array[performanceLevel]*
> *performanceLevel = enum(INVALID,LEVEL1,LEVEL2,LEVEL3,LEVEL4,LEVEL5, ...)*
> *out* **aq** `performanceLevelList`

DisplayRoute = This method visualizes one of the calculated routes
method `DisplayRoute`

> *sessionHandle = Session handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value*
> *in* **u** `sessionHandle`
>
> *mapViewInstanceHandle = Map instance handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value*
> *in* **u** `mapViewInstanceHandle`

routeHandle = Route handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value
in **u** `routeHandle`

highlighted = flag. TRUE means highligted,FALSE means not highlighted
Note: the highlighted route must be visualized on top of the other routes
in **b** `highlighted`

HideRoute = This method hides one of the visible routes
method `HideRoute`

sessionHandle = Session handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value
in **u** `sessionHandle`

mapViewInstanceHandle = Map instance handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value
in **u** `mapViewInstanceHandle`

routeHandle = Route handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value
Note: the routeHandle has to be one of the visible routes
in **u** `routeHandle`

GetDisplayedRoutes = This method returns a list of displayed routes
method `GetDisplayedRoutes`

mapViewInstanceHandle = Map instance handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value
in **u** `mapViewInstanceHandle`

displayedRoutes = array[struct(routeHandle,highlighted)]
routeHandle = Route handle of a displayed route. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value
highlighted = flag. TRUE means highlighted,FALSE means not highlighted
out **a(ub)** `displayedRoutes`

DisplayedRoutes = This signal is emitted when the list of displayed routes change
signal `DisplayedRoutes`

mapViewInstanceHandle = Map instance handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value
out **u** `mapViewInstanceHandle`

displayedRoutes = array[struct(routeHandle,highlighted)]
routeHandle = Route handle of a displayed route. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value
highlighted = flag. TRUE means highlighted,FALSE means not highlighted
out **a(ub)** `displayedRoutes`

GetPoiCategoriesVisible = Get the set of POI categories displayed on the map.
method `GetPoiCategoriesVisible`

mapViewInstanceHandle = Map instance handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value
in **u** `mapViewInstanceHandle`

poiCategoryIds = array[poiCategoryId]
poiCategoryId = a POI category as defined in the 'GENIVI POIService API'.

out **aq** `poiCategoryIds`

SetPoiCategoriesVisible = Add POI categories to the set of POI categories displayed on the map. Any specified category that until now was displayed with scale limits is now displayed without limits.

method `SetPoiCategoriesVisible`

sessionHandle = Session handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value

in **u** `sessionHandle`

mapViewInstanceHandle = Map instance handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value

in **u** `mapViewInstanceHandle`

poiCategoryIds = array[poiCategoryId]

poiCategoryId = a POI category as defined in the 'GENIVI POIService API'.

in **aq** `poiCategoryIds`

SetPoiCategoriesVisible = Add POI categories to the set of POI categories displayed on the map, where the POI's are only displayed in a specific range of scales. Any specified category that until now was displayed without scale limits is now displayed with limits.

method `SetPoiCategoriesVisibleWithinLimits`

sessionHandle = Session handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value

in **u** `sessionHandle`

mapViewInstanceHandle = Map instance handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value

in **u** `mapViewInstanceHandle`

poiCategoryIds = array[poiCategoryId]

poiCategoryId = a POI category as defined in the 'GENIVI POIService API'.

in **aq** `poiCategoryIds`

minScaleID = minimun scale on which the POI categories are displayed

in **y** `minScaleID`

maxScaleID = maximum scale on which the POI categories are displayed

in **y** `maxScaleID`

SetPoiCategoriesNotVisible = Remove POI categories from the set of POI categories displayed on the map.

method `SetPoiCategoriesNotVisible`

sessionHandle = Session handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value

in **u** `sessionHandle`

mapViewInstanceHandle = Map instance handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value

in **u** `mapViewInstanceHandle`

poiCategoryIds = array[poiCategoryId]

poiCategoryId = a POI category as defined in the 'GENIVI POIService API'.

in **aq** `poiCategoryIds`

SetTrafficIncidentsVisibility = Set the visibility of Traffic Incidents on the map.

method `SetTrafficIncidentsVisibility`

> *sessionHandle = Session handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value*
> *in* **u** `sessionHandle`
>
> *mapViewInstanceHandle = Map instance handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value*
> *in* **u** `mapViewInstanceHandle`
>
> *visible = If true, Traffic Incidents are shown on the map, else they are not shown.*
> *in* **b** `visible`

SetMapViewTheme = This method configures the theme of a given map view instance
method `SetMapViewTheme`

> *sessionHandle = Session handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value*
> *in* **u** `sessionHandle`
>
> *mapViewInstanceHandle = Map instance handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value*
> *in* **u** `mapViewInstanceHandle`
>
> *mapViewTheme = enum(INVALID,THEME_1,THEME_2,THEME_3, ...)*
> *Note: Themes are implementation specific. Example: THEME_1 = day color, THEME_2 = night color*
> *in* **q** `mapViewTheme`

GetMapViewTheme = This method returns the current theme of a given map view instance
method `GetMapViewTheme`

> *mapViewInstanceHandle = Map instance handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value*
> *in* **u** `mapViewInstanceHandle`
>
> *mapViewTheme = enum(INVALID,THEME_1,THEME_2,THEME_3, ...)*
> *Note: Themes are implementation specific. Example: THEME_1 = day color, THEME_2 = night color*
> *out* **q** `mapViewTheme`

GetSupportedMapViewThemes = This method retrieves the supported mapview themes
method `GetSupportedMapViewThemes`

> *mapViewThemeList = array[mapViewTheme]*
> *mapViewTheme = enum(INVALID,THEME_1,THEME_2,THEME_3, ...)*
> *Note: Themes are implementation specific. Example: THEME_1 = day color, THEME_2 = night color*
> *out* **aq** `mapViewThemeList`

ConvertPixelCoordsToGeoCoords = This method converts pixel coordinates to geographical coordinates
method `ConvertPixelCoordsToGeoCoords`

> *sessionHandle = Session handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value*
> *in* **u** `sessionHandle`
>
> *mapViewInstanceHandle = Map instance handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value*
> *in* **u** `mapViewInstanceHandle`

pixelCoordinates = array[struct(x,y)]
x = x-coordinate (x=0 indicates the first left pixel of the map view)
y = y-coordinate (y=0 indicates the first top pixel of the map view)
in **a(qq)** `pixelCoordinates`

geoCoordinates = array[struct(lat,lon)]
lat = latitude in format %3.6f. Range[-90:+90]
lon = longitude in format %3.6f. Range[-180:+180]
out **a(dd)** `geoCoordinates`

ConvertGeoCoordsToPixelCoords = This method converts geographical coordinates into pixel coordinates
method `ConvertGeoCoordsToPixelCoords`

sessionHandle = Session handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value
in **u** `sessionHandle`

mapViewInstanceHandle = Map instance handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value
in **u** `mapViewInstanceHandle`

geoCoordinates = array[struct(lat,lon)]
lat = latitude in format %3.6f. Range[-90:+90]
lon = longitude in format %3.6f. Range[-180:+180]
in **a(dd)** `geoCoordinates`

pixelCoordinates = array[struct(x,y)]
x = x-coordinate (x=0 indicates the first left pixel of the map view)
y = y-coordinate (y=0 indicates the first top pixel of the map view)
out **a(qq)** `pixelCoordinates`

DisplayCustomElements = This method visualizes a set of custom elements on the map
method `DisplayCustomElements`

sessionHandle = Session handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value
in **u** `sessionHandle`

mapViewInstanceHandle = Map instance handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value
in **u** `mapViewInstanceHandle`

customElements = array[struct(name,iconUri,coordinate,anchorPoint)]
name = name of the custom element
iconUri = uri to the icon of the custome element
coordinate = struct(lat,lon)
lat = latitude in format %3.6f. Range[-90:+90]. Example: 48.053250
lon = longitude in format %3.6f. Range[-180:+180]. Example: 8.321000
anchorPoint=struct(anchorX,anchorY)
anchorPoint defines which point on the icon is used as the reference for associating the icon to the map coordinate
(0,0) is the center of the icon
(-1,-1) is the top left corner of the icon
(1,1) is the bottom right corner of the icon
anchorX = anchor x value
anchorY = anchor y value
in **a(ss(dd)(nn))** `customElements`

customElementHandles = handles to the custom elements displayed on the map. The order of the handles is the same as the order of custom elements specified in the argument 'customElements'. Range[0x0:0x7fffffff]. 0x0 is

reserved as an invalid handle value
out **au** `customElementHandles`

HideCustomElements = This method hides a set of custom elements which were visualized by DisplayCustomElements
method `HideCustomElements`

sessionHandle = Session handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value
in **u** `sessionHandle`

mapViewInstanceHandle = Map instance handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value
in **u** `mapViewInstanceHandle`

customElementHandles = Custom element handles. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value
in **au** `customElementHandles`

GetDisplayedCustomElements = This method retrieves the visualized custom elements on the map
method `GetDisplayedCustomElements`

mapViewInstanceHandle = Map instance handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value
in **u** `mapViewInstanceHandle`

customElements = array[customElement]
customElement = tuple[customElementHandle,struct(name,iconUri,coordinate,anchorPoint)]
customElementHandle = Custom element handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value
name = name of the custom element
iconUri = uri to the icon of the custome element
coordinate = struct(lat,lon)
lat = latitude in format %3.6f. Range[-90:+90]. Example: 48.053250
lon = longitude in format %3.6f. Range[-180:+180]. Example: 8.321000
anchorPoint=struct(anchorX,anchorY)
anchorPoint defines which point on the icon is used as the reference for associating the icon to the map coordinate
(0,0) is the center of the icon
(-1,-1) is the top left corner of the icon
(1,1) is the bottom right corner of the icon
anchorX = anchor x value
anchorY = anchor y value
out **a{u(ss(dd)(nn))}** `customElements`

SelectElementsOnMap = This method selects elements on the map view which are at the position specified by user input
method `SelectElementsOnMap`

mapViewInstanceHandle = Map instance handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value
in **u** `mapViewInstanceHandle`

pixelCoordinates = struct(x,y)
x = x-coordinate of the position on the map view specified by user input (x=0 indicates the first left pixel of the map view)
y = y-coordinate of the position on the map view specified by user input (y=0 indicates the first top pixel of the map view)
in **(qq)** `pixelCoordinate`

selectableTypes = array[selectableType]

selectableType =
enum(INVALID,CUSTOM_ELEMENT,CURRENT_POSITION,WAYPOINT,POI,TRAFFIC_INCIDENT,ROUTE,GEOCOORDINATES)
Note: The order of priority by which the elements are selected is implementation dependent
in **aq** `selectableTypes`

maxNumberOfSelectedElements = maximum number of selected elements to return. If 0, all possible elements which can be selected will be returned
in **q** `maxNumberOfSelectedElements`

selectedElements = array[selectableType,struct(lat,lon),value]
selectableType =
enum(INVALID,CUSTOM_ELEMENT,CURRENT_POSITION,WAYPOINT,POI,TRAFFIC_INCIDENT,ROUTE,GEOCOORDINATES)
lat = latitude of the selected element in format %3.6f. Range[-90:+90]
lon = longitude of the selected element in format %3.6f. Range[-180:+180]
selectableType = CUSTOM_ELEMENT, value = value of type '(uss(nn))' that expresses the extra data for a custom element
Note: the extra data for a custom element is expressed as a struct(customElementHandle,name,iconUri,struct(anchorX,anchorY))
selectableType = CURRENT_POSITION, value = null
selectableType = WAYPOINT, value = value of type '(uq)' that expresses the extra data for a waypoint
Note: the extra data for a waypoint is expressed as a struct(routeHandle,waypointIndex) where waypointIndex is the index of the waypoint on the route (the first waypoint is index 0)
selectableType = POI, value = value of type 'u' that expresses a POI handle
selectableType = TRAFFIC_INCIDENT, value = value of type 'i' that expresses a traffic incident identifier
selectableType = ROUTE, value = value of type 'u' that expresses a route handle
selectableType = GEOCOORDINATES, value = null
out **a(q(dd)v)** `selectedElements`

interface org.genivi.mapviewer.Session

version 3.0.0 (21-01-2014)

Session = This interface offers functions to create and delete sessions

---

GetVersion = This method returns the API version implemented by the server application

method `GetVersion`

version = struct(major,minor,micro,date)
major = when the major changes, then backward compatibility with previous releases is not granted
minor = when the minor changes, then backward compatibility with previous releases is granted, but something changed in the implementation of the API (e.g. new methods may have been added)
micro = when the micro changes, then backward compatibility with previous releases is granted (bug fixes or documentation modifications)
date = release date (e.g. 21-06-2011)

out **(qqqs)** `version`

CreateSession = This method creates a new session

method `CreateSession`

client = name or identifier of the client application that requests a new session
The navigation core must internally associate this name to the returned session handle
This parameter can be used to identify the client application and determine if a given feature is enabled for it

in **s** `client`

sessionHandle = Session handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value

out **u** `sessionHandle`

This error is generated if no more session handles are available

error *`org.genivi.mapviewer.Session.Error.NoMoreSessionHandles`*

DeleteSession = This method deletes a session and its associated resources

method `DeleteSession`

sessionHandle = Session handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value

in **u** `sessionHandle`

This error is generated if an application tries to delete a session handle that is not available

error *`org.genivi.mapviewer.Session.Error.SessionNotAvailable`*

GetSessionStatus = This method returns whether a given session handle is available or not (for example because it was deleted)

method `GetSessionStatus`

sessionHandle = Session handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value

in **u** `sessionHandle`

sessionStatus = enum(INVALID,AVAILABLE,NOT_AVAILABLE)

out **q** `sessionStatus`

GetAllSessions = This method returns a list of all available sessions

method `GetAllSessions`

sessionsList = array[struct(sessionHandle,client)]

sessionHandle = Session handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value

client = name or identifier of the client application that requested the sessionHandle

out **a(us)** `sessionsList`

SessionDeleted = This signal is emitted when a session is deleted

signal `SessionDeleted`

sessionHandle = Session handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value

out **u** `sessionHandle`

interface *org.genivi.mapviewer.Configuration*

version 3.0.0 (21-01-2014)

Configuration = This interface offers functions to set and retrieve configuration parameters

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GetVersion = This method returns the API version implemented by the server application

method `GetVersion`

> *version = struct(major,minor,micro,date)*
>
> *major = when the major changes, then backward compatibility with previous releases is not granted*
>
> *minor = when the minor changes, then backward compatibility with previous releases is granted, but something changed in the implementation of the API (e.g. new methods may have been added)*
>
> *micro = when the micro changes, then backward compatibility with previous releases is granted (bug fixes or documentation modifications)*
>
> *date = release date (e.g. 21-06-2011)*
>
> *out* **(qqqs)** `version`

SetUnitsOfMeasurement = This method sets the units of measurement

method `SetUnitsOfMeasurement`

> *unitsOfMeasurementList = array[unitsOfMeasurement]*
>
> *unitsOfMeasurement = tuple (key,value)*
>
> *key = enum(INVALID,LENGTH, ...)*
>
> *key = LENGTH, value = value of type 'q', that represents an enum(INVALID,METER,MILE, ...)*
>
> *in* **a{qv}** `unitsOfMeasurementList`

GetUnitsOfMeasurement = This method retrieves the units of measurement

method `GetUnitsOfMeasurement`

> *unitsOfMeasurementList = array[unitsOfMeasurement]*
>
> *unitsOfMeasurement = tuple (key,value)*
>
> *key = enum(INVALID,LENGTH, ...)*
>
> *key = LENGTH, value = value of type 'q', that represents an enum(INVALID,METER,MILE, ...)*
>
> *out* **a{qv}** `unitsOfMeasurementList`

GetSupportedUnitsOfMeasurement = This method retrieves the supported units of measurement

method `GetSupportedUnitsOfMeasurement`

> *unitsOfMeasurementList = array[unitsOfMeasurement]*
>
> *unitsOfMeasurement = dictionary[key,value]*
>
> *dictionary = array of tuples (key,value)*
>
> *key = enum(INVALID,LENGTH, ...)*
>
> *key = LENGTH, value = value of type 'aq'; 'q' is an enum(INVALID,METER,MILE, ...)*

out **a{qv}** `unitsOfMeasurementList`

SetTimeFormat = This method sets the time format
method `SetTimeFormat`

timeFormat = enum(INVALID,12H,24H, ...)
in **q** `timeFormat`

GetTimeFormat = This method retrieves the time format
method `GetTimeFormat`

timeFormat = enum(INVALID,12H,24H, ...)
out **q** `timeFormat`

GetSupportedTimeFormats = This method retrieves the supported time formats
method `GetSupportedTimeFormats`

timeFormatList = array[timeFormat]
timeFormat = enum(INVALID,12H,24H, ...)
out **aq** `timeFormatList`

SetCoordinatesFormat = This method sets the coordinates format
method `SetCoordinatesFormat`

coordinatesFormat = enum(INVALID,DEGREES,MINUTES,SECONDS, ...)
DEGREES format = d.dº
MINUTES format = dºm.m'
SECONDS format = dºm's"
in **q** `coordinatesFormat`

GetCoordinatesFormat = This method retrieves the coordinates format
method `GetCoordinatesFormat`

coordinatesFormat = enum(INVALID,DEGREES,MINUTES,SECONDS, ...)
DEGREES format = d.dº
MINUTES format = dºm.m'
SECONDS format = dºm's"
out **q** `coordinatesFormat`

GetSupportedCoordinatesFormats = This method retrieves the supported coordinates formats
method `GetSupportedCoordinatesFormats`

coordinatesFormatList = array[coordinatesFormat]

coordinatesFormat = enum(INVALID,DEGREES,MINUTES,SECONDS, ...)

DEGREES format = d.dº

MINUTES format = dºm.m'

SECONDS format = dºm's"

out **aq** `coordinatesFormatList`

SetLocale = This method sets the current language and country

method `SetLocale`

language = ISO 639-3 language code (lower case)

in **s** `language`

country = ISO 3166-1 alpha 3 country code (upper case)

in **s** `country`

GetLocale = This method retrieves the current language and country

method `GetLocale`

language = ISO 639-3 language code (lower case)

out **s** `language`

country = ISO 3166-1 alpha 3 country code (upper case)

out **s** `country`

GetSupportedLocales = This method retrieves the supported languages and countries

method `GetSupportedLocales`

localeList = array[struct(language,country)]

language = ISO 639-3 language code (lower case)

country = ISO 3166-1 alpha 3 country code (upper case)

out **a(ss)** `localeList`

ConfigurationChanged = This signal is sent to the clients when one or more configuration settings changes

signal `ConfigurationChanged`

changedSettings = array[setting]

setting = enum(INVALID,UNITS_OF_MEASUREMENT,LOCALE,TIME_FORMAT,COORDINATES_FORMAT, ...)

out **aq** `changedSettings`

constants MapViewer version 3.0.0 (21-01-2014)

- *This document defines the constants used in the MapViewer APIs*

- *INVALID = 0x0000*

- *ALL = 0xffff*

- *AVAILABLE = 0x0001*

- *NOT_AVAILABLE = 0x0002*

- *TIME_FORMAT = 0x0003*

- *12H = 0x0004*

- *24H = 0x0005*

- *COORDINATES_FORMAT = 0x0006*

- *DEGREES = 0x0007*

- *MINUTES = 0x0008*

- *SECONDS = 0x0009*

- *MAIN_MAP = 0x0010*

- *SPLIT_SCREEN = 0x0011*

- *2D = 0x0020*

- *3D = 0x0021*

- *LOCALE = 0x0025*

- *UNITS_OF_MEASUREMENT = 0x0030*

- *LENGTH = 0x0031*

- *METER = 0x0032*

- *MILE = 0x0033*

- *KM = 0x0034*

- *YARD = 0x0035*

- *FOOT = 0x0036*

- *MIN = 0x0040*

- *MAX = 0x0041*
- *MID = 0x0042*
- *VISIBLE = 0x0043*
- *INVISIBLE = 0x0044*
- *FROZEN = 0x0045*
- *LEVEL1 = 0x0050*
- *LEVEL2 = 0x0051*
- *LEVEL3 = 0x0052*
- *LEVEL4 = 0x0053*
- *LEVEL5 = 0x0054*
- *THEME_1 = 0x0060*
- *THEME_2 = 0x0061*
- *THEME_3 = 0x0062*
- *CONSTANT_ANGLE = 0x0070*
- *TRACK_UP = 0x0071*
- *TOWARDS_TARGET = 0x0072*
- *PAN_START = 0x0100*
- *PAN_TO = 0x0101*
- *PAN_END = 0x0102*
- *BUILDINGS = 0x0080*
- *TERRAIN = 0x0081*
- *AUTOMATIC = 0x0110*
- *MANUAL = 0x0111*
- *HYBRID = 0x0112*
- *CUSTOM_ELEMENT = 0x0120*
- *CURRENT_POSITION = 0x0121*
- *WAYPOINT = 0x0122*
- *POI = 0x0123*

- *TRAFFIC_INCIDENT = 0x0124*

- *ROUTE = 0x0125*

- *GEOCOORDINATES = 0x0126*