



# **Navigation Controller API**

## **Interface Specification**

Harman Connected Car

CoC\_Nav\_NavCtrl\_Trunk\_16103a

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## Navigation Controller API: Interface Specification

Harman Connected Car

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Person in charge: Jacob Block

CoC\_Nav\_NavCtrl\_Trunk\_16103a

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### Revision History

Revision	2016-03-08	Jacob Block
CoC_Nav_NavCtrl_Trunk_16093a		
<b>Interface Changes:</b>		
<ul style="list-style-type: none"><li>• <a href="#">CCNAVCA-38</a> - Settings attribute for map viewer instances<ul style="list-style-type: none"><li>• <a href="#">org_harman_nav_ctrl_mapv_MapViewControl.hbsi</a> (1.1 to 1.2).</li><li>• <a href="#">org_harman_nav_ctrl_mapv_MapViewControlTypes.hbtd</a> (1.0 to 1.1).</li></ul></li></ul>		
Revision	2016-03-01	Jacob Block
CoC_Nav_NavCtrl_Trunk_16093a		
<b>Interface Changes:</b>		
<ul style="list-style-type: none"><li>• <a href="#">CCNAVCA-26</a> - Guidance improvements with new waypoint attribute, broadcasts for maneuvers, and separation of static and dynamic data structures.<ul style="list-style-type: none"><li>• <a href="#">org_harman_nav_ctrl_Guidance.hbsi</a> (0.3 to 0.4).</li><li>• <a href="#">org_harman_nav_ctrl_GuidanceTypes.hbtd</a> (1.1 to 1.2).</li></ul></li><li>• <a href="#">CCNAVCA-34</a> - TpegOverIP data download<ul style="list-style-type: none"><li>• <a href="#">org_harman_nav_ctrl_traffic_TrafficInformation.hbsi</a> (2.0 to 2.1).</li><li>• <a href="#">org_harman_nav_ctrl_traffic_TrafficInformationTypes.hbtd</a> (2.0 to 2.1).</li><li>• <a href="#">org_harman_nav_ctrl_highawymode_HighwayMode.hbsi</a> (2.1 to 2.2).</li><li>• <a href="#">org_harman_nav_ctrl_highawymode_HighwayModeTypes.hbtd</a> (2.1 to 2.2).</li></ul></li><li>• <a href="#">CCNAVCA-35</a> - New HOV RoutePreferenceSource for avoidance<ul style="list-style-type: none"><li>• <a href="#">org_harman_nav_ctrl_Routing.hbsi</a> (1.2 to 1.3).</li><li>• <a href="#">org_harman_nav_ctrl_RoutingTypes.hbtd</a> (1.1 to 1.2).</li></ul></li><li>• Updated positioning descriptions for maps with variant types.<ul style="list-style-type: none"><li>• <a href="#">org_harman_nav_ctrl_PositioningTypes.hbsi</a> (No Change).</li></ul></li></ul>		
Revision	2016-02-24	Jacob Block
CoC_Nav_NavCtrl_Trunk_16083a		
<b>Interface Changes:</b>		
<ul style="list-style-type: none"><li>• <a href="#">CCNAVCA-33</a> - Adding date fields to DBUpdate<ul style="list-style-type: none"><li>• <a href="#">org_harman_nav_ctrl_dbupdate_DBUpdate.hbsi</a> (0.2 to 1.0).</li><li>• <a href="#">org_harman_nav_ctrl_dbupdate_DBUpdateTypes.hbtd</a> (0.3 to 1.0).</li></ul></li></ul>		

Revision	2016-02-16	Jacob Block
CoC_Nav_NavCtrl_Trunk_16073a		
<b>Interface Changes:</b>		
<ul style="list-style-type: none"> <li>• <a href="#">CCNAVCA-31</a> - Change several requests to use item id in place of view id. <ul style="list-style-type: none"> <li>• <a href="#">org_harman_nav_ctrl_memory_LocationMemory.hbsi</a> (4.0 to 5.0).</li> </ul> </li> <li>• <a href="#">CCNAVCA-32</a> - Retrieve details about specific item (e.g. click id) <ul style="list-style-type: none"> <li>• <a href="#">org_harman_nav_ctrl_memory_LocationMemory.hbsi</a> (4.0 to 5.0).</li> <li>• <a href="#">org_harman_nav_ctrl_memory_LocationMemoryTypes.hbtd</a> (3.3 to 3.4).</li> </ul> </li> </ul>		
Revision	2016-01-26	Jacob Block
CoC_Nav_NavCtrl_Trunk_16043a		
<b>Interface Changes:</b>		
<ul style="list-style-type: none"> <li>• <a href="#">CCNAVCA-17</a> - Semi Dynamic Routing <ul style="list-style-type: none"> <li>• <a href="#">org_harman_nav_ctrl_Guidance.hsbi</a> (0.2 to 0.3).</li> <li>• <a href="#">org_harman_nav_ctrl_GuidanceTypes.hbtd</a> (1.0 to 1.1).</li> </ul> </li> <li>• <a href="#">CCNAVCA-23</a> - LocationMemory new AddItem method <ul style="list-style-type: none"> <li>• <a href="#">org_harman_nav_ctrl_di_OneBoxSearch.hsbi</a> (2.2 to 2.3).</li> <li>• <a href="#">org_harman_nav_ctrl_memory_LocationMemory.hbsi</a> (3.2 to 4.0).</li> <li>• <a href="#">org_harman_nav_ctrl_memory_LocationMemoryTypes.hbtd</a> (3.2 to 3.3).</li> </ul> </li> <li>• <a href="#">CCNAVCA-25</a> - New enum in LI for country abbreviation <ul style="list-style-type: none"> <li>• <a href="#">org_harman_nav_ctrl_di_LocationInputTypes.hbtd</a> (2.1 to 2.2).</li> <li>• <a href="#">org_harman_nav_ctrl_di_LocationInput.hbsi</a> (2.1 to 2.2).</li> <li>• <a href="#">org_harman_nav_ctrl_di_OneBoxSearch.hsbi</a> (2.2 to 2.3).</li> <li>• <a href="#">org_harman_nav_ctrl_di_SpeechLocationInput.hsbi</a> (0.2 to 0.2).</li> <li>• <a href="#">org_harman_nav_ctrl_di_SpeechLocationInputTypes.hbtd</a> (1.0 to 1.0).</li> <li>• <a href="#">org_harman_nav_ctrl_di_SpeechPoiSearch.hsbi</a> (0.1 to 0.1).</li> <li>• <a href="#">org_harman_nav_ctrl_highwaymode_HighwayMode.hsbi</a> (2.1 to 2.1).</li> <li>• <a href="#">org_harman_nav_ctrl_highwaymode_HighwayModeTypes.hbtd</a> (2.1 to 2.1).</li> <li>• <a href="#">org_harman_nav_ctrl_memory_LocationMemory.hbsi</a> (3.2 to 4.0).</li> <li>• <a href="#">org_harman_nav_ctrl_memory_LocationMemoryTypes.hbtd</a> (3.2 to 3.3).</li> </ul> </li> <li>• <a href="#">CCNAVCA-29</a> - SpeedCam increased functionality and refactoring <ul style="list-style-type: none"> <li>• <a href="#">org_harman_nav_ctrl_speedcam_SpeedCamOnlineService.hsbi</a> (0.2 to 1.0).</li> <li>• <a href="#">org_harman_nav_ctrl_speedcam_SpeedCamOnlineServiceTypes.hbtd</a> (1.0 to 1.0).</li> <li>• <a href="#">org_harman_nav_ctrl_speedcam_SpeedCamService.hsbi</a> (2.0 to 3.0).</li> <li>• <a href="#">org_harman_nav_ctrl_speedcam_SpeedCamServiceTypes.hbtd</a> (2.0 to 3.0).</li> </ul> </li> </ul>		
Revision	2016-01-18	Jacob Block
CoC_Nav_NavCtrl_Trunk_16033a		
<b>Interface Changes:</b>		
<ul style="list-style-type: none"> <li>• <a href="#">CCNAVCA-20</a> - Enhanced traffic services (icon, message by id, tuner configuration) <ul style="list-style-type: none"> <li>• <a href="#">org_harman_nav_ctrl_highwaymode_HighwayMode.hsbi</a> (2.1 to 2.1). Upgraded hbtd dependency.</li> <li>• <a href="#">org_harman_nav_ctrl_highwaymode_HighwayModeTypes.hbtd</a> (2.1 to 2.1). Upgraded hbtd dependency.</li> <li>• <a href="#">org_harman_nav_ctrl_traffic_TrafficInformation.hbsi</a> (1.0 to 2.0)</li> <li>• <a href="#">org_harman_nav_ctrl_traffic_TrafficInformationTypes.hbtd</a> (1.0 to 2.0)</li> </ul> </li> </ul>		
<b>Interfaces Removed:</b>		
<ul style="list-style-type: none"> <li>• Removed <a href="#">org_harman_nav_ctrl_PositioningInternal.hbsi</a> from external delivery.</li> </ul>		

Revision	2016-01-07	Jacob Block
CoC_Nav_NavCtrl_Trunk_16014a		
<b>Interface Changes:</b>		
<ul style="list-style-type: none"> <li>• <a href="#">CCNAVCA-22</a> - Additional route avoidance options. <ul style="list-style-type: none"> <li>• <a href="#">org_harman_nav_ctrl_Routing.hsbi</a> (1.1 to 1.2)</li> <li>• <a href="#">org_harman_nav_ctrl_RoutingTypes.hbtd</a> (1.0 to 1.1)</li> </ul> </li> <li>• <a href="#">CCNAVCA-21</a> - Additional speedcam functionality. <ul style="list-style-type: none"> <li>• <a href="#">org_harman_nav_ctrl_speedcam_SpeedCamService.hsbi</a> (1.0 to 2.0)</li> <li>• <a href="#">org_harman_nav_ctrl_speedcam_SpeedCamServiceTypes.hbtd</a> (1.0 to 2.0)</li> </ul> </li> <li>• <a href="#">CCNAVCA-18</a> - New empty item type for lists. <ul style="list-style-type: none"> <li>• <a href="#">org_harman_nav_ctrl_di_OneBoxSearch.hsbi</a> (2.1 to 2.2)</li> <li>• <a href="#">org_harman_nav_ctrl_memory_LocationMemory.hsbi</a> (3.1 to 3.2)</li> <li>• <a href="#">org_harman_nav_ctrl_memory_LocationMemoryTypes.hbtd</a> (3.1 to 3.2)</li> </ul> </li> </ul>		
Revision	2015-12-17	Oliver Kude
CoC_Nav_NavCtrl_Trunk_15413a		
Release NavCtrl Trunk CW 51		
Revision	2015-12-09	Jacob Block
CoC_Nav_NavCtrl_Trunk_15502a		
Release NavCtrl Trunk CW 50		
<ul style="list-style-type: none"> <li>• <a href="#">CCNAVCA-16</a></li> <li>• <a href="#">CCNAVCA-11</a></li> <li>• <a href="#">CCNAVCA-9</a></li> <li>• <a href="#">CCNAVCA-7</a></li> </ul>		
Revision	2015-11-19	Oliver Kude
CoC_Nav_NavCtrl_Trunk_15473a		
Release NavCtrl Trunk CW 47		
Revision	2015-11-19	Oliver Kude
CoC_Nav_NavCtrl_Trunk_15473a		
Release NavCtrl Trunk CW 47		
Revision	2015-11-12	Oliver Kude
CoC_Nav_NavCtrl_Trunk_15463a		
Release NavCtrl Trunk CW 46		
Revision	2015-10-29	Oliver Kude
CoC_Nav_NavCtrl_Trunk_15443a		
Release NavCtrl Trunk CW 44		
Revision	2015-10-15	Oliver Kude
CoC_Nav_NavCtrl_Trunk_15424a		
Release NavCtrl Trunk CW 42		
Revision	2015-09-23	Oliver Kude
CoC_Nav_NavCtrl_Trunk_15393a		
Release NavCtrl Trunk CW 39		
Revision	2015-09-17	Oliver Kude
CoC_Nav_NavCtrl_Trunk_15383a		
Release NavCtrl Trunk CW 38		

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Revision	2015-09-03	Veneriu Sandulescu
CoC_Nav_NavCtrl_Trunk_15363a		
Release NavCtrl Trunk CW 36		
Revision	2015-07-02	Oliver Kude
CoC_Nav_NavCtrl_Trunk_15273a		
Release NavCtrl Trunk CW 27		
Revision	2015-06-11	Oliver Kude
CoC_Nav_NavCtrl_Trunk_15243a		
Release NavCtrl Trunk CW 24		

# Table of Contents

1. Introduction .....	1
1.1. Scope .....	1
1.2. DSI .....	2
1.3. Service Interface Elements .....	2
1.4. DataTypes .....	3
1.5. Guidelines & Conventions .....	3
2. Application Service .....	4
2.1. org_harman_nav_ctrl_configuration_Configuration .....	4
2.1.1. getCoordinatesFormat .....	4
2.1.2. getLocale .....	4
2.1.3. getNavigationVersion .....	4
2.1.4. getSupportedCoordinatesFormats .....	5
2.1.5. getSupportedLocales .....	5
2.1.6. getSupportedTimeFormats .....	5
2.1.7. getSupportedUnitsOfMeasurement .....	6
2.1.8. getTimeFormat .....	6
2.1.9. getUnitsOfMeasurement .....	6
2.1.10. setCoordinatesFormat .....	7
2.1.11. setLocale .....	7
2.1.12. setStyleTheme .....	7
2.1.13. setTimeFormat .....	8
2.1.14. setUnitsOfMeasurement .....	8
2.1.15. configurationChanges .....	8
2.1.16. Error .....	9
2.2. org_harman_nav_ctrl_configuration_ConfigurationBase .....	10
2.2.1. getCoordinatesFormat .....	10
2.2.2. getLocale .....	10
2.2.3. getNavigationVersion .....	10
2.2.4. getStyleTheme .....	11
2.2.5. getSupportedCoordinatesFormats .....	11
2.2.6. getSupportedLocales .....	11
2.2.7. getSupportedUnitsOfMeasurement .....	12
2.2.8. getTimeFormat .....	12
2.2.9. getUnitsOfMeasurement .....	12
2.2.10. configurationChanges .....	13
2.2.11. Error .....	13
2.3. org_harman_nav_ctrl_configuration_ConfigurationTypes .....	14
2.3.1. CoordinatesFormat .....	14
2.3.2. CoordinatesFormats .....	14
2.3.3. GetCoordinatesFormatError .....	14
2.3.4. GetLocaleError .....	14
2.3.5. GetLocalesError .....	15
2.3.6. GetStyleThemeError .....	15
2.3.7. GetSupportedCoordinatesFormatsError .....	15
2.3.8. GetSupportedTimeFormatsError .....	15
2.3.9. GetSupportedUnitsOfMeasurementError .....	16
2.3.10. GetTimeFormatError .....	16
2.3.11. GetUnitsOfMeasurementError .....	16
2.3.12. GetVersionError .....	16

2.3.13. Locale .....	16
2.3.14. Locales .....	17
2.3.15. NavigationVersion .....	17
2.3.16. SetCoordinatesFormatError .....	17
2.3.17. SetLocaleError .....	18
2.3.18. SetStyleThemeError .....	18
2.3.19. SetTimeFormatError .....	18
2.3.20. SetUnitsOfMeasurementError .....	18
2.3.21. Setting .....	19
2.3.22. Settings .....	19
2.3.23. StyleTheme .....	19
2.3.24. TimeFormat .....	20
2.3.25. TimeFormats .....	20
2.3.26. UnitOfMeasurement .....	20
2.3.27. UnitOfMeasurementKey .....	20
2.3.28. UnitOfMeasurementValue .....	21
2.3.29. UnitsOfMeasurement .....	21
2.4. org_harman_nav_ctrl_dbupdate_DBUpdate .....	21
2.4.1. SetAutoModus .....	21
2.4.2. applyUpdate .....	23
2.4.3. cancelUpdate .....	24
2.4.4. finalizeUpdate .....	24
2.4.5. updateList .....	25
2.4.6. dealerUpdateAvailable .....	26
2.4.7. aautoModus .....	26
2.4.8. adealerUpdateProgress .....	26
2.4.9. aoutstandingUpdates .....	27
2.4.10. aversionId .....	27
2.4.11. Error .....	27
2.5. org_harman_nav_ctrl_dbupdate_DBUpdateTypes .....	28
2.5.1. E_RequestMode .....	28
2.5.2. E_UpdateType .....	28
2.5.3. SDBDealerUpdate .....	29
2.5.4. SDBOTAUpdate .....	29
2.5.5. SVersion .....	30
2.5.6. TId .....	30
2.5.7. TOTAUpdateList .....	31
2.6. org_harman_nav_ctrl_Simulation .....	31
2.6.1. getSimulationSpeed .....	31
2.6.2. getSimulationStatus .....	31
2.6.3. pauseSimulation .....	32
2.6.4. resumeSimulation .....	32
2.6.5. setPosition .....	32
2.6.6. setSimulationMode .....	33
2.6.7. setSimulationSpeed .....	33
2.6.8. simulationSpeedChanged .....	33
2.6.9. simulationStatusChanged .....	33
2.7. org_harman_nav_ctrl_SimulationTypes .....	34
2.7.1. SimulationStatus .....	34
3. Location Service .....	35
3.1. org_harman_nav_ctrl_di_LocationInput .....	35

3.1.1. createLocationInput .....	35
3.1.2. deleteLocationInput .....	35
3.1.3. getEntry .....	36
3.1.4. getSupportedAddressAttributes .....	36
3.1.5. getVersion .....	36
3.1.6. requestListUpdate .....	37
3.1.7. reverseGeocode .....	37
3.1.8. search .....	38
3.1.9. selectEntry .....	38
3.1.10. setAddress .....	38
3.1.11. setSelectionCriterion .....	39
3.1.12. spell .....	39
3.1.13. validateAddress .....	40
3.1.14. addressValidationResult .....	40
3.1.15. contentUpdated .....	41
3.1.16. currentSelectionCriterion .....	41
3.1.17. searchResultList .....	41
3.1.18. searchResultListSizeChanged .....	42
3.1.19. spellResult .....	42
3.1.20. Error .....	42
3.1.21. THBVector_AddressAttribute_ .....	43
3.1.22. THBVector_Address_ .....	43
3.1.23. THBVector_ValidationStatus_ .....	43
3.2. org_harman_nav_ctrl_di_LocationInputTypes .....	43
3.2.1. Address .....	43
3.2.2. AddressAttribute .....	44
3.2.3. AddressAttributeList .....	45
3.2.4. AddressValue .....	45
3.2.5. SearchStatus .....	45
3.2.6. ValidationStatus .....	45
3.2.7. ValidationType .....	46
3.3. org_harman_nav_ctrl_di_OneBoxSearch .....	46
3.3.1. cancelOneBoxSearch .....	46
3.3.2. createOneBoxSearch .....	47
3.3.3. deleteOneBoxSearch .....	47
3.3.4. getEntry .....	47
3.3.5. getVersion .....	48
3.3.6. requestResultList .....	48
3.3.7. selectEntry .....	49
3.3.8. setSearchCountry .....	49
3.3.9. setSearchLanguage .....	50
3.3.10. setSearchParameters .....	50
3.3.11. startOneBoxSearch .....	51
3.3.12. searchResultList .....	51
3.3.13. searchResultListSizeChanged .....	52
3.3.14. searchStatus .....	52
3.3.15. Error .....	52
3.4. org_harman_nav_ctrl_di_OneBoxSearchTypes .....	53
3.4.1. FtsOptions .....	53
3.5. org_harman_nav_ctrl_di_POIContentAccess .....	53
3.5.1. addCategories .....	53



3.5.2. registerContentAccessModule .....	54
3.5.3. registerPoiCategories .....	54
3.5.4. removeCategories .....	55
3.5.5. unRegisterContentAccessModule .....	55
3.5.6. updateCategories .....	56
3.5.7. THBVector_CAMCategoryUpdate_ .....	56
3.5.8. THBVector_CAMCategory_ .....	56
3.5.9. THBVector_CategoryID_ .....	57
3.6. org_harman_nav_ctrl_di_POIContentAccessModule .....	57
3.6.1. getVersion .....	57
3.6.2. poiDetailsRequested .....	57
3.6.3. poiSearchCanceled .....	58
3.6.4. poiSearchStarted .....	58
3.6.5. resultListRequested .....	59
3.6.6. setLanguage .....	59
3.6.7. searchStatus .....	60
3.6.8. THBVector_AttributeDetails_ .....	60
3.6.9. THBVector_AttributeID_ .....	60
3.6.10. THBVector_CategoryAndRadius_ .....	60
3.6.11. THBVector_Coordinate3D_ .....	61
3.6.12. THBVector_POI_ID_ .....	61
3.6.13. THBVector_PoiCAMDetails_ .....	61
3.6.14. THBVector_SearchResultDetails_ .....	61
3.7. org_harman_nav_ctrl_di_POISearch .....	61
3.7.1. cancelPoiSearch .....	61
3.7.2. createPoiSearchHandle .....	62
3.7.3. deletePoiSearchHandle .....	62
3.7.4. getAvailableCategories .....	62
3.7.5. getCategoriesDetails .....	63
3.7.6. getChildrenCategories .....	63
3.7.7. getParentCategories .....	64
3.7.8. getPoiData .....	64
3.7.9. getPoiDetails .....	64
3.7.10. getRootCategory .....	65
3.7.11. getVersion .....	65
3.7.12. requestResultList .....	66
3.7.13. setAttributes .....	66
3.7.14. setCategories .....	67
3.7.15. setCenter .....	67
3.7.16. setMaximumResults .....	67
3.7.17. setRouteHandle .....	68
3.7.18. setSearchRadius .....	68
3.7.19. startPoiSearch .....	69
3.7.20. categoriesUpdated .....	69
3.7.21. poiStatus .....	70
3.7.22. resultListChanged .....	70
3.7.23. Error .....	70
3.7.24. THBVector_AttributeDetails_ .....	71
3.7.25. THBVector_AttributeID_ .....	71
3.7.26. THBVector_CategoryAndLevel_ .....	71
3.7.27. THBVector_CategoryAndName_ .....	71

3.7.28. THBVector_CategoryAndReason_ .....	71
3.7.29. THBVector_CategoryID_ .....	71
3.7.30. THBVector_Category_ .....	72
3.7.31. THBVector_POI_ID_ .....	72
3.7.32. THBVector_SearchResultDetails_ .....	72
3.7.33. THBVector_SearchResult_ .....	72
3.8. org_harman_nav_ctrl_di_POIServiceTypes .....	72
3.8.1. AttributeDetails .....	72
3.8.2. AttributeID .....	73
3.8.3. AttributeType .....	73
3.8.4. AttributeValue .....	74
3.8.5. CAMCategory .....	74
3.8.6. CAMCategoryUpdate .....	74
3.8.7. Category .....	75
3.8.8. CategoryAndLevel .....	75
3.8.9. CategoryAndName .....	76
3.8.10. CategoryAndRadius .....	76
3.8.11. CategoryAndReason .....	76
3.8.12. CategoryAndStatus .....	77
3.8.13. CategoryAttribute .....	77
3.8.14. CategoryDetails .....	77
3.8.15. CategoryID .....	78
3.8.16. CategorySortOption .....	78
3.8.17. Category_t .....	79
3.8.18. Details .....	79
3.8.19. Icon .....	79
3.8.20. Media .....	80
3.8.21. Operator .....	80
3.8.22. OperatorType .....	80
3.8.23. POI_ID .....	81
3.8.24. PoiAddedDetails .....	81
3.8.25. PoiAttribute .....	81
3.8.26. PoiCAMDetails .....	81
3.8.27. PoiDetails .....	82
3.8.28. PreviewDetails .....	82
3.8.29. ResourceID .....	83
3.8.30. SearchResult .....	83
3.8.31. SearchResultDetails .....	83
3.8.32. SearchStatusState .....	84
3.8.33. SortOptions .....	84
3.8.34. THBVector_CHBString_ .....	84
3.8.35. THBVector_CategoryAttribute_ .....	84
3.8.36. THBVector_CategoryID_ .....	85
3.8.37. THBVector_CategorySortOption_ .....	85
3.8.38. THBVector_Coordinate2D_ .....	85
3.8.39. THBVector_Int32_ .....	85
3.8.40. THBVector_Operator_ .....	85
3.8.41. THBVector_PoiAttribute_ .....	85
3.8.42. THBVector_PreviewDetails_ .....	86
3.8.43. THBVector_ResourceID_ .....	86
3.8.44. THBVector_bool_ .....	86

3.8.45. UpdateReason .....	86
3.9. org_harman_nav_ctrl_di_POIServiceTypesExt .....	86
3.9.1. POIStandardCat .....	87
3.9.2. PredefinedPoiAttributeIDs .....	89
3.10. org_harman_nav_ctrl_di_SpeechLocationInput .....	91
3.10.1. getSpeechList .....	91
3.10.2. getSpeechModesList .....	91
3.10.3. getSpeechOrthographies .....	92
3.10.4. Error .....	93
3.10.5. THBVector_EntryId_ .....	93
3.10.6. THBVector_SpeechMode_ .....	93
3.11. org_harman_nav_ctrl_di_SpeechLocationInputTypes .....	93
3.11.1. EntryId .....	93
3.11.2. Locales .....	93
3.11.3. SpeechInputMode .....	94
3.11.4. SpeechMode .....	94
3.12. org_harman_nav_ctrl_di_SpeechPoiSearch .....	95
3.12.1. getCategoriesSpeechInfoList .....	95
3.12.2. getCategoriesSpeechOrthographies .....	95
3.12.3. getSpeechInputModes .....	96
3.12.4. Error .....	96
3.12.5. THBVector_EntryId_ .....	97
3.12.6. THBVector_SpeechMode_ .....	97
4. DriverAssist Service .....	98
4.1. org_harman_nav_ctrl_DriverAssist .....	98
4.1.1. getAllCountryInfo .....	98
4.1.2. getAvailableCountries .....	98
4.1.3. getCountryInfo .....	98
4.1.4. getSettings .....	99
4.1.5. setSettings .....	99
4.1.6. countryInfoUpdate .....	99
4.1.7. settingsChanged .....	100
4.1.8. speedLimitExceeded .....	100
4.2. org_harman_nav_ctrl_DriverAssistTypes .....	100
4.2.1. CountryCode .....	100
4.2.2. CountryCodes .....	100
4.2.3. CountryInfo .....	101
4.2.4. CountryInfoDict .....	101
4.2.5. CountryRequirement .....	101
4.2.6. GetSettingsError .....	102
4.2.7. SetSettingsError .....	102
4.2.8. SettingType .....	102
4.2.9. SettingTypes .....	102
4.2.10. SettingValue .....	103
4.2.11. Settings .....	103
4.2.12. Speed .....	103
4.2.13. SpeedUnit .....	103
4.2.14. SpeedWarning .....	104
4.2.15. SpeedWarningNotification .....	104
5. Guidance Service .....	105
5.1. org_harman_nav_ctrl_GuidanceViewer .....	105

5.1.1. displayableValid .....	105
5.1.2. maneuverStatusChanged .....	105
5.2. org_harman_nav_ctrl_GuidanceViewerTypes .....	105
5.2.1. ECharacterCodeOfStreetName .....	105
5.2.2. EDistanceUnit .....	106
5.2.3. EIncreasedLane .....	106
5.2.4. EIncreasedLaneOption .....	106
5.2.5. EIncreasedLaneSide .....	107
5.2.6. EManeuverOrientation .....	107
5.2.7. EPresenceOfRotary .....	107
5.2.8. ERecomendLane .....	108
5.2.9. ESpecialRoadShapeForTbT .....	108
5.2.10. TLaneFlags .....	109
5.2.11. TLanesDirectionList .....	109
5.2.12. TLanesFlagList .....	109
5.2.13. TManeuverStatus .....	109
5.3. org_harman_nav_ctrl_Guidance .....	110
5.3.1. getDestinationInformation .....	111
5.3.2. getGuidanceDetails .....	111
5.3.3. getGuidanceStatus .....	112
5.3.4. getManeuversList .....	112
5.3.5. getVoiceGuidanceSettings .....	113
5.3.6. getWaypointInformation .....	113
5.3.7. pauseGuidance .....	114
5.3.8. playVoiceManeuver .....	114
5.3.9. resumeGuidance .....	115
5.3.10. selectAlternativeTIRoute .....	115
5.3.11. setRouteCalculationMode .....	116
5.3.12. setVoiceGuidance .....	116
5.3.13. setVoiceGuidanceSettings .....	116
5.3.14. skipNextManeuver .....	117
5.3.15. startGuidance .....	117
5.3.16. stopGuidance .....	117
5.3.17. activeRouteChanged .....	118
5.3.18. alternativeTIRouteAvailable .....	118
5.3.19. alternativeTIRouteInvalidated .....	118
5.3.20. guidancePaused .....	119
5.3.21. guidanceResumed .....	119
5.3.22. guidanceStatusChanged .....	119
5.3.23. laneGuidanceChanged .....	119
5.3.24. maneuverAvailable .....	120
5.3.25. maneuverChanged .....	120
5.3.26. maneuverPhaseChanged .....	120
5.3.27. maneuverTravelCostsChanged .....	120
5.3.28. positionOnRouteChanged .....	121
5.3.29. positionToRouteChanged .....	121
5.3.30. vehicleLeftTheRoadNetwork .....	121
5.3.31. vehicleLeftTheRoute .....	121
5.3.32. waypointReached .....	122
5.3.33. waypointTravelCostsChanged .....	122
5.3.34. awaypoints .....	122

5.3.35. THBVector_Maneuver_ .....	122
5.3.36. THBVector_tWaypointStruct_ .....	122
5.4. org_harman_nav_ctrl_GuidanceTypes .....	122
5.4.1. CalculationMode .....	123
5.4.2. CompassDirection .....	123
5.4.3. CostDifference .....	123
5.4.4. GuidanceStatus .....	124
5.4.5. LaneDirection .....	124
5.4.6. LaneDivider .....	124
5.4.7. LaneGuidanceInfo .....	125
5.4.8. LaneGuidanceInfoList .....	125
5.4.9. LaneInfo .....	125
5.4.10. LaneInfoList .....	126
5.4.11. LaneType .....	126
5.4.12. LaneTypeCategory .....	127
5.4.13. Maneuver .....	127
5.4.14. ManeuverDetails .....	127
5.4.15. ManeuverDirection .....	128
5.4.16. ManeuverDirectionType .....	128
5.4.17. ManeuverGroup .....	129
5.4.18. ManeuverInfo .....	129
5.4.19. ManeuverInfoList .....	130
5.4.20. ManeuverSegment .....	130
5.4.21. ManeuverTurn .....	130
5.4.22. ManeuverType .....	130
5.4.23. ManeuverPhase .....	131
5.4.24. PromptMode .....	131
5.4.25. RoadInfo .....	132
5.4.26. RoadName .....	132
5.4.27. RoadNameList .....	132
5.4.28. RoadNumber .....	133
5.4.29. RoadNumberList .....	133
5.4.30. RoadProperty .....	133
5.4.31. RouteChangedCause .....	133
5.4.32. RouteCostData .....	134
5.4.33. Side .....	134
5.4.34. SignPostInfo .....	135
5.4.35. THBVector_tManeuverItem_ .....	135
5.4.36. Towards .....	135
5.4.37. TowardsList .....	135
5.4.38. TravelCosts .....	135
5.4.39. WaypointCosts .....	136
5.4.40. WaypointCostsList .....	136
5.4.41. WaypointInfo .....	136
5.4.42. WaypointInfoList .....	137
5.4.43. tManeuverItem .....	137
5.4.44. tWaypointStruct .....	137
5.5. org_harman_nav_ctrl_Routing .....	138
5.5.1. calculateAlternateRoute .....	138
5.5.2. calculateRoute .....	138
5.5.3. cancelRouteCalculation .....	139

5.5.4. createRoute .....	139
5.5.5. deleteRoute .....	140
5.5.6. getAllRoutes .....	140
5.5.7. getCostModel .....	140
5.5.8. getRouteOverview .....	141
5.5.9. getRoutePreferences .....	141
5.5.10. getRouteSchedule .....	142
5.5.11. getRouteSettings .....	142
5.5.12. getSupportedCostModels .....	142
5.5.13. getSupportedRoutePreferences .....	143
5.5.14. getWaypoints .....	143
5.5.15. setBlockedRouteStretch .....	144
5.5.16. setCostModel .....	144
5.5.17. setRoutePreferences .....	145
5.5.18. setRouteSchedule .....	145
5.5.19. setRouteSettings .....	145
5.5.20. setWaypoints .....	146
5.5.21. alternativeRoutesAvailable .....	146
5.5.22. routeCalculationCancelled .....	146
5.5.23. routeCalculationFailed .....	147
5.5.24. routeCalculationProgressUpdate .....	147
5.5.25. routeCalculationSuccessful .....	147
5.5.26. routeDeleted .....	148
5.5.27. routeSettingsChanged .....	148
5.5.28. THBVector_ConiditionPreference_ .....	148
5.5.29. THBVector_CostModel_ .....	148
5.5.30. THBVector_Handle_ .....	148
5.5.31. THBVector_RouteOverviewType_ .....	149
5.5.32. THBVector_RoutePreference_ .....	149
5.5.33. THBVector_RouteSettingType_ .....	149
5.5.34. THBVector_Schedule_ .....	149
5.5.35. THBVector_WayPoint_ .....	149
5.6. org_harman_nav_ctrl_RoutingTypes .....	149
5.6.1. CalculationError .....	149
5.6.2. ConditionPreferenceSource .....	150
5.6.3. ConiditionPreference .....	150
5.6.4. CostModel .....	150
5.6.5. IntermediatePoint .....	151
5.6.6. IntermediatePointType .....	151
5.6.7. PreferenceMode .....	151
5.6.8. RouteOverview .....	152
5.6.9. RouteOverviewItem .....	152
5.6.10. RouteOverviewType .....	152
5.6.11. RoutePreference .....	153
5.6.12. RoutePreferenceSource .....	153
5.6.13. RoutePreferences .....	154
5.6.14. RouteSchedule .....	154
5.6.15. RouteSettingItem .....	154
5.6.16. RouteSettingType .....	154
5.6.17. RouteSettings .....	155
5.6.18. Schedule .....	155

5.6.19. WapointElementType .....	155
5.6.20. WayPoint .....	156
5.6.21. WayPointItem .....	156
5.7. org_harman_nav_ctrl_highwaymode_HighwayMode .....	156
5.7.1. createView .....	156
5.7.2. deleteView .....	157
5.7.3. getListSize .....	157
5.7.4. getMessageDetails .....	158
5.7.5. getResultList .....	158
5.7.6. setEnable .....	159
5.7.7. setViewAnchor .....	159
5.7.8. setViewPosition .....	160
5.7.9. setViewSize .....	160
5.7.10. listSize .....	161
5.7.11. viewUpdate .....	161
5.7.12. astatus .....	162
5.7.13. Error .....	162
5.8. org_harman_nav_ctrl_highwaymode_HighwayModeTypes .....	162
5.8.1. Addresses .....	162
5.8.2. Distance_m .....	162
5.8.3. HighWayStatus .....	163
5.8.4. HighwayItem .....	163
5.8.5. HighwayItemArray .....	163
5.8.6. HighwayItemDetails .....	163
5.8.7. HighwayItemId .....	164
5.8.8. InterchangeDetails .....	164
5.8.9. ItemDetailsType .....	164
5.8.10. ItemType .....	165
5.8.11. JunctionDetails .....	165
5.8.12. MessageDetails .....	165
5.8.13. POIDetailsArray .....	166
5.8.14. POIInformation .....	166
5.8.15. ResourceId .....	166
5.8.16. Time_ms .....	166
5.8.17. UpdateReason .....	166
6. MapControl Service .....	168
6.1. org_harman_nav_ctrl_mapv_MapViewControl .....	168
6.1.1. addKml .....	168
6.1.2. addMapViewScaleChangedListener .....	168
6.1.3. centerOnObjectListItems .....	169
6.1.4. convertGeoCoordsToPixelCoords .....	169
6.1.5. convertPixelCoordsToGeoCoords .....	170
6.1.6. createMapViewInstance .....	170
6.1.7. deleteKml .....	171
6.1.8. displayCustomElements .....	171
6.1.9. displayObjectList .....	172
6.1.10. displayRoute .....	172
6.1.11. getAutozoomEnabled .....	173
6.1.12. getAutozoomSetting .....	173
6.1.13. getCameraDistanceFromTargetPoint .....	174
6.1.14. getCameraHeading .....	174

6.1.15. getCameraHeight .....	175
6.1.16. getCameraPosition .....	175
6.1.17. getCameraRollAngle .....	176
6.1.18. getCameraTiltAngle .....	176
6.1.19. getDisplayedCustomElements .....	177
6.1.20. getDisplayedRoutes .....	177
6.1.21. getFollowCarMode .....	178
6.1.22. getMapMode .....	178
6.1.23. getMapModeList .....	179
6.1.24. getMapViewBoundingBox .....	179
6.1.25. getMapViewObjectVisibility .....	179
6.1.26. getMapViewPerformanceLevel .....	180
6.1.27. getMapViewPerspective .....	180
6.1.28. getMapViewRotation .....	181
6.1.29. getMapViewSaveArea .....	181
6.1.30. getMapViewScale .....	182
6.1.31. getMapViewScaleMode .....	182
6.1.32. getMapViewTheme .....	183
6.1.33. getMapViewType .....	183
6.1.34. getMapViewVisibilityMode .....	184
6.1.35. getPoiCategoriesVisible .....	184
6.1.36. getScaleList .....	185
6.1.37. getSupportedMapViewObjectVisibilities .....	185
6.1.38. getSupportedMapViewPerformanceLevels .....	186
6.1.39. getSupportedMapViewPerspectives .....	186
6.1.40. getSupportedMapViewScaleModes .....	186
6.1.41. getSupportedMapViewThemes .....	187
6.1.42. getSupportedMapViewTypes .....	187
6.1.43. getSupportedMapViewVisibilityModes .....	188
6.1.44. getTargetPoint .....	188
6.1.45. getVersion .....	188
6.1.46. hideCustomElements .....	189
6.1.47. hideObjectList .....	189
6.1.48. hideRoute .....	190
6.1.49. highlightObjectListItem .....	190
6.1.50. mapSetStyle .....	191
6.1.51. mapShowRouteOverview .....	191
6.1.52. mapViewGesture .....	192
6.1.53. popSettings .....	193
6.1.54. pushSettings .....	193
6.1.55. releaseMapViewInstance .....	194
6.1.56. removeMapViewScaleChangedListener .....	194
6.1.57. resetSettings .....	195
6.1.58. selectElementsOnMap .....	195
6.1.59. setAutozoomEnabled .....	196
6.1.60. setAutozoomSetting .....	196
6.1.61. setCameraDistanceFromTargetPoint .....	197
6.1.62. setCameraHeadingAngle .....	197
6.1.63. setCameraHeadingToTarget .....	198
6.1.64. setCameraHeadingTrackUp .....	198
6.1.65. setCameraHeight .....	199



6.1.66. setCameraPosition .....	199
6.1.67. setCameraRollAngle .....	200
6.1.68. setCameraTiltAngle .....	200
6.1.69. setFollowCarMode .....	201
6.1.70. setKmlVisibility .....	201
6.1.71. setMapMode .....	202
6.1.72. setMapViewBoundingBox .....	202
6.1.73. setMapViewObjectVisibility .....	203
6.1.74. setMapViewPan .....	203
6.1.75. setMapViewPerformanceLevel .....	204
6.1.76. setMapViewPerspective .....	205
6.1.77. setMapViewRotation .....	205
6.1.78. setMapViewSaveArea .....	206
6.1.79. setMapViewScale .....	206
6.1.80. setMapViewScaleByDelta .....	207
6.1.81. setMapViewScaleByMetersPerPixel .....	207
6.1.82. setMapViewScaleMode .....	208
6.1.83. setMapViewTheme .....	208
6.1.84. setMapViewVisibilityMode .....	209
6.1.85. setPoiCategoriesNotVisible .....	209
6.1.86. setPoiCategoriesVisible .....	210
6.1.87. setPoiCategoriesVisibleMode .....	210
6.1.88. setPoiCategoriesVisibleWithinLimits .....	211
6.1.89. setTargetPoint .....	212
6.1.90. setTrafficIncidentsVisibility .....	212
6.1.91. displayedRoutes .....	213
6.1.92. mapViewScaleChanged .....	213
6.1.93. mapViewVisibilityChanged .....	213
6.1.94. astatus .....	214
6.1.95. THBVector_CHBString_ .....	214
6.1.96. THBVector_Coordinate2D_ .....	214
6.1.97. THBVector_CustomElement_ .....	214
6.1.98. THBVector_DisplayedRoute_ .....	214
6.1.99. THBVector_Handle_ .....	214
6.1.100. THBVector_Level_ .....	215
6.1.101. THBVector_MapObject_ .....	215
6.1.102. THBVector_MapPerspective_ .....	215
6.1.103. THBVector_MapScaleMode_ .....	215
6.1.104. THBVector_MapScale_ .....	215
6.1.105. THBVector_MapTheme_ .....	215
6.1.106. THBVector_MapViewType_ .....	215
6.1.107. THBVector_ObjectListItem_ .....	216
6.1.108. THBVector_Pixel_ .....	216
6.1.109. THBVector_ScreenCoordinate_ .....	216
6.1.110. THBVector_SelectableMapType_ .....	216
6.1.111. THBVector_SelectedMapElement_ .....	216
6.1.112. THBVector_UInt32_ .....	216
6.1.113. THBVector_Visibility_ .....	217
6.2. org_harman_nav_ctrl_mapv_MapViewControlTypes .....	217
6.2.1. AnchorPoint .....	217
6.2.2. AutozoomSetting .....	217

6.2.3. CustomElement .....	217
6.2.4. Dimension .....	218
6.2.5. DisplayedRoute .....	218
6.2.6. DisplayedRoutes .....	218
6.2.7. EObjectListDomain .....	219
6.2.8. ElementValue .....	219
6.2.9. KmlType .....	219
6.2.10. Level .....	219
6.2.11. MapObject .....	220
6.2.12. MapObjectVisibility .....	220
6.2.13. MapPerspective .....	220
6.2.14. MapScale .....	221
6.2.15. MapScaleMode .....	221
6.2.16. MapScaleType .....	222
6.2.17. MapScaleUnit .....	222
6.2.18. MapTheme .....	222
6.2.19. MapViewOrientation .....	223
6.2.20. MapVisualStyleSet .....	223
6.2.21. MapViewType .....	223
6.2.22. ObjectList .....	224
6.2.23. ObjectListItem .....	224
6.2.24. PanAction .....	224
6.2.25. Pixel .....	225
6.2.26. PoiCategoriesVisibleMode .....	225
6.2.27. Poild .....	225
6.2.28. ScreenCoordinate .....	226
6.2.29. ScreenRectangle .....	226
6.2.30. ScreenStatus .....	226
6.2.31. ScreenStatusList .....	227
6.2.32. SelectableMapType .....	227
6.2.33. SelectedMapElement .....	228
6.2.34. Status .....	228
6.2.35. Visibility .....	228
6.2.36. tCustomElementDict .....	229
7. LearningNav Service .....	230
7.1. org_harman_nav_ctrl_In_Trails .....	230
7.1.1. createView .....	230
7.1.2. deleteView .....	230
7.1.3. getDetails .....	231
7.1.4. getListSize .....	231
7.1.5. getSettings .....	231
7.1.6. getViewData .....	232
7.1.7. setSettings .....	232
7.1.8. setViewAnchor .....	233
7.1.9. setViewPosition .....	233
7.1.10. setViewSize .....	234
7.1.11. listSize .....	235
7.1.12. viewUpdate .....	235
7.1.13. Error .....	235
7.2. org_harman_nav_ctrl_In_TrailTypes .....	236
7.2.1. SettingKey .....	236

7.2.2. SettingKeys .....	236
7.2.3. SettingValue .....	236
7.2.4. Settings .....	237
7.2.5. TrailDescription .....	237
7.2.6. TrailDescriptions .....	237
7.2.7. TrailDetails .....	237
7.2.8. TrailError .....	238
7.2.9. TrailHandle .....	238
7.2.10. TrailHandles .....	238
7.2.11. Trails .....	238
8. LocationMemory Service .....	239
8.1. org_harman_nav_ctrl_memory_LocationMemory .....	239
8.1.1. addItem .....	239
8.1.2. addItemLocation .....	239
8.1.3. createSpeechFile .....	240
8.1.4. createView .....	240
8.1.5. deleteView .....	241
8.1.6. exportFullList .....	241
8.1.7. filterView .....	241
8.1.8. getActiveAutoNavItems .....	242
8.1.9. getActiveItems .....	242
8.1.10. getItemDetails .....	243
8.1.11. getItemDetailsExt .....	243
8.1.12. getListSize .....	244
8.1.13. getResultList .....	244
8.1.14. getSortOrder .....	244
8.1.15. importFullList .....	245
8.1.16. importLocationItemList .....	245
8.1.17. removeAll .....	246
8.1.18. removeItem .....	246
8.1.19. setItemName .....	247
8.1.20. setLocationItem .....	247
8.1.21. setSortOrder .....	247
8.1.22. setTimeslot .....	248
8.1.23. setViewAnchor .....	248
8.1.24. setViewPosition .....	249
8.1.25. setViewSize .....	250
8.1.26. listSize .....	250
8.1.27. viewUpdate .....	251
8.1.28. aavailableConfiguration .....	251
8.1.29. aavailableLists .....	251
8.1.30. Error .....	252
8.1.31. THBVector_Item_ .....	252
8.1.32. THBVector_ListId_ .....	252
8.1.33. THBVector_NameLocationItem_ .....	253
8.1.34. THBVector_ViewKey_ .....	253
8.2. org_harman_nav_ctrl_memory_LocationMemoryTypes .....	253
8.2.1. Configurations .....	253
8.2.2. Dayslot .....	253
8.2.3. DayslotList .....	254
8.2.4. EExternalSources .....	254

8.2.5. EltemType .....	254
8.2.6. EProvidedListTypes .....	254
8.2.7. Item .....	255
8.2.8. ItemList .....	255
8.2.9. ListSetting .....	255
8.2.10. Location .....	256
8.2.11. LocationItem .....	256
8.2.12. LocationItemList .....	256
8.2.13. LocationList .....	257
8.2.14. LocationMemoryError .....	257
8.2.15. NameLocationItem .....	257
8.2.16. THBVector_SortOption_ .....	258
8.2.17. TItemId .....	258
8.2.18. TItemMembership .....	258
8.2.19. TItemName .....	258
8.2.20. Timeslot .....	258
8.2.21. UniqueItemId .....	259
8.2.22. UniqueItemIdList .....	259
8.2.23. ViewKeyList .....	259
9. Positioning Service .....	260
9.1. org_harman_nav_ctrl_Positioning .....	260
9.1.1. getAddress .....	260
9.1.2. getCurrentRoadAttributes .....	260
9.1.3. getPosition .....	260
9.1.4. getStatus .....	261
9.1.5. addressUpdate .....	261
9.1.6. currentRoadAttributesChanged .....	261
9.1.7. offRoadPositionChanged .....	262
9.1.8. positionUpdate .....	262
9.1.9. statusUpdate .....	262
9.1.10. agpsRTC .....	262
9.1.11. THBVector_AddressItemKey_ .....	263
9.1.12. THBVector_PositionItemKey_ .....	263
9.1.13. THBVector_PositionStatus_ .....	263
9.2. org_harman_nav_ctrl_PositioningTypes .....	263
9.2.1. AddressItemDict .....	263
9.2.2. AddressItemKey .....	263
9.2.3. AddressItemValue .....	264
9.2.4. EIntersection .....	264
9.2.5. ERoadClass .....	265
9.2.6. ERoadType .....	265
9.2.7. ESpeedLimitStatus .....	266
9.2.8. ExitInfo .....	266
9.2.9. GnnsFixStatus .....	266
9.2.10. GpsTime .....	267
9.2.11. GpsTimeQuality .....	267
9.2.12. MatchMode .....	267
9.2.13. PositionItemDict .....	268
9.2.14. PositionItemKey .....	268
9.2.15. PositionItemValue .....	269
9.2.16. PositionStatus .....	269

9.2.17. PositionStatusDict .....	269
9.2.18. PositionStatusValue .....	270
9.2.19. RoadAttributeDict .....	270
9.2.20. RoadAttributeKey .....	270
9.2.21. RoadAttributeKeys .....	271
9.2.22. RoadAttributeValue .....	271
9.2.23. SpeedLimit .....	271
10. Traffic Service .....	272
10.1. org_harman_nav_ctrl_traffic_TrafficInformation .....	272
10.1.1. SetConfiguration .....	272
10.1.2. createView .....	272
10.1.3. deleteView .....	273
10.1.4. getAvailableTmcStations .....	273
10.1.5. getListSize .....	274
10.1.6. getMessageData .....	274
10.1.7. getSupportedOnlineFallbackSources .....	275
10.1.8. getSupportedSources .....	275
10.1.9. getViewData .....	275
10.1.10. refreshOnlineTrafficData .....	276
10.1.11. setViewAnchor .....	276
10.1.12. setViewPosition .....	277
10.1.13. setViewSize .....	278
10.1.14. toggleDetourStatus .....	278
10.1.15. listSize .....	279
10.1.16. popUpIndication .....	279
10.1.17. viewUpdate .....	279
10.1.18. aavailableLists .....	280
10.1.19. aconfiguration .....	280
10.1.20. acurrentTmcStation .....	280
10.1.21. asource .....	281
10.1.22. Error .....	281
10.1.23. THBVector_CHBString_ .....	281
10.1.24. THBVector_ListId_ .....	281
10.1.25. THBVector_SourceSelection_ .....	282
10.2. org_harman_nav_ctrl_traffic_TrafficInformationTypes .....	282
10.2.1. Direction .....	282
10.2.2. OnlineRefreshMode .....	282
10.2.3. PopupType .....	283
10.2.4. RouteDynamics .....	283
10.2.5. SBaseMessage .....	283
10.2.6. SConfig .....	284
10.2.7. SMessage .....	285
10.2.8. SOnlineRefreshSetting .....	286
10.2.9. SourceSelection .....	286
10.2.10. TBaseMessages .....	286
10.2.11. THBVector_CHBString_ .....	287
10.2.12. TMessageId .....	287
10.2.13. TMessageIds .....	287
10.2.14. TMessages .....	287
10.2.15. TrafficInformationError .....	287
10.3. org_harman_nav_ctrl_speedcam_SpeedCamOnlineService .....	287

10.3.1. createSession .....	288
10.3.2. deleteSession .....	288
10.3.3. push .....	288
10.3.4. feedback .....	289
10.4. org_harman_nav_ctrl_speedcam_SpeedCamOnlineServiceTypes .....	289
10.4.1. CountryIso .....	289
10.4.2. EDataSource .....	290
10.4.3. EDataUpdate .....	290
10.4.4. EFeedback .....	290
10.4.5. Handle .....	290
10.4.6. Heading .....	291
10.4.7. Id .....	291
10.4.8. Latitude .....	291
10.4.9. Longitude .....	291
10.4.10. RawData .....	291
10.4.11. SDataUpdate .....	291
10.4.12. SDirectedPosition .....	292
10.4.13. SSpeedCamFeedback .....	292
10.4.14. Speed .....	292
10.4.15. TileId .....	293
10.5. org_harman_nav_ctrl_speedcam_SpeedCamService .....	293
10.5.1. confirmExistingSpeedCam .....	293
10.5.2. confirmSpeedCam .....	293
10.5.3. createSession .....	293
10.5.4. declineExistingSpeedCam .....	294
10.5.5. declineSpeedCam .....	294
10.5.6. deleteSession .....	294
10.5.7. reportSpeedcam .....	295
10.5.8. forthcomingEvent .....	295
10.6. org_harman_nav_ctrl_speedcam_SpeedCamServiceTypes .....	295
10.6.1. EDirection .....	295
10.6.2. ESpeedCamProvider .....	296
10.6.3. ESpeedCamType .....	296
10.6.4. SReportId .....	297
10.6.5. SSpeedCamConfirmationData .....	297
10.6.6. SSpeedCamEvent .....	297
10.6.7. TId .....	298
10.6.8. TSpeed_kmh .....	298
11. Icon Service .....	299
11.1. org_harman_nav_ctrl_icon_IconProvider .....	299
11.1.1. createSession .....	299
11.1.2. deleteSession .....	299
11.1.3. getIconResource .....	299
11.2. org_harman_nav_ctrl_icon_IconProviderTypes .....	300
11.2.1. DesignParameters .....	300
11.2.2. ErrorCode .....	300
11.2.3. IconDayNightRepresentation .....	301
11.2.4. IconDisplayRepresentation .....	301
11.2.5. IconResourceSetId .....	301
11.2.6. IconResponseData .....	302
11.2.7. IconType .....	302

11.2.8. ImageEncoding .....	302
12. Common Types .....	303
12.1. org_harman_nav_ctrl_CommonTypes .....	303
12.1.1. Area .....	303
12.1.2. BasicEnum .....	303
12.1.3. Coordinate2D .....	303
12.1.4. Coordinate3D .....	304
12.1.5. Distance .....	304
12.1.6. Handle .....	305
12.1.7. LinkId .....	309
12.1.8. Polygon .....	309
12.1.9. Rectangle .....	309
12.1.10. Slcon .....	310
12.1.11. TDistance_dm .....	310
12.1.12. TTime_sec .....	310
12.1.13. Timestamp .....	310
12.1.14. Version .....	311
12.2. org_harman_nav_ctrl_common_list_ListTypes .....	311
12.2.1. AnchorOffset .....	311
12.2.2. ListError .....	312
12.2.3. ListId .....	312
12.2.4. ListKey .....	313
12.2.5. ListSize .....	313
12.2.6. ModificationPolicy .....	313
12.2.7. SortOption .....	314
12.2.8. SortOptionList .....	314
12.2.9. ViewId .....	314
12.2.10. ViewKey .....	315
12.2.11. ViewKeyList .....	316
12.2.12. ViewSize .....	316
12.2.13. ViewSnapshotPosition .....	316

# 1 Introduction

## 1.1 Scope

Usually a navigation controller is tailored into a multi-layer architecture, at which each layer is encapsulating a certain set of functionality.

The human machine interface (HMI) represents textual and graphical information to the user and controls the interaction between the user and the system. It is also known as user interface. The HMI is a highly project-specific layer and is often developed by third parties or the customer itself. It is usually not a part of the navigation system itself.

The navigation application is the mediator between the user interface and the navigation controller components. It describes and coordinates the business and sequence logic and holds state information, that is relevant for the HMI but not for the navigation controller.

It is usually decomposed into several components with well-known interfaces, at which each component has a clear scope. Typical components are destination input, poi search, route calculation, guidance, positioning, map viewer, etc. The navigation controller API is designed to be generic as possible to guarantee a high re-use in multiple projects.

The described interfaces in this document are exclusively focused on the navigation controller, the so-called Navigation Controller API, for the purpose of developing the layers above (application and HMI).

The interfaces are grouped related to their functional domain, in particular:

- Application Service
  - DB Update
  - LifeCycle Management
- Location Service
  - LocationInput
  - PoiSearch
  - OneBoxSearch
- Guidance Service
  - Routing
  - Guidance Viewer
  - Route Guidance
- MapControl Service
  - MapViewer



- Positioning Service
  - Position
  - Simulation
  - Driver Assistance
- Traffic Service
  - Traffic

All interfaces are described in a programming-language neutral way by using a declarative XML language, called DSI (see next section). Internal interfaces and those, which are not compliant with DSI are out of scope and not part of this document.

## 1.2 DSI

All described interfaces in this document are specified using the DSI (Distributed Service Interface) modeling language. Basically DSI describes how two or more applications can exchange data through a standard protocol. This protocol has been designed to work well with MoCCAv2 service interfaces. The MoCCA Framework implements DSI in a transparent way, but it can be implemented in other environments which need to connect to a MoCCA application.

Interfaces are specified in HBSI (Service Interface) files and type definitions are usually described in HBTD (type definition) files. An interface can include one or more type definition files. Both HBSI and HBTD files support a versioning feature, by specifying a major and minor number. Minor version are increased after every change on the interface, major version only when incompatible changes occur. For DSI-capable service interfaces that might be used with DSI, the rule applies that nearly every interface change must be considered as major change. Only the addition of new methods or attributes can be considered as minor change.

DSI provides a set of primitive scalar types including **bool**, **Int8**, **Int16**, **Int32**, **Int64**, **float** and **double**. Unsigned versions of the integer data types will have a preceding **U** in the type name. These standard typedefs are to be preferred over the built-in C++ types, since they are guaranteed to have a well defined, processor independent data width. Furthermore there are some special utility types such as **Vector**, **Variant**, **String** and **ByteStream**.

## 1.3 Service Interface Elements

**Attribute:** An attribute is essentially a data object that is published via the service interface. A client can request that it be notified whenever an attribute is updated.

**Request (Method):** A request is a method that can be called by a client. This is the means by which a client can request that a service interface implementation do something.

**Response (Method):** A response is a method that can be called by the implementation. A client can be notified that a response method has been called and can then retrieve the values of the calling parameters for the response.

**Information** (Method): The server can notify clients even if they didn't send a request. A client can request that it be notified whenever this information is sent.

**Register, Unregister**(Method): The interface can provide a specific Register method that allows a client to get an information only if a user defined condition is fulfilled. Register and Unregister are always correlated to an information.

## 1.4 DataTypes

Type definition files (.hbtd) contain a formal description of enumerations, constants, structures and typedefs. Code generators are used to transform these formal descriptions into source code (C/C++ , Java,...). The main purpose of .hbtd files is to define types centrally and use the same type definitions in multiple service interfaces (.hbsi) or other .hbtds without having to duplicate them.

## 1.5 Guidelines & Conventions

There some guidelines and conventions, that needs to be considered:

- Interfaces starts with the preifx **DNAVI** , whereby **D** means DSI, **NAV** means Navigation and **I** means Interface. Then follows the name of the functionality itself (e.g. LocationInput).
- The interface name is the same as the file name where the interface description is stored.
- TypeDefitions starts with the prefix **T**.
- Cross-cutting Type Definitions (means Type Defintions, which can not be dedicated to a certain subsystem) are located in the **common** area.

## 2 Application Service

### 2.1 org\_harman\_nav\_ctrl\_configuration\_Configuration

Interface Version: 1.0

#### 2.1.1 getCoordinatesFormat

requestGetCoordinatesFormat		
Methode for getting coordinates format.		
Parameter	Type	Description

responseGetCoordinatesFormat		
Methode for getting coordinates format.		
Parameter	Type	Description
getCoordinatesFormat_coordinatesFormat	CoordinatesFormat	

#### 2.1.2 getLocale

requestGetLocale		
Methode for getting locale.		
Parameter	Type	Description

responseGetLocale		
Methode for getting locale.		
Parameter	Type	Description
getLocale_locale	Locale	

#### 2.1.3 getNavigationVersion

requestGetNavigationVersion		
Methode for getting version of Navigation Controller.		
Parameter	Type	Description

responseGetNavigationVersion		
Methode for getting version of Navigation Controller.		
Parameter	Type	Description
getNavigationVersion_navigationVersion	NavigationVersion	

## 2.1.4 getSupportedCoordinatesFormats

requestGetSupportedCoordinatesFormats		
Methode for getting supported coordinates format.		
Parameter	Type	Description

responseGetSupportedCoordinatesFormats		
Methode for getting supported coordinates format.		
Parameter	Type	Description
getSupportedCoordinatesFormats_coordinatesFormats	CoordinatesFormats	

## 2.1.5 getSupportedLocales

requestGetSupportedLocales		
Methode for getting supported locales.		
Parameter	Type	Description

responseGetSupportedLocales		
Methode for getting supported locales.		
Parameter	Type	Description
getSupportedLocales_locales	Locales	

## 2.1.6 getSupportedTimeFormats

requestGetSupportedTimeFormats		
Methode for getting supported time formats.		
Parameter	Type	Description

responseGetSupportedTimeFormats		
Methode for getting supported time formats.		
Parameter	Type	Description
getSupportedTimeFormats_timeFormats	TimeFormats	

## 2.1.7 getSupportedUnitsOfMeasurement

requestGetSupportedUnitsOfMeasurement		
Methode for getting supported units of measurements.		
Parameter	Type	Description

responseGetSupportedUnitsOfMeasurement		
Methode for getting supported units of measurements.		
Parameter	Type	Description
getSupportedUnitsOfMeasurement_unitsOfMeasurement	UnitsOfMeasurement	

## 2.1.8 getTimeFormat

requestGetTimeFormat		
Methode for getting time format.		
Parameter	Type	Description

responseGetTimeFormat		
Methode for getting time format.		
Parameter	Type	Description
getTimeFormat_timeFormat	TimeFormat	

## 2.1.9 getUnitsOfMeasurement

requestGetUnitsOfMeasurement		
Methode for getting units of measurements.		
Parameter	Type	Description

responseGetUnitsOfMeasurement		
Methode for getting units of measurements.		
Parameter	Type	Description
getUnitsOfMeasurement_units	UnitOfMeasurement	

## 2.1.10 setCoordinatesFormat

requestSetCoordinatesFormat		
Methode for setting coordinates format.		
Parameter	Type	Description
setCoordinatesFormat_R_coordinatesFormat	CoordinatesFormat	

responseSetCoordinatesFormat		
Methode for setting coordinates format.		
Parameter	Type	Description

## 2.1.11 setLocale

requestSetLocale		
Methode for setting locale.		
Parameter	Type	Description
setLocale_R_locale	Locale	

responseSetLocale		
Methode for setting locale.		
Parameter	Type	Description

## 2.1.12 setStyleTheme

requestSetStyleTheme		
Methode for setting style for theme.		
Parameter	Type	Description
setStyleTheme_R_style	StyleTheme	

<b>responseSetStyleTheme</b>		
Methode for setting style for theme.		
Parameter	Type	Description

## 2.1.13 setTimeFormat

<b>requestSetTimeFormat</b>		
Methode for setting time format.		
Parameter	Type	Description
setTimeFormat_R_timeFormat	<a href="#">TimeFormat</a>	

<b>responseSetTimeFormat</b>		
Methode for setting time format.		
Parameter	Type	Description

## 2.1.14 setUnitsOfMeasurement

<b>requestSetUnitsOfMeasurement</b>		
Methode for setting units of measurements.		
Parameter	Type	Description
setUnitsOfMeasurement_R_unitsOfMeasurement	<a href="#">UnitsOfMeasurement</a>	

<b>responseSetUnitsOfMeasurement</b>		
Methode for setting units of measurements.		
Parameter	Type	Description

## 2.1.15 configurationChanges

<b>informationConfigurationChanges</b>		
This signals there was a change is configuration.		
Parameter	Type	Description

**informationConfigurationChanges**

configurationChanges\_changedSettings

## 2.1.16 Error

Error	
This is the type for error responses.	
Literal	Description
ERROR_GetVersionError_INVALID	
ERROR_GetVersionError_GET_VERSION_FAILED	
ERROR_SetUnitsOfMeasurementError_INVALID	
ERROR_SetUnitsOfMeasurementError_SET_UNITS_OF_MEASUREMENTS_FAILED	
ERROR_SetTimeFormatError_INVALID	
ERROR_SetTimeFormatError_SET_TIME_FORMAT_FAILED	
ERROR_GetSupportedTimeFormatsError_INVALID	
ERROR_GetSupportedTimeFormatsError_GET_SUPPORTED_TIME_FORMAT_FAILED	
ERROR_SetCoordinatesFormatError_INVALID	
ERROR_SetCoordinatesFormatError_SET_COORDINATES_FORMAT_FAILED	
ERROR_SetLocaleError_INVALID	
ERROR_SetLocaleError_SET_LOCALE_FAILED	
ERROR_GetSupportedUnitsOfMeasurementError_INVALID	
ERROR_GetSupportedUnitsOfMeasurementError_GET_SUPPORTED_UNITS_OF_MEASUREMENTS_FAILED	
ERROR_GetUnitsOfMeasurementError_INVALID	
ERROR_GetUnitsOfMeasurementError_GET_UNITS_OF_MEASUREMENTS_FAILED	
ERROR_GetTimeFormatError_INVALID	
ERROR_GetTimeFormatError_GET_TIME_FORMAT_FAILED	
ERROR_GetCoordinatesFormatError_INVALID	
ERROR_GetCoordinatesFormatError_GET_COORDINATES_FORMAT_FAILED	
ERROR_GetSupportedCoordinatesFormatsError_INVALID	
ERROR_GetSupportedCoordinatesFormatsError_GET_SUPPORTED_COORDINATES_FORMAT_FAILED	
ERROR_GetLocaleError_INVALID	
ERROR_GetLocaleError_GET_LOCALE_FAILED	
ERROR_GetLocalesError_INVALID	
ERROR_GetLocalesError_GET_LOCALES_FAILED	
ERROR_SetStyleThemeError_INVALID	
ERROR_SetStyleThemeError_SET_STYLE_THEME_FAILED	



## 2.2 org\_harman\_nav\_ctrl\_configuration\_ConfigurationBase

Interface Version: 1.0

### 2.2.1 getCoordinatesFormat

requestGetCoordinatesFormat		
Methode for getting coordinates format.		
Parameter	Type	Description

responseGetCoordinatesFormat		
Methode for getting coordinates format.		
Parameter	Type	Description
getCoordinatesFormat_coordinatesFormat	CoordinatesFormat	

### 2.2.2 getLocale

requestGetLocale		
Methode for getting locale.		
Parameter	Type	Description

responseGetLocale		
Methode for getting locale.		
Parameter	Type	Description
getLocale_locale	Locale	

### 2.2.3 getNavigationVersion

requestGetNavigationVersion		
Methode for getting version.		
Parameter	Type	Description

responseGetNavigationVersion		
Methode for getting version.		
Parameter	Type	Description
getNavigationVersion_navigationVersion	NavigationVersion	

## 2.2.4 getStyleTheme

requestGetStyleTheme		
Methode for getting style theme.		
Parameter	Type	Description

responseGetStyleTheme		
Methode for getting style theme.		
Parameter	Type	Description
getStyleTheme_style	StyleTheme	

## 2.2.5 getSupportedCoordinatesFormats

requestGetSupportedCoordinatesFormats		
Methode for getting supported coordinates format.		
Parameter	Type	Description

responseGetSupportedCoordinatesFormats		
Methode for getting supported coordinates format.		
Parameter	Type	Description
getSupportedCoordinatesFormats_coordinatesFormats	CoordinatesFormats	

## 2.2.6 getSupportedLocales

requestGetSupportedLocales		
Methode for getting supported locales.		
Parameter	Type	Description

responseGetSupportedLocales		
Methode for getting supported locales.		
Parameter	Type	Description
getSupportedLocales_locales	<a href="#">Locales</a>	

## 2.2.7 getSupportedUnitsOfMeasurement

requestGetSupportedUnitsOfMeasurement		
Methode for getting supported units of measurements.		
Parameter	Type	Description

responseGetSupportedUnitsOfMeasurement		
Methode for getting supported units of measurements.		
Parameter	Type	Description
getSupportedUnitsOfMeasurement_unitsOfMeasurement	<a href="#">UnitsOfMeasurement</a>	

## 2.2.8 getTimeFormat

requestGetTimeFormat		
Methode for getting time format.		
Parameter	Type	Description

responseGetTimeFormat		
Methode for getting time format.		
Parameter	Type	Description
getTimeFormat_timeFormat	<a href="#">TimeFormat</a>	

## 2.2.9 getUnitsOfMeasurement

requestGetUnitsOfMeasurement		
Methode for getting units of measurements.		
Parameter	Type	Description

responseGetUnitsOfMeasurement		
Methode for getting units of measurements.		
Parameter	Type	Description
getUnitsOfMeasurement_units	UnitOfMeasurement	

## 2.2.10 configurationChanges

informationConfigurationChanges		
This signals there was a change is configuration.		
Parameter	Type	Description
configurationChanges_changed	Settings	

## 2.2.11 Error

Error	
This is the type for error responses.	
Literal	Description
ERROR_GetVersionError_INVALID	
ERROR_GetVersionError_GET_VERSION_FAILED	
ERROR_GetSupportedUnitsOfMeasurementError_INVALID	
ERROR_GetSupportedUnitsOfMeasurementError_GET_SUPPORTED_UNITS_OF_MEASUREMENTS_FAILED	
ERROR_GetUnitsOfMeasurementError_INVALID	
ERROR_GetUnitsOfMeasurementError_GET_UNITS_OF_MEASUREMENTS_FAILED	
ERROR_GetTimeFormatError_INVALID	
ERROR_GetTimeFormatError_GET_TIME_FORMAT_FAILED	
ERROR_GetCoordinatesFormatError_INVALID	
ERROR_GetCoordinatesFormatError_GET_COORDINATES_FORMAT_FAILED	
ERROR_GetSupportedCoordinatesFormatsError_INVALID	
ERROR_GetSupportedCoordinatesFormatsError_GET_SUPPORTED_COORDINATES_FORMAT_FAILED	
ERROR_GetLocaleError_INVALID	
ERROR_GetLocaleError_GET_LOCALE_FAILED	
ERROR_GetLocalesError_INVALID	
ERROR_GetLocalesError_GET_LOCALES_FAILED	
ERROR_GetStyleThemeError_INVALID	
ERROR_GetStyleThemeError_GET_STYLE_THEME_FAILED	

## 2.3 org\_harman\_nav\_ctrl\_configuration\_ConfigurationTypes

Interface Version: 1.0

### 2.3.1 CoordinatesFormat

CoordinatesFormat	
Literal	Description
CoordinatesFormat_INVALID	
CoordinatesFormat_DEGREES	
CoordinatesFormat_MINUTES	
CoordinatesFormat_SECONDS	

Referenced by : [org\\_harman\\_nav\\_ctrl\\_configuration\\_Configuration::setCoordinatesFormat](#),  
[org\\_harman\\_nav\\_ctrl\\_configuration\\_Configuration::getCoordinatesFormat](#),  
[org\\_harman\\_nav\\_ctrl\\_configuration\\_ConfigurationBase::getCoordinatesFormat](#),  
[org\\_harman\\_nav\\_ctrl\\_configuration\\_ConfigurationTypes::CoordinatesFormats](#)

### 2.3.2 CoordinatesFormats

List for coordinates formats. Vector of element type [CoordinatesFormat](#)

Referenced by : [org\\_harman\\_nav\\_ctrl\\_configuration\\_Configuration::getSupportedCoordinatesFormats](#),  
[org\\_harman\\_nav\\_ctrl\\_configuration\\_ConfigurationBase::getSupportedCoordinatesFormats](#)

### 2.3.3 GetCoordinatesFormatError

GetCoordinatesFormatError	
Literal	Description
GetCoordinatesFormatError_BasicEnum_INVALID	
GetCoordinatesFormatError_GET_COORDINATES_FORMAT_FAILED	

### 2.3.4 GetLocaleError

GetLocaleError
----------------

GetLocaleError	
Literal	Description
GetLocaleError_BasicEnum_INVALID	
GetLocaleError_GET_LOCALE_FAILED	

## 2.3.5 GetLocalesError

GetLocalesError	
Literal	Description
GetLocalesError_BasicEnum_INVALID	
GetLocalesError_GET_LOCALES_FAILED	

## 2.3.6 GetStyleThemeError

GetStyleThemeError	
Literal	Description
GetStyleThemeError_BasicEnum_INVALID	
GetStyleThemeError_GET_STYLE_THEME_FAILED	

## 2.3.7 GetSupportedCoordinatesFormatsError

GetSupportedCoordinatesFormatsError	
Literal	Description
GetSupportedCoordinatesFormatsError_BasicEnum_INVALID	
GetSupportedCoordinatesFormatsError_GET_SUPPORTED_COORDINATES_FORMAT_FAILED	

## 2.3.8 GetSupportedTimeFormatsError

GetSupportedTimeFormatsError	
Literal	Description
GetSupportedTimeFormatsError_BasicEnum_INVALID	
GetSupportedTimeFormatsError_GET_SUPPORTED_TIME_FORMAT_FAILED	

## 2.3.9 GetSupportedUnitsOfMeasurementError

GetSupportedUnitsOfMeasurementError	
Literal	Description
GetSupportedUnitsOfMeasurementError_BasicEnum_INVALID	
GetSupportedUnitsOfMeasurementError_GET_SUPPORTED_UNITS_OF_MEASUREMENTS_FAILED	

## 2.3.10 GetTimeFormatError

GetTimeFormatError	
Literal	Description
GetTimeFormatError_BasicEnum_INVALID	
GetTimeFormatError_GET_TIME_FORMAT_FAILED	

## 2.3.11 GetUnitsOfMeasurementError

GetUnitsOfMeasurementError	
Literal	Description
GetUnitsOfMeasurementError_BasicEnum_INVALID	
GetUnitsOfMeasurementError_GET_UNITS_OF_MEASUREMENTS_FAILED	

## 2.3.12 GetVersionError

GetVersionError	
Literal	Description
GetVersionError_BasicEnum_INVALID	
GetVersionError_GET_VERSION_FAILED	

## 2.3.13 Locale

Locale
Locale consists of language and country and script.

Locale		
Structure Element	Type	Description
language	String	languageCode = ISO 639?3 language code (lower case)
country	String	countryCode = ISO 3166?1 alpha 3 country code (upper case)
scriptCode	String	scriptCode= ISO 15924 alpha 4 script code (upper case)

Referenced by : [org\\_harman\\_nav\\_ctrl\\_configuration\\_Configuration::setLocale](#),  
[org\\_harman\\_nav\\_ctrl\\_configuration\\_Configuration::getLocale](#),  
[org\\_harman\\_nav\\_ctrl\\_configuration\\_ConfigurationBase::getLocale](#),  
[org\\_harman\\_nav\\_ctrl\\_configuration\\_ConfigurationTypes::Locales](#)

## 2.3.14 Locales

List for locales. Vector of element type [Locale](#)

Referenced by : [org\\_harman\\_nav\\_ctrl\\_configuration\\_Configuration::getSupportedLocales](#),  
[org\\_harman\\_nav\\_ctrl\\_configuration\\_ConfigurationBase::getSupportedLocales](#)

## 2.3.15 NavigationVersion

NavigationVersion		
Version info. consists of major, minor, micro and release date.		
Structure Element	Type	Description
navigationMajor	UInt16	
navigationMinor	UInt16	
navigationMicro	UInt16	
navigationDate	String	

Referenced by : [org\\_harman\\_nav\\_ctrl\\_configuration\\_Configuration::getNavigationVersion](#),  
[org\\_harman\\_nav\\_ctrl\\_configuration\\_ConfigurationBase::getNavigationVersion](#)

## 2.3.16 SetCoordinatesFormatError

SetCoordinatesFormatError
---------------------------



SetCoordinatesFormatError	
Literal	Description
SetCoordinatesFormatError_BasicEnum_INVALID	
SetCoordinatesFormatError_SET_COORDINATES	FORMAT_FAILED

## 2.3.17 SetLocaleError

SetLocaleError	
Literal	Description
SetLocaleError_BasicEnum_INVALID	
SetLocaleError_SET_LOCALE_FAILED	

## 2.3.18 SetStyleThemeError

SetStyleThemeError	
Literal	Description
SetStyleThemeError_BasicEnum_INVALID	
SetStyleThemeError_SET_STYLE_THEME_FAILED	

## 2.3.19 SetTimeFormatError

SetTimeFormatError	
Literal	Description
SetTimeFormatError_BasicEnum_INVALID	
SetTimeFormatError_SET_TIME_FORMAT_FAILED	

## 2.3.20 SetUnitsOfMeasurementError

SetUnitsOfMeasurementError	
Literal	Description

<b>SetUnitsOfMeasurementError</b>	
SetUnitsOfMeasurementError_BasicEnum_INVALID	
SetUnitsOfMeasurementError_SET_UNITS_OF_MEASUREMENTS_FAILED	

## 2.3.21 Setting

<b>Setting</b>	
Literal	Description
Setting_INVALID	
Setting_UNITS_OF_MEASUREMENT	
Setting_LOCALE	
Setting_TIME_FORMAT	
Setting_COORDINATES_FORMAT	
Setting_STYLE_THEME	

Referenced by : [org\\_harman\\_nav\\_ctrl\\_configuration\\_ConfigurationTypes::Settings](#)

## 2.3.22 Settings

List for settings. Vector of element type [Setting](#)

Referenced by : [org\\_harman\\_nav\\_ctrl\\_configuration\\_Configuration::configurationChanges](#),  
[org\\_harman\\_nav\\_ctrl\\_configuration\\_ConfigurationBase::configurationChanges](#)

## 2.3.23 StyleTheme

<b>StyleTheme</b>	
Literal	Description
StyleTheme_INVALID	
StyleTheme_STYLE_DAY	
StyleTheme_STYLE_NIGHT	

Referenced by : [org\\_harman\\_nav\\_ctrl\\_configuration\\_Configuration::setStyleTheme](#),  
[org\\_harman\\_nav\\_ctrl\\_configuration\\_ConfigurationBase::getStyleTheme](#)

## 2.3.24 TimeFormat

TimeFormat	
Literal	Description
TimeFormat_INVALID	
TimeFormat_TIME12H	
TimeFormat_TIME24H	

Referenced by : [org\\_harman\\_nav\\_ctrl\\_configuration\\_Configuration::setTimeFormat](#),  
[org\\_harman\\_nav\\_ctrl\\_configuration\\_Configuration::getTimeFormat](#),  
[org\\_harman\\_nav\\_ctrl\\_configuration\\_ConfigurationBase::getTimeFormat](#),  
[org\\_harman\\_nav\\_ctrl\\_configuration\\_ConfigurationTypes::TimeFormats](#)

## 2.3.25 TimeFormats

List for time format. Vector of element type [TimeFormat](#)

Referenced by : [org\\_harman\\_nav\\_ctrl\\_configuration\\_Configuration::getSupportedTimeFormats](#)

## 2.3.26 UnitOfMeasurement

UnitOfMeasurement		
Structure for UnitsOfMeasurement.		
Structure Element	Type	Description
unitOfMeasurementKey	<a href="#">UnitOfMeasurementKey</a>	
unitOfMeasurementValue	<a href="#">UnitOfMeasurementValue</a>	

Referenced by : [org\\_harman\\_nav\\_ctrl\\_configuration\\_ConfigurationTypes::UnitsOfMeasurement](#),  
[org\\_harman\\_nav\\_ctrl\\_PositioningTypes::PositionItemValue](#)

## 2.3.27 UnitOfMeasurementKey

UnitOfMeasurementKey	
Literal	Description
UnitOfMeasurementKey_INVALID	

UnitOfMeasurementKey	
UnitOfMeasurementKey_LENGTH	

Referenced by : [org\\_harman\\_nav\\_ctrl\\_configuration\\_ConfigurationTypes::UnitOfMeasurement](#)

## 2.3.28 UnitOfMeasurementValue

UnitOfMeasurementValue	
Literal	Description
UnitOfMeasurementValue_INVALID	
UnitOfMeasurementValue_METER	
UnitOfMeasurementValue_MILE	
UnitOfMeasurementValue_KM	
UnitOfMeasurementValue_YARD	
UnitOfMeasurementValue_FOOT	

Referenced by : [org\\_harman\\_nav\\_ctrl\\_configuration\\_ConfigurationTypes::UnitOfMeasurement](#)

## 2.3.29 UnitsOfMeasurement

List for Units of measurement. Vector of element type [UnitOfMeasurement](#)

Referenced by : [org\\_harman\\_nav\\_ctrl\\_configuration\\_Configuration::setUnitsOfMeasurement](#),  
[org\\_harman\\_nav\\_ctrl\\_configuration\\_Configuration::getSupportedUnitsOfMeasurement](#),  
[org\\_harman\\_nav\\_ctrl\\_configuration\\_Configuration::getUnitsOfMeasurement](#),  
[org\\_harman\\_nav\\_ctrl\\_configuration\\_ConfigurationBase::getSupportedUnitsOfMeasurement](#),  
[org\\_harman\\_nav\\_ctrl\\_configuration\\_ConfigurationBase::getUnitsOfMeasurement](#)

## 2.4 org\_harman\_nav\_ctrl\_dbupdate\_DBUpdate

Interface Version: 1.0

### 2.4.1 SetAutoModus

requestSetAutoModus
enable/disable the automode for the iu

### requestSetAutoModus

The auto-mode is by default enabled. In auto mode the dbupdate happens in background and is more or less completely opaque for the customer/driver. In general, the dbupdate ctrl checks for updates in a cycle manner (every updateTime\_sec seconds) or based on online notifications (which must be supported by project). If an update is available, a download progress is initiated automatically. As soon as the update is applied, the client gets notified about the option to restart the system in order to work on the latest DB. This is done by attribute outstandingUpdates. Anyway the client can ignore this notification and with the next lifecycle the latest dbversion is used. If the automodus is disabled, the client must manually initiate any update process. For further details see requestUpdateList and requestApplyUpdate.

Parameter	Type	Description
s_AutoModus	boolean	<p>enable/disable the automode for the iu</p> <p>The auto-mode is by default enabled. In auto mode the dbupdate happens in background and is more or less completely opaque for the customer/driver. In general, the dbupdate ctrl checks for updates in a cycle manner (every updateTime_sec seconds) or based on online notifications (which must be supported by project). If an update is available, a download progress is initiated automatically. As soon as the update is applied, the client gets notified about the option to restart the system in order to work on the latest DB. This is done by attribute outstandingUpdates. Anyway the client can ignore this notification and with the next lifecycle the latest dbversion is used. If the automodus is disabled, the client must manually initiate any update process. For further details see requestUpdateList and requestApplyUpdate.</p>

### responseSetAutoModus

enable/disable the automode for the iu

The auto-mode is by default enabled. In auto mode the dbupdate happens in background and is more or less completely opaque for the customer/driver. In general, the dbupdate ctrl checks for updates in a cycle manner (every updateTime\_sec seconds) or based on online notifications (which must be supported by project). If an update is available, a download progress is initiated automatically. As soon as the update is applied, the client gets notified about the option to restart the system in order to work on the latest DB. This is done by attribute outstandingUpdates. Anyway the client can ignore this notification and with the next lifecycle the latest dbversion is used. If the automodus is disabled, the client must manually initiate any update process. For further details see requestUpdateList and requestApplyUpdate.

responseSetAutoModus		
Parameter	Type	Description
s_AutoModus	boolean	enable/disable the automode for the iu  The auto-mode is by default enabled. In auto mode the dbupdate happens in background and is more or less completely opaque for the customer/driver. In general, the dbupdate ctrl checks for updates in a cycle manner (every updateTime_sec seconds) or based on online notifications (which must supported by project). If an update is available, a download progress is initiated automatically. As soon as the update is applied, the client gets notified about the option to restart the system in order to work on the latest DB. This is done by attribute outstandingUpdates. Anyway the client can ignore this notification and with the next lifecycle the latest dbversion is used. If the automodus is disabled, the client must manually initiate any update process. For further details see requestUpdateList and requestApplyUpdate.

## 2.4.2 applyUpdate

requestApplyUpdate		
manual request to download and apply an incremental update patch This method is used in case of auto-mode = off and the client is responsible to control the complete incremental update process himself. Preceding to this call, the client must have already called updateList to get a list of available updates. By passing the TId of one of the patches in the list, the download and appliance of a patch is started. There are different error scenarios (see error codes)		
Parameter	Type	Description
applyUpdate_R_patchId	TId	identifier of a certain patch

responseApplyUpdate		
manual request to download and apply an incremental update patch This method is used in case of auto-mode = off and the client is responsible to control the complete incremental update process himself. Preceding to this call, the client must have already called updateList to get a list of available		

### responseApplyUpdate

updates. By passing the TId of one of the patches in the list, the download and appliance of a patch is started. There are different error scenarios (see error codes)

Parameter	Type	Description
-----------	------	-------------

## 2.4.3 cancelUpdate

### requestCancelUpdate

Request to stop current applying process This method allows the client to stop an update progress. In essence this might lead to a stop-download or stop db-patch. A cancelled update will be cleaned up if the pausedProcess is set to false. Otherwise the client can resume the update later on. Please note: this call is only available in manual mode The controller stores the status of the current update and allows to resume the update process. The client can recall see requestApplyUpdate which internally will resume the update (if TId is the same). Multiple calls of requestCancelUpdate can be used to first pause an update and later on clean up. The controller will autocleanup update content automatically if the data is deprecated.

Parameter	Type	Description
cancelUpdate_R_pauseProcess	boolean	

### responseCancelUpdate

Request to stop current applying process This method allows the client to stop an update progress. In essence this might lead to a stop-download or stop db-patch. A cancelled update will be cleaned up if the pausedProcess is set to false. Otherwise the client can resume the update later on. Please note: this call is only available in manual mode The controller stores the status of the current update and allows to resume the update process. The client can recall see requestApplyUpdate which internally will resume the update (if TId is the same). Multiple calls of requestCancelUpdate can be used to first pause an update and later on clean up. The controller will autocleanup update content automatically if the data is deprecated.

Parameter	Type	Description
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## 2.4.4 finalizeUpdate

### requestFinalizeUpdate

initialize a HU restart which finalizes the DB-update process

This method allows the client to control the time in which the system gets restarted in order to finalize the DB-update process. Please note: for each updates (incremental/partial/full) a system restart is necessary to switch to the new DB-files. Intention of this method is to give the control about the restart-time to the client to avoid a restart during a critical guidance situation. Please note: in some cases a restart is not possible, in this case the E\_INVALID\_SYSTEM\_STATE will be returned

requestFinalizeUpdate		
Parameter	Type	Description

responseFinalizeUpdate		
initialize a HU restart which finalizes the DB-update process		
This method allows the client to control the time in which the system gets restarted in order to finalize the DB-update process. Please note: for each updates (incremental/partial/full) a system restart is necessary to switch to the new DB-files. Intention of this method is to give the control about the restart-time to the client to avoid a restart during a critical guidance situation. Please note: in some cases a restart is not possible, in this case the E_INVALID_SYSTEM_STATE will be returned		
Parameter	Type	Description

## 2.4.5 updateList

requestUpdateList		
manual request for search for available updates This method is used in case of auto-mode off. A client can use this method to a list of available updates for his HU. By specifying the E_RequestMode, the client can decide to fetch all interesting iu, the iu around current position or the iu at destination. As a result, the user will get a list of available updates roughly ordered by distance to CCP/destination and depending on project settings. The list is valid for the current lifecycle and update-process only. That meas if an update was applied the client must request the list again.		
In case that no online connection is available, the request returns with error code. Furthermore an error will responded in case that the auto mode is enabled. Please note: an empty list is not an error - it simply tells the client that there are no updates available		
Parameter	Type	Description
updateList_R_mode	E_RequestMode	

responseUpdateList		
manual request for search for available updates This method is used in case of auto-mode off. A client can use this method to a list of available updates for his HU. By specifying the E_RequestMode, the client can decide to fetch all interesting iu, the iu around current position or the iu at destination. As a result, the user will get a list of available updates roughly ordered by distance to CCP/destination and depending on project settings. The list is valid for the current lifecycle and update-process only. That meas if an update was applied the client must request the list again.		
In case that no online connection is available, the request returns with error code. Furthermore an error will responded in case that the auto mode is enabled. Please note: an empty list is not an error - it simply tells the client that there are no updates available		
Parameter	Type	Description



responseUpdateList		
updateList_list	TOTAUpdateList	

## 2.4.6 dealerUpdateAvailable

informationDealerUpdateAvailable		
<p>notify the client about a dealer update media than can be applied This broadcast is emitted by IUcontroller if an update media is connected to the HU which contains a valid update for the system. The client then can decide to apply the update by see applyUpdate. Please note: in contrast to incremental updates, this requestApplyUpdate will then switch the system to Full-Update-Mode in which no iu request is possible.</p>		
Parameter	Type	Description
dealerUpdateAvailable_dealerUpdate	SOADealerUpdate	

## 2.4.7 aautoModus

Attribute <i>aautoModus</i>	
<p>enable/disable the automode for the iu</p> <p>The auto-mode is by default enabled. In auto mode the dbupdate happens in background and is more or less completely opaque for the customer/driver. In general, the dbupdate ctrl checks for updates in a cycle manner (every updateTime_sec seconds) or based on online notifications (which must supported by project). If an update is available, a download progress is initiated automatically. As soon as the update is applied, the client gets notified about the option to restart the system in order to work on the latest DB. This is done by attribute outstandingUpdates. Anyway the client can ignore this notification and with the next lifecycle the latest dbversion is used. If the automodus is disabled, the client must manually initiate any update process. For further details see requestUpdateList and requestApplyUpdate.</p>	
Type	Notification Type
boolean	ON_CHANGE

## 2.4.8 adealerUpdateProgress

Attribute <i>adealerUpdateProgress</i>
<p>progress indication for dealer-update process This indication allows to give feedback about the progress when running a dealer update (don't mix up with incremental update). The valid range is between 0 and 100. As soon as the complete update is applied, the outstandingUpdates attribute will be increased to 1 and the fullUpdateProgress will indicate 100 (percent). In normal mode (meaning no</p>

Attribute <i>adealerUpdateProgress</i>	
update device is plugged to HU) the fullUpdateProgress will always be equal to 0 which indicates no full update progress in process.	
Type	Notification Type
UInt8	ON_CHANGE

## 2.4.9 aoutstandingUpdates

Attribute <i>aoutstandingUpdates</i>	
an indication on how many updates are ready to be applied This attribute allow the client to get feedback about the current update status. All updates that were downloaded and applied will increase this counter. Due to the fact that the DB itself must be switch after the update was applied successfully, the client can decide to trigger an system restart to get the latest update available for his current navigation. The interpretation of this attribute is very simple: outstandingUpdates!=0 - restart in order to switch to new database outstandingUpdates==0 - nothing to do The client can use see requestFinalizeUpdate to initialize a HU restart. With the next lifecylce of the system, the updates will be finalized automatically. In this case the outstandingUpdates will be reset to zero.	
Type	Notification Type
Int8	ON_CHANGE

## 2.4.10 aversionId

Attribute <i>aversionId</i>	
human readable version information of the database conglomerate This attribute is used to give the customer/driver information about the database that is currently available on his system.	
Type	Notification Type
<a href="#">SVersion</a>	ON_CHANGE

## 2.4.11 Error

Error	
This is the type for error responses.	
Literal	Description
ERROR_updateList_E_AUTOMODE_ACTIVE	
ERROR_updateList_E_NO_ONLINE_SERVICE	
ERROR_applyUpdate_E_AUTOMODE_ACTIVE	

Error	
ERROR_applyUpdate_E_NO_ONLINE_SERVICE	
ERROR_applyUpdate_E_PATCH_NOT_AVAILABLE	
ERROR_applyUpdate_E_PATCH_NOT_APPLICABLE	
ERROR_applyUpdate_E_VERIFICATION_FAILURE	
ERROR_applyUpdate_E_RESSOURCE_BUSY	
ERROR_cancelUpdate_E_AUTOMODE_ACTIVE	
ERROR_cancelUpdate_E_UPDATE_NOT_ACTIVE	
ERROR_finalizeUpdate_E_UPDATE_NOT_ACTIVE	
ERROR_finalizeUpdate_E_INVALID_SYSTEM_STATE	

## 2.5 org\_harman\_nav\_ctrl\_dbupdate\_DBUpdateTypes

Interface Version: 1.0

### 2.5.1 E\_RequestMode

E_RequestMode	
Literal	Description
E_RequestMode_E_REQUEST_DEFAULT_IU	request all iu according to project/default behaviour
E_RequestMode_E_REQUEST_ALL_IU	request all iu which are available for current system
E_RequestMode_E_REQUEST_CPP_IU	request all iu around the current car position
E_RequestMode_E_REQUEST_DEST_IU	request all iu around the destination

Referenced by : [org\\_harman\\_nav\\_ctrl\\_dbupdate\\_DBUpdate::updateList](#)

### 2.5.2 E\_UpdateType

E_UpdateType	
Literal	Description
E_UpdateType_E_UNKNOWN_DEFAULT	update type unknown/default: should be used if there is only one update type supported

E_UpdateType	
E_UpdateType_E_INCREMENTAL_UPDATE	incremental update (OTA-update)
E_UpdateType_E_PARTIAL_UPDATE	partial update (several update regions only)
E_UpdateType_E_FULL_UPDATE	full update (all regions and libs)
E_UpdateType_E_NO_UPDATE	none update (media has no update or primary check failed)

Referenced by : [org\\_harman\\_nav\\_ctrl\\_dbupdate\\_DBUpdateTypes::SDBDealerUpdate](#)

## 2.5.3 SDBDealerUpdate

SDBDealerUpdate		
struct describing a full/partial update this structure combines the different dealer update types in a single container: partial and full update. For the customer a mandatory title describes in short the content of the update. An optional description field allows to provide more detailed information. The type identifier is more or less for information only - it points out if this is a full update (all UR getting updated) or a partial one (e.g. only germany is getting updated).		
Structure Element	Type	Description
id	<a href="#">TId</a>	id for this update
type	<a href="#">E_UpdateType</a>	information about update type
_version	<a href="#">SVersion</a>	version of update which is used by version check functionality
title	String	mandatory short description of the update, e.g. "Central-Europe Q15.1"
description	String	optional detailed description of the update, e.g. list of URs, date, version
path	String	full path to root folder of DB, does not contain ROOT.NDS because there can be another entry point

Referenced by : [org\\_harman\\_nav\\_ctrl\\_dbupdate\\_DBUpdate::dealerUpdateAvailable](#)

## 2.5.4 SDBOTAUpdate

SDBOTAUpdate
description of an OTA incremental update This struct is used to describe a certain patch. It contains a short title (e.g. Germany Q1.15) and an optional more detailed description. The id is used to reference

<b>SDBOTAUpdate</b>		
a certain patch from the list of given patches. The struct furthermore contains optional fields for patch size and estimated time to download and apply.		
Structure Element	Type	Description
id	TId	id to identify a patch (mandatory)
title	String	information about the patch, e.g. Germany Q1.15 (mandatory)
description	String	additional optional information about the patch content (optional)
size_byte	UInt32	size of the patch in bytes (optional)
estimatedTime_sec	UInt32	expected time to download and to apply the patch (optional)

Referenced by : [org\\_harman\\_nav\\_ctrl\\_dbupdate\\_DBUpdateTypes::TOTAUpdateList](#)

## 2.5.5 SVersion

<b>SVersion</b>		
DB version information This struct is used to give information about the database that is currently used in HU. The details about representation of version are project specific.		
Structure Element	Type	Description
db_version	String	textual description of DB version, e.g. "ECE-101151"
title	String	optional textual description
lib_version	String	textual description of ndsupdate lib version
fud_db	UInt32	UTC of when the current database was first used.

Referenced by : [org\\_harman\\_nav\\_ctrl\\_dbupdate\\_DBUpdate::aversionId](#),  
[org\\_harman\\_nav\\_ctrl\\_dbupdate\\_DBUpdateTypes::SDBDealerUpdate](#)

## 2.5.6 TId

id of a patch Alias of actual type: **UInt32**

Referenced by : [org\\_harman\\_nav\\_ctrl\\_dbupdate\\_DBUpdate::applyUpdate](#),  
[org\\_harman\\_nav\\_ctrl\\_dbupdate\\_DBUpdateTypes::SDBDealerUpdate](#),  
[org\\_harman\\_nav\\_ctrl\\_dbupdate\\_DBUpdateTypes::SDBOTAUpdate](#)

## 2.5.7 TOTAUpdateList

a list of available patches Vector of element type [SDBOTAUpdate](#)

Referenced by : [org\\_harman\\_nav\\_ctrl\\_dbupdate\\_DBUpdate::updateList](#)

## 2.6 org\_harman\_nav\_ctrl\_Simulation

Interface Version: 0.1

### 2.6.1 getSimulationSpeed

requestGetSimulationSpeed		
Returns the speed factor for the simulation mode		
Parameter	Type	Description

responseGetSimulationSpeed		
Returns the speed factor for the simulation mode		
Parameter	Type	Description
getSimulationSpeed_speedFactor	float	speedFactor = speed factor

### 2.6.2 getSimulationStatus

requestGetSimulationStatus		
Retrieves the simulation status		
Parameter	Type	Description

responseGetSimulationStatus		
Retrieves the simulation status		
Parameter	Type	Description
getSimulationStatus_simulationStatus	<a href="#">SimulationStatus</a>	simulationStatus = enum(SIMULATION_STATUS_NO_SIMULATION, SIMULATION_STATUS_RUNNING, SIMULATION_STATUS_PAUSED, SIMULATION_STATUS_FIXED_POSITION)

## 2.6.3 pauseSimulation

<b>requestPauseSimulation</b>		
Freezes the current location		
Parameter	Type	Description

<b>responsePauseSimulation</b>		
Freezes the current location		
Parameter	Type	Description

## 2.6.4 resumeSimulation

<b>requestResumeSimulation</b>		
Resumes a follow active route simulation		
Parameter	Type	Description

<b>responseResumeSimulation</b>		
Resumes a follow active route simulation		
Parameter	Type	Description

## 2.6.5 setPosition

<b>requestSetPosition</b>		
Sets the position to a specific location		
Parameter	Type	Description
setPosition_R_position	<a href="#">PositionItemDict</a>	

<b>responseSetPosition</b>		
Sets the position to a specific location		
Parameter	Type	Description

## 2.6.6 setSimulationMode

requestSetSimulationMode		
Activates or deactivates simulation mode		
Parameter	Type	Description
setSimulationMode_R_activate	boolean	activate = flag. TRUE means that the simulation mode is activated.

responseSetSimulationMode		
Activates or deactivates simulation mode		
Parameter	Type	Description

## 2.6.7 setSimulationSpeed

requestSetSimulationSpeed		
Sets the speed factor for the simulation mode		
Parameter	Type	Description
setSimulationSpeed_R_speedFactor	float	speedFactor = speed factor

responseSetSimulationSpeed		
Sets the speed factor for the simulation mode		
Parameter	Type	Description

## 2.6.8 simulationSpeedChanged

informationSimulationSpeedChanged		
Notification when the simulation speed factor has changed		
Parameter	Type	Description
simulationSpeedChanged_speedFactor	float	speedFactor = speed factor

## 2.6.9 simulationStatusChanged

informationSimulationStatusChanged		
Notification when the Simulation Status has changed		



informationSimulationStatusChanged		
Parameter	Type	Description
simulationStatusChanged_simulationStatus	SimulationStatus	simulationStatus = enum(SIMULATION_STATUS_NO_SIMULATION, SIMULATION_STATUS_RUNNING, SIMULATION_STATUS_PAUSED, SIMULATION_STATUS_FIXED_POSITION)

## 2.7 org\_harman\_nav\_ctrl\_SimulationTypes

Interface Version: 1.0

### 2.7.1 SimulationStatus

SimulationStatus	
Literal	Description
SimulationStatus_BasicEnum_INVALID	
SimulationStatus_SIMULATION_STATUS_NO_SIMULATION	
SimulationStatus_SIMULATION_STATUS_RUNNING	
SimulationStatus_SIMULATION_STATUS_PAUSED	
SimulationStatus_SIMULATION_STATUS_FIXED_POSITION	

Referenced by : [org\\_harman\\_nav\\_ctrl\\_Simulation::getSimulationStatus](#),  
[org\\_harman\\_nav\\_ctrl\\_Simulation::simulationStatusChanged](#)

## 3 Location Service

### 3.1 org\_harman\_nav\_ctrl\_di\_LocationInput

Interface Version: 2.2

#### 3.1.1 createLocationInput

requestCreateLocationInput		
createLocationInput = This method creates a new location input and retrieves a handle		
Parameter	Type	Description

responseCreateLocationInput		
createLocationInput = This method creates a new location input and retrieves a handle		
Parameter	Type	Description
createLocationInput_locationInputHandle	Handle	Location input handle. Range[0x0:0x7ffffff]. 0x0 is reserved as an invalid handle value

#### 3.1.2 deleteLocationInput

requestDeleteLocationInput		
deleteLocationInput = This method deletes a location input and its associated resources		
Parameter	Type	Description
deleteLocationInput_R_locationInputHandle	Handle	locationInputHandle = Location input handle. Range[0x0:0x7ffffff]. 0x0 is reserved as an invalid handle value

responseDeleteLocationInput		
deleteLocationInput = This method deletes a location input and its associated resources		
Parameter	Type	Description

### 3.1.3 getEntry

requestGetEntry		
getEntry = This method synchronously gets the address for the given result list entry		
Parameter	Type	Description
getEntry_R_locationInputHandle	Handle	locationInputHandle = Location input handle. Range[0x0:0x7ffffff]. 0x0 is reserved as an invalid handle value
getEntry_R_index	UInt16	index = list index of the entry to be returned

responseGetEntry		
getEntry = This method synchronously gets the address for the given result list entry		
Parameter	Type	Description
getEntry_address	Address	

### 3.1.4 getSupportedAddressAttributes

requestGetSupportedAddressAttributes		
getSupportedAddressAttributes = This method retrieves the supported address attributes		
Parameter	Type	Description

responseGetSupportedAddressAttributes		
getSupportedAddressAttributes = This method retrieves the supported address attributes		
Parameter	Type	Description
getSupportedAddressAttributes	AddressAttributeList	

### 3.1.5 getVersion

requestGetVersion		
getVersion = This method returns the API version implemented by the server application		
Parameter	Type	Description

responseGetVersion		
getVersion = This method returns the API version implemented by the server application		

responseGetVersion		
Parameter	Type	Description
getVersion_version	Version	

### 3.1.6 requestListUpdate

requestRequestListUpdate		
requestListUpdate = This method sends a request for more list elements for the current session If a session changes, e.g. new character is entered, a new list is generated. Offset is starting at 0 again.		
Parameter	Type	Description
requestListUpdate_R_locationInputHandle	Handle	locationInputHandle = Location input handle. Range[0x0:0x7ffffff]. 0x0 is reserved as an invalid handle value
requestListUpdate_R_offset	UInt16	offset = starting offset of the newly requested list elements
requestListUpdate_R_maxWindowSize	UInt32	maxWindowSize = maximum number of elements that should be returned as result

responseRequestListUpdate		
requestListUpdate = This method sends a request for more list elements for the current session If a session changes, e.g. new character is entered, a new list is generated. Offset is starting at 0 again.		
Parameter	Type	Description

### 3.1.7 reverseGeocode

requestReverseGeocode		
reverseGeocode = This method transforms a geocoordinate into an address		
Parameter	Type	Description
reverseGeocode_R_locationInputHandle	Handle	locationInputHandle = Location input handle. Range[0x0:0x7ffffff]. 0x0 is reserved as an invalid handle value
reverseGeocode_R_coordinate	Coordinate2D	

responseReverseGeocode		
reverseGeocode = This method transforms a geocoordinate into an address		
Parameter	Type	Description

## 3.1.8 search

<b>requestSearch</b>		
search = This method sets the inputString for the current selection criterion TBD: expected broadcasts		
Parameter	Type	Description
search_R_locationInputHandle	Handle	locationInputHandle = Location input handle. Range[0x0:0x7ffffff]. 0x0 is reserved as an invalid handle value
search_R_inputString	String	inputString = contains the String, that is searched

<b>responseSearch</b>		
search = This method sets the inputString for the current selection criterion TBD: expected broadcasts		
Parameter	Type	Description

## 3.1.9 selectEntry

<b>requestSelectEntry</b>		
selectEntry = This method triggers selection of a result list entry by index		
Parameter	Type	Description
selectEntry_R_locationInputHandle	Handle	locationInputHandle = Location input handle. Range[0x0:0x7ffffff]. 0x0 is reserved as an invalid handle value
selectEntry_R_index	UInt16	index = absolute list index of the entry to be selected

<b>responseSelectEntry</b>		
selectEntry = This method triggers selection of a result list entry by index		
Parameter	Type	Description

## 3.1.10 setAddress

<b>requestSetAddress</b>		
setAddress = This method sets the address to start with for the LocationInput identified by the given handle		
Parameter	Type	Description

requestSetAddress		
setAddress_R_locationInputHandle	Handle	locationInputHandle = Location input handle. Range[0x0:0x7ffffff]. 0x0 is reserved as an invalid handle value
setAddress_R_address	Address	

responseSetAddress		
setAddress = This method sets the address to start with for the LocationInput identified by the given handle		
Parameter	Type	Description

### 3.1.11 setSelectionCriterion

requestSetSelectionCriterion		
setSelectionCriterion = This method sets the selection criterion for the current speller, search input and the corresponding result-lists for the current session		
Parameter	Type	Description
setSelectionCriterion_R_locationInputHandle	Handle	locationInputHandle = Location input handle. Range[0x0:0x7ffffff]. 0x0 is reserved as an invalid handle value
setSelectionCriterion_R_selectionCriterion	SelectionCriterion	selectionCriterion = enum(INVALID,LATITUDE,LONGITUDE,ALTITUDE,FULL... )

responseSetSelectionCriterion		
setSelectionCriterion = This method sets the selection criterion for the current speller, search input and the corresponding result-lists for the current session		
Parameter	Type	Description

### 3.1.12 spell

requestSpell		
spell = This method sends the next spell input for the current session TBD: expected broadcasts		
Parameter	Type	Description
spell_R_locationInputHandle	Handle	locationInputHandle = Location input handle. Range[0x0:0x7ffffff]. 0x0 is reserved as an invalid handle value

requestSpell		
spell_R_inputCharacter	String	inputCharacter = last input character (UTF-8) (0x08(Backspace) for delete last character, 0x0D(Carriage Return) for delete entire input)

responseSpell		
spell = This method sends the next spell input for the current session TBD: expected broadcasts		
Parameter	Type	Description

### 3.1.13 validateAddress

requestValidateAddress		
validateAddress = This method validates an address from different sources than Navigation TBD: functionality to be clarified		
Parameter	Type	Description
validateAddress_R_locationInputHandle	Handle	locationInputHandle = Location input handle. Range[0x0:0x7ffffff]. 0x0 is reserved as an invalid handle value
validateAddress_R_inputAddress	Address	

responseValidateAddress		
validateAddress = This method validates an address from different sources than Navigation TBD: functionality to be clarified		
Parameter	Type	Description

### 3.1.14 addressValidationResult

informationAddressValidationResult		
addressValidationResult = This signal notifies the validation result of a former ValidateAddress call TBD: functionality to be clarified		
Parameter	Type	Description
addressValidationResult_locationInputHandle	Handle	locationInputHandle = Location input handle. Range[0x0:0x7ffffff]. 0x0 is reserved as an invalid handle value
addressValidationResult_validatedAddress_List	Address	
addressValidationResult_validationStatus_List	ValidationStatus	

### 3.1.15 contentUpdated

informationContentUpdated		
contentUpdated = This signal updates the input content data for the specified session		
Parameter	Type	Description
contentUpdated_locationInputHandle	Handle	locationInputHandle = Location input handle. Range[0x0:0x7ffffff]. 0x0 is reserved as an invalid handle value
contentUpdated_guidable	boolean	guidable = flag indicating whether the current address is guidable
contentUpdated_availableSelectionCriteria_AddressAttribute_	SelectionCriteria_AddressAttribute_	
contentUpdated_address	Address	

### 3.1.16 currentSelectionCriterion

informationCurrentSelectionCriterion		
currentSelectionCriterion = This signal notifies the SelectionCriterion for the current speller input or search.		
Parameter	Type	Description
currentSelectionCriterion_locationInputHandle	Handle	locationInputHandle = Location input handle. Range[0x0:0x7ffffff]. 0x0 is reserved as an invalid handle value
currentSelectionCriterion_selectionCriteria_Attribute	SelectionCriteria_Attribute	selectionCriterion = enum(INVALID,LATITUDE, LONGITUDE, ALTITUDE, FU... )

### 3.1.17 searchResultList

informationSearchResultList		
searchResultList = This signal updates the address result list (e.g. after a Search/Spell/Scroll call)		
Parameter	Type	Description
searchResultList_locationInputHandle	Handle	locationInputHandle = Location input handle. Range[0x0:0x7ffffff]. 0x0 is reserved as an invalid handle value
searchResultList_totalSize	UInt16	totalSize = total size of the result list
searchResultList_windowOffset	UInt16	windowOffset = window offset within the complete list
searchResultList_windowSize	UInt16	windowSize = size of the provided window



informationSearchResultList		
searchResultList_resultListWindow	TVVector_Address_	

### 3.1.18 searchResultListSizeChanged

informationSearchResultListSizeChanged		
searchResultListSizeChanged = This signal updates the size of the address result list		
Parameter	Type	Description
searchResultListSizeChanged_locationInputHandle	Handle	locationInputHandle = Location input handle. Range[0x0:0x7ffffff]. 0x0 is reserved as an invalid handle value
searchResultListSizeChanged_totalSize	UInt32	totalSize = total size of the result list

### 3.1.19 spellResult

informationSpellResult		
spellResult = This signal notifies the result of the previous Spell method		
Parameter	Type	Description
spellResult_locationInputHandle	Handle	locationInputHandle = Location input handle. Range[0x0:0x7ffffff]. 0x0 is reserved as an invalid handle value
spellResult_uniqueString	String	uniqueString = unique string derived from spell input (i.e. including auto-completion if applicable)
spellResult_validCharacters	String	validCharacters = set of (UTF-8 encoded) characters valid for next input (unified in a single string). A Backspace(0x08) is returned if the input character passed to the Spell method was invalid
spellResult_fullMatch	boolean	fullMatch = flag indicating whether the value in UniqueCharacters is already a full match for an existing list entry

### 3.1.20 Error

Error
This is the type for error responses.

Error	
Literal	Description
ERROR_createLocationInput_NoMorelocationInputHandles	
ERROR_setAddress_InvalidAddressError	
ERROR_setSelectionCriterion_InvalidSelectionCriterion	
ERROR_spell_InvalidCharacterError	
ERROR_search_InvalidStringError	
ERROR_requestListUpdate_OffsetBeyondListSizeError	
ERROR_requestListUpdate_WindowSizeTooLargeError	
ERROR_selectEntry_InvalidIndex	
ERROR_selectEntry_InvalidHandle	

### 3.1.21 THBVector\_AddressAttribute\_

Vector of element type [AddressAttribute](#)

Referenced by : [org\\_harman\\_nav\\_ctrl\\_di\\_LocationInput::contentUpdated](#)

### 3.1.22 THBVector\_Address\_

Vector of element type [Address](#)

Referenced by : [org\\_harman\\_nav\\_ctrl\\_di\\_LocationInput::searchResultList](#),  
[org\\_harman\\_nav\\_ctrl\\_di\\_LocationInput::addressValidationResult](#)

### 3.1.23 THBVector\_ValidationStatus\_

Vector of element type [ValidationStatus](#)

Referenced by : [org\\_harman\\_nav\\_ctrl\\_di\\_LocationInput::addressValidationResult](#)

## 3.2 org\_harman\_nav\_ctrl\_di\_LocationInputTypes

Interface Version: 2.2

### 3.2.1 Address

Address		
Map Element	Type	Description

Address		
keyType	<a href="#">AddressAttribute</a>	
valueType	<a href="#">AddressValue</a>	

Referenced by : [org\\_harman\\_nav\\_ctrl\\_di\\_LocationInput::setAddress](#),  
[org\\_harman\\_nav\\_ctrl\\_di\\_LocationInput::getEntry](#),  
[org\\_harman\\_nav\\_ctrl\\_di\\_LocationInput::validateAddress](#),  
[org\\_harman\\_nav\\_ctrl\\_di\\_LocationInput::contentUpdated](#),  
[org\\_harman\\_nav\\_ctrl\\_di\\_LocationInput::THBVector\\_Address](#),  
[org\\_harman\\_nav\\_ctrl\\_highwaymode\\_HighwayModeTypes::Addresses](#),  
[org\\_harman\\_nav\\_ctrl\\_memory\\_LocationMemoryTypes::Location](#)

## 3.2.2 AddressAttribute

AddressAttribute	
Literal	Description
AddressAttribute_BasicEnum_INVALID	
AddressAttribute_LATITUDE	
AddressAttribute_LONGITUDE	
AddressAttribute_ALTITUDE	
AddressAttribute_COUNTRY	
AddressAttribute_STATE	
AddressAttribute_CITY	
AddressAttribute_ZIPCODE	
AddressAttribute_STREET	
AddressAttribute_HOUSENUMBER	
AddressAttribute_CROSSING	
AddressAttribute_DISTRICT	
AddressAttribute_TOWNCENTER	
AddressAttribute_REFINEMENT	
AddressAttribute_FULL_ADDRESS	
AddressAttribute_COUNTRYFLAG	
AddressAttribute_COUNTRYSET	
AddressAttribute_COUNTRYABBR	
AddressAttribute_INTERNAL_DATA	

Referenced by : [org\\_harman\\_nav\\_ctrl\\_di\\_LocationInput::setSelectionCriterion](#),  
[org\\_harman\\_nav\\_ctrl\\_di\\_LocationInput::currentSelectionCriterion](#),

[org\\_harman\\_nav\\_ctrl\\_di\\_LocationInput::THBVector\\_AddressAttribute\\_](#),  
[org\\_harman\\_nav\\_ctrl\\_di\\_LocationInputTypes::AddressAttributeList](#)

### 3.2.3 AddressAttributeList

Vector of element type [AddressAttribute](#)

Referenced by : [org\\_harman\\_nav\\_ctrl\\_di\\_LocationInput::getSupportedAddressAttributes](#),  
[org\\_harman\\_nav\\_ctrl\\_di\\_SpeechLocationInputTypes::SpeechMode](#)

### 3.2.4 AddressValue

AddressValue		
Variant Element	Type	Description
intValue	Int32	
doubleValue	double	
stringValue	String	
coordinateValue	<a href="#">Coordinate3D</a>	
internalData	Buffer	

### 3.2.5 SearchStatus

SearchStatus	
Literal	Description
SearchStatus_BasicEnum_INVALID	
SearchStatus_SEARCHING	
SearchStatus_FINISHED	

Referenced by : [org\\_harman\\_nav\\_ctrl\\_di\\_OneBoxSearch::searchStatus](#)

### 3.2.6 ValidationStatus

ValidationStatus
------------------

ValidationStatus		
Map Element	Type	Description
keyType	<a href="#">AddressAttribute</a>	
valueType	<a href="#">ValidationType</a>	

Referenced by : [org\\_harman\\_nav\\_ctrl\\_di\\_LocationInput::THBVector\\_ValidationStatus\\_](#)

## 3.2.7 ValidationType

ValidationType	
Literal	Description
ValidationType_BasicEnum_INVALID	
ValidationType_OK	
ValidationType_UNKNOWN	
ValidationType_AMBIGUOUS	
ValidationType_INCONSISTENT	

## 3.3 org\_harman\_nav\_ctrl\_di\_OneBoxSearch

Interface Version: 2.3

### 3.3.1 cancelOneBoxSearch

requestCancelOneBoxSearch		
cancelFtsSearch = This method cancels the search for the current session		
Parameter	Type	Description
cancelOneBoxSearch_R_oneBoxSearchHandle	<a href="#">BoxSearchHandle</a>	oneBoxSearchHandle = one box search unique handle

responseCancelOneBoxSearch		
cancelFtsSearch = This method cancels the search for the current session		
Parameter	Type	Description

## 3.3.2 createOneBoxSearch

requestCreateOneBoxSearch		
createOneBoxSearch = This method creates a new OneBoxSearch and retrieves a handle		
Parameter	Type	Description

responseCreateOneBoxSearch		
createOneBoxSearch = This method creates a new OneBoxSearch and retrieves a handle		
Parameter	Type	Description
createOneBoxSearch_oneBoxSearchHandle	SearchHandle	Location input handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value

## 3.3.3 deleteOneBoxSearch

requestDeleteOneBoxSearch		
deleteLocationInput = This method deletes a location input and its associated resources		
Parameter	Type	Description
deleteOneBoxSearch_R_oneBoxSearchHandle	SearchHandle	oneBoxSearchHandle = Search handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value

responseDeleteOneBoxSearch		
deleteLocationInput = This method deletes a location input and its associated resources		
Parameter	Type	Description

## 3.3.4 getEntry

requestGetEntry		
getEntry = This method synchronously gets the address for the given result list entry		
Parameter	Type	Description
getEntry_R_oneBoxSearchHandle	SearchHandle	oneBoxSearchHandle = One Box input handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value

requestGetEntry		
getEntry_R_index	UInt16	index = list index of the entry to be returned

responseGetEntry		
getEntry = This method synchronously gets the address for the given result list entry		
Parameter	Type	Description
getEntry_locItem	Location	location = Location selected for the result list. For a phonebook contact with two addresses, two separate entries will be returned.

### 3.3.5 getVersion

requestGetVersion		
getVersion = This method returns the API version implemented by the server application		
Parameter	Type	Description

responseGetVersion		
getVersion = This method returns the API version implemented by the server application		
Parameter	Type	Description
getVersion_version	Version	

### 3.3.6 requestResultList

requestRequestResultList		
requestListUpdate = This method sends a request for more list elements for the current session		
Parameter	Type	Description
requestResultList_R_oneBoxSearchHandle	SearchHandle	oneBoxSearchHandle = One box handle. Range[0x0:0x7ffffff]. 0x0 is reserved as an invalid handle value
requestResultList_R_offset	UInt16	offset = starting offset of the newly requested list elements
requestResultList_R_maxWindowSize	UInt16	maxWindowSize = maximum number of elements that should be returned as result

responseRequestResultList		
requestListUpdate = This method sends a request for more list elements for the current session		
Parameter	Type	Description
requestResultList_statusValue	UInt16	enum(INVALID,NOT_STARTED,SEARCHING,FINISHED,...).
requestResultList_resultListSize	UInt16	Number of items of the results list.
requestResultList_locations	LocationList	array[locations].

### 3.3.7 selectEntry

requestSelectEntry		
selectEntry = This method triggers selection of a result list entry by index		
Parameter	Type	Description
selectEntry_R_oneBoxSearchHandle	Handle	oneBoxSearchHandle = One Box handle. Range[0x0:0x7ffffff]. 0x0 is reserved as an invalid handle value
selectEntry_R_index	UInt16	index = absolute list index of the entry to be selected

responseSelectEntry		
selectEntry = This method triggers selection of a result list entry by index		
Parameter	Type	Description

### 3.3.8 setSearchCountry

requestSetSearchCountry		
setSearchCountry = This method sets the target country for the current search, If no country is set the current center position is used to determine the country		
Parameter	Type	Description
setSearchCountry_R_oneBoxSearchHandle	Handle	oneBoxSearchHandle = one box search unique handle
setSearchCountry_R_country	String	country = Deutschland, Frankreich, Utah, New Jersey, no country set allowed zB USA, European Union, Canada



<b>responseSetSearchCountry</b>		
setSearchCountry = This method sets the target country for the current search, If no country is set the current center position is used to determine the country		
Parameter	Type	Description

### 3.3.9 setSearchLanguage

<b>requestSetSearchLanguage</b>		
setSearchLanguage = for the phonetic search algorithms the language and script are important		
Parameter	Type	Description
setSearchLanguage_R_ftsSearchHandle	Handle	oneBoxSearchHandle = one box search unique handle
setSearchLanguage_R_language	String	language = ISO language used for the search eng deu fra ita
setSearchLanguage_R_script	String	script = ISO script Latn1, Latn2, Cyrillic, etc

<b>responseSetSearchLanguage</b>		
setSearchLanguage = for the phonetic search algorithms the language and script are important		
Parameter	Type	Description

### 3.3.10 setSearchParameters

<b>requestSetSearchParameters</b>		
setSearchParameters = setSearchParameters = configure if we want to search for addresses and/or pois. configure if we want to search in the vicinity of the specified center. configure if we want to search using fuzziness. Default behaviour if no option is set we search everywhere		
Parameter	Type	Description
setSearchParameters_R_oneBoxSearchHandle	Handle	oneBoxSearchHandle = one box search unique handle
setSearchParameters_R_searchOptions	Options	searchOptions = bitmask, default value is 0xFFFF FTS_SEARCH_BITMASK_ADDRESSES = 0x1, enable search for addresses FTS_SEARCH_BITMASK_POIS = 0x2, enable search for pois FTS_SEARCH_BITMASK_VICINITY = 0x4 enable search around position

requestSetSearchParameters		
		FTS_SEARCH_BITMASK_FUZZINESS = 0x8 enable fuzziness

responseSetSearchParameters		
setSearchParameters = SetSearchParameters = configure if we want to search for addresses and/or pois. configure if we want to search in the vicinity of the specified center. configure if we want to search using fuzziness. Default behaviour if no option is set we search everywhere		
Parameter	Type	Description

### 3.3.11 startOneBoxSearch

requestStartOneBoxSearch		
startOneBoxSearch = This method sends the search input for the search handle. The search will start with the location.		
Parameter	Type	Description
startOneBoxSearch_R_oneBoxSearchHandle	oneBoxSearchHandle	oneBoxSearchHandle = one box search unique handle
startOneBoxSearch_R_inputString	String	inputString = contains the name of the poi, address, contact that is searched. It cannot be an empty string.

responseStartOneBoxSearch		
startOneBoxSearch = This method sends the search input for the search handle. The search will start with the location.		
Parameter	Type	Description

### 3.3.12 searchResultList

informationSearchResultList		
searchResultList = This signal updates the address result list (e.g. after a Search/Spell/Scroll call)		
Parameter	Type	Description
searchResultList_oneBoxSearchHandle	oneBoxSearchHandle	oneBoxSearchHandle = Location input handle. Range[0x0:0x7ffffff]. 0x0 is reserved as an invalid handle value
searchResultList_totalSize	UInt16	totalSize = total size of the result list
searchResultList_windowOffset	UInt16	windowOffset = window offset within the complete list

informationSearchResultList		
searchResultList_windowSize	UInt16	windowSize = size of the provided window

### 3.3.13 searchResultListSizeChanged

informationSearchResultListSizeChanged		
searchResultListSizeChanged = This signal updates the size of the address result list		
Parameter	Type	Description
searchResultListSizeChanged_locationInputHandle	LocationInputHandle	oneBoxSearchHandle = Location input handle. Range[0x0:0x7ffffff]. 0x0 is reserved as an invalid handle value
searchResultListSizeChanged_totalSize	UInt16	totalSize = total size of the result list

### 3.3.14 searchStatus

informationSearchStatus		
searchStatus = This signal updates the search status of the specified session		
Parameter	Type	Description
searchStatus_oneBoxSearchHandle	LocationInputHandle	oneBoxSearchHandle = Location input handle. Range[0x0:0x7ffffff]. 0x0 is reserved as an invalid handle value
searchStatus_statusValue	SearchStatus	statusValue = enum(INVALID,NOT_STARTED,SEARCHING,FINISHED,...)

### 3.3.15 Error

Error	
This is the type for error responses.	
Literal	Description
ERROR_createOneBoxSearch_NoMoreOneBoxHandles	
ERROR_setSearchCountry_HandleNotAvailable	
ERROR_setSearchLanguage_HandleNotAvailable	
ERROR_setSearchParameters_HandleNotAvailable	
ERROR_startOneBoxSearch_HandleNotAvailable	
ERROR_cancelOneBoxSearch_HandleNotAvailable	

## 3.4 org\_harman\_nav\_ctrl\_di\_OneBoxSearchTypes

Interface Version: 1.0

### 3.4.1 FtsOptions

FtsOptions	
Literal	Description
FtsOptions_BasicEnum_INVALID	
FtsOptions_ONEBOX_SEARCH_BITMASK_ADDRESSES	
FtsOptions_x0001	
FtsOptions_ONEBOX_SEARCH_BITMASK_POIS	
FtsOptions_x0002	
FtsOptions_ONEBOX_SEARCH_BITMASK_VICINITY	
FtsOptions_x0003	
FtsOptions_ONEBOX_SEARCH_BITMASK_FUZZINESS	
FtsOptions_x0004	
FtsOptions_ONEBOX_SEARCH_BITMASK_RECENT	
FtsOptions_x0008	
FtsOptions_ONEBOX_SEARCH_BITMASK_FAVORITES	
FtsOptions_x0010	
FtsOptions_ONEBOX_SEARCH_BITMASK_CONTACTS	
FtsOptions_x0020	

## 3.5 org\_harman\_nav\_ctrl\_di\_POIContentAccess

Interface Version: 1.0

### 3.5.1 addCategories

requestAddCategories		
Add new categories to the POI service component. The CAM provides for each categories the name, the parent categories, the top level attribute, the list of attributes, the icons, ... .		
Parameter	Type	Description
addCategories_R_camId	UInt8	Content access module unique id as known by the POI service component.

requestAddCategories		
addCategories_R_poiCategories	THBVector_CAMCategory_	List of details for all the POI categories.

responseAddCategories		
Add new categories to the POI service component. The CAM provides for each categories the name, the parent categories, the top level attribute, the list of attributes, the icons, ... .		
Parameter	Type	Description
addCategories_poiCategoriesId	THBVector_CategoryID_	array of unique POI categories as registered by the POI service component. Note: A POI category is a unique ID

## 3.5.2 registerContentAccessModule

requestRegisterContentAccessModule		
Register to the POI provider module When the CAM registers, it provides a name and then get a unique id. This id must be used everytime the CAM communicates with the POI service component. After the registration is done, the CAM can start to update POI categories and POI attributes as well as registers POI categories to search for.		
Parameter	Type	Description
registerContentAccessModule_String	moduleName	The name of the CAM.

responseRegisterContentAccessModule		
Register to the POI provider module When the CAM registers, it provides a name and then get a unique id. This id must be used everytime the CAM communicates with the POI service component. After the registration is done, the CAM can start to update POI categories and POI attributes as well as registers POI categories to search for.		
Parameter	Type	Description
registerContentAccessModule_Id	id	Content access module unique id as known by the POI service component.

## 3.5.3 registerPoiCategories

requestRegisterPoiCategories		
Register to the POI provider module the categories you can search for POI. The categories could be predefined one or customized ones. In order to register a customized category, you might need to create it before and add it to the POI service component.		

<b>requestRegisterPoiCategories</b>		
Parameter	Type	Description
registerPoiCategories_R_camId	UInt8	Content access module unique id as known by the POI service component.
registerPoiCategories_R_poiCategories	std::vector<CategoryID_	array[unique_id]. List of POI categories to register. unique_id = Unique category id.

<b>responseRegisterPoiCategories</b>		
Register to the POI provider module the categories you can search for POI. The categories could be predefined one or customized ones. In order to register a customized category, you might need to create it before and add it to the POI service component.		
Parameter	Type	Description

### 3.5.4 removeCategories

<b>requestRemoveCategories</b>		
Remove categories from the POI service component. It could be a predefined or a customized one. Depending on the local database write policy, the CAM might only not be able to remove some categories.		
Parameter	Type	Description
removeCategories_R_camId	UInt8	Content access module unique id as known by the POI service component.
removeCategories_R_poiCategories	std::vector<CategoryID_	array[unique_id]. List of POI categories to remove.

<b>responseRemoveCategories</b>		
Remove categories from the POI service component. It could be a predefined or a customized one. Depending on the local database write policy, the CAM might only not be able to remove some categories.		
Parameter	Type	Description

### 3.5.5 unRegisterContentAccessModule

<b>requestUnRegisterContentAccessModule</b>		
Remove CAM from POI provider module.		
Parameter	Type	Description

requestUnRegisterContentAccessModule		
unRegisterContentAccessModule	UInt8	Content access module unique id as known by the POI service component.

responseUnRegisterContentAccessModule		
Remove CAM from POI provider module.		
Parameter	Type	Description

## 3.5.6 updateCategories

requestUpdateCategories		
Update categories in the POI service component. It could be a predefined or a customized one. The CAM provides for each categories the list of attributes (mandatories like name or optional) it wants to update. Depending on the local database write policy, the CAM might only be able to update customized attributes for a category and not the predefined ones so some update could be rejected.		
Parameter	Type	Description
updateCategories_R_camId	UInt8	Content access module unique id as known by the POI service component.
updateCategories_R_poiCategories	THBVector_CAMCategoryUpdate	array[unique_id, attributes, sortOptions].

responseUpdateCategories		
Update categories in the POI service component. It could be a predefined or a customized one. The CAM provides for each categories the list of attributes (mandatories like name or optional) it wants to update. Depending on the local database write policy, the CAM might only be able to update customized attributes for a category and not the predefined ones so some update could be rejected.		
Parameter	Type	Description

## 3.5.7 THBVector\_CAMCategoryUpdate\_

array[unique\_id, attributes, sortOptions]. Vector of element type [CAMCategoryUpdate](#)

Referenced by : [org\\_harman\\_nav\\_ctrl\\_di\\_POIContentAccess::updateCategories](#)

## 3.5.8 THBVector\_CAMCategory\_

List of details for all the POI categories. Vector of element type [CAMCategory](#)

Referenced by : [org\\_harman\\_nav\\_ctrl\\_di\\_POIContentAccess::addCategories](#)

### 3.5.9 THBVector\_CategoryID\_

array[unique\_id]. List of POI categories to register. unique\_id = Unique category id. Vector of element type [CategoryID](#)

Referenced by : [org\\_harman\\_nav\\_ctrl\\_di\\_POIContentAccess::registerPoiCategories](#),  
[org\\_harman\\_nav\\_ctrl\\_di\\_POIContentAccess::addCategories](#),  
[org\\_harman\\_nav\\_ctrl\\_di\\_POIContentAccess::removeCategories](#)

## 3.6 org\_harman\_nav\_ctrl\_di\_POIContentAccessMod

Interface Version: 2.0

### 3.6.1 getVersion

requestGetVersion		
This method returns the API version implemented by the content access module.		
Parameter	Type	Description

responseGetVersion		
This method returns the API version implemented by the content access module.		
Parameter	Type	Description
getVersion_version	<a href="#">Version</a>	.

### 3.6.2 poiDetailsRequested

requestPoiDetailsRequested		
This method retrieves the details associated to one or more POI. It contains the name, the parent categories, the list of attributes, the icons, ... .		
Parameter	Type	Description
poiDetailsRequested_R_source	<a href="#">THBVector_POI_ID_</a>	array[unique_poi_id].

responsePoiDetailsRequested		
This method retrieves the details associated to one or more POI. It contains the name, the parent categories, the list of attributes, the icons, ... .		



responsePoiDetailsRequested		
Parameter	Type	Description
poiDetailsRequested_results	<a href="#">THBVector_SearchResultDetails</a>	array[(details, categories, attributes)] .

### 3.6.3 poiSearchCanceled

requestPoiSearchCanceled		
This method cancels the search for the current id.		
Parameter	Type	Description
poiSearchCanceled_R_poiSearchHandle	<a href="#">Handle</a>	poi search unique handle.

responsePoiSearchCanceled		
This method cancels the search for the current id.		
Parameter	Type	Description

### 3.6.4 poiSearchStarted

requestPoiSearchStarted		
This method is sent by the POI service component to inform all the CAM that a new POI search was started. It provides all the relevant search parameters. Of course the CAM will only be aware of the search if it registers one of the search categories.		
Parameter	Type	Description
poiSearchStarted_R_poiSearchHandle	<a href="#">Handle</a>	poi search unique handle. It must be used by the CAM to send the list of results to the component.
poiSearchStarted_R_maxSize	UInt16	max size of the results list.
poiSearchStarted_R_locations	<a href="#">THBVector_Coordinate3D</a>	array[struct(lat,lon,alt)].
poiSearchStarted_R_poiCategories	<a href="#">THBVector_CategoryAndRadius</a>	array[struct(id,radius)].
poiSearchStarted_R_poiAttributes	<a href="#">THBVector_AttributeDetails</a>	array[struct(name, poiCategory, type, value, operator, mandatory)].
poiSearchStarted_R_inputString	String	contains the name of the poi that is searched. It could be a partial name or an empty string.
poiSearchStarted_R_sortOptions	UInt16	enum(SORT_DEFAULT,SORT_BY_DISTANCE,SORT_BY_DISTANCE_AND_RADIUS,SORT_BY_RADIUS,... ) If more than one category was defined for this search, the sort criteria should be compliant with all categories.

### responsePoiSearchStarted

This method is sent by the POI service component to inform all the CAM that a new POI search was started. It provides all the relevant search parameters. Of course the CAM will only be aware of the search if it registers one of the search categories.

Parameter	Type	Description
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## 3.6.5 resultListRequested

### requestResultListRequested

This method provides the poi results list found by the CAM. As the POI unique id is managed by the POI component, the CAM only provides the POI name, the category and coordinates as well as all the relevant detailed information.

Parameter	Type	Description
resultListRequested_R_camId	UInt8	Content access module unique id as known by the POI service component.
resultListRequested_R_poiSearchHandle	UInt8	poi search unique handle.
resultListRequested_R_attributes	THBVector_AttributeID_	List of attributes id to retrieve. This is optional and the list could be empty.

### responseResultListRequested

This method provides the poi results list found by the CAM. As the POI unique id is managed by the POI component, the CAM only provides the POI name, the category and coordinates as well as all the relevant detailed information.

Parameter	Type	Description
resultListRequested_statusValue	UInt16	enum(INVALID,NOT_STARTED,SEARCHING,FINISHED,...).
resultListRequested_resultListSize	UInt16	Number of items of the results list.
resultListRequested_resultList	THBVector_PoiCAMDetails_	array[struct(source_id, name, category, location, distance, attributes)].

## 3.6.6 setLanguage

### requestSetLanguage

Set the current language set for the search by poi provider module. The language defines the poi and categories name and details language. If the language is not supported, the default details will be returned in the native language.

Parameter	Type	Description
setLanguage_R_languageCode	String	the language to be used.

requestSetLanguage		
setLanguage_R_countryCode	String	the country specific variant for the language to be used.

responseSetLanguage		
Set the current language set for the search by poi provider module. The language defines the poi and categories name and details language. If the language is not supported, the default details will be returned in the native language.		
Parameter	Type	Description

### 3.6.7 searchStatus

informationSearchStatus		
This signal updates the search or proximity alert status of the specified handle.		
Parameter	Type	Description
searchStatus_poiSearchHandle	<a href="#">Handle</a>	poi search unique handle.
searchStatus_statusValue	<a href="#">SearchStatusState</a>	enum(INVALID,NOT_STARTED,SEARCHING,FINISHED,...).
searchStatus_resultListSize	UInt16	Number of items of the results list.

### 3.6.8 THBVector\_AttributeDetails\_

array[struct(name, poiCategory, type, value, operator, mandatory)]. Vector of element type [AttributeDetails](#)

Referenced by : [org\\_harman\\_nav\\_ctrl\\_di\\_POIContentAccessModule::poiSearchStarted](#)

### 3.6.9 THBVector\_AttributeID\_

List of attributes id to retrieve. This is optional and the list could be empty. Vector of element type [AttributeID](#)

Referenced by : [org\\_harman\\_nav\\_ctrl\\_di\\_POIContentAccessModule::resultListRequested](#)

### 3.6.10 THBVector\_CategoryAndRadius\_

array[struct(id,radius)]. Vector of element type [CategoryAndRadius](#)

Referenced by : [org\\_harman\\_nav\\_ctrl\\_di\\_POIContentAccessModule::poiSearchStarted](#)

### 3.6.11 THBVector\_Coordinate3D\_

array[struct(lat,lon,alt)]. Vector of element type [Coordinate3D](#)

Referenced by : [org\\_harman\\_nav\\_ctrl\\_di\\_POIContentAccessModule::poiSearchStarted](#)

### 3.6.12 THBVector\_POI\_ID\_

array[unique\_poi\_id]. Vector of element type [POI\\_ID](#)

Referenced by : [org\\_harman\\_nav\\_ctrl\\_di\\_POIContentAccessModule::poiDetailsRequested](#)

### 3.6.13 THBVector\_PoiCAMDetails\_

array[struct(source\_id, name, category, location, distance, attributes)]. Vector of element type [PoiCAMDetails](#)

Referenced by : [org\\_harman\\_nav\\_ctrl\\_di\\_POIContentAccessModule::resultListRequested](#)

### 3.6.14 THBVector\_SearchResultDetails\_

array[(details, categories, attributes)] . Vector of element type [SearchResultDetails](#)

Referenced by : [org\\_harman\\_nav\\_ctrl\\_di\\_POIContentAccessModule::poiDetailsRequested](#)

## 3.7 org\_harman\_nav\_ctrl\_di\_POISearch

Interface Version: 1.1

### 3.7.1 cancelPoiSearch

requestCancelPoiSearch		
This method cancels the search for the current session.		
Parameter	Type	Description
cancelPoiSearch_R_poiSearch	<a href="#">Handle</a>	poi search unique handle.

responseCancelPoiSearch		
This method cancels the search for the current session.		

responseCancelPoiSearch		
Parameter	Type	Description

## 3.7.2 createPoiSearchHandle

requestCreatePoiSearchHandle		
This method creates a new search input and retrieves a handle .		
Parameter	Type	Description

responseCreatePoiSearchHandle		
This method creates a new search input and retrieves a handle .		
Parameter	Type	Description
createPoiSearchHandle_poiSearchHandle	handle	poi search unique handle.

## 3.7.3 deletePoiSearchHandle

requestDeletePoiSearchHandle		
This method deletes a search input and its associated resources.		
Parameter	Type	Description
deletePoiSearchHandle_R_poiSearchHandle	SearchHandle	poi search unique handle.

responseDeletePoiSearchHandle		
This method deletes a search input and its associated resources.		
Parameter	Type	Description

## 3.7.4 getAvailableCategories

requestGetAvailableCategories		
This method retrieves the list of POI categories available (predefined and custom).		
Parameter	Type	Description

responseGetAvailableCategories		
This method retrieves the list of POI categories available (predefined and custom).		
Parameter	Type	Description
getAvailableCategories_categories	THBVector_CategoryAndName	List of categories (id, name and top_level).

### 3.7.5 getCategoriesDetails

requestGetCategoriesDetails		
GetCategoriesDetails = This method retrieves the details associated to one or more POI categories. It contains the name, the parent categories, the top level attribute, the list of attributes, the icons, ... .		
Parameter	Type	Description
getCategoriesDetails_R_categories	THBVector_CategoryID_	list of categories enum(INVALID,ALL_CATEGORIES,AIRPORT,RESTAURANT,...) Note: A POI category is a unique ID. It could be a predefined category or a custom one defined by a POI plug-in.

responseGetCategoriesDetails		
GetCategoriesDetails = This method retrieves the details associated to one or more POI categories. It contains the name, the parent categories, the top level attribute, the list of attributes, the icons, ... .		
Parameter	Type	Description
getCategoriesDetails_results	THBVector_Category_	List of details for all the POI categories.

### 3.7.6 getChildrenCategories

requestGetChildrenCategories		
Get the children categories id and type (top level) from the a parent unique id.		
Parameter	Type	Description
getChildrenCategories_R_category	CategoryID	unique category id.

responseGetChildrenCategories		
Get the children categories id and type (top level) from the a parent unique id.		
Parameter	Type	Description

responseGetChildrenCategories		
getChildrenCategories_categories	THBVector_CategoryAndLevel	List of categories (id and top_level).

### 3.7.7 getParentCategories

requestGetParentCategories		
Get the parent categories id and type (top level) from the a unique id.		
Parameter	Type	Description
getParentCategories_R_category	CategoryID	unique category id.

responseGetParentCategories		
Get the parent categories id and type (top level) from the a unique id.		
Parameter	Type	Description
getParentCategories_categories	THBVector_CategoryAndLevel	List of categories (id and top_level).

### 3.7.8 getPoiData

requestGetPoiData		
This method returns the POI data for a preview map. The same data as for the last requestResultList is returned.		
Parameter	Type	Description
poiSearchHandle	Handle	poi search unique handle.

responseGetPoiData		
This method returns the POI data for a preview map. The same data as for the last requestResultList is returned.		
Parameter	Type	Description
poiList	THBVector_PreviewDetails_	id, icon, latitude, longitude.

### 3.7.9 getPoiDetails

requestGetPoiDetails		
This method retrieves the details associated to one or more POI. It contains the name, the parent categories, the list of attributes, the icons, ... ..		

requestGetPoiDetails		
Parameter	Type	Description
getPoiDetails_R_id	<a href="#">THBVector_POI_ID_</a>	list of poi.

responseGetPoiDetails		
This method retrieves the details associated to one or more POI. It contains the name, the parent categories, the list of attributes, the icons, ... ..		
Parameter	Type	Description
getPoiDetails_results	<a href="#">THBVector_SearchResultDetails</a>	array[details, categories, attributes].

### 3.7.10 getRootCategory

requestGetRootCategory		
Get the root category id. That would be ALL_CATEGORIES.		
Parameter	Type	Description

responseGetRootCategory		
Get the root category id. That would be ALL_CATEGORIES.		
Parameter	Type	Description
getRootCategory_category	<a href="#">CategoryID</a>	The root category is a top level one by design.

### 3.7.11 getVersion

requestGetVersion		
This method returns the API version implemented by the content access module.		
Parameter	Type	Description

responseGetVersion		
This method returns the API version implemented by the content access module.		
Parameter	Type	Description
getVersion_version	<a href="#">Version</a>	.



## 3.7.12 requestResultList

requestRequestResultList		
This method gets the poi result list (e.g. after a Search/Scroll call) .		
Parameter	Type	Description
requestResultList_R_poiSearchHandle	Handle	poi search unique handle.
requestResultList_R_offset	UInt16	starting offset of the newly requested list elements. If invalid (more that total list for instance) it starts from the beginning.
requestResultList_R_maxWindowSize	UInt16	maximum number of elements that should be returned as result.
requestResultList_R_attributes	THBVector_AttributeID_	List of attributes id to retrieve. This is optional and the list could be empty.

responseRequestResultList		
This method gets the poi result list (e.g. after a Search/Scroll call) .		
Parameter	Type	Description
requestResultList_statusValue	SearchStatusState	enum(INVALID,NOT_STARTED,SEARCHING,FINISHED,... ).
requestResultList_resultListSize	UInt16	Number of items of the results list.
requestResultList_resultListWindow	THBVector_SearchResult_	array[unique_id, distance, route_status, attributes].

## 3.7.13 setAttributes

requestSetAttributes		
This method filters for POI attributes (optional) for the current search input and the corresponding result-lists for the current session An attribute is attached to a category.		
Parameter	Type	Description
setAttributes_R_poiSearchHandle	Handle	poi search unique handle.
setAttributes_R_poiAttributes	THBVector_AttributeDetails_	array[struct(name, poiCategory, type, value, operator, mandatory)].

responseSetAttributes		
This method filters for POI attributes (optional) for the current search input and the corresponding result-lists for the current session An attribute is attached to a category.		
Parameter	Type	Description

## 3.7.14 setCategories

requestSetCategories		
This method sets the POI categories for the current search input and the corresponding result-lists for the current session .		
Parameter	Type	Description
setCategories_R_poiSearchHandle	Handle	poi search unique handle.
setCategories_R_poiCategories	THBVector_CategoryID_	List of categories to search.

responseSetCategories		
This method sets the POI categories for the current search input and the corresponding result-lists for the current session .		
Parameter	Type	Description

## 3.7.15 setCenter

requestSetCenter		
This method sets the location to start the search around. If a route handle was defined before, it will be replaced by this location.		
Parameter	Type	Description
setCenter_R_poiSearchHandle	Handle	poi search unique handle.
setCenter_R_location	Coordinate3D	location of the center.

responseSetCenter		
This method sets the location to start the search around. If a route handle was defined before, it will be replaced by this location.		
Parameter	Type	Description

## 3.7.16 setMaximumResults

requestSetMaximumResults		
This method sets the maximum number of results to retrieve.		
Parameter	Type	Description
setMaximumResults_R_poiSearchHandle	Handle	poi search unique handle.

requestSetMaximumResults		
setMaximumResults_R_maxResults	uint32	maximum number of results to search.
setMaximumResults_R_findAtLeastOne	boolean	search until at least one POI is found, even if radius is larger than the set maximum.

responseSetMaximumResults		
This method sets the maximum number of results to retrieve.		
Parameter	Type	Description

## 3.7.17 setRouteHandle

requestSetRouteHandle		
This method allows to start a POI search along a route. The route handle must be valid or the POI search will fail. If a search location was defined before, it will be replaced by the route.		
Parameter	Type	Description
setRouteHandle_R_poiSearchHandle	Handle	poi search unique handle.
setRouteHandle_R_routeHandle	Handle	route handle.
setRouteHandle_R_startSearchOffset	uint32	(optional) Distance from destination (in meters) from where to start the search along. Invalid (>route length) distance means start from start of route.
setRouteHandle_R_endSearchOffset	uint32	(optional) Distance from destination (in meters) where to end the search. Invalid (>route length) means end is the start of route.

responseSetRouteHandle		
This method allows to start a POI search along a route. The route handle must be valid or the POI search will fail. If a search location was defined before, it will be replaced by the route.		
Parameter	Type	Description

## 3.7.18 setSearchRadius

requestSetSearchRadius		
This method sets the search radius.		

requestSetSearchRadius		
Parameter	Type	Description
setSearchRadius_R_poiSearchHandle	Handle	poi search unique handle.
setSearchRadius_R_radius	UInt32	Radius to search (in meters).

responseSetSearchRadius		
This method sets the search radius.		
Parameter	Type	Description

### 3.7.19 startPoiSearch

requestStartPoiSearch		
This method sends the search input for the search handle. The search will start with the either the location or the route handle. If no position or route handle were configured, the search will use the vehicle position are center location.		
Parameter	Type	Description
startPoiSearch_R_poiSearchHandle	Handle	poi search unique handle.
startPoiSearch_R_inputString	String	contains the name of the poi that is searched. It could be a partial name or an empty string.
startPoiSearch_R_sortOption	SortOptions	enum(SORT_DEFAULT,SORT_BY_DISTANCE,SORT_BY_DISTANCE_AND_CATEGORY,... ) If more than one category was defined for this search, the sort criteria should be compliant with all categories.

responseStartPoiSearch		
This method sends the search input for the search handle. The search will start with the either the location or the route handle. If no position or route handle were configured, the search will use the vehicle position are center location.		
Parameter	Type	Description

### 3.7.20 categoriesUpdated

informationCategoriesUpdated		
This signal indicates that one or more POI categories were added, updated or removed.		
Parameter	Type	Description

informationCategoriesUpdated		
categoriesUpdated_poiCategories	<a href="#">T4BVector_CategoryAndReason</a>	List of POI categories modified or added.

## 3.7.21 poiStatus

informationPoiStatus		
This signal updates the search status of the specified handle.		
Parameter	Type	Description
poiStatus_poiSearchHandle	<a href="#">Handle</a>	poi search unique handle.
poiStatus_statusValue	<a href="#">SearchStatusState</a>	SearchStatusState enum(INVALID,NOT_STARTED,SEARCHING,FINISHED,... ).
poiStatus_coveredSearchRadius	uint32	covered radius of the search, respectively distance along the route (in meters).

## 3.7.22 resultListChanged

informationResultListChanged		
This signal updates in the poi results list.		
Parameter	Type	Description
resultListChanged_poiSearchHandle	<a href="#">Handle</a>	poi search unique handle.
resultListChanged_resultListSize	uint16	Number of items of the results list.

## 3.7.23 Error

Error	
This is the type for error responses.	
Literal	Description
ERROR_createPoiSearchHandle_NoHandleAvailable	
ERROR_setCenter_ImpossibleToSetWhenSearchIsStarted	
ERROR_setRouteHandle_StartEqualsEndError	
ERROR_setCategories_UnmatchedCategoryError	
ERROR_setSearchRadius_NotPossibleForSearchAlongRouteError	
ERROR_setSearchRadius_RadiusTooSmallError	

Error	
ERROR_setMaximumResults_RadiusTooSmallError	
ERROR_setAttributes_UnsupportedFilterError	
ERROR_cancelPoiSearch_InvalidHandleError	

### 3.7.24 THBVector\_AttributeDetails\_

array[struct(name, poiCategory, type, value, operator, mandatory)]. Vector of element type [AttributeDetails](#)

Referenced by : [org\\_harman\\_nav\\_ctrl\\_di\\_POISearch::setAttributes](#)

### 3.7.25 THBVector\_AttributeID\_

List of attributes id to retrieve. This is optional and the list could be empty. Vector of element type [AttributeID](#)

Referenced by : [org\\_harman\\_nav\\_ctrl\\_di\\_POISearch::requestResultList](#)

### 3.7.26 THBVector\_CategoryAndLevel\_

List of categories (id and top\_level). Vector of element type [CategoryAndLevel](#)

Referenced by : [org\\_harman\\_nav\\_ctrl\\_di\\_POISearch::getChildrenCategories](#),  
[org\\_harman\\_nav\\_ctrl\\_di\\_POISearch::getParentCategories](#)

### 3.7.27 THBVector\_CategoryAndName\_

List of categories (id, name and top\_level). Vector of element type [CategoryAndName](#)

Referenced by : [org\\_harman\\_nav\\_ctrl\\_di\\_POISearch::getAvailableCategories](#)

### 3.7.28 THBVector\_CategoryAndReason\_

List of POI categories modified or added. Vector of element type [CategoryAndReason](#)

Referenced by : [org\\_harman\\_nav\\_ctrl\\_di\\_POISearch::categoriesUpdated](#)

### 3.7.29 THBVector\_CategoryID\_

list of categories  
enum(INVALID,ALL\_CATEGORIES,AIRPORT,RESTAURANT,HOTEL,GAZ\_STATION,CAR\_PARK,

...) Note: A POI category is a unique ID. It could be a predefined category or a custom one defined by a POI plug-in. Vector of element type **CategoryID**

Referenced by : [org\\_harman\\_nav\\_ctrl\\_di\\_POISearch::getCategoriesDetails](#),  
[org\\_harman\\_nav\\_ctrl\\_di\\_POISearch::setCategories](#)

### 3.7.30 THBVector\_Category\_

List of details for all the POI categories. Vector of element type **Category**

Referenced by : [org\\_harman\\_nav\\_ctrl\\_di\\_POISearch::getCategoriesDetails](#)

### 3.7.31 THBVector\_POI\_ID\_

list of poi. Vector of element type **POI\_ID**

Referenced by : [org\\_harman\\_nav\\_ctrl\\_di\\_POISearch::getPoiDetails](#)

### 3.7.32 THBVector\_SearchResultDetails\_

array[details, categories, attributes]. Vector of element type **SearchResultDetails**

Referenced by : [org\\_harman\\_nav\\_ctrl\\_di\\_POISearch::getPoiDetails](#)

### 3.7.33 THBVector\_SearchResult\_

array[unique\_id, distance, route\_status, attributes]. Vector of element type **SearchResult**

Referenced by : [org\\_harman\\_nav\\_ctrl\\_di\\_POISearch::requestResultList](#)

## 3.8 org\_harman\_nav\_ctrl\_di\_POIServiceTypes

Interface Version: 1.1

### 3.8.1 AttributeDetails

AttributeDetails		
used in setAttributes and CAM startPOISearch		
Structure Element	Type	Description
id	<a href="#">AttributeID</a>	id of attribute .

AttributeDetails		
categoryId	CategoryID	enum(INVALID,ALL_CATEGORIES,AIRPORT,RESTA... ...). Note: A POI category is a unique ID. It could be a predefined category or a custom one defined by a POI plug-in
type	AttributeType	enum(INVALID,STRING,INTEGER,COORDINATES...).
value	AttributeValue	value or partial value. The value depends on the attribute specifications and type.
oper	OperatorType	enum(INVALID,MORE_THAN,LESS_THAN,EQUAL,...).
mandatory	boolean	true if the attribute is mandatory for the search and false for optional.

Referenced by : [org\\_harman\\_nav\\_ctrl\\_di\\_POIContentAccessModule::THBVector\\_AttributeDetails\\_](#),  
[org\\_harman\\_nav\\_ctrl\\_di\\_POISearch::THBVector\\_AttributeDetails\\_](#)

## 3.8.2 AttributelD

Alias of actual type: **UInt32**

Referenced by : [org\\_harman\\_nav\\_ctrl\\_di\\_POIContentAccessModule::THBVector\\_AttributelD\\_](#),  
[org\\_harman\\_nav\\_ctrl\\_di\\_POISearch::THBVector\\_AttributelD\\_](#),  
[org\\_harman\\_nav\\_ctrl\\_di\\_POIServiceTypes::PoiAttribute](#),  
[org\\_harman\\_nav\\_ctrl\\_di\\_POIServiceTypes::CategoryAttribute](#),  
[org\\_harman\\_nav\\_ctrl\\_di\\_POIServiceTypes::AttributeDetails](#)

## 3.8.3 AttributeType

AttributeType	
Type of Attribute	
Literal	Description
AttributeType_INTEGER	
AttributeType_BOOLEAN	
AttributeType_COORDINATE	
AttributeType_STRING	

Referenced by : [org\\_harman\\_nav\\_ctrl\\_di\\_POIServiceTypes::PoiAttribute](#),  
[org\\_harman\\_nav\\_ctrl\\_di\\_POIServiceTypes::CategoryAttribute](#),  
[org\\_harman\\_nav\\_ctrl\\_di\\_POIServiceTypes::AttributeDetails](#)



## 3.8.4 AttributeValue

AttributeValue		
values for attributes.		
Variant Element	Type	Description
intListValue	<a href="#">THBVector_Int32_</a>	
stringListValue	<a href="#">THBVector_CHBString_</a>	
boolListValue	<a href="#">THBVector_bool_</a>	
coordinateListValue	<a href="#">THBVector_Coordinate2D_</a>	

Referenced by : [org\\_harman\\_nav\\_ctrl\\_di\\_POIServiceTypes::PoiAttribute](#),  
[org\\_harman\\_nav\\_ctrl\\_di\\_POIServiceTypes::Operator](#),  
[org\\_harman\\_nav\\_ctrl\\_di\\_POIServiceTypes::AttributeDetails](#)

## 3.8.5 CAMCategory

CAMCategory		
Structure Element	Type	Description
details	<a href="#">Details</a>	struct(list of parents_id, icons, name, short_desc, media).
attributes	<a href="#">THBVector_CategoryAttribute_</a>	array[struct(name, type, array[struct(operator_id, operator_name)])].
sortOptions	<a href="#">THBVector_CategorySortOptions_</a>	array[struct(id, name)].

Referenced by : [org\\_harman\\_nav\\_ctrl\\_di\\_POIContentAccess::THBVector\\_CAMCategory\\_](#)

## 3.8.6 CAMCategoryUpdate

CAMCategoryUpdate		
Structure Element	Type	Description
id	<a href="#">CategoryID</a>	enum(INVALID,ALL_CATEGORIES,AIRPORT,RESTAURANT,...). Note: A POI category is a unique ID. It could be a predefined category or a custom one defined by a POI plug-in

CAMCategoryUpdate		
attributes	<a href="#">THBVector_CategoryAttribute</a>	array[struct(name, type, array[struct(operator_id, operator_name)])].
sortOptions	<a href="#">THBVector_CategorySortOption</a>	array[struct(id, name)].

Referenced by : [org\\_harman\\_nav\\_ctrl\\_di\\_POIContentAccess::THBVector\\_CAMCategoryUpdate\\_](#)

## 3.8.7 Category

Category		
Detailed description of a category including attributes and sort options		
Structure Element	Type	Description
details	<a href="#">CategoryDetails</a>	struct(unique_id, list of parents_id, icons, name, top_level, short_desc, media).
attributes	<a href="#">THBVector_CategoryAttribute</a>	array[struct(name, type, array[struct(operator_id, operator_name)])].
sortOptions	<a href="#">THBVector_CategorySortOption</a>	array[struct(id, name)].

Referenced by : [org\\_harman\\_nav\\_ctrl\\_di\\_POISearch::THBVector\\_Category\\_](#)

## 3.8.8 CategoryAndLevel

CategoryAndLevel		
Pair of catgory and description of level		
Structure Element	Type	Description
uniqueId	<a href="#">CategoryID</a>	Category unique id.
topLevel	boolean	true if the category is a pre-defined one (top level), false for customized categories created by plug-in.
hasChildCategories	boolean	

Referenced by : [org\\_harman\\_nav\\_ctrl\\_di\\_POISearch::THBVector\\_CategoryAndLevel\\_](#)

## 3.8.9 CategoryAndName

CategoryAndName		
pair of category and name		
Structure Element	Type	Description
uniqueId	<a href="#">CategoryID</a>	Category unique id.
name	String	name.
topLevel	boolean	true if the category is a pre-defined one (top level), false for customized categories created by plug-in.

Referenced by : [org\\_harman\\_nav\\_ctrl\\_di\\_POISearch::THBVector\\_CategoryAndName\\_](#)

## 3.8.10 CategoryAndRadius

CategoryAndRadius		
Structure Element	Type	Description
id	<a href="#">CategoryID</a>	enum(INVALID,ALL_CATEGORIES,AIRPORT,RESTA...). Note: A POI category is a unique ID. It could be a predefined category or a custom one defined by a POI plug-in
radius	UInt32	activation or search radius around the position (in 10 meters) for the category. If value is 0 (zero), the default radius (defined for a category) is applied.

Referenced by :  
[org\\_harman\\_nav\\_ctrl\\_di\\_POIContentAccessModule::THBVector\\_CategoryAndRadius\\_](#)

## 3.8.11 CategoryAndReason

CategoryAndReason		
pair of category and reason for update		
Structure Element	Type	Description
unique_id	<a href="#">CategoryID</a>	Category unique id.

CategoryAndReason		
reason	UInt16	enum(ADDED,REMOVED,ATTR_ADDED,ATTR_MOD ... ) .

Referenced by : [org\\_harman\\_nav\\_ctrl\\_di\\_POISearch::THBVector\\_CategoryAndReason\\_](#)

## 3.8.12 CategoryAndStatus

CategoryAndStatus		
pair of category and the this category is available		
Structure Element	Type	Description
uniqueId	<a href="#">CategoryID</a>	Category unique id.
status	boolean	true if the category is available .

## 3.8.13 CategoryAttribute

CategoryAttribute		
Describes an attribute which is associated to an category. Use more than one operator to specify choice options i.e. different accepted credit cards used in category details and update category		
Structure Element	Type	Description
id	<a href="#">AttributeID</a>	id of attribute .
name	String	localized display name.
type	<a href="#">AttributeType</a>	enum(INVALID,STRING,INTEGER,COORDINATES ...).
operators	<a href="#">THBVector_Operator_</a>	

Referenced by : [org\\_harman\\_nav\\_ctrl\\_di\\_POIServiceTypes::THBVector\\_CategoryAttribute\\_](#)

## 3.8.14 CategoryDetails

CategoryDetails		
Detailed description of a category		
Structure Element	Type	Description
uniqueId	<a href="#">CategoryID</a>	Category unique id.

CategoryDetails		
parentsId	<a href="#">THBVector_CategoryID_</a>	list of parent categories unique id.
icons	<a href="#">Icon</a>	visual icons set.
name	String	name.
topLevel	boolean	true if the category is a pre-defined one (top level), false for customized categories created by plug-in.
description	String	short category description (optional).
media	<a href="#">Media</a>	media associated (html web site, audio, video, ...) (optional).

Referenced by : [org\\_harman\\_nav\\_ctrl\\_di\\_POIServiceTypes::Category](#)

## 3.8.15 CategoryID

Unique ID for a POI Categories Alias of actual type: **UInt32**

Referenced by : [org\\_harman\\_nav\\_ctrl\\_di\\_POIContentAccess::THBVector\\_CategoryID\\_](#),  
[org\\_harman\\_nav\\_ctrl\\_di\\_POISearch::getRootCategory](#),  
[org\\_harman\\_nav\\_ctrl\\_di\\_POISearch::getChildrenCategories](#),  
[org\\_harman\\_nav\\_ctrl\\_di\\_POISearch::getParentCategories](#),  
[org\\_harman\\_nav\\_ctrl\\_di\\_POISearch::THBVector\\_CategoryID\\_](#),  
[org\\_harman\\_nav\\_ctrl\\_di\\_POIServiceTypes::CategoryAndStatus](#),  
[org\\_harman\\_nav\\_ctrl\\_di\\_POIServiceTypes::CategoryAndReason](#),  
[org\\_harman\\_nav\\_ctrl\\_di\\_POIServiceTypes::CategoryAndName](#),  
[org\\_harman\\_nav\\_ctrl\\_di\\_POIServiceTypes::CategoryAndLevel](#),  
[org\\_harman\\_nav\\_ctrl\\_di\\_POIServiceTypes::AttributeDetails](#),  
[org\\_harman\\_nav\\_ctrl\\_di\\_POIServiceTypes::PoiCAMDetails](#),  
[org\\_harman\\_nav\\_ctrl\\_di\\_POIServiceTypes::THBVector\\_CategoryID\\_](#),  
[org\\_harman\\_nav\\_ctrl\\_di\\_POIServiceTypes::CategoryAndRadius](#),  
[org\\_harman\\_nav\\_ctrl\\_di\\_POIServiceTypes::CategorySortOption](#),  
[org\\_harman\\_nav\\_ctrl\\_di\\_POIServiceTypes::CAMCategoryUpdate](#),  
[org\\_harman\\_nav\\_ctrl\\_di\\_POIServiceTypes::CategoryDetails](#),  
[org\\_harman\\_nav\\_ctrl\\_di\\_SpeechPoiSearch::getSpeechInputModes](#),  
[org\\_harman\\_nav\\_ctrl\\_di\\_SpeechPoiSearch::getCategoriesSpeechInfoList](#)

## 3.8.16 CategorySortOption

CategorySortOption		
Structure Element	Type	Description
id	<a href="#">CategoryID</a>	enum(SORT_DEFAULT, SORT_BY_DISTANCE, SORT_... ).

CategorySortOption		
name	String	localized name to be displayed by application.

Referenced by : [org\\_harman\\_nav\\_ctrl\\_di\\_POIServiceTypes::THBVector\\_CategorySortOption\\_](#)

## 3.8.17 Category\_t

TODO: This is a placeholder for a Category which used into the POISearch.fidl. Alias of actual type: UInt16

## 3.8.18 Details

Details		
Structure Element	Type	Description
parentsId	<a href="#">THBVector_CategoryID_</a>	list of parent categories unique id.
icons	<a href="#">Icon</a>	visual icons set.
name	String	name.
shortDesc	String	short category description (optional).
media	<a href="#">Media</a>	media associated (html web site, audio, video, ...) (optional).

Referenced by : [org\\_harman\\_nav\\_ctrl\\_di\\_POIServiceTypes::CAMCategory](#)

## 3.8.19 Icon

Icon		
Different types of resources for icons		
Variant Element	Type	Description
id	<a href="#">THBVector_ResourceID_</a>	
url	String	

Referenced by : [org\\_harman\\_nav\\_ctrl\\_di\\_POIServiceTypes::CategoryDetails](#),  
[org\\_harman\\_nav\\_ctrl\\_di\\_POIServiceTypes::Details](#),  
[org\\_harman\\_nav\\_ctrl\\_di\\_POIServiceTypes::PreviewDetails](#)

## 3.8.20 Media

Media		
Differtent type of media		
Variant Element	Type	Description
id	<a href="#">THBVector_ResourceID_</a>	
url	String	

Referenced by : [org\\_harman\\_nav\\_ctrl\\_di\\_POIServiceTypes::CategoryDetails](#),  
[org\\_harman\\_nav\\_ctrl\\_di\\_POIServiceTypes::Details](#)

## 3.8.21 Operator

Operator		
Structure Element	Type	Description
type	<a href="#">OperatorType</a>	enum(INVALID,MORE_THAN,LESS_THAN,EQUAL,....).
name	String	localized display name.
value	<a href="#">AttributeValue</a>	value to use if this comparator is selected.

Referenced by : [org\\_harman\\_nav\\_ctrl\\_di\\_POIServiceTypes::THBVector\\_Operator\\_](#)

## 3.8.22 OperatorType

OperatorType	
Type of Operator	
Literal	Description
OperatorType_INVALID	
OperatorType_MORE_THAN	
OperatorType_LESS_THAN	
OperatorType_EQUAL	

Referenced by : [org\\_harman\\_nav\\_ctrl\\_di\\_POIServiceTypes::Operator](#),  
[org\\_harman\\_nav\\_ctrl\\_di\\_POIServiceTypes::AttributeDetails](#)

## 3.8.23 POI\_ID

Unique ID for a POI results Alias of actual type: **UInt32**

Referenced by : [org\\_harman\\_nav\\_ctrl\\_di\\_POIContentAccessModule::THBVector\\_POI\\_ID\\_](#),  
[org\\_harman\\_nav\\_ctrl\\_di\\_POISearch::THBVector\\_POI\\_ID\\_](#),  
[org\\_harman\\_nav\\_ctrl\\_di\\_POIServiceTypes::PoiDetails](#),  
[org\\_harman\\_nav\\_ctrl\\_di\\_POIServiceTypes::SearchResult](#),  
[org\\_harman\\_nav\\_ctrl\\_di\\_POIServiceTypes::PoiCAMDetails](#),  
[org\\_harman\\_nav\\_ctrl\\_di\\_POIServiceTypes::PreviewDetails](#),  
[org\\_harman\\_nav\\_ctrl\\_highwaymode\\_HighwayModeTypes::POIInformation](#)

## 3.8.24 PoiAddedDetails

PoiAddedDetails		
Structure Element	Type	Description
name	String	POI name
location	<a href="#">Coordinate3D</a>	POI location.
attributes	<a href="#">THBVector_PoiAttribute_</a>	array[struct(name,type,value)].

## 3.8.25 PoiAttribute

PoiAttribute		
Attribute associated to an POI used in addPOI and POI Search Result(both CAM and Service)		
Structure Element	Type	Description
id	<a href="#">AttributeID</a>	attribute unique id (see data model)
type	<a href="#">AttributeType</a>	enum(INVALID,STRING,INTEGER,COORDINATES...)
value	<a href="#">AttributeValue</a>	The value depends on the attribute specifications and type

Referenced by : [org\\_harman\\_nav\\_ctrl\\_di\\_POIServiceTypes::THBVector\\_PoiAttribute\\_](#)

## 3.8.26 PoiCAMDetails

PoiCAMDetails		
Structure Element	Type	Description



PoiCAMDetails		
sourceld	<a href="#">POI_ID</a>	POI unique id as known by the content access module. This id will be used by POI service to request POI details.
name	String	POI name.
category	<a href="#">CategoryID</a>	POI category unique id.
location	<a href="#">Coordinate3D</a>	POI location.
distance	UInt16	distance in meters to poi from center of the search.
attributes	<a href="#">THBVector_PoiAttribute_</a>	List of attributes requested. It could be empty.

Referenced by : [org\\_harman\\_nav\\_ctrl\\_di\\_POIContentAccessModule::THBVector\\_PoiCAMDetails\\_](#)

## 3.8.27 PoiDetails

PoiDetails		
Structure Element	Type	Description
id	<a href="#">POI_ID</a>	POI id
name	String	POI name
location	<a href="#">Coordinate3D</a>	POI location.

Referenced by : [org\\_harman\\_nav\\_ctrl\\_di\\_POIServiceTypes::SearchResultDetails](#)

## 3.8.28 PreviewDetails

PreviewDetails		
Details for a POI preview on map		
Structure Element	Type	Description
index	UInt32	Index in list.
displayedIndex	String	Displayed index (can differ, e.g. advertisement).
Id	<a href="#">POI_ID</a>	POI Id.
category	<a href="#">THBVector_CategoryID_</a>	list of parent categories unique id.
icon	<a href="#">Icon</a>	visual icon.
geopos	<a href="#">Coordinate3D</a>	position.
name	String	name, optional.

Referenced by : [org\\_harman\\_nav\\_ctrl\\_di\\_POIServiceTypes::THBVector\\_PreviewDetails\\_](#)

## 3.8.29 ResourceID

Unique ID for a POI Icon Resource Alias of actual type: **UInt32**

Referenced by : [org\\_harman\\_nav\\_ctrl\\_di\\_POIServiceTypes::THBVector\\_ResourceID\\_](#),  
[org\\_harman\\_nav\\_ctrl\\_highwaymode\\_HighwayModeTypes::POIInformation](#)

## 3.8.30 SearchResult

SearchResult		
Structure Element	Type	Description
id	<a href="#">POI_ID</a>	POI id
distance	UInt32	distance in meters to poi from center of the search or from vehicle if search along
routeStatus	UInt16	enum(OFF_ROUTE,ON_ROUTE,INSIDE_CORRIDOR,... )
attributes	<a href="#">THBVector_PoiAttribute_</a>	List of attributes requested. It could be empty

Referenced by : [org\\_harman\\_nav\\_ctrl\\_di\\_POISearch::THBVector\\_SearchResult\\_](#)

## 3.8.31 SearchResultDetails

SearchResultDetails		
Structure Element	Type	Description
details	<a href="#">PoiDetails</a>	struct(id,name,latitude,longitude,altitude).
categories	<a href="#">THBVector_CategoryID_</a>	array[unique_id].
attributes	<a href="#">THBVector_PoiAttribute_</a>	array[struct(name,type,value)].

Referenced by :  
[org\\_harman\\_nav\\_ctrl\\_di\\_POIContentAccessModule::THBVector\\_SearchResultDetails\\_](#),  
[org\\_harman\\_nav\\_ctrl\\_di\\_POISearch::THBVector\\_SearchResultDetails\\_](#),  
[org\\_harman\\_nav\\_ctrl\\_highwaymode\\_HighwayModeTypes::POIDetailsArray](#),  
[org\\_harman\\_nav\\_ctrl\\_highwaymode\\_HighwayModeTypes::HighwayItemDetails](#),  
[org\\_harman\\_nav\\_ctrl\\_memory\\_LocationMemoryTypes::Location](#)

## 3.8.32 SearchStatusState

SearchStatusState	
Current state of the search	
Literal	Description
SearchStatusState_INVALID	
SearchStatusState_NOT_STARTED	
SearchStatusState_SEARCHING	
SearchStatusState_FINISHED	

Referenced by : [org\\_harman\\_nav\\_ctrl\\_di\\_POIContentAccessModule::searchStatus](#),  
[org\\_harman\\_nav\\_ctrl\\_di\\_POISearch::requestResultList](#),  
[org\\_harman\\_nav\\_ctrl\\_di\\_POISearch::poiStatus](#)

## 3.8.33 SortOptions

SortOptions	
sort option of result list	
Literal	Description
SortOptions_SORT_BY_DISTANCE	
SortOptions_SORT_BY_NAME	
SortOptions_SORT_BY_TIME	
SortOptions_SORT_BY_PRICE	

Referenced by : [org\\_harman\\_nav\\_ctrl\\_di\\_POISearch::startPoiSearch](#)

## 3.8.34 THBVector\_CHBString\_

Vector of element type **String**

Referenced by : [org\\_harman\\_nav\\_ctrl\\_di\\_POIServiceTypes::AttributeValue](#)

## 3.8.35 THBVector\_CategoryAttribute\_

array[struct(name, type, array[struct(operator\_id, operator\_name)])]. Vector of element type  
[CategoryAttribute](#)

Referenced by : [org\\_harman\\_nav\\_ctrl\\_di\\_POIServiceTypes::CAMCategoryUpdate](#),  
[org\\_harman\\_nav\\_ctrl\\_di\\_POIServiceTypes::Category](#),  
[org\\_harman\\_nav\\_ctrl\\_di\\_POIServiceTypes::CAMCategory](#)

### 3.8.36 THBVector\_CategoryID\_

array[unique\_id]. Vector of element type [CategoryID](#)

Referenced by : [org\\_harman\\_nav\\_ctrl\\_di\\_POIServiceTypes::SearchResultDetails](#),  
[org\\_harman\\_nav\\_ctrl\\_di\\_POIServiceTypes::CategoryDetails](#),  
[org\\_harman\\_nav\\_ctrl\\_di\\_POIServiceTypes::Details](#),  
[org\\_harman\\_nav\\_ctrl\\_di\\_POIServiceTypes::PreviewDetails](#)

### 3.8.37 THBVector\_CategorySortOption\_

array[struct(id, name)]. Vector of element type [CategorySortOption](#)

Referenced by : [org\\_harman\\_nav\\_ctrl\\_di\\_POIServiceTypes::CAMCategoryUpdate](#),  
[org\\_harman\\_nav\\_ctrl\\_di\\_POIServiceTypes::Category](#),  
[org\\_harman\\_nav\\_ctrl\\_di\\_POIServiceTypes::CAMCategory](#)

### 3.8.38 THBVector\_Coordinate2D\_

Vector of element type [Coordinate2D](#)

Referenced by : [org\\_harman\\_nav\\_ctrl\\_di\\_POIServiceTypes::AttributeValue](#)

### 3.8.39 THBVector\_Int32\_

Vector of element type [Int32](#)

Referenced by : [org\\_harman\\_nav\\_ctrl\\_di\\_POIServiceTypes::AttributeValue](#)

### 3.8.40 THBVector\_Operator\_

Vector of element type [Operator](#)

Referenced by : [org\\_harman\\_nav\\_ctrl\\_di\\_POIServiceTypes::CategoryAttribute](#)

### 3.8.41 THBVector\_PoiAttribute\_

array[struct(name,type,value)]. Vector of element type [PoiAttribute](#)

Referenced by : [org\\_harman\\_nav\\_ctrl\\_di\\_POIServiceTypes::PoiAddedDetails](#),  
[org\\_harman\\_nav\\_ctrl\\_di\\_POIServiceTypes::SearchResult](#),  
[org\\_harman\\_nav\\_ctrl\\_di\\_POIServiceTypes::PoiCAMDetails](#),  
[org\\_harman\\_nav\\_ctrl\\_di\\_POIServiceTypes::SearchResultDetails](#)

### 3.8.42 THBVector\_PreviewDetails\_

Vector of element type [PreviewDetails](#)

Referenced by : [org\\_harman\\_nav\\_ctrl\\_di\\_POISearch::getPoiData](#)

### 3.8.43 THBVector\_ResourceID\_

Vector of element type [ResourceID](#)

Referenced by : [org\\_harman\\_nav\\_ctrl\\_di\\_POIServiceTypes::Media](#),  
[org\\_harman\\_nav\\_ctrl\\_di\\_POIServiceTypes::Icon](#)

### 3.8.44 THBVector\_bool\_

Vector of element type **boolean**

Referenced by : [org\\_harman\\_nav\\_ctrl\\_di\\_POIServiceTypes::AttributeValue](#)

### 3.8.45 UpdateReason

UpdateReason	
Reason of update	
Literal	Description
UpdateReason_ADDED	
UpdateReason_REMOVED	
UpdateReason_ATTR_ADDED	
UpdateReason_ATTR_MODIFIED	
UpdateReason_ATTR_REMOVED	

## 3.9 org\_harman\_nav\_ctrl\_di\_POIServiceTypesExt

Interface Version: 1.0

### 3.9.1 POIStandardCat

POIStandardCat	
NDS predefined standard categories	
Literal	Description
POICAT_ACCESS_POINT	
POICAT_ACTIVATION_POINT	
POICAT_LOGICAL_ACCESS_POINT	
POICAT_GUIDANCE_POINT	
POICAT_NDSGENERAL	
POICAT_VEHICLE_REPAIR	
POICAT_PETROL_STATION	
POICAT_RENT_A_CAR	
POICAT_CAR_WASH	
POICAT_CAR_DEALERSHIP	
POICAT_MOTORCYCLE_DEALERSHIP	
POICAT_TRUCK_DEALERSHIP	
POICAT_PARKING_GARAGE	
POICAT_OPEN_PARKING	
POICAT_REST_AREA	
POICAT_ROAD_ASSISTANCE	
POICAT_CAMPING	
POICAT_CARAVAN_SITE	
POICAT_COACH_AND_LORRY_PARKING	
POICAT_MOTORING_ORG_OFFICE	
POICAT_CAR_SHIPPING_TERMINAL	
POICAT_HOTEL_MOTEL	
POICAT_RESTAURANT	
POICAT_FAST_FOOD	
POICAT_COFFEE_SHOP	
POICAT_BAR_OR_PUB	
POICAT_CINEMA	
POICAT_MUSEUM	
POICAT_THEATRE	
POICAT_LIBRARY	
POICAT_HOSPITAL	
POICAT_PHYSICIAN	

POIStandardCat	
POICAT_DENTIST	
POICAT_PHARMACY	
POICAT_VETERINARIAN_SERVICE	
POICAT_POLICE_STATION	
POICAT_POST_OFFICE	
POICAT_CITY_HALL	
POICAT_EMBASSY	
POICAT_COURT_HOUSE	
POICAT_GOVERNMENT_OFFICE	
POICAT_COMMUNITY_CENTRE	
POICAT_SHOPPING_CENTRE	
POICAT_STORE	
POICAT_BANK	
POICAT_ATM	
POICAT_CURRENCY_EXCHANGE	
POICAT_TOURIST_OFFICE	
POICAT_TRAVEL_AGENCY	
POICAT_TOURIST_ATTRACTION	
POICAT_HISTORICAL_MONUMENT	
POICAT_NATIONAL_PARK	
POICAT_CITY_CENTRE	
POICAT_HAMLET	
POICAT_ZOO	
POICAT_AMUSEMENT_PARK	
POICAT_GOINGOUT	
POICAT_STADIUM	
POICAT_SPORTS_CENTRE	
POICAT_RECREATION	
POICAT_SKI_RESORT	
POICAT_SWIMMING_POOL	
POICAT_GOLF_COURSE	
POICAT_FERRY_TERMINAL	
POICAT_MARINA	
POICAT_HARBOUR	
POICAT_BUSINESS_FACILITY	
POICAT_EXIBITION_CONFERENCE_CENTRE	

POIStandardCat	
POICAT_RAILWAY_STATION	
POICAT_PUBLIC_TRANSIT_STOP	
POICAT_PARK_AND_RIDE	
POICAT_AIRPORT	
POICAT_AIRLINE_ACCESS	
POICAT_TAXI_STAND	
POICAT_EMERGENCY_CALL_STATION	
POICAT_EMERGENCY_MEDICAL_SERVICE	
POICAT_FIRST_AID_POST	
POICAT_FIREBRIGADE	
POICAT_PLACE_OF_WORSHIP	
POICAT_EDUCATION	
POICAT_CUSTOMS	
POICAT_FRONTIER_CROSSING	
POICAT_TOLL_LOCATION	
POICAT_PUBLIC_RESTROOM	
POICAT_PUBLIC_PHONE	
POICAT_KINDERGARTEN	
POICAT_MOUNTAIN_PASS_SUMMIT	
POICAT_SPEED_CAMERA	
POICAT_EVS_CHARGING_STATION	
POICAT_CONTROLLED_ACCESS_INTERSECTION	
POICAT_CONTROLLED_ACCESS_ENTRY_EXIT	
POICAT_CONTROLLED_ACCESS_SMART_IC	

### 3.9.2 PredefinedPoiAttributeIDs

PredefinedPoiAttributeIDs	
Predefined IDs for common POI or category attributes.	
Literal	Description
POIATTR_INVALID	
POIATTR_DISTANCE_2_DESTINATION	
POIATTR_DISTANCE_2_POI	
POIATTR_OFF_ROUTE_DISTANCE	
POIATTR_TRAVEL_TIME	
POIATTR_ROUTE_STATUS	
POIATTR_NAME	



PredefinedPoiAttributeIDs	
POIATTR_DESCRIPTION	
POIATTR_ADDRESS	
POIATTR_PHONE_NUMBER	
POIATTR_URL	
POIATTR_OPEN247	
POIATTR_ICON	
POIATTR_POI_ID	
POIATTR_CLICK_ID	
POIATTR_CATEGORY	
POIATTR_STD_CATID	
POIATTR_GEOPOSITION	
POIATTR_COUNTRY	
POIATTR_STATE	
POIATTR_CITY	
POIATTR_POSTALCODE	
POIATTR_STREET	
POIATTR_HOUSE_NUMBER	
POIATTR_JUNCTION	
POIATTR_INTERNAL_ID	
POIATTR_BRAND	
POIATTR_AVAILABILITY	
POIATTR_PLUGTYPE	
POIATTR_FUELTYPE	
POIATTR_FUELPRICE	
POIATTR_CURRENCY	
POIATTR_STARRANKING	
POIATTR_PRICERANGE	
POIATTR_PREFERRED_PARTNER	
POIATTR_SPONSORED_LINK	
POIATTR_PARKING_TYPE	
POIATTR_PARKING_COST_DAY	
POIATTR_PARKING_COST_HOUR	
POIATTR_PARKING_COST_HOUR2	
POIATTR_PARKING_SLOTS	
POIATTR_PARKING_SLOTS_FREE	
POIATTR_PROVIDER_ID	

PredefinedPoiAttributeIDs	
POIATTR_PROVIDER_NAME	
POIATTR_SEARCH_MAX_RESULTS	
POIATTR_SEARCH_MAX_CORRIDOR	
POIATTR_SEARCH_MAX_REALROAD	
POIATTR_SEARCH_AT_LEAST_ONE	

## 3.10 org\_harman\_nav\_ctrl\_di\_SpeechLocationInput

Interface Version: 0.2

### 3.10.1 getSpeechList

requestGetSpeechList		
Retrieves a file containing all data for speech input. The user has to take care of the file housekeeping		
Parameter	Type	Description
getSpeechList_R_locationInputHandle	Handle	locationInputHandle = Location input handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value
getSpeechList_R_inputMode	SpeechMode	Mode for speech input.

responseGetSpeechList		
Retrieves a file containing all data for speech input. The user has to take care of the file housekeeping		
Parameter	Type	Description
getSpeechList_pathToListFile	String	Path to the file containing the list of entries.

### 3.10.2 getSpeechModesList

requestGetSpeechModesList		
Get the available modes for speech input, i.e. language and mode (oneshot,fullword,spelling).		
Parameter	Type	Description
getSpeechModesList_R_locationInputHandle	Handle	locationInputHandle = Location input handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value

requestGetSpeechModesList		
getSpeechModesList_R_language	LanguageCode	Language for which the speech input should be performed.

responseGetSpeechModesList		
Get the available modes for speech input, i.e. language and mode (oneshot,fullword,spelling).		
Parameter	Type	Description
getSpeechModesList_availableInputModes	ArrayOfSpeechMode_	List of available modes for speech input.

### 3.10.3 getSpeechOrtographies

requestGetSpeechOrtographies		
Retrieves the orthographies and phonemes to the index entries. The result is returned as an SDS file to give the system the possibility to display the name and prompt the phonemes. To save space compressed SDS files do not include the orthographical name of an entry.  Note that phonemes are only available for unrotated names. If the ID of a rotated name is given, the phoneme of the unrotated name is returned!		
Parameter	Type	Description
getSpeechOrtographies_R_entryId	EntryId	Every entry in the compressed SDS file has a unique id (entryId). With this entryId the engine can find the orthographical name and phoneme for an entry.
getSpeechOrtographies_R_locationInpuHandle	locationInpuHandle	locationInpuHandle = Location input handle. Range[0x0:0x7ffffff]. 0x0 is reserved as an invalid handle value
getSpeechOrtographies_R_voiceCode	voiceCode	SDS language code.

responseGetSpeechOrtographies		
Retrieves the orthographies and phonemes to the index entries. The result is returned as an SDS file to give the system the possibility to display the name and prompt the phonemes. To save space compressed SDS files do not include the orthographical name of an entry.  Note that phonemes are only available for unrotated names. If the ID of a rotated name is given, the phoneme of the unrotated name is returned!		
Parameter	Type	Description
getSpeechOrtographies_pathToSdsFile	String	Path to the file containing the list of entries.

### 3.10.4 Error

Error	
This is the type for error responses.	
Literal	Description
ERROR_getSpeechModesList_SpeechInputError	
ERROR_getSpeechList_SpeechInputError	
ERROR_getSpeechOrtographies_SpeechInputError	

### 3.10.5 THBVector\_EntryId\_

Every entry in the compressed SDS file has a unique id (entryId). With this entryId the engine can find the orthographical name and phoneme for an entry. Vector of element type [EntryId](#)

Referenced by : [org\\_harman\\_nav\\_ctrl\\_di\\_SpeechLocationInput::getSpeechOrtographies](#)

### 3.10.6 THBVector\_SpeechMode\_

List of available modes for speech input. Vector of element type [SpeechMode](#)

Referenced by : [org\\_harman\\_nav\\_ctrl\\_di\\_SpeechLocationInput::getSpeechModesList](#)

## 3.11 org\_harman\_nav\_ctrl\_di\_SpeechLocationInput

Interface Version: 1.0

### 3.11.1 EntryId

Alias of actual type: **Buffer**

Referenced by : [org\\_harman\\_nav\\_ctrl\\_di\\_SpeechLocationInput::THBVector\\_EntryId\\_](#),  
[org\\_harman\\_nav\\_ctrl\\_di\\_SpeechPoiSearch::THBVector\\_EntryId\\_](#)

### 3.11.2 Locales

Locales		
Locale data structure - maybe it should be moved in Common Types.		
Structure Element	Type	Description

Locales		
languageCode	String	the language used. ISO 639_3 language code (lower case)
countryCode	String	the country specific variant for the language used. ISO 3166_1 alpha 3 country code (upper case)
scriptCode	String	the script specific variant for the language used. ISO 15924 alpha 4 script code (upper case)

Referenced by : [org\\_harman\\_nav\\_ctrl\\_di\\_SpeechLocationInput::getSpeechModesList](#),  
[org\\_harman\\_nav\\_ctrl\\_di\\_SpeechLocationInput::getSpeechOrthographies](#),  
[org\\_harman\\_nav\\_ctrl\\_di\\_SpeechLocationInputTypes::SpeechMode](#),  
[org\\_harman\\_nav\\_ctrl\\_di\\_SpeechPoiSearch::getSpeechInputModes](#),  
[org\\_harman\\_nav\\_ctrl\\_di\\_SpeechPoiSearch::getCategoriesSpeechOrthographies](#)

### 3.11.3 SpeechInputMode

SpeechInputMode	
Literal	Description
SpeechInputMode_BasicEnum_INVALID	
SpeechInputMode_SPEECHINPUT_MODE_SPELLING	
SpeechInputMode_SPEECHINPUT_MODE_FULLWORD	
SpeechInputMode_SPEECHINPUT_MODE_ONESHOT	
SpeechInputMode_SPEECHINPUT_MODE_POI_NAME	
SpeechInputMode_SPEECHINPUT_MODE_POI_CATEGORY	

Referenced by : [org\\_harman\\_nav\\_ctrl\\_di\\_SpeechLocationInputTypes::SpeechMode](#)

### 3.11.4 SpeechMode

SpeechMode		
Available modes and parameters for speech input.		
Structure Element	Type	Description
inputMode	<a href="#">SpeechInputMode</a>	
language	<a href="#">Locales</a>	
fileFormat	String	

SpeechMode		
fieldTypes	AddressAttributeList	

Referenced by : [org\\_harman\\_nav\\_ctrl\\_di\\_SpeechLocationInput::getSpeechList](#),  
[org\\_harman\\_nav\\_ctrl\\_di\\_SpeechLocationInput::THBVector\\_SpeechMode\\_](#),  
[org\\_harman\\_nav\\_ctrl\\_di\\_SpeechPoiSearch::getCategoriesSpeechInfoList](#),  
[org\\_harman\\_nav\\_ctrl\\_di\\_SpeechPoiSearch::THBVector\\_SpeechMode\\_](#)

## 3.12 org\_harman\_nav\_ctrl\_di\_SpeechPoiSearch

Interface Version: 0.1

### 3.12.1 getCategoriesSpeechInfoList

requestGetCategoriesSpeechInfoList		
Returns the associated speech information file according to the selected search result identifier. The provided file needs to be removed by the user (if generated on-the-fly).		
Parameter	Type	Description
getCategoriesSpeechInfoList_CategoryId	CategoryId	ALL_CATEGORIES is the root categoryId.
getCategoriesSpeechInfoList_SpeechMode	SpeechMode	Mode for speech input.

responseGetCategoriesSpeechInfoList		
Returns the associated speech information file according to the selected search result identifier. The provided file needs to be removed by the user (if generated on-the-fly).		
Parameter	Type	Description
getCategoriesSpeechInfoList_PathToListFile	PathToListFile	Path to the file containing the list of entries.

### 3.12.2 getCategoriesSpeechOrthographies

requestGetCategoriesSpeechOrthographies		
Retrieves the orthographies and phonemes to the index entries. The result is returned as an SDS file to give the system the possibility to display the name and prompt the phonemes. To save space compressed SDS files do not include the orthographical name of an entry.		
Parameter	Type	Description

requestGetCategoriesSpeechOrthographies		
getCategoriesSpeechOrthographies_R_entryId	entryId	Every entry in the compressed SDS file has a unique id (entryId). With this entryId the engine can find the orthographical name and phoneme for an entry.
getCategoriesSpeechOrthographies_R_voiceLocale	voiceLocale	SDS language code.

responseGetCategoriesSpeechOrthographies		
Retrieves the orthographies and phonemes to the index entries. The result is returned as an SDS file to give the system the possibility to display the name and prompt the phonemes. To save space compressed SDS files do not include the orthographical name of an entry.		
Parameter	Type	Description
getCategoriesSpeechOrthographies_R_pathToIndexFile	String	Path to the file containing the list of entries.

### 3.12.3 getSpeechInputModes

requestGetSpeechInputModes		
Get the available modes for speech input, i.e. language and mode (oneshot,fullword,spelling).		
Parameter	Type	Description
getSpeechInputModes_R_categoryId	categoryId	ALL_CATEGORIES is the root categoryId.
getSpeechInputModes_R_languageCode	languageCode	Language for which the speech input should be performed.

responseGetSpeechInputModes		
Get the available modes for speech input, i.e. language and mode (oneshot,fullword,spelling).		
Parameter	Type	Description
getSpeechInputModes_availableSpeechModes	SpeechMode	List of available modes for speech input.

### 3.12.4 Error

Error	
This is the type for error responses.	
Literal	Description

Error
ERROR_getSpeechInputModes_SpeechInputError
ERROR_getCategoriesSpeechInfoList_SpeechInputError
ERROR_getCategoriesSpeechOrthographies_SpeechInputError

### 3.12.5 THBVector\_EntryId\_

Every entry in the compressed SDS file has a unique id (entryId). With this entryId the engine can find the orthographical name and phoneme for an entry. Vector of element type **EntryId**

Referenced by : [org\\_harman\\_nav\\_ctrl\\_di\\_SpeechPoiSearch::getCategoriesSpeechOrthographies](#)

### 3.12.6 THBVector\_SpeechMode\_

List of available modes for speech input. Vector of element type **SpeechMode**

Referenced by : [org\\_harman\\_nav\\_ctrl\\_di\\_SpeechPoiSearch::getSpeechInputModes](#)



## 4 DriverAssist Service

### 4.1 org\_harman\_nav\_ctrl\_DriverAssist

Interface Version: 0.1

#### 4.1.1 getAllCountryInfo

<b>requestGetAllCountryInfo</b>		
getAllCountryInfo = This method returns all country information available.		
Parameter	Type	Description

<b>responseGetAllCountryInfo</b>		
getAllCountryInfo = This method returns all country information available.		
Parameter	Type	Description
getAllCountryInfo_countryInfoDict	CountryInfoDict	Dictionary of available country codes and their associated information.

#### 4.1.2 getAvailableCountries

<b>requestGetAvailableCountries</b>		
getCountryInfo = This method returns an array of countries with information available.		
Parameter	Type	Description

<b>responseGetAvailableCountries</b>		
getCountryInfo = This method returns an array of countries with information available.		
Parameter	Type	Description
getAvailableCountries_countryCodes	CountryCodes	Array of countries info is available for

#### 4.1.3 getCountryInfo

<b>requestGetCountryInfo</b>		
getCountryInfo = This method returns country-wide information for the given country.		

requestGetCountryInfo		
Parameter	Type	Description
getCountryInfo_R_countryCode	CountryCode	Country to get country info for.

responseGetCountryInfo		
getCountryInfo = This method returns country-wide information for the given country.		
Parameter	Type	Description
getCountryInfo_countryInfo	CountryInfo	Returns the country's information.

## 4.1.4 getSettings

requestGetSettings		
Parameter	Type	Description
getSettings_R_types	SettingTypes	

responseGetSettings		
Parameter	Type	Description
getSettings_settings	Settings	

## 4.1.5 setSettings

requestSetSettings		
Parameter	Type	Description
setSettings_R_settings	Settings	

responseSetSettings		
Parameter	Type	Description

## 4.1.6 countryInfoUpdate

informationCountryInfoUpdate		
Broadcasts the current location's country info.		

informationCountryInfoUpdate		
Parameter	Type	Description
countryInfoUpdate_countryCode	<a href="#">CountryCode</a>	Country code of current country.
countryInfoUpdate_countryInfo	<a href="#">CountryInfo</a>	Country info of current country.

## 4.1.7 settingsChanged

informationSettingsChanged		
Notifies if settings have changed		
Parameter	Type	Description
settingsChanged_settings	<a href="#">SettingTypes</a>	

## 4.1.8 speedLimitExceeded

informationSpeedLimitExceeded		
Broadcasts the current location's country info.		
Parameter	Type	Description
speedLimitExceeded_currentSpeed	<a href="#">Speed</a>	
speedLimitExceeded_currentSpeedLimit	<a href="#">SpeedLimit</a>	

# 4.2 org\_harman\_nav\_ctrl\_DriverAssistTypes

Interface Version: 1.1

## 4.2.1 CountryCode

ISO 3166-1 alpha 3 country code (upper case). Alias of actual type: **String**

Referenced by : [org\\_harman\\_nav\\_ctrl\\_DriverAssist::getCountryInfo](#),  
[org\\_harman\\_nav\\_ctrl\\_DriverAssist::countryInfoUpdate](#),  
[org\\_harman\\_nav\\_ctrl\\_DriverAssistTypes::CountryCodes](#)

## 4.2.2 CountryCodes

Vector of element type [CountryCode](#)

Referenced by : [org\\_harman\\_nav\\_ctrl\\_DriverAssist::getAvailableCountries](#)

## 4.2.3 CountryInfo

CountryInfo		
Structure Element	Type	Description
alcoholLimit	double	Maximum alcohol limit in units of "undecided".
requiresSpareBulbs	<a href="#">CountryRequirement</a>	
requiresTowRope	<a href="#">CountryRequirement</a>	
requiresWarningVest	<a href="#">CountryRequirement</a>	
requiresLightsOnDuringDay	<a href="#">CountryRequirement</a>	
maxSpeedLimitInCity	<a href="#">Speed</a>	
maxSpeedLimitOutsideCity	<a href="#">Speed</a>	
maxSpeedLimitOnHighway	<a href="#">Speed</a>	

Referenced by : [org\\_harman\\_nav\\_ctrl\\_DriverAssist::getCountryInfo](#),  
[org\\_harman\\_nav\\_ctrl\\_DriverAssist::countryInfoUpdate](#)

## 4.2.4 CountryInfoDict

CountryInfoDict		
Map Element	Type	Description
keyType	<a href="#">CountryCode</a>	ISO 3166-1 alpha 3 country code (upper case).
valueType	<a href="#">CountryInfo</a>	

Referenced by : [org\\_harman\\_nav\\_ctrl\\_DriverAssist::getAllCountryInfo](#)

## 4.2.5 CountryRequirement

CountryRequirement	
Literal	Description
CountryRequirement_NOT_REQUIRED	

CountryRequirement	
CountryRequirement_REQUIRED	
CountryRequirement_PREFERRED	

Referenced by : [org\\_harman\\_nav\\_ctrl\\_DriverAssistTypes::CountryInfo](#),  
[org\\_harman\\_nav\\_ctrl\\_DriverAssistTypes::CountryInfo](#),  
[org\\_harman\\_nav\\_ctrl\\_DriverAssistTypes::CountryInfo](#),  
[org\\_harman\\_nav\\_ctrl\\_DriverAssistTypes::CountryInfo](#)

## 4.2.6 GetSettingsError

GetSettingsError	
Literal	Description
GetSettingsError_GET_SETTINGS_FAILED	

## 4.2.7 SetSettingsError

SetSettingsError	
Literal	Description
SetSettingsError_GET_VERSION_FAILED	

## 4.2.8 SettingType

SettingType	
Literal	Description
SettingType_SPEED_WARNING	

Referenced by : [org\\_harman\\_nav\\_ctrl\\_DriverAssistTypes::SettingTypes](#)

## 4.2.9 SettingTypes

Vector of element type [SettingType](#)

Referenced by : [org\\_harman\\_nav\\_ctrl\\_DriverAssist::getSettings](#),  
[org\\_harman\\_nav\\_ctrl\\_DriverAssist::settingsChanged](#)

## 4.2.10 SettingValue

SettingValue		
Variant Element	Type	Description
speedWarningValue	<a href="#">SpeedWarning</a>	

## 4.2.11 Settings

Settings		
Map Element	Type	Description
keyType	<a href="#">SettingType</a>	
valueType	<a href="#">SettingValue</a>	

Referenced by : [org\\_harman\\_nav\\_ctrl\\_DriverAssist::getSettings](#),  
[org\\_harman\\_nav\\_ctrl\\_DriverAssist::setSettings](#)

## 4.2.12 Speed

Speed		
Structure Element	Type	Description
units	<a href="#">SpeedUnit</a>	
value	UInt32	

Referenced by : [org\\_harman\\_nav\\_ctrl\\_DriverAssist::speedLimitExceeded](#),  
[org\\_harman\\_nav\\_ctrl\\_DriverAssist::speedLimitExceeded](#),  
[org\\_harman\\_nav\\_ctrl\\_DriverAssistTypes::SpeedWarning](#),  
[org\\_harman\\_nav\\_ctrl\\_DriverAssistTypes::CountryInfo](#),  
[org\\_harman\\_nav\\_ctrl\\_DriverAssistTypes::CountryInfo](#),  
[org\\_harman\\_nav\\_ctrl\\_DriverAssistTypes::CountryInfo](#)

## 4.2.13 SpeedUnit

SpeedUnit	
Literal	Description

SpeedUnit	
SpeedUnit_KM_P_H	
SpeedUnit_MPH_UK	
SpeedUnit_MPH_US	

Referenced by : [org\\_harman\\_nav\\_ctrl\\_DriverAssistTypes::Speed](#)

## 4.2.14 SpeedWarning

SpeedWarning		
Contains speed warning settings. @param notification is the type of warning (or off). @param speedExcess is the overage that triggers the warning.		
Structure Element	Type	Description
notification	<a href="#">SpeedWarningNotification</a>	
speedExcess	<a href="#">Speed</a>	

Referenced by : [org\\_harman\\_nav\\_ctrl\\_DriverAssistTypes::SettingValue](#)

## 4.2.15 SpeedWarningNotification

SpeedWarningNotification	
Literal	Description
SpeedWarningNotification_SPEEDLIMIT_NOTIFICATION_OFF	
SpeedWarningNotification_SPEEDLIMIT_NOTIFICATION_MAP	
SpeedWarningNotification_SPEEDLIMIT_NOTIFICATION_AUDIBLE	
SpeedWarningNotification_SPEEDLIMIT_NOTIFICATION_MAP_AND_AUDIBLE	

Referenced by : [org\\_harman\\_nav\\_ctrl\\_DriverAssistTypes::SpeedWarning](#)

## 5 Guidance Service

### 5.1 org\_harman\_nav\_ctrl\_GuidanceViewer

Interface Version: 1.0

#### 5.1.1 displayableValid

informationDisplayableValid		
Updates info about validity of displayable		
Parameter	Type	Description
displayableValid_displayableLayerID	Integer	
displayableValid_valid	boolean	

#### 5.1.2 maneuverStatusChanged

informationManeuverStatusChanged		
Updates info about maneuver status		
Parameter	Type	Description
maneuverStatusChanged_maneuverStatus	ManeuverStatus	

### 5.2 org\_harman\_nav\_ctrl\_GuidanceViewerTypes

Interface Version: 1.0

#### 5.2.1 ECharacterCodeOfStreetName

ECharacterCodeOfStreetName	
Literal	Description
ECharacterCodeOfStreetName_UTF8	
ECharacterCodeOfStreetName_UCS2	
ECharacterCodeOfStreetName_ASCII	



ECharacterCodeOfStreetName	
ECharacterCodeOfStreetName_SJIS	

Referenced by : [org\\_harman\\_nav\\_ctrl\\_GuidanceViewerTypes::TManeuverStatus](#),  
[org\\_harman\\_nav\\_ctrl\\_GuidanceViewerTypes::TManeuverStatus](#)

## 5.2.2 EDistanceUnit

EDistanceUnit	
Literal	Description
EDistanceUnit_METER	
EDistanceUnit_KM	
EDistanceUnit_FEET	
EDistanceUnit_YARD	
EDistanceUnit_MILE	

Referenced by : [org\\_harman\\_nav\\_ctrl\\_GuidanceViewerTypes::TManeuverStatus](#),  
[org\\_harman\\_nav\\_ctrl\\_GuidanceViewerTypes::TManeuverStatus](#),  
[org\\_harman\\_nav\\_ctrl\\_GuidanceViewerTypes::TManeuverStatus](#)

## 5.2.3 EIncreasedLane

EIncreasedLane	
Literal	Description
EIncreasedLane_NOT_INCREASED	
EIncreasedLane_INCREASED	

Referenced by : [org\\_harman\\_nav\\_ctrl\\_GuidanceViewerTypes::TLaneFlags](#)

## 5.2.4 EIncreasedLaneOption

EIncreasedLaneOption
----------------------

EIncreasedLaneOption	
Literal	Description
EIncreasedLaneOption_INCREASED_LANE_OPTION	
EIncreasedLaneOption_DECREASED_LANE_OPTION	

Referenced by : [org\\_harman\\_nav\\_ctrl\\_GuidanceViewerTypes::TLaneFlags](#)

## 5.2.5 EIncreasedLaneSide

EIncreasedLaneSide	
Literal	Description
EIncreasedLaneSide_INCREASED_LANE_LEFT	
EIncreasedLaneSide_INCREASED_LANE_RIGHT	

Referenced by : [org\\_harman\\_nav\\_ctrl\\_GuidanceViewerTypes::TLaneFlags](#)

## 5.2.6 EManeuverOrientation

EManeuverOrientation	
Literal	Description
EManeuverOrientation_OUTWARD	
EManeuverOrientation_INWARD	

Referenced by : [org\\_harman\\_nav\\_ctrl\\_GuidanceViewerTypes::TManeuverStatus](#),  
[org\\_harman\\_nav\\_ctrl\\_GuidanceViewerTypes::TManeuverStatus](#),  
[org\\_harman\\_nav\\_ctrl\\_GuidanceViewerTypes::TManeuverStatus](#)

## 5.2.7 EPresenceOfRotary

EPresenceOfRotary	
Literal	Description
EPresenceOfRotary_ABSENCE	

<b>EPresenceOfRotary</b>	
EPresenceOfRotary_PRESENCE	

Referenced by : [org\\_harman\\_nav\\_ctrl\\_GuidanceViewerTypes::TManeuverStatus](#),  
[org\\_harman\\_nav\\_ctrl\\_GuidanceViewerTypes::TManeuverStatus](#),  
[org\\_harman\\_nav\\_ctrl\\_GuidanceViewerTypes::TManeuverStatus](#)

## 5.2.8 ERecomendLane

<b>ERecomendLane</b>	
Literal	Description
ERecomendLane_NOT_RECOMMENDED	
ERecomendLane_RECOMMENDED	

Referenced by : [org\\_harman\\_nav\\_ctrl\\_GuidanceViewerTypes::TLaneFlags](#)

## 5.2.9 ESpecialRoadShapeForTbT

<b>ESpecialRoadShapeForTbT</b>	
Literal	Description
ESpecialRoadShapeForTbT_NONDISPLAY	
ESpecialRoadShapeForTbT_GOALONGTHEROADRIGHT	
ESpecialRoadShapeForTbT_GOALONGTHEROADLEFT	
ESpecialRoadShapeForTbT_UTURNRIGHT	
ESpecialRoadShapeForTbT_UTURNLEFT	
ESpecialRoadShapeForTbT_UTURNLEFTROTARYTRAFFICCIRCLEUTURNRIGHT	
ESpecialRoadShapeForTbT_ROTARYTRAFFICCIRCLEUTURNLEFT	
ESpecialRoadShapeForTbT_MICHIGANTURNRIGHT	
ESpecialRoadShapeForTbT_MICHIGANTURNLEFT	
ESpecialRoadShapeForTbT_DESTINATIONROUND	
ESpecialRoadShapeForTbT_TRANSITPOINTROUND	
ESpecialRoadShapeForTbT_DESTINATIONFLAG	
ESpecialRoadShapeForTbT_TRANSITPOINTFLAG	
ESpecialRoadShapeForTbT_ROTARYTRAFFICCIRCLEHEADINGFORINWARDRIGHT	

<b>ESpecialRoadShapeForTbT</b>	
ESpecialRoadShapeForTbT_ROTARYTRAFFICCIRCLEHEADINGFORINWARDLEFT	
ESpecialRoadShapeForTbT_HOOKTURN	

Referenced by : [org\\_harman\\_nav\\_ctrl\\_GuidanceViewerTypes::TManeuverStatus](#),  
[org\\_harman\\_nav\\_ctrl\\_GuidanceViewerTypes::TManeuverStatus](#),  
[org\\_harman\\_nav\\_ctrl\\_GuidanceViewerTypes::TManeuverStatus](#)

## 5.2.10 TLaneFlags

<b>TLaneFlags</b>		
Describes lane flags		
Structure Element	Type	Description
recommended	<a href="#">ERecomendLane</a>	Recommend Lane
increasedLane	<a href="#">EIncreasedLane</a>	Increased lane.
increasedLaneSide	<a href="#">EIncreasedLaneSide</a>	Increased lane side
increasedLaneOption	<a href="#">EIncreasedLaneOption</a>	Increased lane option

Referenced by : [org\\_harman\\_nav\\_ctrl\\_GuidanceViewerTypes::TLanesFlagList](#)

## 5.2.11 TLanesDirectionList

Vector of element type **UInt16**

Referenced by : [org\\_harman\\_nav\\_ctrl\\_GuidanceViewerTypes::TManeuverStatus](#)

## 5.2.12 TLanesFlagList

Vector of element type **TLaneFlags**

Referenced by : [org\\_harman\\_nav\\_ctrl\\_GuidanceViewerTypes::TManeuverStatus](#)

## 5.2.13 TManeuverStatus

<b>TManeuverStatus</b>
Describes maneuver status

<b>TManeuverStatus</b>		
<b>Structure Element</b>	<b>Type</b>	<b>Description</b>
uiVehicleDirection	UInt8	
eSpecialRoadShapeForTbT	<a href="#">ESpecialRoadShapeForTbT</a>	
ePresenceOfRotary	<a href="#">EPresenceOfRotary</a>	
eOutward	<a href="#">EManeuverOrientation</a>	
uiDistanceToIntersection	UInt8	
eDistanceUnit	<a href="#">EDistanceUnit</a>	
uiDirectionOfMovement	UInt8	
uiRoadShapeInformation	UInt32	
eSpecialRoadShapeForArrowGuide	<a href="#">ESpecialRoadShapeForTbT</a>	
ePresenceOfRotaryArrow	<a href="#">EPresenceOfRotary</a>	
eOutwardArrow	<a href="#">EManeuverOrientation</a>	
uiDistanceToIntersectionArrow	UInt16	
eDistanceUnitToIntersectionArrow	<a href="#">EDistanceUnit</a>	
uiDirectionOfMovementArrow	UInt8	
uiTotalLaneNumber	UInt8	
vLanesFlags	<a href="#">TLanesFlagList</a>	
vLanesDirection	<a href="#">TLanesDirectionList</a>	
eSpecialRoadShapeOfNextIntersection	<a href="#">ESpecialRoadShapeForTbT</a>	
ePresenceOfRotaryNextIntersection	<a href="#">EPresenceOfRotary</a>	
eOutwardNextIntersectionInformation	<a href="#">EManeuverOrientation</a>	
uiDistanceToIntersectionNextIntersection	UInt16	
eDistanceUnitNextIntersectionInformation	<a href="#">EDistanceUnit</a>	
eDirectionOfNextMovementNextIntersection	UInt8	
uiRoadShapeInformationNextIntersection	UInt32	
uiAzimuthInformationToDestination	UInt8	
eCharacterCodeOfCurrentStreetName	<a href="#">ECharacterCodeOfStreetName</a>	
chbCurrentStreetName	Buffer	
eCharacterCodeOfNextStreetName	<a href="#">ECharacterCodeOfStreetName</a>	
chbNextStreetName	Buffer	

Referenced by : [org\\_harman\\_nav\\_ctrl\\_GuidanceViewer::maneuverStatusChanged](#)

## 5.3 org\_harman\_nav\_ctrl\_Guidance

Interface Version: 0.4

## 5.3.1 getDestinationInformation

requestGetDestinationInformation		
getDestinationInformation = This method retrieves the information on the final destination @deprecated Please use waypoints attribute and waypointTravelCostsChanged broadcast		
Parameter	Type	Description

responseGetDestinationInformation		
getDestinationInformation = This method retrieves the information on the final destination @deprecated Please use waypoints attribute and waypointTravelCostsChanged broadcast		
Parameter	Type	Description
getDestinationInformation_offset	UInt32	offset = offset of the destination in meter from the beginning of the route
getDestinationInformation_travelTime	UInt32	travelTime = time to reach the destination in second
getDestinationInformation_direction	UInt32	direction = direction of the destination in degree relatively to the North. Range [0:360]
getDestinationInformation_side	UInt16	side = enum(LEFT,RIGHT,NOT_AVAILABLE)
getDestinationInformation_timeZone	Int16	timeZone = time zone of the destination. It is expressed as the time difference from the UTC in minutes
getDestinationInformation_daylightSavingTime	Int16	daylightSavingTime = daylight saving time of the destination. It is expressed as the time difference from the UTC in minutes

## 5.3.2 getGuidanceDetails

requestGetGuidanceDetails		
getGuidanceDetails = This method retrieves guidance information		
Parameter	Type	Description

responseGetGuidanceDetails		
getGuidanceDetails = This method retrieves guidance information		
Parameter	Type	Description

responseGetGuidanceDetails		
getGuidanceDetails_voiceGuidance	Boolean	voiceGuidance = if TRUE voice guidance is active
getGuidanceDetails_vehicleOnTheRoad	Boolean	vehicleOnTheRoad = if TRUE the vehicle is located on the road network
getGuidanceDetails_isDestinationReached	Boolean	isDestinationReached = if TRUE the destination has been reached
getGuidanceDetails_maneuver	ManeuverPhase	maneuver = enum(INVALID,CRUISE,MANEUVER_APPEARED,PR... )

### 5.3.3 getGuidanceStatus

requestGetGuidanceStatus		
getGuidanceStatus = This method retrieves the guidance status		
Parameter	Type	Description

responseGetGuidanceStatus		
getGuidanceStatus = This method retrieves the guidance status		
Parameter	Type	Description
getGuidanceStatus_guidanceStatus	GuidanceStatus	guidanceStatus = enum(INVALID,ACTIVE,INACTIVE)
getGuidanceStatus_routeHandle	Handle	routeHandle = Active route handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value. Should be ignored when guidanceStatus=INACTIVE

### 5.3.4 getManeuversList

requestGetManeuversList		
getManeuversList = This method retrieves the list of next maneuvers @deprecated Please maneuverAvailable broadcast and		
Parameter	Type	Description
getManeuversList_R_requestedNumberOfManeuvers	UInt16	requestedNumberOfManeuvers = the number of requested maneuvers
getManeuversList_R_maneuverOffset	UInt32	maneuverOffset = the offset of the first maneuver to retrieve

responseGetManeuversList		
getManeuversList = This method retrieves the list of next maneuvers @deprecated Please maneuverAvailable broadcast and		
Parameter	Type	Description
getManeuversList_numberOfManeuvers	int	numberOfManeuvers = the number of retrieved maneuvers
getManeuversList_maneuversList	ArrayList<TBVector_Maneuver_>	

### 5.3.5 getVoiceGuidanceSettings

requestGetVoiceGuidanceSettings		
getVoiceGuidanceSettings = This method returns the used voice guidance settings		
Parameter	Type	Description

responseGetVoiceGuidanceSettings		
getVoiceGuidanceSettings = This method returns the used voice guidance settings		
Parameter	Type	Description
getVoiceGuidanceSettings_promptMode	PromptMode	mode = enum(INVALID,DISABLED_PROMPT,AUTOMATIC_PROMPT,... )

### 5.3.6 getWaypointInformation

requestGetWaypointInformation		
getWaypointInformation = This method retrieves the information on the remaining way points of the route. A point can be the final destination as well as a stage defined by the user. The returned waypoints are ordered by their 'number'. @deprecated Please use waypoints attribute		
Parameter	Type	Description
getWaypointInformation_R_requestedNumberOfWaypoints	int	requestedNumberOfWaypoints = the number of requested waypoints. If 0, all waypoints will be returned.

responseGetWaypointInformation		
getWaypointInformation = This method retrieves the information on the remaining way points of the route. A point can be the final destination as well as a stage defined by the user. The returned waypoints are ordered by their 'number'. @deprecated Please use waypoints attribute		



responseGetWaypointInformation		
Parameter	Type	Description
getWaypointInformation_numberOfWaypoints	uint16	numberOfWaypoints = the number of retrieved waypoints(NOTE: the number corresponds to the number of elements in the array)
getWaypointInformation_waypointInfo	std::vector<WaypointStruct>	

## 5.3.7 pauseGuidance

requestPauseGuidance		
<p>pauseGuidance = This method disables display guidance on the map, voice guidance prompts and broadcast events of an active guidance. While paused, the guidance remains active in the background, and will recalculate the route if the user diverts from the initial route.</p> <p>This method should be called when guidance is in active status.</p>		
Parameter	Type	Description

responsePauseGuidance		
<p>pauseGuidance = This method disables display guidance on the map, voice guidance prompts and broadcast events of an active guidance. While paused, the guidance remains active in the background, and will recalculate the route if the user diverts from the initial route.</p> <p>This method should be called when guidance is in active status.</p>		
Parameter	Type	Description

## 5.3.8 playVoiceManeuver

requestPlayVoiceManeuver		
playVoiceManeuver = This method plays or repeats the last voice guidance		
Parameter	Type	Description

responsePlayVoiceManeuver		
playVoiceManeuver = This method plays or repeats the last voice guidance		
Parameter	Type	Description

## 5.3.9 resumeGuidance

requestResumeGuidance		
<p>pauseGuidance = This method resumes guidance from pasued state to normal state. When resumed, display guidance on the map and broadcasts events are enabled, and voice guidance prompts are resumed to the original state.</p> <p>This method should be called when guidance is in active status.</p>		
Parameter	Type	Description

responseResumeGuidance		
<p>pauseGuidance = This method resumes guidance from pasued state to normal state. When resumed, display guidance on the map and broadcasts events are enabled, and voice guidance prompts are resumed to the original state.</p> <p>This method should be called when guidance is in active status.</p>		
Parameter	Type	Description

## 5.3.10 selectAlternativeTIRoute

requestSelectAlternativeTIRoute		
<p>selectAlternativeTIRoute = This method selects the given route for semi dynamic rerouting. The routeHandle can be the original guided route or the alternative route.</p> <p>If the user selects the alternative route successfully, Guidance will broadcast the route handle via guidanceStatusChanged.</p>		
Parameter	Type	Description
selectAlternativeTIRoute_R_routeHandle	RouteHandle	routeHandle = Route handle. Range[0x0:0x7ffffff]. 0x0 is reserved as an invalid handle value

responseSelectAlternativeTIRoute		
<p>selectAlternativeTIRoute = This method selects the given route for semi dynamic rerouting. The routeHandle can be the original guided route or the alternative route.</p> <p>If the user selects the alternative route successfully, Guidance will broadcast the route handle via guidanceStatusChanged.</p>		
Parameter	Type	Description

## 5.3.11 setRouteCalculationMode

requestSetRouteCalculationMode		
setRouteCalculationMode = This method configures the way the navigation application wants the navigation core to behave of reroute trigger		
Parameter	Type	Description
setRouteCalculationMode_R_routeCalculationMode	RouteCalculationMode	routeCalculationMode = enum(INVALID,ALL_MANUAL,ALL_AUTOMATIC,TRAFFIC)

responseSetRouteCalculationMode		
setRouteCalculationMode = This method configures the way the navigation application wants the navigation core to behave of reroute trigger		
Parameter	Type	Description

## 5.3.12 setVoiceGuidance

requestSetVoiceGuidance		
setVoiceGuidance = This method switch on/off the voice guidance		
Parameter	Type	Description
setVoiceGuidance_R_activate	boolean	activation of the voice guidance
setVoiceGuidance_R_voice	String	kind of voice (to be defined)

responseSetVoiceGuidance		
setVoiceGuidance = This method switch on/off the voice guidance		
Parameter	Type	Description

## 5.3.13 setVoiceGuidanceSettings

requestSetVoiceGuidanceSettings		
setVoiceGuidanceSettings = This method sets the voice guidance settings		
Parameter	Type	Description
setVoiceGuidanceSettings_R_promptMode	PromptMode	mode = enum(INVALID,DISABLED_PROMPT,AUTOMATIC_PROMPT,...)

<b>responseSetVoiceGuidanceSettings</b>		
setVoiceGuidanceSettings = This method sets the voice guidance settings		
Parameter	Type	Description

## 5.3.14 skipNextManeuver

<b>requestSkipNextManeuver</b>		
skipNextManeuver = This method allows to jump behind the current maneuver		
Parameter	Type	Description

<b>responseSkipNextManeuver</b>		
skipNextManeuver = This method allows to jump behind the current maneuver		
Parameter	Type	Description

## 5.3.15 startGuidance

<b>requestStartGuidance</b>		
startGuidance = This method starts the guidance for a given route		
Parameter	Type	Description
startGuidance_R_routeHandle	<a href="#">Handle</a>	routeHandle = Route handle. Range[0x0:0x7ffffff]. 0x0 is reserved as an invalid handle value

<b>responseStartGuidance</b>		
startGuidance = This method starts the guidance for a given route		
Parameter	Type	Description

## 5.3.16 stopGuidance

<b>requestStopGuidance</b>		
stopGuidance = This method stops the guidance		

requestStopGuidance		
Parameter	Type	Description

responseStopGuidance		
stopGuidance = This method stops the guidance		
Parameter	Type	Description

## 5.3.17 activeRouteChanged

informationActiveRouteChanged		
activeRouteChanged = This signal is emitted when the active route changes		
Parameter	Type	Description
activeRouteChanged_changeCause	RouteChangedCause	changeCause = enum(INVALID,TRAFFIC,OFF_ROUTE,MANUAL,...)

## 5.3.18 alternativeTIRouteAvailable

informationAlternativeTIRouteAvailable		
alternativeTIRouteAvailable = This signal is emitted when a better TI route is available		
Parameter	Type	Description
alternativeTIRouteAvailable_costDifference	CostDifference	costDifference = time and distance differences
alternativeTIRouteAvailable_ids	TMessageIds	ids = ids of traffic messages causing the delay

## 5.3.19 alternativeTIRouteInvalidated

informationAlternativeTIRouteInvalidated		
alternativeTIRouteInvalidated = this signal is emitted when the alternative route is invalidated, ex. when the car passes the exit to the alternative route or a new alternative route is calculated.		
Parameter	Type	Description
alternativeTIRouteInvalidated_routeHandle	RouteHandle	routeHandle = invalidated alternative route handle. Range(0x0:0x7ffffff). 0x0 is reserved as an invalid handle value.

## 5.3.20 guidancePaused

informationGuidancePaused		
guidancePaused = This signal is emitted when guidance is paused		
Parameter	Type	Description

## 5.3.21 guidanceResumed

informationGuidanceResumed		
guidancePaused = This signal is emitted when guidance is resumed		
Parameter	Type	Description

## 5.3.22 guidanceStatusChanged

informationGuidanceStatusChanged		
guidanceStatusChanged = This signal is emitted when the guidance status changes		
Parameter	Type	Description
guidanceStatusChanged_guidanceStatus	GuidanceStatus	guidanceStatus = enum(INVALID,ACTIVE,INACTIVE)
guidanceStatusChanged_routeHandle	Handle	routeHandle = Active route handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value. Should be ignored when guidanceStatus=INACTIVE.

## 5.3.23 laneGuidanceChanged

informationLaneGuidanceChanged		
The lane guiding of the maneuver has changed		
Parameter	Type	Description
laneGuidanceChanged_maneuverId	uint16	The unique id of the maneuver that has been passed
laneGuidanceChanged_laneGuidingIndex	uint32	The index of the laneGuidingInfo in ManeuverInfo.laneGuidings

## 5.3.24 maneuverAvailable

informationManeuverAvailable		
This broadcast is fired whenever a new maneuver group is available		
Parameter	Type	Description
maneuverAvailable_group	ManeuverGroup	A maneuver group usually consists of one maneuver. It contains more than one maneuver just in case of combined/joined maneuvers.

## 5.3.25 maneuverChanged

informationManeuverChanged		
maneuverChanged = This signal is emitted each time a maneuver event is going		
Parameter	Type	Description
maneuverChanged_maneuver	ManeuverPhase	maneuver = enum(INVALID,CRUISE,MANEUVER_APPEARED,PR ... )

## 5.3.26 maneuverPhaseChanged

informationManeuverPhaseChanged		
The maneuver phase has changed		
Parameter	Type	Description
maneuverPhaseChanged_maneuverID	Invalid	The unique id of the maneuver that has changed
maneuverPhaseChanged_phase	ManeuverPhase	phase = enum(INVALID,CRUISE,MANEUVER_APPEARED,PR ... )

## 5.3.27 maneuverTravelCostsChanged

informationManeuverTravelCostsChanged		
The travel costs to the maneuver have changed		
Parameter	Type	Description
maneuverTravelCostsChanged_maneuverID	Invalid	The unique id of the maneuver that has changed

informationManeuverTravelCostsChanged		
maneuverTravelCostsChanged	TravelCosts	travel costs to the maneuver

### 5.3.28 positionOnRouteChanged

informationPositionOnRouteChanged		
positionOnRouteChanged = This signal is emitted when the position on the route changes		
Parameter	Type	Description
positionOnRouteChanged_offsetOnRoute	double	offsetOnRoute = the current offset on the route in meters from the beginning of the route

### 5.3.29 positionToRouteChanged

informationPositionToRouteChanged		
positionToRouteChanged = This signal is emitted when the vehicle is off-the-road network and either the heading or the distance (or both) to the closest point on the active route changes		
Parameter	Type	Description
positionToRouteChanged_distance	double	distance = distance in meters to the closest point on the active route
positionToRouteChanged_direction	double	direction = direction in degrees relatively to the closest point on the active route. Range [0:360]

### 5.3.30 vehicleLeftTheRoadNetwork

informationVehicleLeftTheRoadNetwork		
vehicleLeftTheRoadNetwork = This signal is emitted when the vehicle exits from the road network		
Parameter	Type	Description

### 5.3.31 vehicleLeftTheRoute

informationVehicleLeftTheRoute		
vehicleLeftTheRoute = This signal is emitted when the vehicle has left the route		
Parameter	Type	Description



### 5.3.32 waypointReached

informationWaypointReached		
waypointReached = This signal is emitted when the destination is reached		
Parameter	Type	Description
waypointReached_isDestination	boolean	isDestination = flag. TRUE means that the way point is the destination

### 5.3.33 waypointTravelCostsChanged

informationWaypointTravelCostsChanged		
The travel costs to the waypoints have changed		
Parameter	Type	Description
waypointTravelCostsChanged_	<a href="#">WaypointCostsList</a>	travel costs to the waypoints

### 5.3.34 awaypoints

Attribute <i>awaypoints</i>	
Information about the waypoints (destinations) along the route.	
Type	Notification Type
<a href="#">WaypointInfoList</a>	ON_CHANGE

### 5.3.35 THBVector\_Maneuver\_

Vector of element type [Maneuver](#)

Referenced by : [org\\_harman\\_nav\\_ctrl\\_Guidance::getManeuversList](#)

### 5.3.36 THBVector\_tWaypointStruct\_

Vector of element type [tWaypointStruct](#)

Referenced by : [org\\_harman\\_nav\\_ctrl\\_Guidance::getWaypointInformation](#)

## 5.4 org\_harman\_nav\_ctrl\_GuidanceTypes

Interface Version: 1.2

## 5.4.1 CalculationMode

CalculationMode	
Literal	Description
CalculationMode_BasicEnum_INVALID	
CalculationMode_ALL_MANUAL	
CalculationMode_ALL_AUTOMATIC	
CalculationMode_TRAFFIC_MANUAL	
CalculationMode_OFF_ROUTE_MANUAL	

Referenced by : [org\\_harman\\_nav\\_ctrl\\_Guidance::setRouteCalculationMode](#)

## 5.4.2 CompassDirection

CompassDirection	
Literal	Description
CompassDirection_UNDEFINED	Undefined.
CompassDirection_NORTH	North.
CompassDirection_EAST	East.
CompassDirection_WEST	West.
CompassDirection_SOUTH	South.

Referenced by : [org\\_harman\\_nav\\_ctrl\\_GuidanceTypes::RoadNumber](#)

## 5.4.3 CostDifference

CostDifference		
struct for CostDifference Costs of the original route and the alternative route		
Structure Element	Type	Description
originalRoute	<a href="#">RouteCostData</a>	
alternativeRoute	<a href="#">RouteCostData</a>	

Referenced by : [org\\_harman\\_nav\\_ctrl\\_Guidance::alternativeTIRouteAvailable](#)

## 5.4.4 GuidanceStatus

GuidanceStatus	
Literal	Description
GuidanceStatus_BasicEnum_INVALID	
GuidanceStatus_ACTIVE	
GuidanceStatus_INACTIVE	

Referenced by : [org\\_harman\\_nav\\_ctrl\\_Guidance::getGuidanceStatus](#),  
[org\\_harman\\_nav\\_ctrl\\_Guidance::guidanceStatusChanged](#)

## 5.4.5 LaneDirection

LaneDirection	
Literal	Description
LaneDirection_LANE_INFO_BITMASK_NONE	
LaneDirection_LANE_INFO_BITMASK_STRAIGHT	
LaneDirection_LANE_INFO_BITMASK_SLIGHTRIGHT	
LaneDirection_LANE_INFO_BITMASK_RIGHT	
LaneDirection_LANE_INFO_BITMASK_SHARPRIGHT	
LaneDirection_LANE_INFO_BITMASK_RIGHTUTURN	
LaneDirection_LANE_INFO_BITMASK_SLIGHTLEFT	
LaneDirection_LANE_INFO_BITMASK_LEFT	
LaneDirection_LANE_INFO_BITMASK_SHARPLEFT	
LaneDirection_LANE_INFO_BITMASK_LEFTUTURN	

Referenced by : [org\\_harman\\_nav\\_ctrl\\_GuidanceTypes::LaneInfo](#),  
[org\\_harman\\_nav\\_ctrl\\_GuidanceTypes::LaneInfo](#)

## 5.4.6 LaneDivider

LaneDivider	
Literal	Description
LaneDivider_BasicEnum_INVALID	
LaneDivider_DIVIDER_UNDEFINED	

LaneDivider	
LaneDivider_DIVIDER_INTERRUPTEDLONG	
LaneDivider_DIVIDER_INTERRUPTEDSHORT	
LaneDivider_DIVIDER_SOLIDSSINGLE	
LaneDivider_DIVIDER_SOLIDDOUBLE	
LaneDivider_DIVIDER_SOLIDINTERRUPTED	
LaneDivider_DIVIDER_INTERRUPTEDSOLID	

Referenced by : [org\\_harman\\_nav\\_ctrl\\_GuidanceTypes::LaneInfo](#)

## 5.4.7 LaneGuidanceInfo

LaneGuidanceInfo		
Information related to lane guidance		
Structure Element	Type	Description
lanes	<a href="#">LaneInfoList</a>	A list of LaneInfo-structs. The first entry is only used to store the lane-divider left of the first lane (i.e. the first actual lane is at index 1). The order of the lanes should be left-to-right (as shown to the driver).
distance	<a href="#">Distance</a>	The distance (to destination) at which the lane-change should be completed.
geoCoordinate	<a href="#">Coordinate2D</a>	

Referenced by : [org\\_harman\\_nav\\_ctrl\\_GuidanceTypes::LaneGuidanceInfoList](#)

## 5.4.8 LaneGuidanceInfoList

Vector of element type [LaneGuidanceInfo](#)

Referenced by : [org\\_harman\\_nav\\_ctrl\\_GuidanceTypes::ManeuverInfo](#)

## 5.4.9 LaneInfo

LaneInfo		
Information describing a single lane-guiding lane		
Structure Element	Type	Description

LaneInfo		
laneDirections	<a href="#">LaneDirection</a>	A bitmask of LaneDirection values, that specifies which directions can be taken from this lane in the upcoming intersection.
directionToFollow	<a href="#">LaneDirection</a>	A single LaneDirection value that specifies which of the possible directions the driver should follow. Should be LANE_INFO_BITMASK_NONE, in case this is not a possible or recommended lane.
divider	<a href="#">LaneDivider</a>	Specifies the lane divider type to the right of this lane.
type	<a href="#">LaneTypeCategory</a>	Specifies the lane type (RECOMMENDED, POSSIBLE, OTHER, ...).

Referenced by : [org\\_harman\\_nav\\_ctrl\\_GuidanceTypes::LaneInfoList](#)

## 5.4.10 LaneInfoList

Vector of element type [LaneInfo](#)

Referenced by : [org\\_harman\\_nav\\_ctrl\\_GuidanceTypes::LaneGuidanceInfo](#)

## 5.4.11 LaneType

LaneType	
Literal	Description
LaneType_BasicEnum_INVALID	
LaneType_LANE_INFO_BITMASK_STRAIGHT	
LaneType_LANE_INFO_BITMASK_SLIGHTRIGHT	
LaneType_LANE_INFO_BITMASK_RIGHT	
LaneType_LANE_INFO_BITMASK_SHARPRIGHT	
LaneType_LANE_INFO_BITMASK_RIGHTUTURN	
LaneType_LANE_INFO_BITMASK_SLIGHTLEFT	
LaneType_LANE_INFO_BITMASK_LEFT	
LaneType_LANE_INFO_BITMASK_SHARPLEFT	
LaneType_LANE_INFO_BITMASK_LEFTUTURN	

## 5.4.12 LaneTypeCategory

LaneTypeCategory	
Literal	Description
LaneTypeCategory_POSSIBLE_LANE	It is possible to reach the maneuver using this lane.
LaneTypeCategory_RECOMMENDED_LANE	Using this lane is recommended.
LaneTypeCategory_BUS_LANE	This lane is reserved for busses.
LaneTypeCategory_HOV_LANE	This lane is reserved for high occupancy vehicles (relevant e.g. in the US).
LaneTypeCategory_OTHER_LANE	Some other lane, which will not lead to the maneuver.

Referenced by : [org\\_harman\\_nav\\_ctrl\\_GuidanceTypes::LaneInfo](#)

## 5.4.13 Maneuver

Maneuver		
Maneuver		
Structure Element	Type	Description
roadNumberAfterManeuver	String	
roadNameAfterManeuver	String	
roadPropertyAfterManeuver	UInt16	
drivingSide	<a href="#">Side</a>	
offsetOfNextManeuver	UInt32	
items	<a href="#">THBVector_tManeuverItem_</a>	

Referenced by : [org\\_harman\\_nav\\_ctrl\\_Guidance::THBVector\\_Maneuver\\_](#)

## 5.4.14 ManeuverDetails

ManeuverDetails		
Extended maneuver information		
Structure Element	Type	Description

ManeuverDetails		
entryRoadClass	<a href="#">ERoadClass</a>	Road class of the road that leads to the maneuver point.
wayPointStopoverNumber	UInt16	The stopover-number (starting from 0), if this maneuver represents reaching a waypoint/destination.

Referenced by : [org\\_harman\\_nav\\_ctrl\\_GuidanceTypes::ManeuverInfo](#)

## 5.4.15 ManeuverDirection

ManeuverDirection	
Literal	Description
ManeuverDirection_BasicEnum_INVALID	
ManeuverDirection_STRAIGHT_ON	
ManeuverDirection_LEFT	
ManeuverDirection_SLIGHT_LEFT	
ManeuverDirection_HARD_LEFT	
ManeuverDirection_RIGHT	
ManeuverDirection_SLIGHT_RIGHT	
ManeuverDirection_HARD_RIGHT	
ManeuverDirection_UTURN_RIGHT	
ManeuverDirection_UTURN_LEFT	

Referenced by : [org\\_harman\\_nav\\_ctrl\\_GuidanceTypes::ManeuverTurn](#),  
[org\\_harman\\_nav\\_ctrl\\_GuidanceTypes::ManeuverInfo](#)

## 5.4.16 ManeuverDirectionType

ManeuverDirectionType	
Literal	Description
ManeuverDirectionType_BasicEnum_INVALID	
ManeuverDirectionType_LENGTH	
ManeuverDirectionType_DIRECTION	
ManeuverDirectionType_EXIT_NUMBER	

ManeuverDirectionType	
ManeuverDirectionType_ROAD_FORM	
ManeuverDirectionType_LANE_INFO	

## 5.4.17 ManeuverGroup

ManeuverGroup		
A set of maneuvers that are close to each other		
Structure Element	Type	Description
maneuvers	<a href="#">ManeuverInfoList</a>	The list of maneuvers that are part of the group (sorted by their distance to destination).

Referenced by : [org\\_harman\\_nav\\_ctrl\\_Guidance::maneuverAvailable](#)

## 5.4.18 ManeuverInfo

ManeuverInfo		
Information that describes a maneuver		
Structure Element	Type	Description
uniqueId	UInt64	An Id that can be used to uniquely identify this maneuver.
distance	<a href="#">Distance</a>	The distance from the start of the maneuver to the destination.
geoCoordinate	<a href="#">Coordinate2D</a>	
maneuverLength	<a href="#">Distance</a>	The length of the maneuver in meters.
comingRoadInfo	<a href="#">RoadInfo</a>	Information about the road coming after the maneuver.
signPostInfo	<a href="#">SignPostInfo</a>	Signpost related information.
turnDirection	<a href="#">ManeuverDirection</a>	The direction that the driver should turn to during the maneuver (STRAIGHT_ON, LEFT, SLIGHT_LEFT, ...).
maneuverType	<a href="#">ManeuverType</a>	The type of maneuver (STRAIGHT_ON, TURN, CROSSROAD, ROUNDABOUT, ...).
maneuverDetails	<a href="#">ManeuverDetails</a>	More detailed maneuver information.



ManeuverInfo		
laneGuidanceList	<a href="#">LaneGuidanceInfoList</a>	Lane guiding information associated with the maneuver.

Referenced by : [org\\_harman\\_nav\\_ctrl\\_GuidanceTypes::ManeuverInfoList](#)

## 5.4.19 ManeuverInfoList

Vector of element type [ManeuverInfo](#)

Referenced by : [org\\_harman\\_nav\\_ctrl\\_GuidanceTypes::ManeuverGroup](#)

## 5.4.20 ManeuverSegment

ManeuverSegment		
Maneuver segment		
Structure Element	Type	Description
maneuver	<a href="#">ManeuverType</a>	
maneuverLength	UInt16	

Referenced by : [org\\_harman\\_nav\\_ctrl\\_GuidanceTypes::tManeuverItem](#)

## 5.4.21 ManeuverTurn

ManeuverTurn		
Maneuver turn		
Structure Element	Type	Description
maneuverDirection	<a href="#">ManeuverDirection</a>	
exitNumber	String	

Referenced by : [org\\_harman\\_nav\\_ctrl\\_GuidanceTypes::tManeuverItem](#)

## 5.4.22 ManeuverType

ManeuverType

ManeuverType	
Literal	Description
ManeuverType_BasicEnum_INVALID	
ManeuverType_STRAIGHT_ON	
ManeuverType_TURN	
ManeuverType_CROSSROAD	
ManeuverType_ROUNDABOUT	
ManeuverType_HIGHWAY_ENTER	
ManeuverType_HIGHWAY_EXIT	
ManeuverType_BIFURCATION	
ManeuverType_HIGHWAY_CHANGE_LANE	
ManeuverType_DESTINATION	
ManeuverType_WAYPOINT	

Referenced by : [org\\_harman\\_nav\\_ctrl\\_GuidanceTypes::ManeuverInfo](#),  
[org\\_harman\\_nav\\_ctrl\\_GuidanceTypes::ManeuverSegment](#)

## 5.4.23 ManueverPhase

ManueverPhase	
Literal	Description
ManueverPhase_BasicEnum_INVALID	
ManueverPhase_CRUISE	
ManueverPhase_MANEUVER_APPEARED	
ManueverPhase_PRE_ADVICE	
ManueverPhase_ADVICE	
ManueverPhase_PASSED	

Referenced by : [org\\_harman\\_nav\\_ctrl\\_Guidance::getGuidanceDetails](#),  
[org\\_harman\\_nav\\_ctrl\\_Guidance::maneuverChanged](#),  
[org\\_harman\\_nav\\_ctrl\\_Guidance::maneuverPhaseChanged](#)

## 5.4.24 PromptMode

PromptMode
------------

PromptMode	
Literal	Description
PromptMode_BasicEnum_INVALID	
PromptMode_DISABLED_PROMPT	
PromptMode_AUTOMATIC_PROMPT	
PromptMode_MANUAL_PROMPT	

Referenced by : [org\\_harman\\_nav\\_ctrl\\_Guidance::setVoiceGuidanceSettings](#),  
[org\\_harman\\_nav\\_ctrl\\_Guidance::getVoiceGuidanceSettings](#)

## 5.4.25 RoadInfo

RoadInfo		
Information about a Road		
Structure Element	Type	Description
roadNumbers	<a href="#">RoadNumberList</a>	A list of RoadNumber structs. The list should be ordered by relevance, so that in case not all items fit in the HMI, the most relevant are shown. E.g. in Germany A9 should be placed before E45.
roadNames	<a href="#">RoadNameList</a>	A list of road names. The list should be ordered by relevance, so that at least the most relevant ones are shown, if not all names fit in the HMI.
roadClass	<a href="#">ERoadClass</a>	The road class.

Referenced by : [org\\_harman\\_nav\\_ctrl\\_GuidanceTypes::ManeuverInfo](#)

## 5.4.26 RoadName

Alias of actual type: **String**

Referenced by : [org\\_harman\\_nav\\_ctrl\\_GuidanceTypes::RoadNameList](#)

## 5.4.27 RoadNameList

Vector of element type [RoadName](#)

Referenced by : [org\\_harman\\_nav\\_ctrl\\_GuidanceTypes::RoadInfo](#)

## 5.4.28 RoadNumber

RoadNumber		
Information about a Road Number		
Structure Element	Type	Description
text	String	A string representation of the road-number (e.g. "A8" for German Autobahn 8.)
compassDirection	<a href="#">CompassDirection</a>	The compass direction of a road-number (mostly relevant for US).

Referenced by : [org\\_harman\\_nav\\_ctrl\\_GuidanceTypes::RoadNumberList](#)

## 5.4.29 RoadNumberList

Vector of element type [RoadNumber](#)

Referenced by : [org\\_harman\\_nav\\_ctrl\\_GuidanceTypes::RoadInfo](#),  
[org\\_harman\\_nav\\_ctrl\\_GuidanceTypes::Towards](#)

## 5.4.30 RoadProperty

RoadProperty	
Literal	Description
RoadProperty_BasicEnum_INVALID	

## 5.4.31 RouteChangedCause

RouteChangedCause	
Literal	Description
RouteChangedCause_BasicEnum_INVALID	
RouteChangedCause_TRAFFIC	
RouteChangedCause_OFF_ROUTE	
RouteChangedCause_MANUAL	

Referenced by : [org\\_harman\\_nav\\_ctrl\\_Guidance::activeRouteChanged](#)

## 5.4.32 RouteCostData

RouteCostData		
Structure Element	Type	Description
routeHandle	<a href="#">Handle</a>	routeHandle = Route handle. Range[0x0:0x7ffffff]. 0x0 is reserved as an invalid handle value
freeFlowTravelTime	UInt32	remaining travel time in seconds. This is the travel time from the decision point to the end of the route. This duration does not include the extra time caused by traffic information. If no decision point exists, then the value is 0.
additionalTravelTime	UInt32	additional travel time in seconds. This is the travel time from the decision point to the end of the route. This duration only contains the extra time caused by traffic information. If no decision point exists, then the value is 0.
distance	UInt32	remaining distance in meters. This is the distance from the decision point to the end of the route. If no decision point exists, then the value is 0.

Referenced by : [org\\_harman\\_nav\\_ctrl\\_GuidanceTypes::CostDifference](#),  
[org\\_harman\\_nav\\_ctrl\\_GuidanceTypes::CostDifference](#)

## 5.4.33 Side

Side	
Literal	Description
Side_BasicEnum_INVALID	
Side_LEFT	
Side_RIGHT	
Side_NOT_AVAILABLE	

Referenced by : [org\\_harman\\_nav\\_ctrl\\_GuidanceTypes::WaypointInfo](#),  
[org\\_harman\\_nav\\_ctrl\\_GuidanceTypes::Maneuver](#),  
[org\\_harman\\_nav\\_ctrl\\_GuidanceTypes::tWaypointStruct](#)

## 5.4.34 SignPostInfo

SignPostInfo		
Defines sign-post information.		
Structure Element	Type	Description
exitNumber	String	Exit number of a road-exit.
towardsList	<a href="#">TowardsList</a>	Contains the towards-entries of a sign-post at the maneuver

Referenced by : [org\\_harman\\_nav\\_ctrl\\_GuidanceTypes::ManeuverInfo](#)

## 5.4.35 THBVector\_tManeuverItem\_

Vector of element type [tManeuverItem](#)

Referenced by : [org\\_harman\\_nav\\_ctrl\\_GuidanceTypes::Maneuver](#)

## 5.4.36 Towards

Towards		
Defines on "towards"-entry on the sign-post; e.g. "[A9] Nrnberg/Berlin/Leipzig" or "[490] [East] Rochester		
Structure Element	Type	Description
viaRoad	<a href="#">RoadNumberList</a>	The road(s) which leads up to the city/poi/etc. mentioned on the sign-post

Referenced by : [org\\_harman\\_nav\\_ctrl\\_GuidanceTypes::TowardsList](#)

## 5.4.37 TowardsList

Vector of element type [Towards](#)

Referenced by : [org\\_harman\\_nav\\_ctrl\\_GuidanceTypes::SignPostInfo](#)

## 5.4.38 TravelCosts

TravelCosts

TravelCosts		
Structure Element	Type	Description
distance	<a href="#">Distance</a>	Remaining distance to the waypoint.
travelTime	UInt32	Remaining time to the waypoint in seconds.
direction	Int32	Direction to the waypoint in degrees relative to North.

Referenced by : [org\\_harman\\_nav\\_ctrl\\_Guidance::maneuverTravelCostsChanged](#),  
[org\\_harman\\_nav\\_ctrl\\_GuidanceTypes::WaypointCosts](#)

## 5.4.39 WaypointCosts

WaypointCosts		
Structure Element	Type	Description
number	UInt16	Waypoint number
travelCosts	<a href="#">TravelCosts</a>	Remaining distance to the waypoint.

Referenced by : [org\\_harman\\_nav\\_ctrl\\_GuidanceTypes::WaypointCostsList](#)

## 5.4.40 WaypointCostsList

Vector of element type [WaypointCosts](#)

Referenced by : [org\\_harman\\_nav\\_ctrl\\_Guidance::waypointTravelCostsChanged](#)

## 5.4.41 WaypointInfo

WaypointInfo		
WaypointInfo = Information about a Waypoint		
Structure Element	Type	Description
waypointId	<a href="#">UniqueItemId</a>	Unique location id for the waypoint. To be used with LocationMemory to retrieve details about the destination.
side	<a href="#">Side</a>	Roadside (left, right) of the waypoint.
hasBeenReached	boolean	True, if this destination has already been reached in the current guidance session.

WaypointInfo		
number	UInt16	The stop-over number of this waypoint (starting at 0).
position	<a href="#">Coordinate3D</a>	The position of this waypoint in GPS coordinates.
timeZone	Int16	timeZone = time zone of the destination. It is expressed as the time difference from the UTC in minutes
daylightSavingTime	Int16	daylightSavingTime = daylight saving time of the destination. It is expressed as the time difference from the UTC in minutes

Referenced by : [org\\_harman\\_nav\\_ctrl\\_GuidanceTypes::WaypointInfoList](#)

## 5.4.42 WaypointInfoList

Vector of element type [WaypointInfo](#)

Referenced by : [org\\_harman\\_nav\\_ctrl\\_Guidance::awaypoints](#)

## 5.4.43 tManeuverItem

tManeuverItem		
Maneuver Item		
Structure Element	Type	Description
offsetOfManeuver	UInt32	
travelTime	UInt32	
direction	Int32	
segment	<a href="#">ManeuverSegment</a>	
turnTo	<a href="#">ManeuverTurn</a>	

Referenced by : [org\\_harman\\_nav\\_ctrl\\_GuidanceTypes::THBVector\\_tManeuverItem\\_](#)

## 5.4.44 tWaypointStruct

tWaypointStruct



tWaypointStruct		
Structure Element	Type	Description
waypointOffset	UInt32	
travelTime	UInt32	
direction	Int32	
side	Side	
timeZone	Int16	
daylightSavingTime	Int16	
isDestination	boolean	
number	UInt16	

Referenced by : [org\\_harman\\_nav\\_ctrl\\_Guidance::THBVector\\_tWaypointStruct\\_](#)

## 5.5 org\_harman\_nav\_ctrl\_Routing

Interface Version: 1.3

### 5.5.1 calculateAlternateRoute

requestCalculateAlternateRoute		
calculateAlternateRoute = This method calculates an alternate route based on an existing handle. Optionally a different CostModel and RoutePreferences can be used.		
Parameter	Type	Description
calculateAlternateRoute_R_calculateRoute	CalculateRoute	

responseCalculateAlternateRoute		
calculateAlternateRoute = This method calculates an alternate route based on an existing handle. Optionally a different CostModel and RoutePreferences can be used.		
Parameter	Type	Description
calculateAlternateRoute_alternativeRouteList	AlternativeRouteList	

### 5.5.2 calculateRoute

requestCalculateRoute		
calculateRoute = This method starts a route calculation		

requestCalculateRoute		
Parameter	Type	Description
calculateRoute_R_routeHandle	Handle	routeHandle = Route handle. Range[0x0:0x7ffffff]. 0x0 is reserved as an invalid handle value

responseCalculateRoute		
calculateRoute = This method starts a route calculation		
Parameter	Type	Description

### 5.5.3 cancelRouteCalculation

requestCancelRouteCalculation		
cancelRouteCalculation = This method cancels a route calculation		
Parameter	Type	Description
cancelRouteCalculation_R_routeHandle	Handle	routeHandle = Route handle. Range[0x0:0x7ffffff]. 0x0 is reserved as an invalid handle value

responseCancelRouteCalculation		
cancelRouteCalculation = This method cancels a route calculation		
Parameter	Type	Description

### 5.5.4 createRoute

requestCreateRoute		
This method creates a route		
Parameter	Type	Description

responseCreateRoute		
This method creates a route		
Parameter	Type	Description

responseCreateRoute		
createRoute_routeHandle	Handle	Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value

## 5.5.5 deleteRoute

requestDeleteRoute		
This method deletes a route and its associated resources		
Parameter	Type	Description
deleteRoute_R_routeHandle	Handle	Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value

responseDeleteRoute		
This method deletes a route and its associated resources		
Parameter	Type	Description

## 5.5.6 getAllRoutes

requestGetAllRoutes		
getAllRoutes = This method retrieves the handles of all created routes		
Parameter	Type	Description

responseGetAllRoutes		
getAllRoutes = This method retrieves the handles of all created routes		
Parameter	Type	Description
getAllRoutes_routesList	THBVector_Handle_	

## 5.5.7 getCostModel

requestGetCostModel		
This method retrieves the selected cost model		
Parameter	Type	Description
getCostModel_R_routeHandle	Handle	Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value

responseGetCostModel		
This method retrieves the selected cost model		
Parameter	Type	Description
getCostModel_costModel	CostModel	enum(INVALID,FASTEST,SHORTEST,ECOLOGICAL,... )

## 5.5.8 getRouteOverview

requestGetRouteOverview		
getRouteOverview = This method retrieves general information about a given route		
Parameter	Type	Description
getRouteOverview_R_routeHandle	Handle	routeHandle = Route handle. Range[0x0:0x7ffffff]. 0x0 is reserved as an invalid handle value
getRouteOverview_R_valuesToReturn	TRBVectr_RouteOverviewType_	

responseGetRouteOverview		
getRouteOverview = This method retrieves general information about a given route		
Parameter	Type	Description
getRouteOverview_routeOverview	RouteOverview	

## 5.5.9 getRoutePreferences

requestGetRoutePreferences		
This method retrieves a list of selected route preferences		
Parameter	Type	Description
getRoutePreferences_R_routeHandle	Handle	Range[0x0:0x7ffffff]. 0x0 is reserved as an invalid handle value

responseGetRoutePreferences		
This method retrieves a list of selected route preferences		
Parameter	Type	Description
getRoutePreferences_roadPreferenceList	TRBVectr_RoutePreference_	

responseGetRoutePreferences		
getRoutePreferences_condition	PreferenceList	ConditionPreference_

## 5.5.10 getRouteSchedule

requestGetRouteSchedule		
This method gets the time schedule for the route to be calculated		
Parameter	Type	Description
getRouteSchedule_R_routeHandle	Handle	Range[0x0:0x7ffffff]. 0x0 is reserved as an invalid handle value
getRouteSchedule_R_valuesToReturn	TRMVector_Schedule_	

responseGetRouteSchedule		
This method gets the time schedule for the route to be calculated		
Parameter	Type	Description
getRouteSchedule_routeSchedule	RouteSchedule	

## 5.5.11 getRouteSettings

requestGetRouteSettings		
setRouteSetting = This method gets the global route preference settings		
Parameter	Type	Description

responseGetRouteSettings		
setRouteSetting = This method gets the global route preference settings		
Parameter	Type	Description
getRouteSettings_settings	RouteSettings	

## 5.5.12 getSupportedCostModels

requestGetSupportedCostModels		
This method retrieves a list of supported cost models		

requestGetSupportedCostModels		
Parameter	Type	Description

responseGetSupportedCostModels		
This method retrieves a list of supported cost models		
Parameter	Type	Description
getSupportedCostModels_costModelList	ModelList_CostModel_	

## 5.5.13 getSupportedRoutePreferences

requestGetSupportedRoutePreferences		
This method retrieves a list of supported route preferences		
Parameter	Type	Description

responseGetSupportedRoutePreferences		
This method retrieves a list of supported route preferences		
Parameter	Type	Description
getSupportedRoutePreferences_routePreferenceList	THRoutePreference_	
getSupportedRoutePreferences_locationPreferenceList	THLocationPreference_	

## 5.5.14 getWaypoints

requestGetWaypoints		
getWaypoints = This method retrieves a list of waypoints		
Parameter	Type	Description
getWaypoints_R_routeHandle	Handle	routeHandle = Route handle. Range[0x0:0x7ffffff]. 0x0 is reserved as an invalid handle value

responseGetWaypoints		
getWaypoints = This method retrieves a list of waypoints		
Parameter	Type	Description

responseGetWaypoints		
getWaypoints_startFromCurrentPosition	Boolean	startFromCurrentPosition = flag indicating if the current position is used as starting point
getWaypoints_waypointsList	THBVector_WayPoint_	

## 5.5.15 setBlockedRouteStretch

requestSetBlockedRouteStretch		
setBlockedRouteStretches = This method sets blocked stretches on a given route		
Parameter	Type	Description
setBlockedRouteStretch_R_routeHandle	Handle	routeHandle = Route handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value
setBlockedRouteStretch_R_length	uint32	Length in meters, from the current car position, to be blocked.

responseSetBlockedRouteStretch		
setBlockedRouteStretches = This method sets blocked stretches on a given route		
Parameter	Type	Description

## 5.5.16 setCostModel

requestSetCostModel		
This method sets the cost model		
Parameter	Type	Description
setCostModel_R_routeHandle	Handle	Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value
setCostModel_R_costModel	CostModel	enum(INVALID, FASTEST, SHORTEST, ECOLOGICAL, ... )

responseSetCostModel		
This method sets the cost model		
Parameter	Type	Description

## 5.5.17 setRoutePreferences

requestSetRoutePreferences		
This method sets a list of route preferences		
Parameter	Type	Description
setRoutePreferences_R_routeHandle	Handle	Range[0x0:0x7ffffff]. 0x0 is reserved as an invalid handle value
setRoutePreferences_R_roadPreferenceList	TRIP_Vehicle_RoutePreference_	
setRoutePreferences_R_conditionPreferenceList	TRIP_Vehicle_ConditionPreference_	

responseSetRoutePreferences		
This method sets a list of route preferences		
Parameter	Type	Description

## 5.5.18 setRouteSchedule

requestSetRouteSchedule		
This method sets the time schedule for the route to be calculated		
Parameter	Type	Description
setRouteSchedule_R_routeHandle	Handle	Range[0x0:0x7ffffff]. 0x0 is reserved as an invalid handle value
setRouteSchedule_R_routeSchedule	RouteSchedule	

responseSetRouteSchedule		
This method sets the time schedule for the route to be calculated		
Parameter	Type	Description

## 5.5.19 setRouteSettings

requestSetRouteSettings		
setRouteSetting = This method sets global route preference settings		
Parameter	Type	Description
setRouteSettings_R_settings	RouteSettings	



<b>responseSetRouteSettings</b>		
setRouteSetting = This method sets global route preference settings		
Parameter	Type	Description

## 5.5.20 setWaypoints

<b>requestSetWaypoints</b>		
setWaypoints = This method sets a list of waypoints		
Parameter	Type	Description
setWaypoints_R_routeHandle	Handle	routeHandle = Route handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value
setWaypoints_R_startFromCurrentPosition	boolean	startFromCurrentPosition = flag indicating if the current position is used as starting point
setWaypoints_R_waypointsList	THBVector_WayPoint_	

<b>responseSetWaypoints</b>		
setWaypoints = This method sets a list of waypoints		
Parameter	Type	Description

## 5.5.21 alternativeRoutesAvailable

<b>informationAlternativeRoutesAvailable</b>		
alternativeRoutesAvailable = This signal is emitted when alternative routes have been computed in the background and are available for guidance.		
Parameter	Type	Description
alternativeRoutesAvailable_routeHandlesList	THBVector_Handle_	

## 5.5.22 routeCalculationCancelled

<b>informationRouteCalculationCancelled</b>		
routeCalculationCancelled = This signal informs a client that a route calculation was cancelled		
Parameter	Type	Description

informationRouteCalculationCancelled		
routeCalculationCancelled = This signal informs a client that a route calculation failed		
Parameter	Type	Description
routeCalculationCancelled_routeHandle	Handle	routeHandle = Route handle. Range[0x0:0x7ffffff]. 0x0 is reserved as an invalid handle value

## 5.5.23 routeCalculationFailed

informationRouteCalculationFailed		
routeCalculationFailed = This signal informs a client that a route calculation failed		
Parameter	Type	Description
routeCalculationFailed_Handle	Handle	routeHandle = Route handle. Range[0x0:0x7ffffff]. 0x0 is reserved as an invalid handle value
routeCalculationFailed_errorCode	CalculationError	errorCode = enum(INVALID, UNMATCHED_POSITION, UNREACHABLE, ...)
routeCalculationFailed_unfulfilledPreferences	RoutePreference	

## 5.5.24 routeCalculationProgressUpdate

informationRouteCalculationProgressUpdate		
routeCalculationProgressUpdate = This signal informs a client about a route calculation progress		
Parameter	Type	Description
routeCalculationProgressUpdate_routeHandle	Handle	routeHandle = Route handle. Range[0x0:0x7ffffff]. 0x0 is reserved as an invalid handle value
routeCalculationProgressUpdate_percentage	int	percentage = progress status. Range [0:100]

## 5.5.25 routeCalculationSuccessful

informationRouteCalculationSuccessful		
routeCalculationSuccessful = This signal informs a client that a route calculation was successful		
Parameter	Type	Description
routeCalculationSuccessful_routeHandle	Handle	routeHandle = Route handle. Range[0x0:0x7ffffff]. 0x0 is reserved as an invalid handle value
routeCalculationSuccessful_unfulfilledPreferences	RoutePreference	

## 5.5.26 routeDeleted

informationRouteDeleted		
routeDeleted = This signal is emitted to inform clients that the current route has been deleted		
Parameter	Type	Description
routeDeleted_routeHandle	<a href="#">Handle</a>	routeHandle = Route handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value

## 5.5.27 routeSettingsChanged

informationRouteSettingsChanged		
routeSettingsChanged = This signal is emitted to inform clients that the global route settings has been changed.		
Parameter	Type	Description
routeSettingsChanged_settings	<a href="#">THBVector_RouteSettingType_</a>	

## 5.5.28 THBVector\_ConiditionPreference\_

Vector of element type [ConiditionPreference](#)

Referenced by : [org\\_harman\\_nav\\_ctrl\\_Routing::setRoutePreferences](#),  
[org\\_harman\\_nav\\_ctrl\\_Routing::getRoutePreferences](#),  
[org\\_harman\\_nav\\_ctrl\\_Routing::getSupportedRoutePreferences](#)

## 5.5.29 THBVector\_CostModel\_

Vector of element type [CostModel](#)

Referenced by : [org\\_harman\\_nav\\_ctrl\\_Routing::getSupportedCostModels](#)

## 5.5.30 THBVector\_Handle\_

Vector of element type [Handle](#)

Referenced by : [org\\_harman\\_nav\\_ctrl\\_Routing::calculateAlternateRoute](#),  
[org\\_harman\\_nav\\_ctrl\\_Routing::getAllRoutes](#),  
[org\\_harman\\_nav\\_ctrl\\_Routing::alternativeRoutesAvailable](#)

### 5.5.31 THBVector\_RouteOverviewType\_

Vector of element type [RouteOverviewType](#)

Referenced by : [org\\_harman\\_nav\\_ctrl\\_Routing::getRouteOverview](#)

### 5.5.32 THBVector\_RoutePreference\_

Vector of element type [RoutePreference](#)

Referenced by : [org\\_harman\\_nav\\_ctrl\\_Routing::setRoutePreferences](#),  
[org\\_harman\\_nav\\_ctrl\\_Routing::getRoutePreferences](#),  
[org\\_harman\\_nav\\_ctrl\\_Routing::getSupportedRoutePreferences](#)

### 5.5.33 THBVector\_RouteSettingType\_

Vector of element type [RouteSettingType](#)

Referenced by : [org\\_harman\\_nav\\_ctrl\\_Routing::routeSettingsChanged](#)

### 5.5.34 THBVector\_Schedule\_

Vector of element type [Schedule](#)

Referenced by : [org\\_harman\\_nav\\_ctrl\\_Routing::getRouteSchedule](#)

### 5.5.35 THBVector\_WayPoint\_

Vector of element type [WayPoint](#)

Referenced by : [org\\_harman\\_nav\\_ctrl\\_Routing::setWaypoints](#),  
[org\\_harman\\_nav\\_ctrl\\_Routing::getWaypoints](#)

## 5.6 org\_harman\_nav\_ctrl\_RoutingTypes

Interface Version: 1.2

### 5.6.1 CalculationError

CalculationError	
Literal	Description

CalculationError	
CalculationError_BasicEnum_INVALID	
CalculationError_UNREACHABLE_DESTINATION	
CalculationError_UNFULFILLED_PREFERENCE_MODE	

Referenced by : [org\\_harman\\_nav\\_ctrl\\_Routing::routeCalculationFailed](#)

## 5.6.2 ConditionPreferenceSource

ConditionPreferenceSource	
Literal	Description
ConditionPreferenceSource_BasicEnum_INVALID	
ConditionPreferenceSource_TRAFFIC_REALTIME	

Referenced by : [org\\_harman\\_nav\\_ctrl\\_RoutingTypes::ConiditionPreference](#)

## 5.6.3 ConiditionPreference

ConiditionPreference		
struct generated for DBus argument SetRoutePreferences_conditionPreferenceList		
Structure Element	Type	Description
mode	<a href="#">PreferenceMode</a>	
source	<a href="#">ConditionPreferenceSource</a>	

Referenced by : [org\\_harman\\_nav\\_ctrl\\_Routing::THBVector\\_ConiditionPreference\\_](#)

## 5.6.4 CostModel

CostModel	
Literal	Description
CostModel_BasicEnum_INVALID	
CostModel_FASTEST	
CostModel_SHORTEST	

CostModel	
CostModel_ECOLOGICAL	
CostModel_SCENIC	
CostModel_EASY	
CostModel_OFF_ROAD	
CostModel_BALANCED	
CostModel_CHEAPEST	

Referenced by : [org\\_harman\\_nav\\_ctrl\\_Routing::setCostModel](#),  
[org\\_harman\\_nav\\_ctrl\\_Routing::getCostModel](#),  
[org\\_harman\\_nav\\_ctrl\\_Routing::THBVector\\_CostModel](#),  
[org\\_harman\\_nav\\_ctrl\\_RoutingTypes::RouteSettingItem](#)

## 5.6.5 IntermediatePoint

IntermediatePoint		
Structure Element	Type	Description
_base	<a href="#">Coordinate2D</a>	
type	<a href="#">IntermediatePointType</a>	

## 5.6.6 IntermediatePointType

IntermediatePointType	
Literal	Description
IntermediatePointType_HARD_POINT	
IntermediatePointType_SOFT_POINT	

Referenced by : [org\\_harman\\_nav\\_ctrl\\_RoutingTypes::WayPointItem](#),  
[org\\_harman\\_nav\\_ctrl\\_RoutingTypes::IntermediatePoint](#)

## 5.6.7 PreferenceMode

PreferenceMode	
Literal	Description

PreferenceMode	
PreferenceMode_BasicEnum_INVALID	
PreferenceMode_PROHIBIT	
PreferenceMode_AVOID	
PreferenceMode_USE	
PreferenceMode_PREFER	
PreferenceMode_IGNORE	

Referenced by : [org\\_harman\\_nav\\_ctrl\\_RoutingTypes::ConiditionPreference](#),  
[org\\_harman\\_nav\\_ctrl\\_RoutingTypes::RoutePreference](#)

## 5.6.8 RouteOverview

RouteOverview		
Map Element	Type	Description
keyType	<a href="#">RouteOverviewType</a>	
valueType	<a href="#">RouteOverviewItem</a>	

Referenced by : [org\\_harman\\_nav\\_ctrl\\_Routing::getRouteOverview](#)

## 5.6.9 RouteOverviewItem

RouteOverviewItem		
Variant Element	Type	Description
uValue	UInt32	

## 5.6.10 RouteOverviewType

RouteOverviewType	
Literal	Description
RouteOverviewType_Schedule_ARRIVAL_TIME	
RouteOverviewType_Schedule_ARRIVAL_DATE	
RouteOverviewType_Schedule_DEPARTURE_TIME	

RouteOverviewType	
RouteOverviewType_Schedule_DEPARTURE_DATE	
RouteOverviewType_TOTAL_DISTANCE	
RouteOverviewType_TOTAL_TIME	
RouteOverviewType_FUEL_CONSUMPTION	

Referenced by : [org\\_harman\\_nav\\_ctrl\\_Routing::THBVector\\_RouteOverviewType\\_](#)

## 5.6.11 RoutePreference

RoutePreference		
struct generated for Dbus argument SetRoutePreferences_roadPreferenceList		
Structure Element	Type	Description
mode	<a href="#">PreferenceMode</a>	
source	<a href="#">RoutePreferenceSource</a>	

Referenced by : [org\\_harman\\_nav\\_ctrl\\_Routing::routeCalculationSuccessful](#),  
[org\\_harman\\_nav\\_ctrl\\_Routing::routeCalculationFailed](#),  
[org\\_harman\\_nav\\_ctrl\\_Routing::THBVector\\_RoutePreference\\_](#),  
[org\\_harman\\_nav\\_ctrl\\_RoutingTypes::RoutePreferences](#)

## 5.6.12 RoutePreferenceSource

RoutePreferenceSource	
Literal	Description
RoutePreferenceSource_BasicEnum_INVALID	
RoutePreferenceSource_FERRY	
RoutePreferenceSource_TOLL_ROADS	
RoutePreferenceSource_TUNNELS	
RoutePreferenceSource_HIGHWAYS_MOTORWAYS	
RoutePreferenceSource_VEHICLE_SIZE_LIMIT	
RoutePreferenceSource_CRIME_AREAS	
RoutePreferenceSource_U_TURNS	
RoutePreferenceSource_UNPAVED	
RoutePreferenceSource_HOV	



Referenced by : [org\\_harman\\_nav\\_ctrl\\_RoutingTypes::RoutePreference](#)

## 5.6.13 RoutePreferences

Vector of element type [RoutePreference](#)

Referenced by : [org\\_harman\\_nav\\_ctrl\\_RoutingTypes::RouteSettingItem](#)

## 5.6.14 RouteSchedule

RouteSchedule		
Map Element	Type	Description
keyType	<a href="#">Schedule</a>	
valueType	UInt32	

Referenced by : [org\\_harman\\_nav\\_ctrl\\_Routing::setRouteSchedule](#),  
[org\\_harman\\_nav\\_ctrl\\_Routing::getRouteSchedule](#)

## 5.6.15 RouteSettingItem

RouteSettingItem		
Variant Element	Type	Description
costModelValue	<a href="#">CostModel</a>	
boolValue	boolean	
routePreferencesValue	<a href="#">RoutePreferences</a>	

## 5.6.16 RouteSettingType

RouteSettingType	
Literal	Description
RouteSettingType_BasicEnum_INVALID	
RouteSettingType_COST_MODEL	
RouteSettingType_USE_TRAFFIC_PATTERNS	
RouteSettingType_SHOW_ALTERNATIVES	

RouteSettingType	
RouteSettingType_ROUTE_PREFERENCES	

Referenced by : [org\\_harman\\_nav\\_ctrl\\_Routing::THBVector\\_RouteSettingType\\_](#)

## 5.6.17 RouteSettings

RouteSettings		
Map Element	Type	Description
keyType	<a href="#">RouteSettingType</a>	
valueType	<a href="#">RouteSettingItem</a>	

Referenced by : [org\\_harman\\_nav\\_ctrl\\_Routing::setRouteSettings](#),  
[org\\_harman\\_nav\\_ctrl\\_Routing::getRouteSettings](#)

## 5.6.18 Schedule

Schedule	
Literal	Description
Schedule_BasicEnum_INVALID	
Schedule_ARRIVAL_TIME	
Schedule_ARRIVAL_DATE	
Schedule_DEPARTURE_TIME	
Schedule_DEPARTURE_DATE	

Referenced by : [org\\_harman\\_nav\\_ctrl\\_Routing::THBVector\\_Schedule\\_](#)

## 5.6.19 WapointElementType

WapointElementType	
Literal	Description
WapointElementType_BasicEnum_INVALID	
WapointElementType_WAYPOINT_TYPE	

WapointElementType	
WapointElementType_LOCATION_INPUT	
WapointElementType_LATITUDE	
WapointElementType_LONGITUDE	
WapointElementType_ALTITUDE	

## 5.6.20 WayPoint

WayPoint		
Map Element	Type	Description
keyType	<a href="#">WapointElementType</a>	
valueType	<a href="#">WayPointItem</a>	

Referenced by : [org\\_harman\\_nav\\_ctrl\\_Routing::THBVector\\_WayPoint\\_](#)

## 5.6.21 WayPointItem

WayPointItem		
Variant Element	Type	Description
coordinateValue	double	
altitudeValue	Int32	
wayPointValue	<a href="#">IntermediatePointType</a>	
metaData	Buffer	

# 5.7 org\_harman\_nav\_ctrl\_highwaymode\_HighwayMode

Interface Version: 2.2

## 5.7.1 createView

requestCreateView
create a new view to the mother array. This view will be maintained until the client uses destroyView, unsubscribes or service/proxy exit. After creating a view the client must receive an update. Only one

**requestCreateView**

created view is allowed to modify the list entries. Please note: a valid usecase is to specify a viewSize which is bigger than the initial list size

Parameter	Type	Description
createView_R_list	ListId	list to create the view upon.
createView_R_viewsize	ViewSize	individual size of the requested view.

**responseCreateView**

create a new view to the mother array. This view will be maintained until the client uses destroyView, unsubscribes or service/proxy exit. After creating a view the client must receive an update. Only one created view is allowed to modify the list entries. Please note: a valid usecase is to specify a viewSize which is bigger than the initial list size

Parameter	Type	Description
createView_view	ViewId	view identification used to distinguish several instances of a view for one client. It is never changed by the service nor the client. This id is unique!

## 5.7.2 deleteView

**requestDeleteView**

delete the given view instance

Parameter	Type	Description
deleteView_R_view	ViewId	identifies the view to apply this operation upon.

**responseDeleteView**

delete the given view instance

Parameter	Type	Description
-----------	------	-------------

## 5.7.3 getListSize

**requestGetListSize**

get the current number of contained elements in the given list.

Parameter	Type	Description
getListSize_R_list	ListId	

<b>responseGetListSize</b>		
get the current number of contained elements in the given list.		
Parameter	Type	Description
getListSize_size	ListSize	

## 5.7.4 getMessageDetails

<b>requestGetMessageDetails</b>		
get the details of a road junction, interchange, POI or traffic incident		
Parameter	Type	Description
getMessageDetails_R_view	ViewId	Identifies the view this result list is applied for.
getMessageDetails_R_itemId	HighwayItemId	

<b>responseGetMessageDetails</b>		
get the details of a road junction, interchange, POI or traffic incident		
Parameter	Type	Description
getMessageDetails_messageDetails	MessageDetails	

## 5.7.5 getResultList

<b>requestGetResultList</b>		
getResultList		
Parameter	Type	Description
getResultList_R_view	ViewId	Identifies the view this result list is applied for.

<b>responseGetResultList</b>		
getResultList		
Parameter	Type	Description
getResultList_resultPosition	ListKey	list key of the first entry into the received result list.
getResultList_items	HighwayItemArray	result items based on the requested position and key what is related to the given view id.

## 5.7.6 setEnable

requestSetEnable		
turn on/off highway mode		
Parameter	Type	Description
setEnabled_R_enabled	boolean	

responseSetEnable		
turn on/off highway mode		
Parameter	Type	Description

## 5.7.7 setViewAnchor

requestSetViewAnchor		
<p>set a stable element inside the current view snapshot. The client should use an available snapshot of a view to maintain focused elements within the view if possible, and change the view position only if an element to be focused is outside of the given view. A snapshot is generated whenever querying the data contained in a view. Together with that data, the ViewSnapshotPosition is provided. The initial snapshot of the view is always [0, min(viewSize-1, listSize-1)] with anchor offset 0. When creating a new view snapshot, the last call of setViewPosition or setViewAnchor (whichever was the last one) will be the relevant information to reposition the new view snapshot. If setViewAnchor was the last call, the anchor element of the old view snapshot is used for repositioning. (This method only needs to be used if the current view snapshot is outdated because the list has been updated.)</p> <p>The following rules are applied to set the position of the new view snapshot [newFrom, newTo], given a snapshot [from, to] and anchor offset aOff: Let elem(k) denote the element at key k in the old snapshot and new(e) denote the key the element e will have (would have if deleted) in the new snapshot (see also examples below). newFrom is set to new(elem(from+aOff)) - aOff. If any of these calculated values are out of the range of the list [0, listSize-1], they will be truncated to fit into the list. As a consequence, whenever possible, the anchor element of the old snapshot will be at the same offset within the new snapshot.</p> <p>As an example for the case in which the data was updated: old list {"a", "b", "c", "d", "e", "f"} with view snapshot ["c", "d"] with viewSize 2 and viewKey 2 new list {"b", "d", "f", "h", "j", "l"} setViewAnchor(0) =&gt; elem(from+aOff) is "c", new(elem(from+aOff)) is 1 ("c" would be inserted at index 1) =&gt; ["d", "f"] with ViewSnapshotPosition 6, listKey=1, anchorOffset=0. setViewAnchor(1) =&gt; elem(from+aOff) is "d", new(elem(from+aOff)) is 1 =&gt; ["b", "d"] with ViewSnapshotPosition 6, listKey=0, anchorOffset=1.</p>		
Parameter	Type	Description
setViewAnchor_R_view	<a href="#">ViewId</a>	identifies the view to apply this operation upon.
setViewAnchor_R_anchor	<a href="#">AnchorOffset</a>	relative anchor position in the view, referenced from ListKey Please note: only positive values and 0 are allowed

## 5.7.8 setViewPosition

### requestSetViewPosition

set the absolute view position to element key. The client should use an available snapshot of a view to maintain focused elements within the view if possible, and change the view position only if an element to be focused is outside of the given view. A snapshot is generated whenever querying the data contained in a view. Together with that data, the ViewSnapshotPosition is provided. The initial snapshot of the view is always [0, min(viewSize-1, listSize-1)]. When creating a new view snapshot, the last call of setViewPosition or setViewAnchor (whichever was the last one) will be the relevant information to reposition the new view snapshot. If setViewPosition was the last call, the view is moved such that the provided key refers to the absolute position on the current snapshot of the view. (This becomes important if the current view snapshot is outdated because the list has been updated.)

The following rules are applied to set the position of the new view snapshot [newFrom, newTo], given a snapshot [from, to]: Let elem(k) denote the element at key k in the old snapshot and new(e) denote the key the element e will have (would have if deleted) in the new snapshot (see also examples (1)-(3) below). (1) If key is less than from, then newFrom will be set to new(elem(from)) - (from-key). (2) If key is contained in [from, to], then newKey will be set to new(elem(key)). (3) If key is greater than to, then newFrom will be set to new(elem(to)) + (key-to). If any of these calculated values are out of the range of the list [0, listSize-1], they will be truncated to fit into the list. (Note that the resulting newFrom is always equal to key if the data wasn't updated, but it doesn't have to be equal to key if the data was updated.) After setting the view position the anchor offset will automatically be set to 0. There are two special key values to allow scrolling to the top/bottom of the list, independently from the above rules: The key value 0xFFFFE always positions the view to the top of the list. The key value 0xFFFF always positions the view to the bottom of the list.

As an example for the case in which the data was updated: old list {"a", "b", "c", "d", "e", "f"} with view snapshot ["c", "d"] with viewSize 2 and viewKey 2 new list {"b", "d", "f", "h", "j", "l"} (1) setViewPosition(0) => [from, to] is [2, 3], elem(from) is "c", new(elem(from)) is 1 => ["b", "d"] with ViewSnapshotPosition 6, listKey=0, anchorOffset=0. (2) setViewPosition(3) => [from, to] is [2, 3], elem(key) is "d", new(elem(key)) is 1 => ["d", "f"] with ViewSnapshotPosition 6, listKey=1, anchorOffset=0. (3) setViewPosition(4) => [from, to] is [2, 3], elem(to) is "d", new(elem(d)) is 1 => ["f", "h"] with ViewSnapshotPosition 6, listKey=2, anchorOffset=0.

Parameter	Type	Description
setViewPosition_R_view	<a href="#">ViewId</a>	identifies the view to apply this operation upon.
setViewPosition_R_key	<a href="#">ListKey</a>	element to position the view upon, according to view policy.

## 5.7.9 setViewSize

### requestSetViewSize

adjust the view size. It is allowed to set view size to a larger value than the actual size of the list, but less or equal than the maximum size of the list. The implementation may limit the maximum view size for resource reasons. After adjusting the window size the client must receive an update.

requestSetViewSize		
Parameter	Type	Description
setViewSize_R_view	<a href="#">ViewId</a>	identifies the view to apply this operation upon.
setViewSize_R_new_size	<a href="#">ViewSize</a>	new view size

responseSetViewSize		
adjust the view size. It is allowed to set view size to a larger value than the actual size of the list, but less or equal than the maximum size of the list. The implementation may limit the maximum view size for resource reasons. After adjusting the window size the client must receive an update.		
Parameter	Type	Description

## 5.7.10 listSize

informationListSize		
informs the client about changes of the list size.		
Parameter	Type	Description
listSize_id	<a href="#">ListId</a>	list id related to the list size update
listSize_size	<a href="#">ListSize</a>	changed list size information

## 5.7.11 viewUpdate

informationViewUpdate		
indicate to the client that the underlying list of a certain view has changed Whenever elements get inserted/removed or the content of element gets changed, the size or the sorting order of a list might change. This might influence the current view and especially the position of the anchor element in the list. To allow a client to react on such changes in an appropriate manner, the viewUpdate broadcast will provide all necessary information to its client. It is up to the client to reposition the view to its needs based on the provided information, using the methods setViewPosition or setViewAnchor.		
Parameter	Type	Description
viewUpdate_view	<a href="#">ViewId</a>	unique identifier of a view
viewUpdate_size	<a href="#">ListSize</a>	current size of the underlying list
viewUpdate_viewChanged	boolean	at least one element of the currently active view snapshot has changed
viewUpdate_listChanged	boolean	at least one element of the list has changed (this might lead to a different new view snapshot)



## 5.7.12 astatus

Attribute <i>astatus</i>	
indicate the statuses of Highway Mode	
Type	Notification Type
<a href="#">HighWayStatus</a>	ON_CHANGE

## 5.7.13 Error

Error	
This is the type for error responses.	
Literal	Description
ERROR_ListError_INVALID	
ERROR_ListError_INVALID_LIST_ID	
ERROR_ListError_INVALID_VIEW	
ERROR_ListError_INVALID_PARAMETER	
ERROR_ListError_SIZE_LIMIT_EXCEEDED	
ERROR_ListError_OUT_OF_RESSOURCES	
ERROR_ListError_OUT_OF_RANGE_POSITION	
ERROR_ListError_POLICY_DENIED	

# 5.8 org\_harman\_nav\_ctrl\_highwaymode\_HighwayMode

Interface Version: 2.2

## 5.8.1 Addresses

Vector of element type [Address](#)

Referenced by : [org\\_harman\\_nav\\_ctrl\\_highwaymode\\_HighwayModeTypes::InterchangeDetails](#),  
[org\\_harman\\_nav\\_ctrl\\_highwaymode\\_HighwayModeTypes::JunctionDetails](#)

## 5.8.2 Distance\_m

Alias of actual type: **UInt32**

Referenced by : [org\\_harman\\_nav\\_ctrl\\_highwaymode\\_HighwayModeTypes::HighwayItem](#),  
[org\\_harman\\_nav\\_ctrl\\_highwaymode\\_HighwayModeTypes::MessageDetails](#)

## 5.8.3 HighWayStatus

HighWayStatus	
Literal	Description
HighWayStatus_BasicEnum_INVALID	
HighWayStatus_DISABLED	
HighWayStatus_ACTIVE	
HighWayStatus_INACTIVE	

Referenced by : [org\\_harman\\_nav\\_ctrl\\_highwaymode\\_HighwayMode::astatus](#)

## 5.8.4 HighwayItem

HighwayItem		
generalized representation of a junction, interchange, POI, and traffic incident		
Structure Element	Type	Description
id	<a href="#">HighwayItemId</a>	
messageType	<a href="#">ItemType</a>	
iconId	<a href="#">Icon</a>	
descriptions	String	
distance	<a href="#">Distance_m</a>	

Referenced by : [org\\_harman\\_nav\\_ctrl\\_highwaymode\\_HighwayModeTypes::HighwayItemArray](#)

## 5.8.5 HighwayItemArray

a list of highway items Vector of element type [HighwayItem](#)

Referenced by : [org\\_harman\\_nav\\_ctrl\\_highwaymode\\_HighwayMode::getResultList](#)

## 5.8.6 HighwayItemDetails

HighwayItemDetails
union of highway features and event

HighwayItemDetails		
Variant Element	Type	Description
poiDetails	<a href="#">SearchResultDetails</a>	
serviceAreaDetails	<a href="#">POIDetailsArray</a>	
trafficIncidentDetails	<a href="#">SMessage</a>	
junctionDetails	<a href="#">JunctionDetails</a>	
interchangeDetails	<a href="#">InterchangeDetails</a>	

Referenced by : [org\\_harman\\_nav\\_ctrl\\_highwaymode\\_HighwayModeTypes::MessageDetails](#)

## 5.8.7 HighwayItemId

Alias of actual type: **UInt32**

Referenced by : [org\\_harman\\_nav\\_ctrl\\_highwaymode\\_HighwayMode::getMessageDetails](#),  
[org\\_harman\\_nav\\_ctrl\\_highwaymode\\_HighwayModeTypes::HighwayItem](#),  
[org\\_harman\\_nav\\_ctrl\\_highwaymode\\_HighwayModeTypes::POIInformation](#)

## 5.8.8 InterchangeDetails

InterchangeDetails		
Structure Element	Type	Description
address	<a href="#">Addresses</a>	

Referenced by : [org\\_harman\\_nav\\_ctrl\\_highwaymode\\_HighwayModeTypes::HighwayItemDetails](#)

## 5.8.9 ItemDetailsType

ItemDetailsType	
Literal	Description
ItemDetailsType_BasicEnum_INVALID	
ItemDetailsType_DTYPE_Poi	
ItemDetailsType_DTYPE_TrafficIncident	
ItemDetailsType_DTYPE_Junction	
ItemDetailsType_DTYPE_Interchange	

Referenced by : [org\\_harman\\_nav\\_ctrl\\_highwaymode\\_HighwayModeTypes::MessageDetails](#)

## 5.8.10 ItemType

ItemType	
Literal	Description
ItemType_BasicEnum_INVALID	
ItemType_TYPE_ServiceArea	
ItemType_TYPE_Fuel	
ItemType_TYPE_Parking	
ItemType_TYPE_Junction	
ItemType_TYPE_Interchange	
ItemType_TYPE_POI	
ItemType_TYPE_TrafficIncident	

Referenced by : [org\\_harman\\_nav\\_ctrl\\_highwaymode\\_HighwayModeTypes::HighwayItem](#)

## 5.8.11 JunctionDetails

JunctionDetails		
Structure Element	Type	Description
address	<a href="#">Addresses</a>	

Referenced by : [org\\_harman\\_nav\\_ctrl\\_highwaymode\\_HighwayModeTypes::HighwayItemDetails](#)

## 5.8.12 MessageDetails

MessageDetails		
highway feature or event details and its type.		
type DTYPE_Poi is paired with POIDetails type DTYPE_TrafficIncident is paired with TrafficIncidentDetails		
TBD: How to represent junctionDetails and InterchangeDetails		
Structure Element	Type	Description

MessageDetails		
type	<a href="#">ItemDetailsType</a>	
details	<a href="#">HighwayItemDetails</a>	
distance	<a href="#">Distance_m</a>	

Referenced by : [org\\_harman\\_nav\\_ctrl\\_highwaymode\\_HighwayMode::getMessageDetails](#)

## 5.8.13 POIDetailsArray

Vector of element type [SearchResultDetails](#)

Referenced by : [org\\_harman\\_nav\\_ctrl\\_highwaymode\\_HighwayModeTypes::HighwayItemDetails](#)

## 5.8.14 POIInformation

POIInformation		
representation of a POI in the service area		
Structure Element	Type	Description
description	String	
poId	<a href="#">POI_ID</a>	
iconId	<a href="#">ResourceID</a>	
parent	<a href="#">HighwayItemId</a>	

## 5.8.15 ResourceId

Alias of actual type: **UInt64**

## 5.8.16 Time\_ms

Alias of actual type: **UInt32**

## 5.8.17 UpdateReason

UpdateReason	
Literal	Description

UpdateReason	
UpdateReason_BasicEnum_INVALID	
UpdateReason_REASON_TimerTimedout	
UpdateReason_REASON_DistanceChanged	
UpdateReason_REASON_ElementAdded	
UpdateReason_REASON_ElementRemoved	

## 6 MapControl Service

### 6.1 org\_harman\_nav\_ctrl\_mapv\_MapViewController

Interface Version: 1.2

#### 6.1.1 addKml

requestAddKml		
addKml = add Kml Content to MapViewer		
Parameter	Type	Description
addKml_R_sessionHandle	Handle	sessionHandle = Session handle. Range[0x0:0x7ffffff]. 0x0 is reserved as an invalid handle value
addKml_R_mapViewInstanceHandle	Handle	mapViewInstanceHandle = Map instance handle. Range[0x0:0x7ffffff]. 0x0 is reserved as an invalid handle value
addKml_R_kmlType	KmlType	defines if kml is of KmlType:(KML_URL/ KML_CONTENT)
addKml_R_kml	String	is either the kml-url or a kml-content
addKml_R_show	boolean	show if TRUE then kmlContent is shown on MapViewer

responseAddKml		
addKml = add Kml Content to MapViewer		
Parameter	Type	Description
addKml_kmlHandle	Handle	kmlHandle = NAV2010-kmlHandle

#### 6.1.2 addMapViewScaleChangeListener

requestAddMapViewScaleChangeListener		
addMapViewScaleChangeListener = This method adds a listener which is notified when map view scale changes.		
Parameter	Type	Description

### responseAddMapViewScaleChangedListener

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

Parameter	Type	Description
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## 6.1.3 centerOnObjectListItems

### requestCenterOnObjectListItems

centerOnObjectListItems = This method shows an overview map with the current route in the center

Parameter	Type	Description
centerOnObjectListItems_R_sessionHandle	Handle	sessionHandle = Session handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value
centerOnObjectListItems_R_mapViewInstanceHandle	Handle	mapViewInstanceHandle = Map instance handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value
centerOnObjectListItems_R_objectListItems	ObjectListItems	objectListItems = list of ObjectListItems to center on (if 1 element is in list, don't change scale)

### responseCenterOnObjectListItems

centerOnObjectListItems = This method shows an overview map with the current route in the center

Parameter	Type	Description
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## 6.1.4 convertGeoCoordsToPixelCoords

### requestConvertGeoCoordsToPixelCoords

convertGeoCoordsToPixelCoords = This method converts geographical coordinates into pixel coordinates

Parameter	Type	Description
convertGeoCoordsToPixelCoords_R_sessionHandle	Handle	sessionHandle = Session handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value
convertGeoCoordsToPixelCoords_R_mapViewInstanceHandle	Handle	mapViewInstanceHandle = Map instance handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value
convertGeoCoordsToPixelCoords_R_geoCoordinates2D	GeoCoordinates2D	



responseConvertGeoCoordsToPixelCoords		
convertGeoCoordsToPixelCoords = This method converts geographical coordinates into pixel coordinates		
Parameter	Type	Description
convertGeoCoordsToPixelCoords	IsPixelCoords	

## 6.1.5 convertPixelCoordsToGeoCoords

requestConvertPixelCoordsToGeoCoords		
convertPixelCoordsToGeoCoords = This method converts pixel coordinates to geographical coordinates		
Parameter	Type	Description
convertPixelCoordsToGeoCoords_sessionHandle	Handle	sessionHandle = Session handle. Range[0x0:0x7ffffff]. 0x0 is reserved as an invalid handle value
convertPixelCoordsToGeoCoords_mapViewInstanceHandle	Handle	mapViewInstanceHandle = Map instance handle. Range[0x0:0x7ffffff]. 0x0 is reserved as an invalid handle value
convertPixelCoordsToGeoCoords_R_pixelCoords	IsPixelCoords	

responseConvertPixelCoordsToGeoCoords		
convertPixelCoordsToGeoCoords = This method converts pixel coordinates to geographical coordinates		
Parameter	Type	Description
convertPixelCoordsToGeoCoords_R_geoCoords2D	IsGeoCoords2D	

## 6.1.6 createMapViewInstance

requestCreateMapViewInstance		
createMapViewInstance = This method creates a new map instance		
Parameter	Type	Description
createMapViewInstance_R_sessionHandle	Handle	sessionHandle = Session handle. Range[0x0:0x7ffffff]. 0x0 is reserved as an invalid handle value
createMapViewInstance_R_mapViewSize	MapViewSize	
createMapViewInstance_R_mapViewType	MapViewType	mapViewType = enum(INVALID,MAIN_MAP,SPLIT_SCREEN,...)

<b>responseCreateMapViewInstance</b>		
createMapViewInstance = This method creates a new map instance		
Parameter	Type	Description
createMapViewInstance_mapViewInstanceHandle	Handle	mapViewInstanceHandle = Map instance handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value

## 6.1.7 deleteKml

<b>requestDeleteKml</b>		
deleteKml = deletes (and hides) Kml Content to MapViewer		
Parameter	Type	Description
deleteKml_R_sessionHandle	Handle	sessionHandle = Session handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value
deleteKml_R_mapViewInstanceHandle	Handle	mapViewInstanceHandle = Map instance handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value
deleteKml_R_kmlHandle	Handle	kmlHandle = NAV2010-kmlHandle

<b>responseDeleteKml</b>		
deleteKml = deletes (and hides) Kml Content to MapViewer		
Parameter	Type	Description

## 6.1.8 displayCustomElements

<b>requestDisplayCustomElements</b>		
displayCustomElements = This method visualizes a set of custom elements on the map		
Parameter	Type	Description
displayCustomElements_R_sessionHandle	Handle	sessionHandle = Session handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value
displayCustomElements_R_mapViewInstanceHandle	Handle	mapViewInstanceHandle = Map instance handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value

requestDisplayCustomElements		
displayCustomElements_R_customElement	CustomElement	

responseDisplayCustomElements		
displayCustomElements = This method visualizes a set of custom elements on the map		
Parameter	Type	Description
displayCustomElements_customElementHandle	CustomElementHandle	

## 6.1.9 displayObjectList

requestDisplayObjectList		
displayObjectList = This method visualizes a list of objects, created in another domain		
Parameter	Type	Description
displayObjectList_R_sessionHandle	Handle	sessionHandle = Session handle. Range[0x0:0x7ffffff]. 0x0 is reserved as an invalid handle value
displayObjectList_R_mapViewInstanceHandle	Handle	mapViewInstanceHandle = Map instance handle. Range[0x0:0x7ffffff]. 0x0 is reserved as an invalid handle value
displayObjectList_R_objectList	ObjectList	contains enum to other domain + session-id of other domain

responseDisplayObjectList		
displayObjectList = This method visualizes a list of objects, created in another domain		
Parameter	Type	Description

## 6.1.10 displayRoute

requestDisplayRoute		
displayRoute = This method visualizes one of the calculated routes		
Parameter	Type	Description
displayRoute_R_sessionHandle	Handle	sessionHandle = Session handle. Range[0x0:0x7ffffff]. 0x0 is reserved as an invalid handle value
displayRoute_R_mapViewInstanceHandle	Handle	mapViewInstanceHandle = Map instance handle. Range[0x0:0x7ffffff].

requestDisplayRoute		
		0x0 is reserved as an invalid handle value
displayRoute_R_routeHandle	Handle	routeHandle = Route handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value
displayRoute_R_highlighted	boolean	highlighted = flag. TRUE means highlighted,FALSE means not highlighted

responseDisplayRoute		
displayRoute = This method visualizes one of the calculated routes		
Parameter	Type	Description

## 6.1.11 getAutozoomEnabled

requestGetAutozoomEnabled		
Parameter	Type	Description
getAutozoomEnabled_R_sessionHandle	Handle	sessionHandle = Session handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value
getAutozoomEnabled_R_mapViewInstanceHandle	Handle	mapViewInstanceHandle = Map instance handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value

responseGetAutozoomEnabled		
Parameter	Type	Description
getAutozoomEnabled_enabled	boolean	enabled

## 6.1.12 getAutozoomSetting

requestGetAutozoomSetting		
Parameter	Type	Description
getAutozoomSetting_R_sessionHandle	Handle	sessionHandle = Session handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value

requestGetAutozoomSetting		
getAutozoomSetting_R_mapViewInstanceHandle	Handle	mapViewInstanceHandle = Map instance handle. Range[0x0:0x7ffffff]. 0x0 is reserved as an invalid handle value

responseGetAutozoomSetting		
Parameter	Type	Description
getAutozoomSetting_autozoomSetting	AutozoomSetting	autozoomSetting (NEAR / NORMAL / FAR)

## 6.1.13 getCameraDistanceFromTargetPoint

requestGetCameraDistanceFromTargetPoint		
getCameraDistanceFromTargetPoint = This method gets the mode and the camera distance from the target point		
Parameter	Type	Description
getCameraDistanceFromTargetPoint_R_mapViewInstanceHandle	Handle	mapViewInstanceHandle = Map instance handle. Range[0x0:0x7ffffff]. 0x0 is reserved as an invalid handle value

responseGetCameraDistanceFromTargetPoint		
getCameraDistanceFromTargetPoint = This method gets the mode and the camera distance from the target point		
Parameter	Type	Description
getCameraDistanceFromTargetPoint_UInt32_distance	UInt32	distance = distance from the view point in meters

## 6.1.14 getCameraHeading

requestGetCameraHeading		
getCameraHeading = This method returns the current camera heading		
Parameter	Type	Description
getCameraHeading_R_mapViewInstanceHandle	Handle	mapViewInstanceHandle = Map instance handle. Range[0x0:0x7ffffff].

requestGetCameraHeading		
		0x0 is reserved as an invalid handle value

responseGetCameraHeading		
getCameraHeading = This method returns the current camera heading		
Parameter	Type	Description
getCameraHeading_headingType	uint16	headingType = enum(INVALID,CONSTANT_ANGLE,TRACK_UP,TOW... )
getCameraHeading_headingAngle	uint32	headingAngle = heading angle in degrees measured from the North axis clockwise. Range[0:360]
getCameraHeading_target	Coordinate2D	

## 6.1.15 getCameraHeight

requestGetCameraHeight		
getCameraHeight = This method gets the camera height		
Parameter	Type	Description
getCameraHeight_R_mapViewInstanceHandle	InstanceHandle	mapViewInstanceHandle = Map instance handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value

responseGetCameraHeight		
getCameraHeight = This method gets the camera height		
Parameter	Type	Description
getCameraHeight_height	UInt32	height = height from the ground in meters

## 6.1.16 getCameraPosition

requestGetCameraPosition		
getCameraPosition = This method returns the coordinates of the point at which the camera is positioned		
Parameter	Type	Description

requestGetCameraPosition		
getCameraPosition_R_mapViewInstanceHandle	MapViewInstanceHandle	mapViewInstanceHandle = Map instance handle. Range[0x0:0x7ffffff]. 0x0 is reserved as an invalid handle value

responseGetCameraPosition		
getCameraPosition = This method returns the coordinates of the point at which the camera is positioned		
Parameter	Type	Description
getCameraPosition_position	Coordinate3D	

## 6.1.17 getCameraRollAngle

requestGetCameraRollAngle		
getCameraRollAngle = This method returns the camera roll angle		
Parameter	Type	Description
getCameraRollAngle_R_mapViewInstanceHandle	MapViewInstanceHandle	mapViewInstanceHandle = Map instance handle. Range[0x0:0x7ffffff]. 0x0 is reserved as an invalid handle value

responseGetCameraRollAngle		
getCameraRollAngle = This method returns the camera roll angle		
Parameter	Type	Description
getCameraRollAngle_roll	Int32	roll = roll angle in degrees. Range [-180:180]

## 6.1.18 getCameraTiltAngle

requestGetCameraTiltAngle		
getCameraTiltAngle = This method returns the camera tilt angle		
Parameter	Type	Description
getCameraTiltAngle_R_mapViewInstanceHandle	MapViewInstanceHandle	mapViewInstanceHandle = Map instance handle. Range[0x0:0x7ffffff]. 0x0 is reserved as an invalid handle value

responseGetCameraTiltAngle		
getCameraTiltAngle = This method returns the camera tilt angle		
Parameter	Type	Description
getCameraTiltAngle_tilt	Int32	tilt = tilt angle in degrees. Range [-180:180]

## 6.1.19 getDisplayedCustomElements

requestGetDisplayedCustomElements		
getDisplayedCustomElements = This method retrieves the visualized custom elements on the map		
Parameter	Type	Description
getDisplayedCustomElements_R_mapViewInstanceHandle	MapViewInstanceHandle	mapViewInstanceHandle = Map instance handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value

responseGetDisplayedCustomElements		
getDisplayedCustomElements = This method retrieves the visualized custom elements on the map		
Parameter	Type	Description
getDisplayedCustomElements_CustomElementsDict	CustomElementsDict	

## 6.1.20 getDisplayedRoutes

requestGetDisplayedRoutes		
getDisplayedRoutes = This method returns a list of displayed routes		
Parameter	Type	Description
getDisplayedRoutes_R_mapViewInstanceHandle	MapViewInstanceHandle	mapViewInstanceHandle = Map instance handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value

responseGetDisplayedRoutes		
getDisplayedRoutes = This method returns a list of displayed routes		
Parameter	Type	Description



responseGetDisplayedRoutes		
getDisplayedRoutes_displayedRoutes	RouteVector_DisplayedRoute_	

## 6.1.21 getFollowCarMode

requestGetFollowCarMode		
getFollowCarMode = This method returns the current FollowCar-mode		
Parameter	Type	Description
getFollowCarMode_R_mapViewInstanceHandle	MapViewInstanceHandle	mapViewInstanceHandle = Map instance handle. Range[0x0:0x7ffffff]. 0x0 is reserved as an invalid handle value

responseGetFollowCarMode		
getFollowCarMode = This method returns the current FollowCar-mode		
Parameter	Type	Description
getFollowCarMode_followCarMode	boolean	followCarMode = flag. If true, the current car position is interpreted as position of the point the camera must look at

## 6.1.22 getMapMode

requestGetMapMode		
Parameter	Type	Description
getMapMode_R_sessionHandle	SessionHandle	sessionHandle = Session handle. Range[0x0:0x7ffffff]. 0x0 is reserved as an invalid handle value
getMapMode_R_mapViewInstanceHandle	MapViewInstanceHandle	mapViewInstanceHandle = Map instance handle. Range[0x0:0x7ffffff]. 0x0 is reserved as an invalid handle value

responseGetMapMode		
Parameter	Type	Description
getMapMode_mapMode	String	mapMode

## 6.1.23 getMapModeList

requestGetMapModeList		
getMapModeList = This method returns a list of supported map modes		
Parameter	Type	Description
getMapModeList_R_mapViewInstanceHandle	Handle	mapViewInstanceHandle = Map instance handle. Range[0x0:0x7ffffff]. 0x0 is reserved as an invalid handle value

responseGetMapModeList		
getMapModeList = This method returns a list of supported map modes		
Parameter	Type	Description
getMapModeList_mapModeList	THBVector_CHBString_	mapMode-List (string-based)

## 6.1.24 getMapViewBoundingBox

requestGetMapViewBoundingBox		
getMapViewBoundingBox = This method returns the bounding box of a given map instance		
Parameter	Type	Description
getMapViewBoundingBox_R_mapViewInstanceHandle	Handle	mapViewInstanceHandle = Map instance handle. Range[0x0:0x7ffffff]. 0x0 is reserved as an invalid handle value

responseGetMapViewBoundingBox		
getMapViewBoundingBox = This method returns the bounding box of a given map instance		
Parameter	Type	Description
getMapViewBoundingBox_boundingBox	StringRectangle	

## 6.1.25 getMapViewObjectVisibility

requestGetMapViewObjectVisibility		
getMapViewObjectVisibility = This method gets the type of objects shown on the map.		

<b>responseGetMapViewObjectVisibility</b>		
getMapViewObjectVisibility = This method gets the type of objects shown on the map.		
<b>Parameter</b>	<b>Type</b>	<b>Description</b>
getMapViewObjectVisibility_objectVisibility	MapObjectVisibility	

<b>requestGetMapViewPerformanceLevel</b>		
getMapViewPerformanceLevel = This method returns the perfomance level of a given map instance		
<b>Parameter</b>	<b>Type</b>	<b>Description</b>
getMapViewPerformanceLevel	Handle	mapViewInstanceHandle = Map instance handle. Range[0x0:0x7ffffff]. 0x0 is reserved as an invalid handle value

<b>responseGetMapViewPerformanceLevel</b>		
getMapViewPerformanceLevel = This method returns the performance level of a given map instance		
<b>Parameter</b>	<b>Type</b>	<b>Description</b>
getMapViewPerformanceLevel	PerformanceLevel	performanceLevel = enum(INVALID,LEVEL1,LEVEL2,LEVEL3,LEVEL4,LEVEL5,LEVEL6,LEVEL7,LEVEL8,LEVEL9,LEVEL10,LEVEL11,LEVEL12,LEVEL13,LEVEL14,LEVEL15,LEVEL16,LEVEL17,LEVEL18,LEVEL19,LEVEL20,LEVEL21,LEVEL22,LEVEL23,LEVEL24,LEVEL25,LEVEL26,LEVEL27,LEVEL28,LEVEL29,LEVEL30,LEVEL31,LEVEL32,LEVEL33,LEVEL34,LEVEL35,LEVEL36,LEVEL37,LEVEL38,LEVEL39,LEVEL40,LEVEL41,LEVEL42,LEVEL43,LEVEL44,LEVEL45,LEVEL46,LEVEL47,LEVEL48,LEVEL49,LEVEL50,LEVEL51,LEVEL52,LEVEL53,LEVEL54,LEVEL55,LEVEL56,LEVEL57,LEVEL58,LEVEL59,LEVEL60,LEVEL61,LEVEL62,LEVEL63,LEVEL64,LEVEL65,LEVEL66,LEVEL67,LEVEL68,LEVEL69,LEVEL70,LEVEL71,LEVEL72,LEVEL73,LEVEL74,LEVEL75,LEVEL76,LEVEL77,LEVEL78,LEVEL79,LEVEL80,LEVEL81,LEVEL82,LEVEL83,LEVEL84,LEVEL85,LEVEL86,LEVEL87,LEVEL88,LEVEL89,LEVEL90,LEVEL91,LEVEL92,LEVEL93,LEVEL94,LEVEL95,LEVEL96,LEVEL97,LEVEL98,LEVEL99,LEVEL100,LEVEL101,LEVEL102,LEVEL103,LEVEL104,LEVEL105,LEVEL106,LEVEL107,LEVEL108,LEVEL109,LEVEL110,LEVEL111,LEVEL112,LEVEL113,LEVEL114,LEVEL115,LEVEL116,LEVEL117,LEVEL118,LEVEL119,LEVEL120,LEVEL121,LEVEL122,LEVEL123,LEVEL124,LEVEL125,LEVEL126,LEVEL127,LEVEL128,LEVEL129,LEVEL130,LEVEL131,LEVEL132,LEVEL133,LEVEL134,LEVEL135,LEVEL136,LEVEL137,LEVEL138,LEVEL139,LEVEL140,LEVEL141,LEVEL142,LEVEL143,LEVEL144,LEVEL145,LEVEL146,LEVEL147,LEVEL148,LEVEL149,LEVEL150,LEVEL151,LEVEL152,LEVEL153,LEVEL154,LEVEL155,LEVEL156,LEVEL157,LEVEL158,LEVEL159,LEVEL160,LEVEL161,LEVEL162,LEVEL163,LEVEL164,LEVEL165,LEVEL166,LEVEL167,LEVEL168,LEVEL169,LEVEL170,LEVEL171,LEVEL172,LEVEL173,LEVEL174,LEVEL175,LEVEL176,LEVEL177,LEVEL178,LEVEL179,LEVEL180,LEVEL181,LEVEL182,LEVEL183,LEVEL184,LEVEL185,LEVEL186,LEVEL187,LEVEL188,LEVEL189,LEVEL190,LEVEL191,LEVEL192,LEVEL193,LEVEL194,LEVEL195,LEVEL196,LEVEL197,LEVEL198,LEVEL199,LEVEL200,LEVEL201,LEVEL202,LEVEL203,LEVEL204,LEVEL205,LEVEL206,LEVEL207,LEVEL208,LEVEL209,LEVEL210,LEVEL211,LEVEL212,LEVEL213,LEVEL214,LEVEL215,LEVEL216,LEVEL217,LEVEL218,LEVEL219,LEVEL220,LEVEL221,LEVEL222,LEVEL223,LEVEL224,LEVEL225,LEVEL226,LEVEL227,LEVEL228,LEVEL229,LEVEL230,LEVEL231,LEVEL232,LEVEL233,LEVEL234,LEVEL235,LEVEL236,LEVEL237,LEVEL238,LEVEL239,LEVEL240,LEVEL241,LEVEL242,LEVEL243,LEVEL244,LEVEL245,LEVEL246,LEVEL247,LEVEL248,LEVEL249,LEVEL250,LEVEL251,LEVEL252,LEVEL253,LEVEL254,LEVEL255,LEVEL256,LEVEL257,LEVEL258,LEVEL259,LEVEL260,LEVEL261,LEVEL262,LEVEL263,LEVEL264,LEVEL265,LEVEL266,LEVEL267,LEVEL268,LEVEL269,LEVEL270,LEVEL271,LEVEL272,LEVEL273,LEVEL274,LEVEL275,LEVEL276,LEVEL277,LEVEL278,LEVEL279,LEVEL280,LEVEL281,LEVEL282,LEVEL283,LEVEL284,LEVEL285,LEVEL286,LEVEL287,LEVEL288,LEVEL289,LEVEL290,LEVEL291,LEVEL292,LEVEL293,LEVEL294,LEVEL295,LEVEL296,LEVEL297,LEVEL298,LEVEL299,LEVEL300,LEVEL301,LEVEL302,LEVEL303,LEVEL304,LEVEL305,LEVEL306,LEVEL307,LEVEL308,LEVEL309,LEVEL310,LEVEL311,LEVEL312,LEVEL313,LEVEL314,LEVEL315,LEVEL316,LEVEL317,LEVEL318,LEVEL319,LEVEL320,LEVEL321,LEVEL322,LEVEL323,LEVEL324,LEVEL325,LEVEL326,LEVEL327,LEVEL328,LEVEL329,LEVEL330,LEVEL331,LEVEL332,LEVEL333,LEVEL334,LEVEL335,LEVEL336,LEVEL337,LEVEL338,LEVEL339,LEVEL340,LEVEL341,LEVEL342,LEVEL343,LEVEL344,LEVEL345,LEVEL346,LEVEL347,LEVEL348,LEVEL349,LEVEL350,LEVEL351,LEVEL352,LEVEL353,LEVEL354,LEVEL355,LEVEL356,LEVEL357,LEVEL358,LEVEL359,LEVEL360,LEVEL361,LEVEL362,LEVEL363,LEVEL364,LEVEL365,LEVEL366,LEVEL367,LEVEL368,LEVEL369,LEVEL370,LEVEL371,LEVEL372,LEVEL373,LEVEL374,LEVEL375,LEVEL376,LEVEL377,LEVEL378,LEVEL379,LEVEL380,LEVEL381,LEVEL382,LEVEL383,LEVEL384,LEVEL385,LEVEL386,LEVEL387,LEVEL388,LEVEL389,LEVEL390,LEVEL391,LEVEL392,LEVEL393,LEVEL394,LEVEL395,LEVEL396,LEVEL397,LEVEL398,LEVEL399,LEVEL400,LEVEL401,LEVEL402,LEVEL403,LEVEL404,LEVEL405,LEVEL406,LEVEL407,LEVEL408,LEVEL409,LEVEL410,LEVEL411,LEVEL412,LEVEL413,LEVEL414,LEVEL415,LEVEL416,LEVEL417,LEVEL418,LEVEL419,LEVEL420,LEVEL421,LEVEL422,LEVEL423,LEVEL424,LEVEL425,LEVEL426,LEVEL427,LEVEL428,LEVEL429,LEVEL430,LEVEL431,LEVEL432,LEVEL433,LEVEL434,LEVEL435,LEVEL436,LEVEL437,LEVEL438,LEVEL439,LEVEL440,LEVEL441,LEVEL442,LEVEL443,LEVEL444,LEVEL445,LEVEL446,LEVEL447,LEVEL448,LEVEL449,LEVEL450,LEVEL451,LEVEL452,LEVEL453,LEVEL454,LEVEL455,LEVEL456,LEVEL457,LEVEL458,LEVEL459,LEVEL460,LEVEL461,LEVEL462,LEVEL463,LEVEL464,LEVEL465,LEVEL466,LEVEL467,LEVEL468,LEVEL469,LEVEL470,LEVEL471,LEVEL472,LEVEL473,LEVEL474,LEVEL475,LEVEL476,LEVEL477,LEVEL478,LEVEL479,LEVEL480,LEVEL481,LEVEL482,LEVEL483,LEVEL484,LEVEL485,LEVEL486,LEVEL487,LEVEL488,LEVEL489,LEVEL490,LEVEL491,LEVEL492,LEVEL493,LEVEL494,LEVEL495,LEVEL496,LEVEL497,LEVEL498,LEVEL499,LEVEL500,LEVEL501,LEVEL502,LEVEL503,LEVEL504,LEVEL505,LEVEL506,LEVEL507,LEVEL508,LEVEL509,LEVEL510,LEVEL511,LEVEL512,LEVEL513,LEVEL514,LEVEL515,LEVEL516,LEVEL517,LEVEL518,LEVEL519,LEVEL520,LEVEL521,LEVEL522,LEVEL523,LEVEL524,LEVEL525,LEVEL526,LEVEL527,LEVEL528,LEVEL529,LEVEL530,LEVEL531,LEVEL532,LEVEL533,LEVEL534,LEVEL535,LEVEL536,LEVEL537,LEVEL538,LEVEL539,LEVEL540,LEVEL541,LEVEL542,LEVEL543,LEVEL544,LEVEL545,LEVEL546,LEVEL547,LEVEL548,LEVEL549,LEVEL550,LEVEL551,LEVEL552,LEVEL553,LEVEL554,LEVEL555,LEVEL556,LEVEL557,LEVEL558,LEVEL559,LEVEL560,LEVEL561,LEVEL562,LEVEL563,LEVEL564,LEVEL565,LEVEL566,LEVEL567,LEVEL568,LEVEL569,LEVEL570,LEVEL571,LEVEL572,LEVEL573,LEVEL574,LEVEL575,LEVEL576,LEVEL577,LEVEL578,LEVEL579,LEVEL580,LEVEL581,LEVEL582,LEVEL583,LEVEL584,LEVEL585,LEVEL586,LEVEL587,LEVEL588,LEVEL589,LEVEL590,LEVEL591,LEVEL592,LEVEL593,LEVEL594,LEVEL595,LEVEL596,LEVEL597,LEVEL598,LEVEL599,LEVEL600,LEVEL601,LEVEL602,LEVEL603,LEVEL604,LEVEL605,LEVEL606,LEVEL607,LEVEL608,LEVEL609,LEVEL610,LEVEL611,LEVEL612,LEVEL613,LEVEL614,LEVEL615,LEVEL616,LEVEL617,LEVEL618,LEVEL619,LEVEL620,LEVEL621,LEVEL622,LEVEL623,LEVEL624,LEVEL625,LEVEL626,LEVEL627,LEVEL628,LEVEL629,LEVEL630,LEVEL631,LEVEL632,LEVEL633,LEVEL634,LEVEL635,LEVEL636,LEVEL637,LEVEL638,LEVEL639,LEVEL640,LEVEL641,LEVEL642,LEVEL643,LEVEL644,LEVEL645,LEVEL646,LEVEL647,LEVEL648,LEVEL649,LEVEL650,LEVEL651,LEVEL652,LEVEL653,LEVEL654,LEVEL655,LEVEL656,LEVEL657,LEVEL658,LEVEL659,LEVEL660,LEVEL661,LEVEL662,LEVEL663,LEVEL664,LEVEL665,LEVEL666,LEVEL667,LEVEL668,LEVEL669,LEVEL670,LEVEL671,LEVEL672,LEVEL673,LEVEL674,LEVEL675,LEVEL676,LEVEL677,LEVEL678,LEVEL679,LEVEL680,LEVEL681,LEVEL682,LEVEL683,LEVEL684,LEVEL685,LEVEL686,LEVEL687,LEVEL688,LEVEL689,LEVEL690,LEVEL691,LEVEL692,LEVEL693,LEVEL694,LEVEL695,LEVEL696,LEVEL697,LEVEL698,LEVEL699,LEVEL700,LEVEL701,LEVEL702,LEVEL703,LEVEL704,LEVEL705,LEVEL706,LEVEL707,LEVEL708,LEVEL709,LEVEL710,LEVEL711,LEVEL712,LEVEL713,LEVEL714,LEVEL715,LEVEL716,LEVEL717,LEVEL718,LEVEL719,LEVEL720,LEVEL721,LEVEL722,LEVEL723,LEVEL724,LEVEL725,LEVEL726,LEVEL727,LEVEL728,LEVEL729,LEVEL730,LEVEL731,LEVEL732,LEVEL733,LEVEL734,LEVEL735,LEVEL736,LEVEL737,LEVEL738,LEVEL739,LEVEL740,LEVEL741,LEVEL742,LEVEL743,LEVEL744,LEVEL745,LEVEL746,LEVEL747,LEVEL748,LEVEL749,LEVEL750,LEVEL751,LEVEL752,LEVEL753,LEVEL754,LEVEL755,LEVEL756,LEVEL757,LEVEL758,LEVEL759,LEVEL760,LEVEL761,LEVEL762,LEVEL763,LEVEL764,LEVEL765,LEVEL766,LEVEL767,LEVEL768,LEVEL769,LEVEL770,LEVEL771,LEVEL772,LEVEL773,LEVEL774,LEVEL775,LEVEL776,LEVEL777,LEVEL778,LEVEL779,LEVEL780,LEVEL781,LEVEL782,LEVEL783,LEVEL784,LEVEL785,LEVEL786,LEVEL787,LEVEL788,LEVEL789,LEVEL790,LEVEL791,LEVEL792,LEVEL793,LEVEL794,LEVEL795,LEVEL796,LEVEL797,LEVEL798,LEVEL799,LEVEL800,LEVEL801,LEVEL802,LEVEL803,LEVEL804,LEVEL805,LEVEL806,LEVEL807,LEVEL808,LEVEL809,LEVEL810,LEVEL811,LEVEL812,LEVEL813,LEVEL814,LEVEL81

<b>requestGetMapViewPerspective</b>		
getMapViewPerspective = This method returns the current map perspective		
<b>Parameter</b>	<b>Type</b>	<b>Description</b>

requestGetMapViewPerspective		
getMapViewPerspective_R_mapViewInstanceHandle	MapViewInstanceHandle	mapViewInstanceHandle = Map instance handle. Range[0x0:0x7ffffff]. 0x0 is reserved as an invalid handle value

responseGetMapViewPerspective		
getMapViewPerspective = This method returns the current map perspective		
Parameter	Type	Description
getMapViewPerspective_perspective	MapPerspective	perspective = enum(INVALID,2D,3D, ... )

## 6.1.28 getMapViewRotation

requestGetMapViewRotation		
getMapViewRotation = This method is particularly interesting for debugging purposes		
Parameter	Type	Description
getMapViewRotation_R_mapViewInstanceHandle	MapViewInstanceHandle	mapViewInstanceHandle = Map instance handle. Range[0x0:0x7ffffff]. 0x0 is reserved as an invalid handle value

responseGetMapViewRotation		
getMapViewRotation = This method is particularly interesting for debugging purposes		
Parameter	Type	Description
getMapViewRotation_rotationAngle	Angle	rotationAngle = rotation angle in degrees measured from the North axis clockwise. Range[0:360]
getMapViewRotation_rotationAnglePerFrame	AnglePerFrame	rotationAnglePerFrame = partial rotation for each map frame in degrees

## 6.1.29 getMapViewSaveArea

requestGetMapViewSaveArea		
SetMapViewSaveArea = This methods defines the area that the HMI guarantees not to cover with other getMapViewSaveArea or user interface elements		

requestGetMapViewSaveArea		
Parameter	Type	Description
getMapViewSaveArea_R_mapViewInstanceHandle	MapViewInstanceHandle	mapViewInstanceHandle = Map instance handle. Range[0x0:0x7ffffff]. 0x0 is reserved as an invalid handle value

responseGetMapViewSaveArea		
SetMapViewSaveArea = This methods defines the area that the HMI guarantees not to cover with other getMapViewSaveArea or user interface elements		
Parameter	Type	Description
getMapViewSaveArea_saveAreaScreenRectangle	ScreenRectangle	

## 6.1.30 getMapViewScale

requestGetMapViewScale		
getMapViewScale = This method returns the currently used map scale		
Parameter	Type	Description
getMapViewScale_R_mapViewInstanceHandle	MapViewInstanceHandle	mapViewInstanceHandle = Map instance handle. Range[0x0:0x7ffffff]. 0x0 is reserved as an invalid handle value

responseGetMapViewScale		
getMapViewScale = This method returns the currently used map scale		
Parameter	Type	Description
getMapViewScale_scaleID	Int8	scaleID = scale identifier. Range[0:256]
getMapViewScale_isMinMax	MapScaleType	isMinMax = enum(INVALID,MIN,MAX,MID, ... )

## 6.1.31 getMapViewScaleMode

requestGetMapViewScaleMode		
getMapViewScaleMode = This method gets the scaling mode.		
Parameter	Type	Description

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

responseGetMapViewScaleMode		
getMapViewScaleMode = This method gets the scaling mode.		
Parameter	Type	Description
getMapViewScaleMode_scaleMode	MapScaleMode	scaleMode = enum(AUTOMATIC,MANUAL,HYBRID)

## 6.1.32 getMapViewTheme

requestGetMapViewTheme		
getMapViewTheme = This method returns the current theme of a given map view instance		
Parameter	Type	Description
getMapViewTheme_R_mapViewInstanceHandle	MapViewInstanceHandle	mapViewInstanceHandle = Map instance handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value

responseGetMapViewTheme		
getMapViewTheme = This method returns the current theme of a given map view instance		
Parameter	Type	Description
getMapViewTheme_mapViewTheme	MapTheme	mapViewTheme = enum(INVALID,THEME_1,THEME_2,THEME_3,... )

## 6.1.33 getMapViewType

requestGetMapViewType		
getMapViewType = This method returns the map type of a map instance as it was set using CreateMapViewInstance		
Parameter	Type	Description

requestGetMapViewType		
getMapViewType_R_mapViewHandle	Handle	mapViewInstanceHandle = Map instance handle. Range[0x0:0x7ffffff]. 0x0 is reserved as an invalid handle value

responseGetMapViewType		
getMapViewType = This method returns the map type of a map instance as it was set using CreateMapViewInstance		
Parameter	Type	Description
getMapViewType_mapViewType	MapViewType	mapViewType = enum(INVALID,MAIN_MAP,SPLIT_SCREEN,... )

## 6.1.34 getMapViewVisibilityMode

requestGetMapViewVisibilityMode		
getMapViewVisibilityMode = This method returns the current visibility mode		
Parameter	Type	Description
getMapViewVisibilityMode_R_mapViewInstanceHandle	Handle	mapViewInstanceHandle = Map instance handle. Range[0x0:0x7ffffff]. 0x0 is reserved as an invalid handle value

responseGetMapViewVisibilityMode		
getMapViewVisibilityMode = This method returns the current visibility mode		
Parameter	Type	Description
getMapViewVisibilityMode_visibilityMode	VisibilityMode	visibilityMode = enum(INVALID,VISIBLE,INVISIBLE,FROZEN,... )

## 6.1.35 getPoiCategoriesVisible

requestGetPoiCategoriesVisible		
getPoiCategoriesVisible = Get the set of POI categories displayed on the map.		
Parameter	Type	Description

requestGetPoiCategoriesVisible		
getPoiCategoriesVisible_R_mapViewInstanceHandle	MapViewInstanceHandle	mapViewInstanceHandle = Map instance handle. Range[0x0:0x7ffffff]. 0x0 is reserved as an invalid handle value

responseGetPoiCategoriesVisible		
getPoiCategoriesVisible = Get the set of POI categories displayed on the map.		
Parameter	Type	Description
getPoiCategoriesVisible_poiCategories	THBytes_UInt32_	

## 6.1.36 getScaleList

requestGetScaleList		
getScaleList = This method returns a list of supported map scales		
Parameter	Type	Description
getScaleList_R_mapViewInstanceHandle	MapViewInstanceHandle	mapViewInstanceHandle = Map instance handle. Range[0x0:0x7ffffff]. 0x0 is reserved as an invalid handle value

responseGetScaleList		
getScaleList = This method returns a list of supported map scales		
Parameter	Type	Description
getScaleList_scaleList	THBVector_MapScale_	

## 6.1.37 getSupportedMapViewObjectVisibilities

requestGetSupportedMapViewObjectVisibilities		
getSupportedMapViewObjectVisibilities = This method gets the supported object visibilities.		
Parameter	Type	Description
getSupportedMapViewObjectVisibilities_R_mapViewInstanceHandle	MapViewInstanceHandle	mapViewInstanceHandle = Map instance handle. Range[0x0:0x7ffffff]. 0x0 is reserved as an invalid handle value



responseGetSupportedMapViewObjectVisibilities		
getSupportedMapViewObjectVisibilities = This method gets the supported object visibilities.		
Parameter	Type	Description
getSupportedMapViewObjectVisibilities	SupportedMapObjectVisibilityList	

## 6.1.38 getSupportedMapViewPerformanceLevels

requestGetSupportedMapViewPerformanceLevels		
getSupportedMapViewPerformanceLevels = This method retrieves the supported performance levels		
Parameter	Type	Description

responseGetSupportedMapViewPerformanceLevels		
getSupportedMapViewPerformanceLevels = This method retrieves the supported performance levels		
Parameter	Type	Description
getSupportedMapViewPerformanceLevels	SupportedMapPerformanceLevelList	

## 6.1.39 getSupportedMapViewPerspectives

requestGetSupportedMapViewPerspectives		
getSupportedMapViewPerspectives = This method retrieves the supported mapview perspectives		
Parameter	Type	Description

responseGetSupportedMapViewPerspectives		
getSupportedMapViewPerspectives = This method retrieves the supported mapview perspectives		
Parameter	Type	Description
getSupportedMapViewPerspectives	SupportedMapPerspectiveList	

## 6.1.40 getSupportedMapViewScaleModes

requestGetSupportedMapViewScaleModes		
getSupportedMapViewScaleModes = This method gets the supported scaling modes.		

requestGetSupportedMapViewScaleModes		
Parameter	Type	Description
getSupportedMapViewScaleModes	Handle	MapViewInstanceHandle = Map instance handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value

responseGetSupportedMapViewScaleModes		
getSupportedMapViewScaleModes = This method gets the supported scaling modes.		
Parameter	Type	Description
getSupportedMapViewScaleModes	THBScaleModeScaleMode_	

## 6.1.41 getSupportedMapViewThemes

requestGetSupportedMapViewThemes		
getSupportedMapViewThemes = This method retrieves the supported mapview themes		
Parameter	Type	Description

responseGetSupportedMapViewThemes		
getSupportedMapViewThemes = This method retrieves the supported mapview themes		
Parameter	Type	Description
getSupportedMapViewThemes	THBViewThemeTheme_	

## 6.1.42 getSupportedMapViewTypes

requestGetSupportedMapViewTypes		
getSupportedMapViewTypes = This method retrieves the supported map view types		
Parameter	Type	Description

responseGetSupportedMapViewTypes		
getSupportedMapViewTypes = This method retrieves the supported map view types		
Parameter	Type	Description
getSupportedMapViewTypes	THBViewTypeMapViewType_	

## 6.1.43 getSupportedMapViewVisibilityModes

requestGetSupportedMapViewVisibilityModes		
getSupportedMapViewVisibilityModes = This method retrieves the supported mapview visibility modes		
Parameter	Type	Description

responseGetSupportedMapViewVisibilityModes		
getSupportedMapViewVisibilityModes = This method retrieves the supported mapview visibility modes		
Parameter	Type	Description
getSupportedMapViewVisibilityModes_visibilityModeList	VisibilityModeList	

## 6.1.44 getTargetPoint

requestGetTargetPoint		
getTargetPoint = This method retrieves the target point position		
Parameter	Type	Description
getTargetPoint_R_mapViewInstanceHandle	Handle	mapViewInstanceHandle = Map instance handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value

responseGetTargetPoint		
getTargetPoint = This method retrieves the target point position		
Parameter	Type	Description
getTargetPoint_targetPoint	Coordinate3D	

## 6.1.45 getVersion

requestGetVersion		
GetVersion = This method returns the API version implemented by the server application		
Parameter	Type	Description

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

responseGetVersion		
Parameter	Type	Description
getVersion_version	Version	

## 6.1.46 hideCustomElements

requestHideCustomElements		
hideCustomElements = This method hides a set of custom elements which were visualized by DisplayCustomElements		
Parameter	Type	Description
hideCustomElements_R_sessionHandle	Handle	sessionHandle = Session handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value
hideCustomElements_R_mapViewInstanceHandle	Handle	mapViewInstanceHandle = Map instance handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value
hideCustomElements_R_customElementHandle	Handle	

responseHideCustomElements		
hideCustomElements = This method hides a set of custom elements which were visualized by DisplayCustomElements		
Parameter	Type	Description

## 6.1.47 hideObjectList

requestHideObjectList		
hideObjectList = This method hides a list of objects, created in another domain		
Parameter	Type	Description
hideObjectList_R_sessionHandle	Handle	sessionHandle = Session handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value
hideObjectList_R_mapViewInstanceHandle	Handle	mapViewInstanceHandle = Map instance handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value
hideObjectList_R_objectList	ObjectList	contains enum to other domain + session-id of other domain

responseHideObjectList		
hideObjectList = This method hides a list of objects, created in another domain		
Parameter	Type	Description

## 6.1.48 hideRoute

requestHideRoute		
hideRoute = This method hides one of the visible routes		
Parameter	Type	Description
hideRoute_R_sessionHandle	Handle	sessionHandle = Session handle. Range[0x0:0x7ffffff]. 0x0 is reserved as an invalid handle value
hideRoute_R_mapViewInstanceHandle	Handle	mapViewInstanceHandle = Map instance handle. Range[0x0:0x7ffffff]. 0x0 is reserved as an invalid handle value
hideRoute_R_routeHandle	Handle	routeHandle = Route handle. Range[0x0:0x7ffffff]. 0x0 is reserved as an invalid handle value

responseHideRoute		
hideRoute = This method hides one of the visible routes		
Parameter	Type	Description

## 6.1.49 highlightObjectListItem

requestHighlightObjectListItem		
highlightObjectListItem = highlights exclusively a various number of items within an objectList. For unhighlight all, objectListItems is empty		
Parameter	Type	Description
highlightObjectListItem_R_sessionHandle	Handle	sessionHandle = Session handle. Range[0x0:0x7ffffff]. 0x0 is reserved as an invalid handle value
highlightObjectListItem_R_mapViewInstanceHandle	Handle	mapViewInstanceHandle = Map instance handle. Range[0x0:0x7ffffff]. 0x0 is reserved as an invalid handle value
highlightObjectListItem_R_objectListItems_ObjectListItem_	THIRDOMS_ObjectListItem_	contains enum to other domain, contains session-id of other domain

<b>responseHighlightObjectListItem</b>		
highlightObjectListItem = highlights exclusively a various number of items within an objectList. For unhighlight all, objectListItems is empty		
Parameter	Type	Description

## 6.1.50 mapSetStyle

<b>requestMapSetStyle</b>		
mapSetStyle = Changes the StyleSet of the MapViewer. e.g. day/night switch		
Parameter	Type	Description
mapSetStyle_R_sessionHandle	Handle	sessionHandle = Session handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value
mapSetStyle_R_mapViewInstanceHandle	Handle	mapViewInstanceHandle = Map instance handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value
mapSetStyle_R_styleSet	MapViewStyleSet	styleSet = StyleSet enum. {DAY, NIGHT}

<b>responseMapSetStyle</b>		
mapSetStyle = Changes the StyleSet of the MapViewer. e.g. day/night switch		
Parameter	Type	Description

## 6.1.51 mapShowRouteOverview

<b>requestMapShowRouteOverview</b>		
mapShowRouteOverview = This method shows an overview map with the current route in the center		
Parameter	Type	Description
mapShowRouteOverview_R_sessionHandle	Handle	sessionHandle = Session handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value
mapShowRouteOverview_R_mapViewInstanceHandle	Handle	mapViewInstanceHandle = Map instance handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value

requestMapShowRouteOverview		
mapShowRouteOverview_R_routeId	uint32	Route-Id
mapShowRouteOverview_R_orientation	NavigationOrientation	orientation = orientation of mapView during route-overview

responseMapShowRouteOverview		
mapShowRouteOverview = This method shows an overview map with the current route in the center		
Parameter	Type	Description

## 6.1.52 mapViewGesture

requestMapViewGesture		
mapViewGesture = This method is a compound gesture command		
Parameter	Type	Description
mapViewGesture_R_sessionHandle	Handle	sessionHandle = Session handle. Range[0x0:0x7ffffff]. 0x0 is reserved as an invalid handle value
mapViewGesture_R_mapViewInstanceHandle	Handle	mapViewInstanceHandle = Map instance handle. Range[0x0:0x7ffffff]. 0x0 is reserved as an invalid handle value
mapViewGesture_R_systemMilliseconds	uint32	any internal time of system-HMI-clock in ms. This timestamp should be used for smoothing the movement within controller
mapViewGesture_R_isFingerDown	Boolean	while gesture is running, set to true if gesture ends (last finger lifted from touchscreen) set to false. in case of false, anchorScreen, scrollOffset, zoomFactor, rotationAngle and pitchAngle are ignored
mapViewGesture_R_anchorScreen	ScreenCoordinate	anchorScreen = center "pixels" of gesture to have a rotation axis and scrolling-center
mapViewGesture_R_scrollOffset	ScreenCoordinate	scrollOffset = scrolling in pixels to a direction. 0/0 = default (no scroll)
mapViewGesture_R_zoomFactor	double	zoomFactor = changing scale. 1.0 = no change
mapViewGesture_R_rotationAngle	double	rotationAngle = rotate in degree 0.0 = no change 90.0 = 90 degree

requestMapViewGesture		
mapViewGesture_R_pitchAngle	double	pitchAngle = pitch the view. 0.0 = no change, positive values goto birdview, negative-values goto 2D

responseMapViewGesture		
mapViewGesture = This method is a compound gesture command		
Parameter	Type	Description

## 6.1.53 popSettings

requestPopSettings		
popSettings = re-stores the current map-ctrl setting (scale, orientation, visible objects ...) from the stack (called after pushSetting)		
Parameter	Type	Description
popSettings_R_sessionHandle	Handle	sessionHandle = Session handle. Range[0x0:0x7ffffff]. 0x0 is reserved as an invalid handle value
popSettings_R_mapViewInstanceHandle	Handle	mapViewInstanceHandle = Map instance handle. Range[0x0:0x7ffffff]. 0x0 is reserved as an invalid handle value

responsePopSettings		
popSettings = re-stores the current map-ctrl setting (scale, orientation, visible objects ...) from the stack (called after pushSetting)		
Parameter	Type	Description

## 6.1.54 pushSettings

requestPushSettings		
pushSettings = stores the current map-ctrl setting (scale, orientation, visible objects ...) to an internal stack		
Parameter	Type	Description
pushSettings_R_sessionHandle	Handle	sessionHandle = Session handle. Range[0x0:0x7ffffff]. 0x0 is reserved as an invalid handle value



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

responsePushSettings		
pushSettings = stores the current map-ctrl setting (scale, orientation, visible objects ...) to an internal stack		
Parameter	Type	Description

## 6.1.55 releaseMapViewInstance

requestReleaseMapViewInstance		
releaseMapViewInstance = This method releases (i.e. destroys) a given map instance. Only invisible map instances can be released		
Parameter	Type	Description
releaseMapViewInstance_R_sessionHandle	SessionHandle	sessionHandle = Session handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value
releaseMapViewInstance_R_mapViewInstanceHandle	MapViewInstanceHandle	mapViewInstanceHandle = Map instance handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value

responseReleaseMapViewInstance		
releaseMapViewInstance = This method releases (i.e. destroys) a given map instance. Only invisible map instances can be released		
Parameter	Type	Description

## 6.1.56 removeMapViewScaleChangedListener

requestRemoveMapViewScaleChangedListener		
removeMapViewScaleChangedListener = This method removes a listener which is notified when map view scale changes.		
Parameter	Type	Description

<b>responseRemoveMapViewScaleChangedListener</b>		
removeMapViewScaleChangedListener = This method removes a listener which is notified when map view scale changes.		
Parameter	Type	Description

## 6.1.57 resetSettings

<b>requestResetSettings</b>		
resetSettings = resets the mapInstance to a dedicated state (same as startup)		
Parameter	Type	Description
resetSettings_R_sessionHandle	Handle	sessionHandle = Session handle. Range[0x0:0x7ffffff]. 0x0 is reserved as an invalid handle value
resetSettings_R_mapViewInstanceHandle	Handle	mapViewInstanceHandle = Map instance handle. Range[0x0:0x7ffffff]. 0x0 is reserved as an invalid handle value

<b>responseResetSettings</b>		
resetSettings = resets the mapInstance to a dedicated state (same as startup)		
Parameter	Type	Description

## 6.1.58 selectElementsOnMap

<b>requestSelectElementsOnMap</b>		
selectElementsOnMap = This method selects elements on the map view which are at the position specified by user input		
Parameter	Type	Description
selectElementsOnMap_R_mapViewInstanceHandle	MapViewInstanceHandle	mapViewInstanceHandle = Map instance handle. Range[0x0:0x7ffffff]. 0x0 is reserved as an invalid handle value
selectElementsOnMap_R_pixelCoordinate	Coordinate	
selectElementsOnMap_R_selectableMapType	SelectableMapType	
selectElementsOnMap_R_maxNumberOfSelectedElements	Number	maxNumberOfSelectedElements = maximum number of selected elements to return. If 0, all possible elements which can be selected will be returned

responseSelectElementsOnMap		
selectElementsOnMap = This method selects elements on the map view which are at the position specified by user input		
Parameter	Type	Description
selectElementsOnMap_selectedElements	TELEvents_SelectedMapElement	

## 6.1.59 setAutozoomEnabled

requestSetAutozoomEnabled		
Parameter	Type	Description
setAutozoomEnabled_R_sessionHandle	Handle	sessionHandle = Session handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value
setAutozoomEnabled_R_mapViewInstanceHandle	Handle	mapViewInstanceHandle = Map instance handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value
setAutozoomEnabled_R_enabled	boolean	enabled

responseSetAutozoomEnabled		
Parameter	Type	Description

## 6.1.60 setAutozoomSetting

requestSetAutozoomSetting		
Parameter	Type	Description
setAutozoomSetting_R_sessionHandle	Handle	sessionHandle = Session handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value
setAutozoomSetting_R_mapViewInstanceHandle	Handle	mapViewInstanceHandle = Map instance handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value
setAutozoomSetting_R_autozoomSetting	AutoZoomSetting	autozoomSetting (NEAR / NORMAL / FAR)

responseSetAutozoomSetting		
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responseSetAutozoomSetting		
Parameter	Type	Description

## 6.1.61 setCameraDistanceFromTargetPoint

requestSetCameraDistanceFromTargetPoint		
setCameraDistanceFromTargetPoint = This method sets the mode and the camera distance from the target point		
Parameter	Type	Description
setCameraDistanceFromTargetPoint_R_sessionHandle	Point32	sessionHandle = Session handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value
setCameraDistanceFromTargetPoint_R_mapViewInstanceHandle	Point32	mapViewInstanceHandle = Map instance handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value
setCameraDistanceFromTargetPoint_R_distance	Float	distance = distance from the view point in meters

responseSetCameraDistanceFromTargetPoint		
setCameraDistanceFromTargetPoint = This method sets the mode and the camera distance from the target point		
Parameter	Type	Description

## 6.1.62 setCameraHeadingAngle

requestSetCameraHeadingAngle		
setCameraHeadingAngle = This method sets the map view heading angle		
Parameter	Type	Description
setCameraHeadingAngle_R_sessionHandle	Point32	sessionHandle = Session handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value
setCameraHeadingAngle_R_mapViewInstanceHandle	Point32	mapViewInstanceHandle = Map instance handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value
setCameraHeadingAngle_R_heading	Float	heading = heading angle in degrees. Range [0:360]

responseSetCameraHeadingAngle		
setCameraHeadingAngle = This method sets the map view heading angle		
Parameter	Type	Description

## 6.1.63 setCameraHeadingToTarget

requestSetCameraHeadingToTarget		
setCameraHeadingToTarget = This method sets the camera heading in such a way, that the camera always looks at a given target		
Parameter	Type	Description
setCameraHeadingToTarget_SessionHandle	SessionHandle	sessionHandle = Session handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value
setCameraHeadingToTarget_MapViewInstanceHandle	MapViewInstanceHandle	mapViewInstanceHandle = Map instance handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value
setCameraHeadingToTarget_Companion2DTarget	Companion2DTarget	

responseSetCameraHeadingToTarget		
setCameraHeadingToTarget = This method sets the camera heading in such a way, that the camera always looks at a given target		
Parameter	Type	Description

## 6.1.64 setCameraHeadingTrackUp

requestSetCameraHeadingTrackUp		
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		
Parameter	Type	Description
setCameraHeadingTrackUp_SessionHandle	SessionHandle	sessionHandle = Session handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value
setCameraHeadingTrackUp_MapViewInstanceHandle	MapViewInstanceHandle	mapViewInstanceHandle = Map instance handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value

responseSetCameraHeadingTrackUp		
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		
Parameter	Type	Description

## 6.1.65 setCameraHeight

requestSetCameraHeight		
setCameraHeight = This method sets the camera height		
Parameter	Type	Description
setCameraHeight_R_sessionHandle	Handle	sessionHandle = Session handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value
setCameraHeight_R_mapViewInstanceHandle	MapViewInstanceHandle	mapViewInstanceHandle = Map instance handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value
setCameraHeight_R_height	UInt32	height = height from the ground in meters

responseSetCameraHeight		
setCameraHeight = This method sets the camera height		
Parameter	Type	Description

## 6.1.66 setCameraPosition

requestSetCameraPosition		
setCameraPosition = This method sets the coordinates of the point at which the camera must be positioned		
Parameter	Type	Description
setCameraPosition_R_sessionHandle	Handle	sessionHandle = Session handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value
setCameraPosition_R_mapViewInstanceHandle	MapViewInstanceHandle	mapViewInstanceHandle = Map instance handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value
setCameraPosition_R_position	Coordinate3D	

responseSetCameraPosition		
setCameraPosition = This method sets the coordinates of the point at which the camera must be positioned		
Parameter	Type	Description

## 6.1.67 setCameraRollAngle

requestSetCameraRollAngle		
setCameraRollAngle = This method sets the camera roll angle		
Parameter	Type	Description
setCameraRollAngle_R_sessionHandle	Handle	sessionHandle = Session handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value
setCameraRollAngle_R_mapViewInstanceHandle	MapViewInstanceHandle	mapViewInstanceHandle = Map instance handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value
setCameraRollAngle_R_roll	Int32	roll = roll angle in degrees. Range [-180:180]

responseSetCameraRollAngle		
setCameraRollAngle = This method sets the camera roll angle		
Parameter	Type	Description

## 6.1.68 setCameraTiltAngle

requestSetCameraTiltAngle		
setCameraTiltAngle = This method sets the camera tilt angle		
Parameter	Type	Description
setCameraTiltAngle_R_sessionHandle	Handle	sessionHandle = Session handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value
setCameraTiltAngle_R_mapViewInstanceHandle	MapViewInstanceHandle	mapViewInstanceHandle = Map instance handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value
setCameraTiltAngle_R_tilt	Int32	tilt = tilt angle in degrees. Range [-180:180]

responseSetCameraTiltAngle		
setCameraTiltAngle = This method sets the camera tilt angle		
Parameter	Type	Description

## 6.1.69 setFollowCarMode

requestSetFollowCarMode		
setFollowCarMode = This method sets the FollowCar mode		
Parameter	Type	Description
setFollowCarMode_R_sessionHandle	Handle	sessionHandle = Session handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value
setFollowCarMode_R_mapViewInstanceHandle	Handle	mapViewInstanceHandle = Map instance handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value
setFollowCarMode_R_followCarMode	boolean	followCarMode = flag. If true, the current car position is interpreted as position of the point the camera must look at

responseSetFollowCarMode		
setFollowCarMode = This method sets the FollowCar mode		
Parameter	Type	Description

## 6.1.70 setKmlVisibility

requestSetKmlVisibility		
setKmlVisibility = shows/hides a kmlFile (without deleting it actually)		
Parameter	Type	Description
setKmlVisibility_R_sessionHandle	Handle	sessionHandle = Session handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value
setKmlVisibility_R_mapViewInstanceHandle	Handle	mapViewInstanceHandle = Map instance handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value
setKmlVisibility_R_kmlHandle	Handle	kmlHandle = NAV2010-kmlHandle



requestSetKmlVisibility		
setKmlVisibility_R_show	boolean	show if TRUE then kmlContent is shown on MapViewer

responseSetKmlVisibility		
setKmlVisibility = shows/hides a kmlFile (without deleting it actually)		
Parameter	Type	Description

## 6.1.71 setMapMode

requestSetMapMode		
setMapMode = This method sets the map mode (String-datatype, could be hard-coded in HMI if controller is known)		
Parameter	Type	Description
setMapMode_R_sessionHandle	Handle	sessionHandle = Session handle. Range[0x0:0x7ffffff]. 0x0 is reserved as an invalid handle value
setMapMode_R_mapViewInstanceHandle	Handle	mapViewInstanceHandle = Map instance handle. Range[0x0:0x7ffffff]. 0x0 is reserved as an invalid handle value
setMapMode_R_mapMode	String	mapMode

responseSetMapMode		
setMapMode = This method sets the map mode (String-datatype, could be hard-coded in HMI if controller is known)		
Parameter	Type	Description

## 6.1.72 setMapViewBoundingBox

requestSetMapViewBoundingBox		
setMapViewBoundingBox = This method sets the map bounding box		
Parameter	Type	Description
setMapViewBoundingBox_R_sessionHandle	Handle	sessionHandle = Session handle. Range[0x0:0x7ffffff]. 0x0 is reserved as an invalid handle value

requestSetMapViewBoundingBox		
setMapViewBoundingBox_R_mapView	mapViewInstanceHandle	mapViewInstanceHandle = Map instance handle. Range[0x0:0x7ffffff]. 0x0 is reserved as an invalid handle value
setMapViewBoundingBox_R_boundingBox	BoundingBox	

responseSetMapViewBoundingBox		
setMapViewBoundingBox = This method sets the map bounding box		
Parameter	Type	Description

## 6.1.73 setMapViewObjectVisibility

requestSetMapViewObjectVisibility		
setMapViewObjectVisibility = This method specifies the type of objects to show on the map.		
Parameter	Type	Description
setMapViewObjectVisibility_R_session	sessionHandle	sessionHandle = Session handle. Range[0x0:0x7ffffff]. 0x0 is reserved as an invalid handle value
setMapViewObjectVisibility_R_mapView	mapViewInstanceHandle	mapViewInstanceHandle = Map instance handle. Range[0x0:0x7ffffff]. 0x0 is reserved as an invalid handle value
setMapViewObjectVisibility_R_mapObjectVisibility	MapObjectVisibility	

responseSetMapViewObjectVisibility		
setMapViewObjectVisibility = This method specifies the type of objects to show on the map.		
Parameter	Type	Description

## 6.1.74 setMapViewPan

requestSetMapViewPan		
setMapViewPan = This method pans a given map instance		
Parameter	Type	Description
setMapViewPan_R_sessionHandle	sessionHandle	sessionHandle = Session handle. Range[0x0:0x7ffffff]. 0x0 is reserved as an invalid handle value

requestSetMapViewPan		
setMapViewPan_R_mapViewInstanceHandle	Handle	mapViewInstanceHandle = Map instance handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value
setMapViewPan_R_systemMillisecondsTime	Milliseconds	any internal time of system-HMI-clock in ms. This timestamp should be used for smoothing the movement within controller
setMapViewPan_R_panningAction	PanAction	panningAction = enum(PAN_START,PAN_TO,PAN_END). Whenever a finger is start to touch the screen: PAN_START, whenever a finger leaves the screen: PAN_END
setMapViewPan_R_pixelCoordinates	THDVector_ScreenCoordinate	array of currently touching finger. If this array is empty, all fingers have been removed from screen. A flic can start

responseSetMapViewPan		
setMapViewPan = This method pans a given map instance		
Parameter	Type	Description

## 6.1.75 setMapViewPerformanceLevel

requestSetMapViewPerformanceLevel		
setMapViewPerformanceLevel = This method sets the performance level of a given map instance		
Parameter	Type	Description
setMapViewPerformanceLevel_R_sessionHandle	SessionHandle	sessionHandle = Session handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value
setMapViewPerformanceLevel_R_mapViewInstanceHandle	Handle	mapViewInstanceHandle = Map instance handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value
setMapViewPerformanceLevel_R_performanceLevel	Level	performanceLevel = enum(INVALID,LEVEL1,LEVEL2,LEVEL3,LEVEL4,LEVEL5,... )

responseSetMapViewPerformanceLevel		
setMapViewPerformanceLevel = This method sets the performance level of a given map instance		

responseSetMapViewPerformanceLevel		
Parameter	Type	Description

## 6.1.76 setMapViewPerspective

requestSetMapViewPerspective		
setMapViewPerspective = This method sets the map perspective		
Parameter	Type	Description
setMapViewPerspective_R_sessionHandle	Handle	sessionHandle = Session handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value
setMapViewPerspective_R_mapViewInstanceHandle	MapViewInstanceHandle	mapViewInstanceHandle = Map instance handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value
setMapViewPerspective_R_perspective	MapPerspective	perspective = enum(INVALID,2D,3D, ... )

responseSetMapViewPerspective		
setMapViewPerspective = This method sets the map perspective		
Parameter	Type	Description

## 6.1.77 setMapViewRotation

requestSetMapViewRotation		
setMapViewRotation = This method rotates the map		
Parameter	Type	Description
setMapViewRotation_R_sessionHandle	Handle	sessionHandle = Session handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value
setMapViewRotation_R_mapViewInstanceHandle	MapViewInstanceHandle	mapViewInstanceHandle = Map instance handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value
setMapViewRotation_R_rotationAngle	Angle	rotationAngle = rotation angle in degrees measured from the North axis clockwise. Range[0:360]
setMapViewRotation_R_rotationAnglePerSecond	AnglePerSecond	rotationAnglePerSecond = partial rotation for each second

<b>responseSetMapViewRotation</b>		
setMapViewRotation = This method rotates the map		
Parameter	Type	Description

## 6.1.78 setMapViewSaveArea

<b>requestSetMapViewSaveArea</b>		
setMapViewSaveArea = This methods defines the area that the HMI guarantees not to cover with other windows or user interface elements		
Parameter	Type	Description
setMapViewSaveArea_R_sessionHandle	Handle	sessionHandle = Session handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value
setMapViewSaveArea_R_mapViewInstanceHandle	Handle	mapViewInstanceHandle = Map instance handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value
setMapViewSaveArea_R_saveArea	ScreenRectangle	

<b>responseSetMapViewSaveArea</b>		
setMapViewSaveArea = This methods defines the area that the HMI guarantees not to cover with other windows or user interface elements		
Parameter	Type	Description

## 6.1.79 setMapViewScale

<b>requestSetMapViewScale</b>		
setMapViewScale = This method sets the map scale by specifying a ScaleID		
Parameter	Type	Description
setMapViewScale_R_sessionHandle	Handle	sessionHandle = Session handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value
setMapViewScale_R_mapViewInstanceHandle	Handle	mapViewInstanceHandle = Map instance handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value
setMapViewScale_R_scaleID	UInt16	scaleID = scale identifier. Range[0:256]

**responseSetMapViewScale**

setMapViewScale = This method sets the map scale by specifying a ScaleID

Parameter	Type	Description
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## 6.1.80 setMapViewScaleByDelta

**requestSetMapViewScaleByDelta**

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

Parameter	Type	Description
setMapViewScaleByDelta_R_sessionHandle	SessionHandle	sessionHandle = Session handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value
setMapViewScaleByDelta_R_mapViewInstanceHandle	MapViewInstanceHandle	mapViewInstanceHandle = Map instance handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value
setMapViewScaleByDelta_R_scaleDelta	ScaleDelta	scaleDelta = This parameter can have either positive or negative values. '0' means no change. Positive values indicate larger scales

**responseSetMapViewScaleByDelta**

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

Parameter	Type	Description
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## 6.1.81 setMapViewScaleByMetersPerPixel

**requestSetMapViewScaleByMetersPerPixel**

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

Parameter	Type	Description
setMapViewScaleByMetersPerPixel_R_sessionHandle	SessionHandle	sessionHandle = Session handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value
setMapViewScaleByMetersPerPixel_R_mapViewInstanceHandle	MapViewInstanceHandle	mapViewInstanceHandle = Map instance handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value

requestSetMapViewScaleByMetersPerPixel		
setMapViewScaleByMetersPerPixel_R_metersPerPixel	Double	metersPerPixel = meters per pixel

responseSetMapViewScaleByMetersPerPixel		
setMapViewScaleByMetersPerPixel = This method sets the map scale by specifying the number of meters that a pixel represents		
Parameter	Type	Description

## 6.1.82 setMapViewScaleMode

requestSetMapViewScaleMode		
setMapViewScaleMode = This method sets the scaling mode.		
Parameter	Type	Description
setMapViewScaleMode_R_sessionHandle	Handle	sessionHandle = Session handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value
setMapViewScaleMode_R_mapViewInstanceHandle	Handle	mapViewInstanceHandle = Map instance handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value
setMapViewScaleMode_R_scaleMode	MapScaleMode	scaleMode = enum(AUTOMATIC,MANUAL,HYBRID)

responseSetMapViewScaleMode		
setMapViewScaleMode = This method sets the scaling mode.		
Parameter	Type	Description

## 6.1.83 setMapViewTheme

requestSetMapViewTheme		
setMapViewTheme = This method configures the theme of a given map view instance		
Parameter	Type	Description
setMapViewTheme_R_sessionHandle	Handle	sessionHandle = Session handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value
setMapViewTheme_R_mapViewInstanceHandle	Handle	mapViewInstanceHandle = Map instance handle. Range[0x0:0x7fffffff].

requestSetMapViewTheme		
		0x0 is reserved as an invalid handle value
setMapViewTheme_R_mapViewTheme	MapViewTheme	mapViewTheme = enum(DAY / NIGHT)

responseSetMapViewTheme		
setMapViewTheme = This method configures the theme of a given map view instance		
Parameter	Type	Description

## 6.1.84 setMapViewVisibilityMode

requestSetMapViewVisibilityMode		
setMapViewVisibilityMode = This method sets the current visibility mode		
Parameter	Type	Description
setMapViewVisibilityMode_R_sessionHandle	sessionHandle	sessionHandle = Session handle. Range[0x0:0x7ffffff]. 0x0 is reserved as an invalid handle value
setMapViewVisibilityMode_R_mapViewInstanceHandle	mapViewInstanceHandle	mapViewInstanceHandle = Map instance handle. Range[0x0:0x7ffffff]. 0x0 is reserved as an invalid handle value
setMapViewVisibilityMode_R_visibilityMode	visibilityMode	visibilityMode = enum(INVALID,VISIBLE,INVISIBLE,FROZEN, ... )

responseSetMapViewVisibilityMode		
setMapViewVisibilityMode = This method sets the current visibility mode		
Parameter	Type	Description

## 6.1.85 setPoiCategoriesNotVisible

requestSetPoiCategoriesNotVisible		
setPoiCategoriesNotVisible = Remove POI categories from the set of POI categories displayed on the map.		
Parameter	Type	Description
setPoiCategoriesNotVisible_R_sessionHandle	sessionHandle	sessionHandle = Session handle. Range[0x0:0x7ffffff]. 0x0 is reserved as an invalid handle value



<b>requestSetPoiCategoriesNotVisible</b>		
setPoiCategoriesNotVisible_R_mapView	MapViewInstanceHandle	mapViewInstanceHandle = Map instance handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value
setPoiCategoriesNotVisible_R_poiCategoryIds	PoiCategoryIds32	poiCategoryIds = list of POI-categories

<b>responseSetPoiCategoriesNotVisible</b>		
setPoiCategoriesNotVisible = Remove POI categories from the set of POI categories displayed on the map.		
Parameter	Type	Description

## 6.1.86 setPoiCategoriesVisible

<b>requestSetPoiCategoriesVisible</b>		
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.		
Parameter	Type	Description
setPoiCategoriesVisible_R_sessionHandle	SessionHandle	sessionHandle = Session handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value
setPoiCategoriesVisible_R_mapView	MapViewInstanceHandle	mapViewInstanceHandle = Map instance handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value
setPoiCategoriesVisible_R_poiCategoryIds	PoiCategoryIds32	poiCategoryIds = list of POI-categories

<b>responseSetPoiCategoriesVisible</b>		
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.		
Parameter	Type	Description

## 6.1.87 setPoiCategoriesVisibleMode

<b>requestSetPoiCategoriesVisibleMode</b>		
setPoiCategoriesVisibleMode = gives the possibility to show or hide all POI categories regardless of of which one are enabled with setPoiCategoriesVisible/setPoiCategoriesNotVisible. The selection		

<b>requestSetPoiCategoriesVisibleMode</b>		
which is done with setPoiCategoriesVisible/setPoiCategoriesNotVisible is not changed by this command.		
Parameter	Type	Description
setPoiCategoriesVisibleMode_sessionHandle	sessionHandle	sessionHandle = Session handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value
setPoiCategoriesVisibleMode_mapViewInstanceHandle	mapViewInstanceHandle	mapViewInstanceHandle = Map instance handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value
setPoiCategoriesVisibleMode_poiCategoriesVisibleMode	poiCategoriesVisibleMode	poiCategoriesVisibleMode = {SELECTED(default) / ALL / NONE}

<b>responseSetPoiCategoriesVisibleMode</b>		
setPoiCategoriesVisibleMode = gives the possibility to show or hide all POI categories regardless of of which one are enabled with setPoiCategoriesVisible/setPoiCategoriesNotVisible. The selection which is done with setPoiCategoriesVisible/setPoiCategoriesNotVisible is not changed by this command.		
Parameter	Type	Description

## 6.1.88 setPoiCategoriesVisibleWithinLimits

<b>requestSetPoiCategoriesVisibleWithinLimits</b>		
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.		
Parameter	Type	Description
setPoiCategoriesVisibleWithinLimits_sessionHandle	sessionHandle	sessionHandle = Session handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value
setPoiCategoriesVisibleWithinLimits_mapViewInstanceHandle	mapViewInstanceHandle	mapViewInstanceHandle = Map instance handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value
setPoiCategoriesVisibleWithinLimits_poiCategoryIds	ArrayOfPoiCategoryIds	
setPoiCategoriesVisibleWithinLimits_minScaleID	minScaleID	minScaleID = minimum scale on which the POI categories are displayed
setPoiCategoriesVisibleWithinLimits_maxScaleID	maxScaleID	maxScaleID = maximum scale on which the POI categories are displayed

<b>responseSetPoiCategoriesVisibleWithinLimits</b>		
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.		
Parameter	Type	Description

## 6.1.89 setTargetPoint

<b>requestSetTargetPoint</b>		
setTargetPoint = This method sets the position of the point the camera is always aimed at		
Parameter	Type	Description
setTargetPoint_R_sessionHandle	Handle	sessionHandle = Session handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value
setTargetPoint_R_mapViewInstanceHandle	Handle	mapViewInstanceHandle = Map instance handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value
setTargetPoint_R_targetPoint	Coordinate3D	

<b>responseSetTargetPoint</b>		
setTargetPoint = This method sets the position of the point the camera is always aimed at		
Parameter	Type	Description

## 6.1.90 setTrafficIncidentsVisibility

<b>requestSetTrafficIncidentsVisibility</b>		
setTrafficIncidentsVisibility = Set the visibility of Traffic Incidents on the map.		
Parameter	Type	Description
setTrafficIncidentsVisibility_R_sessionHandle	Handle	sessionHandle = Session handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value
setTrafficIncidentsVisibility_R_mapViewInstanceHandle	Handle	mapViewInstanceHandle = Map instance handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value
setTrafficIncidentsVisibility_R_visible	boolean	visible = If true, Traffic Incidents are shown on the map, else they are not shown.

<b>responseSetTrafficIncidentsVisibility</b>		
setTrafficIncidentsVisibility = Set the visibility of Traffic Incidents on the map.		
Parameter	Type	Description

## 6.1.91 displayedRoutes

<b>informationDisplayedRoutes</b>		
displayedRoutes = This signal is emitted when the list of displayed routes change		
Parameter	Type	Description
displayedRoutes_mapViewInstanceHandle	MapViewInstanceHandle	mapViewInstanceHandle = Map instance handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value
displayedRoutes_displayedRoutes	TSVector_DisplayedRoute	

## 6.1.92 mapViewScaleChanged

<b>informationMapViewScaleChanged</b>		
mapViewScaleChanged = This signal is emitted when the mapview scale changes		
Parameter	Type	Description
mapViewScaleChanged_mapViewInstanceHandle	MapViewInstanceHandle	mapViewInstanceHandle = Map instance handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value
mapViewScaleChanged_scaleID	Id8	scaleID = scale identifier. Range[0:256]
mapViewScaleChanged_isMinMax	MapScaleType	isMinMax = enum(INVALID,MIN,MAX,MID, ... )

## 6.1.93 mapViewVisibilityChanged

<b>informationMapViewVisibilityChanged</b>		
mapViewVisibilityChanged = This signal is emitted when the MapView visibility changes		
Parameter	Type	Description
mapViewVisibilityChanged_mapViewInstanceHandle	MapViewInstanceHandle	mapViewInstanceHandle = Map instance handle. Range[0x0:0x7fffffff]. 0x0 is reserved as an invalid handle value

informationMapViewVisibilityChanged		
mapViewVisibilityChanged_visibilityMode	visibilityMode = enum(INVALID,VISIBLE,INVISIBLE,FROZEN, ... )	

## 6.1.94 astatus

Attribute <i>astatus</i>	
Type	Notification Type
Status	ON_CHANGE

## 6.1.95 THBVector\_CHBString\_

mapMode-List (string-based) Vector of element type **String**

Referenced by : [org\\_harman\\_nav\\_ctrl\\_mapv\\_MapViewControl::getMapModelList](#)

## 6.1.96 THBVector\_Coordinate2D\_

Vector of element type **Coordinate2D**

Referenced by : [org\\_harman\\_nav\\_ctrl\\_mapv\\_MapViewControl::convertPixelCoordsToGeoCoords](#),  
[org\\_harman\\_nav\\_ctrl\\_mapv\\_MapViewControl::convertGeoCoordsToPixelCoords](#)

## 6.1.97 THBVector\_CustomElement\_

Vector of element type **CustomElement**

Referenced by : [org\\_harman\\_nav\\_ctrl\\_mapv\\_MapViewControl::displayCustomElements](#)

## 6.1.98 THBVector\_DisplayedRoute\_

Vector of element type **DisplayedRoute**

Referenced by : [org\\_harman\\_nav\\_ctrl\\_mapv\\_MapViewControl::getDisplayedRoutes](#),  
[org\\_harman\\_nav\\_ctrl\\_mapv\\_MapViewControl::displayedRoutes](#)

## 6.1.99 THBVector\_Handle\_

Vector of element type **Handle**

Referenced by : [org\\_harman\\_nav\\_ctrl\\_mapv\\_MapViewControl::displayCustomElements](#),  
[org\\_harman\\_nav\\_ctrl\\_mapv\\_MapViewControl::hideCustomElements](#)

## 6.1.100 THBVector\_Level\_

Vector of element type [Level](#)

Referenced by :  
[org\\_harman\\_nav\\_ctrl\\_mapv\\_MapViewControl::getSupportedMapViewPerformanceLevels](#)

## 6.1.101 THBVector\_MapObject\_

Vector of element type [MapObject](#)

Referenced by : [org\\_harman\\_nav\\_ctrl\\_mapv\\_MapViewControl::getSupportedMapViewObjectVisibilities](#)

## 6.1.102 THBVector\_MapPerspective\_

Vector of element type [MapPerspective](#)

Referenced by : [org\\_harman\\_nav\\_ctrl\\_mapv\\_MapViewControl::getSupportedMapViewPerspectives](#)

## 6.1.103 THBVector\_MapScaleMode\_

Vector of element type [MapScaleMode](#)

Referenced by : [org\\_harman\\_nav\\_ctrl\\_mapv\\_MapViewControl::getSupportedMapViewScaleModes](#)

## 6.1.104 THBVector\_MapScale\_

Vector of element type [MapScale](#)

Referenced by : [org\\_harman\\_nav\\_ctrl\\_mapv\\_MapViewControl::getScaleList](#)

## 6.1.105 THBVector\_MapTheme\_

Vector of element type [MapTheme](#)

Referenced by : [org\\_harman\\_nav\\_ctrl\\_mapv\\_MapViewControl::getSupportedMapViewThemes](#)

## 6.1.106 THBVector\_MapViewType\_

Vector of element type [MapViewType](#)

Referenced by : [org\\_harman\\_nav\\_ctrl\\_mapv\\_MapViewControl::getSupportedMapViewTypes](#)

## 6.1.107 THBVector\_ObjectListItem\_

contains enum to other domain, contains session-id of other domain Vector of element type [ObjectListItem](#)

Referenced by : [org\\_harman\\_nav\\_ctrl\\_mapv\\_MapViewControl::highlightObjectListItem](#),  
[org\\_harman\\_nav\\_ctrl\\_mapv\\_MapViewControl::centerOnObjectListItems](#)

## 6.1.108 THBVector\_Pixel\_

Vector of element type [Pixel](#)

Referenced by : [org\\_harman\\_nav\\_ctrl\\_mapv\\_MapViewControl::convertPixelCoordsToGeoCoords](#),  
[org\\_harman\\_nav\\_ctrl\\_mapv\\_MapViewControl::convertGeoCoordsToPixelCoords](#)

## 6.1.109 THBVector\_ScreenCoordinate\_

array of currently touching finger. If this array is empty, all fingers have been removed from screen. A flick can start Vector of element type [ScreenCoordinate](#)

Referenced by : [org\\_harman\\_nav\\_ctrl\\_mapv\\_MapViewControl::setMapViewPan](#)

## 6.1.110 THBVector\_SelectableMapType\_

Vector of element type [SelectableMapType](#)

Referenced by : [org\\_harman\\_nav\\_ctrl\\_mapv\\_MapViewControl::selectElementsOnMap](#)

## 6.1.111 THBVector\_SelectedMapElement\_

Vector of element type [SelectedMapElement](#)

Referenced by : [org\\_harman\\_nav\\_ctrl\\_mapv\\_MapViewControl::selectElementsOnMap](#)

## 6.1.112 THBVector\_UInt32\_

Vector of element type [UInt32](#)

Referenced by : [org\\_harman\\_nav\\_ctrl\\_mapv\\_MapViewControl::getPoiCategoriesVisible](#),  
[org\\_harman\\_nav\\_ctrl\\_mapv\\_MapViewControl::setPoiCategoriesVisible](#),  
[org\\_harman\\_nav\\_ctrl\\_mapv\\_MapViewControl::setPoiCategoriesVisibleWithinLimits](#),  
[org\\_harman\\_nav\\_ctrl\\_mapv\\_MapViewControl::setPoiCategoriesNotVisible](#)

## 6.1.113 THBVector\_Visibility\_

Vector of element type [Visibility](#)

Referenced by : [org\\_harman\\_nav\\_ctrl\\_mapv\\_MapViewControl::getSupportedMapViewVisibilityModes](#)

## 6.2 org\_harman\_nav\_ctrl\_mapv\_MapViewControlType

Interface Version: 1.1

### 6.2.1 AnchorPoint

AnchorPoint		
struct generated for DBus argument DisplayCustomElements_customElementsElem4		
Structure Element	Type	Description
x	Int16	
y	Int16	

Referenced by : [org\\_harman\\_nav\\_ctrl\\_mapv\\_MapViewControlTypes::CustomElement](#)

### 6.2.2 AutozoomSetting

AutozoomSetting	
Literal	Description
AutozoomSetting_NEAR	
AutozoomSetting_NORMAL	
AutozoomSetting_FAR	

Referenced by : [org\\_harman\\_nav\\_ctrl\\_mapv\\_MapViewControl::setAutozoomSetting](#),  
[org\\_harman\\_nav\\_ctrl\\_mapv\\_MapViewControl::getAutozoomSetting](#),  
[org\\_harman\\_nav\\_ctrl\\_mapv\\_MapViewControlTypes::ScreenStatus](#)

### 6.2.3 CustomElement

CustomElement
struct generated for DBus argument DisplayCustomElements_customElements



CustomElement		
Structure Element	Type	Description
name	String	
iconUri	String	
coordinate	<a href="#">Coordinate2D</a>	
elem4	<a href="#">AnchorPoint</a>	

Referenced by : [org\\_harman\\_nav\\_ctrl\\_mapv\\_MapViewControl::THBVector\\_CustomElement\\_](#),  
[org\\_harman\\_nav\\_ctrl\\_mapv\\_MapViewControlTypes::ElementValue](#)

## 6.2.4 Dimension

Dimension		
struct generated for DBus argument CreateMapViewInstance_mapViewSize		
Structure Element	Type	Description
horizontalSize	UInt16	
verticalSize	UInt16	

Referenced by : [org\\_harman\\_nav\\_ctrl\\_mapv\\_MapViewControl::createMapViewInstance](#),  
[org\\_harman\\_nav\\_ctrl\\_mapv\\_MapViewControlTypes::ScreenStatus](#)

## 6.2.5 DisplayedRoute

DisplayedRoute		
struct generated for DBus argument GetDisplayedRoutes_displayedRoutes		
Structure Element	Type	Description
routeHandle	<a href="#">Handle</a>	
highlighted	boolean	

Referenced by : [org\\_harman\\_nav\\_ctrl\\_mapv\\_MapViewControl::THBVector\\_DisplayedRoute\\_](#),  
[org\\_harman\\_nav\\_ctrl\\_mapv\\_MapViewControlTypes::DisplayedRoutes](#)

## 6.2.6 DisplayedRoutes

Vector of element type [DisplayedRoute](#)

Referenced by : [org\\_harman\\_nav\\_ctrl\\_mapv\\_MapViewControlTypes::ScreenStatus](#)

## 6.2.7 EObjectListDomain

EObjectListDomain	
Literal	Description
EObjectListDomain_POI_SERVICE	

Referenced by : [org\\_harman\\_nav\\_ctrl\\_mapv\\_MapViewControlTypes::ObjectList](#)

## 6.2.8 ElementValue

ElementValue		
Variant Element	Type	Description
trafficIncident	Int32	
handle	<a href="#">Handle</a>	
element	<a href="#">CustomElement</a>	
objectListItem	<a href="#">ObjectListItem</a>	

Referenced by : [org\\_harman\\_nav\\_ctrl\\_mapv\\_MapViewControlTypes::SelectedMapElement](#)

## 6.2.9 KmlType

KmlType	
Literal	Description
KmlType_KML_URL	KML_URL: the string paramater is a URL (filename)
KmlType_KML_CONTENT	KML_CONTENT: the paramater contains the kml-content directly (file inside big-string)

Referenced by : [org\\_harman\\_nav\\_ctrl\\_mapv\\_MapViewControl::addKml](#)

## 6.2.10 Level

Level	
Literal	Description

Level	
Level_BasicEnum_INVALID	
Level_LEVEL_1	
Level_LEVEL_2	
Level_LEVEL_3	
Level_LEVEL_4	
Level_LEVEL_5	

Referenced by : [org\\_harman\\_nav\\_ctrl\\_mapv\\_MapViewControl::setMapViewPerformanceLevel](#),  
[org\\_harman\\_nav\\_ctrl\\_mapv\\_MapViewControl::getMapViewPerformanceLevel](#),  
[org\\_harman\\_nav\\_ctrl\\_mapv\\_MapViewControl::THBVector\\_Level\\_](#)

## 6.2.11 MapObject

MapObject	
Literal	Description
MapObject_BasicEnum_INVALID	
MapObject_BUILDINGS	
MapObject_TERRAIN	

Referenced by : [org\\_harman\\_nav\\_ctrl\\_mapv\\_MapViewControl::THBVector\\_MapObject\\_](#)

## 6.2.12 MapObjectVisibility

MapObjectVisibility		
Map Element	Type	Description
keyType	<a href="#">MapObject</a>	
valueType	boolean	

Referenced by : [org\\_harman\\_nav\\_ctrl\\_mapv\\_MapViewControl::setMapViewObjectVisibility](#),  
[org\\_harman\\_nav\\_ctrl\\_mapv\\_MapViewControl::getMapViewObjectVisibility](#)

## 6.2.13 MapPerspective

MapPerspective
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MapPerspective	
Literal	Description
MapPerspective_BasicEnum_INVALID	
MapPerspective_PERSPECTIVE_2D	
MapPerspective_PERSPECTIVE_3D	

Referenced by : [org\\_harman\\_nav\\_ctrl\\_mapv\\_MapViewControl::setMapViewPerspective](#),  
[org\\_harman\\_nav\\_ctrl\\_mapv\\_MapViewControl::getMapViewPerspective](#),  
[org\\_harman\\_nav\\_ctrl\\_mapv\\_MapViewControl::THBVector\\_MapPerspective\\_](#),  
[org\\_harman\\_nav\\_ctrl\\_mapv\\_MapViewControlTypes::ScreenStatus](#)

## 6.2.14 MapScale

MapScale		
struct generated for Dbus argument GetScaleList_scaleList		
Structure Element	Type	Description
scaleId	UInt16	
scaleValue	UInt16	
unit	<a href="#">MapScaleUnit</a>	
millimetersPerPixel	UInt32	

Referenced by : [org\\_harman\\_nav\\_ctrl\\_mapv\\_MapViewControl::THBVector\\_MapScale\\_](#),  
[org\\_harman\\_nav\\_ctrl\\_mapv\\_MapViewControlTypes::ScreenStatus](#)

## 6.2.15 MapScaleMode

MapScaleMode	
Literal	Description
MapScaleMode_BasicEnum_INVALID	
MapScaleMode_AUTOMATIC	
MapScaleMode_MANUAL	
MapScaleMode_HYBRID	

Referenced by : [org\\_harman\\_nav\\_ctrl\\_mapv\\_MapViewControl::setMapViewScaleMode](#),  
[org\\_harman\\_nav\\_ctrl\\_mapv\\_MapViewControl::getMapViewScaleMode](#),

[org\\_harman\\_nav\\_ctrl\\_mapv\\_MapViewControl::THBVector\\_MapScaleMode\\_](#),  
[org\\_harman\\_nav\\_ctrl\\_mapv\\_MapViewControlTypes::ScreenStatus](#)

## 6.2.16 MapScaleType

MapScaleType	
Literal	Description
MapScaleType_BasicEnum_INVALID	
MapScaleType_MIN	
MapScaleType_MAX	
MapScaleType_MID	

Referenced by : [org\\_harman\\_nav\\_ctrl\\_mapv\\_MapViewControl::getMapViewScale](#),  
[org\\_harman\\_nav\\_ctrl\\_mapv\\_MapViewControl::mapViewScaleChanged](#)

## 6.2.17 MapScaleUnit

MapScaleUnit	
Literal	Description
MapScaleUnit_BasicEnum_INVALID	
MapScaleUnit_METER	
MapScaleUnit_MILE	
MapScaleUnit_KM	
MapScaleUnit_YARD	
MapScaleUnit_FOOT	

Referenced by : [org\\_harman\\_nav\\_ctrl\\_mapv\\_MapViewControlTypes::MapScale](#)

## 6.2.18 MapTheme

MapTheme	
Literal	Description
MapTheme_BasicEnum_INVALID	
MapTheme_DAY	
MapTheme_NIGHT	

Referenced by : [org\\_harman\\_nav\\_ctrl\\_mapv\\_MapViewControl::setMapViewTheme](#),  
[org\\_harman\\_nav\\_ctrl\\_mapv\\_MapViewControl::getMapViewTheme](#),  
[org\\_harman\\_nav\\_ctrl\\_mapv\\_MapViewControl::THBVector\\_MapTheme\\_](#),  
[org\\_harman\\_nav\\_ctrl\\_mapv\\_MapViewControlTypes::ScreenStatus](#)

## 6.2.19 MapViewOrientation

MapViewOrientation	
Literal	Description
MapViewOrientation_NORTH_UP	
MapViewOrientation_HEADING_UP	
MapViewOrientation_MANEUVER_UP	
MapViewOrientation_DESTINATION_UP	
MapViewOrientation_FIXED_ANGLE	

Referenced by : [org\\_harman\\_nav\\_ctrl\\_mapv\\_MapViewControl::mapShowRouteOverview](#),  
[org\\_harman\\_nav\\_ctrl\\_mapv\\_MapViewControlTypes::ScreenStatus](#)

## 6.2.20 MapViewStyleSet

MapViewStyleSet	
Literal	Description
MapViewStyleSet_DAY	
MapViewStyleSet_NIGHT	

Referenced by : [org\\_harman\\_nav\\_ctrl\\_mapv\\_MapViewControl::mapSetStyle](#),  
[org\\_harman\\_nav\\_ctrl\\_mapv\\_MapViewControlTypes::ScreenStatus](#)

## 6.2.21 MapViewType

MapViewType	
Literal	Description
MapViewType_BasicEnum_INVALID	
MapViewType_MAIN_MAP	
MapViewType_SPLIT_SCREEN	

Referenced by : [org\\_harman\\_nav\\_ctrl\\_mapv\\_MapViewControl::createMapViewInstance](#),  
[org\\_harman\\_nav\\_ctrl\\_mapv\\_MapViewControl::getMapViewType](#),  
[org\\_harman\\_nav\\_ctrl\\_mapv\\_MapViewControl::THBVector\\_MapViewType\\_](#),  
[org\\_harman\\_nav\\_ctrl\\_mapv\\_MapViewControlTypes::ScreenStatus](#)

## 6.2.22 ObjectList

ObjectList		
ObjectList, used in displayObjectList/hideObjectList		
Structure Element	Type	Description
domain	<a href="#">EObjectListDomain</a>	
domainHandle	<a href="#">Handle</a>	

Referenced by : [org\\_harman\\_nav\\_ctrl\\_mapv\\_MapViewControl::displayObjectList](#),  
[org\\_harman\\_nav\\_ctrl\\_mapv\\_MapViewControl::hideObjectList](#),  
[org\\_harman\\_nav\\_ctrl\\_mapv\\_MapViewControlTypes::ObjectListItem](#)

## 6.2.23 ObjectListItem

ObjectListItem		
ObjectListItem, used in highlightObjectListItem		
Structure Element	Type	Description
objectList	<a href="#">ObjectList</a>	
domainIndex	UInt32	

Referenced by : [org\\_harman\\_nav\\_ctrl\\_mapv\\_MapViewControl::THBVector\\_ObjectListItem\\_](#),  
[org\\_harman\\_nav\\_ctrl\\_mapv\\_MapViewControlTypes::ElementValue](#)

## 6.2.24 PanAction

PanAction	
Literal	Description
PanAction_BasicEnum_INVALID	
PanAction_PAN_START	
PanAction_PAN_TO	

<b>PanAction</b>	
PanAction_PAN_END	

Referenced by : [org\\_harman\\_nav\\_ctrl\\_mapv\\_MapViewControl::setMapViewPan](#)

## 6.2.25 Pixel

<b>Pixel</b>		
struct generated for DBus argument SetMapViewPan_pixelCoordinates		
Structure Element	Type	Description
x	UInt16	
y	UInt16	

Referenced by : [org\\_harman\\_nav\\_ctrl\\_mapv\\_MapViewControl::selectElementsOnMap](#),  
[org\\_harman\\_nav\\_ctrl\\_mapv\\_MapViewControl::THBVector\\_Pixel\\_](#)

## 6.2.26 PoiCategoriesVisibleMode

<b>PoiCategoriesVisibleMode</b>	
Literal	Description
PoiCategoriesVisibleMode_SELECTED	
PoiCategoriesVisibleMode_ALL	
PoiCategoriesVisibleMode_NONE	

Referenced by : [org\\_harman\\_nav\\_ctrl\\_mapv\\_MapViewControl::setPoiCategoriesVisibleMode](#)

## 6.2.27 Poild

<b>Poild</b>		
compound POI-id		
Structure Element	Type	Description
databaseld	UInt32	
poild	UInt64	



## 6.2.28 ScreenCoordinate

ScreenCoordinate		
struct pixel-coordinate		
Structure Element	Type	Description
x	Int32	
y	Int32	

Referenced by : [org\\_harman\\_nav\\_ctrl\\_mapv\\_MapViewControl::mapViewGesture](#),  
[org\\_harman\\_nav\\_ctrl\\_mapv\\_MapViewControl::mapViewGesture](#),  
[org\\_harman\\_nav\\_ctrl\\_mapv\\_MapViewControl::THBVector\\_ScreenCoordinate\\_](#)

## 6.2.29 ScreenRectangle

ScreenRectangle		
struct pixel-coordinate		
Structure Element	Type	Description
left	Int32	
top	Int32	
width	UInt32	
height	UInt32	

Referenced by : [org\\_harman\\_nav\\_ctrl\\_mapv\\_MapViewControl::setMapViewBoundingBox](#),  
[org\\_harman\\_nav\\_ctrl\\_mapv\\_MapViewControl::getMapViewBoundingBox](#),  
[org\\_harman\\_nav\\_ctrl\\_mapv\\_MapViewControl::setMapViewSaveArea](#),  
[org\\_harman\\_nav\\_ctrl\\_mapv\\_MapViewControl::getMapViewSaveArea](#)

## 6.2.30 ScreenStatus

ScreenStatus		
Settings per map view instance.		
Structure Element	Type	Description
mapViewInstanceHandle	<a href="#">Handle</a>	
mapMode	String	
visibility	<a href="#">Visibility</a>	

ScreenStatus		
viewType	<a href="#">MapViewType</a>	
style	<a href="#">MapViewStyleSet</a>	
theme	<a href="#">MapTheme</a>	
orientation	<a href="#">MapViewOrientation</a>	
perspective	<a href="#">MapPerspective</a>	
displayedRoutes	<a href="#">DisplayedRoutes</a>	
scaleMode	<a href="#">MapScaleMode</a>	
scale	<a href="#">MapScale</a>	
autozoomEnabled	boolean	
autozoomSetting	<a href="#">AutozoomSetting</a>	
followCarMode	boolean	
cameraHeadingAngle	Int32	
cameraPosition	<a href="#">Coordinate3D</a>	
screenDimensions	<a href="#">Dimension</a>	

Referenced by : [org\\_harman\\_nav\\_ctrl\\_mapv\\_MapViewControlTypes::ScreenStatusList](#)

## 6.2.31 ScreenStatusList

Vector of element type [ScreenStatus](#)

Referenced by : [org\\_harman\\_nav\\_ctrl\\_mapv\\_MapViewControlTypes::Status](#)

## 6.2.32 SelectableMapType

SelectableMapType	
Literal	Description
SelectableMapType_BasicEnum_INVALID	
SelectableMapType_CUSTOM_ELEMENT	
SelectableMapType_CURRENT_POSITION	
SelectableMapType_WAYPOINT	
SelectableMapType_POI	
SelectableMapType_TRAFFIC_INCIDENT	
SelectableMapType_ROUTE	
SelectableMapType_GEOCOORDINATES	
SelectableMapType_OBJECT_LIST_ITEM	

Referenced by : [org\\_harman\\_nav\\_ctrl\\_mapv\\_MapViewControl::THBVector\\_SelectableMapType\\_](#),  
[org\\_harman\\_nav\\_ctrl\\_mapv\\_MapViewControlTypes::SelectedMapElement](#)

## 6.2.33 SelectedMapElement

SelectedMapElement		
struct generated for DBus argument SelectElementsOnMap_selectedElements		
Structure Element	Type	Description
type	<a href="#">SelectableMapType</a>	
position	<a href="#">Coordinate2D</a>	
value	<a href="#">ElementValue</a>	

Referenced by : [org\\_harman\\_nav\\_ctrl\\_mapv\\_MapViewControl::THBVector\\_SelectedMapElement\\_](#)

## 6.2.34 Status

Status		
Settings for map viewer.		
Structure Element	Type	Description
statusList	<a href="#">ScreenStatusList</a>	

Referenced by : [org\\_harman\\_nav\\_ctrl\\_mapv\\_MapViewControl::astatus](#)

## 6.2.35 Visibility

Visibility	
Literal	Description
Visibility_BasicEnum_INVALID	
Visibility_VISIBLE	
Visibility_INVISIBLE	
Visibility_FROZEN	

Referenced by : [org\\_harman\\_nav\\_ctrl\\_mapv\\_MapViewControl::setMapViewVisibilityMode](#),  
[org\\_harman\\_nav\\_ctrl\\_mapv\\_MapViewControl::getMapViewVisibilityMode](#),

[org\\_harman\\_nav\\_ctrl\\_mapv\\_MapViewControl::mapViewVisibilityChanged](#),  
[org\\_harman\\_nav\\_ctrl\\_mapv\\_MapViewControl::THBVector\\_Visibility\\_](#),  
[org\\_harman\\_nav\\_ctrl\\_mapv\\_MapViewControlTypes::ScreenStatus](#)

## 6.2.36 tCustomElementDict

tCustomElementDict		
Map Element	Type	Description
keyType	<a href="#">Handle</a>	
valueType	<a href="#">CustomElement</a>	struct generated for DBus argument DisplayCustomElements_customElements

Referenced by : [org\\_harman\\_nav\\_ctrl\\_mapv\\_MapViewControl::getDisplayCustomElements](#)

# 7 LearningNav Service

## 7.1 org\_harman\_nav\_ctrl\_In\_Trails

Interface Version: 1.0

### 7.1.1 createView

requestCreateView		
create a new view to the mother array. This view will be maintained until the client uses destroyView, unsubscribes or service/proxy exit. After creating a view the client must receive an update. Only one created view is allowed to modify the list entries. Please note: a valid usecase is to specify a viewSize which is bigger than the initial list size		
Parameter	Type	Description
createView_R_list	ListId	list to create the view upon.
createView_R_viewsize	ViewSize	individual size of the requested view.

responseCreateView		
create a new view to the mother array. This view will be maintained until the client uses destroyView, unsubscribes or service/proxy exit. After creating a view the client must receive an update. Only one created view is allowed to modify the list entries. Please note: a valid usecase is to specify a viewSize which is bigger than the initial list size		
Parameter	Type	Description
createView_view	ViewId	view identification used to distinguish several instances of a view for one client. It is never changed by the service nor the client. This id is unique!

### 7.1.2 deleteView

requestDeleteView		
delete the given view instance		
Parameter	Type	Description
deleteView_R_view	ViewId	identifies the view to apply this operation upon.

<b>responseDeleteView</b>		
delete the given view instance		
Parameter	Type	Description

### 7.1.3 getDetails

<b>requestGetDetails</b>		
Returns trail objects for the given handles.		
Parameter	Type	Description
getDetails_R_handles	<a href="#">TrailHandles</a>	

<b>responseGetDetails</b>		
Returns trail objects for the given handles.		
Parameter	Type	Description
getDetails_trails	<a href="#">Trails</a>	

### 7.1.4 getListSize

<b>requestGetListSize</b>		
get the current number of contained elements in the given list.		
Parameter	Type	Description
getListSize_R_list	<a href="#">ListId</a>	

<b>responseGetListSize</b>		
get the current number of contained elements in the given list.		
Parameter	Type	Description
getListSize_size	<a href="#">ListSize</a>	

### 7.1.5 getSettings

<b>requestGetSettings</b>		
Set trail settings.		
Parameter	Type	Description

requestGetSettings		
getSettings_R_keys	SettingKeys	

responseGetSettings		
Set trail settings.		
Parameter	Type	Description
getSettings_settings	Settings	

## 7.1.6 getViewData

requestGetViewData		
Returns a snapshot of the current view and returns contained data.		
Parameter	Type	Description
getViewData_R_view	ViewId	identifies the view to apply this operation upon.

responseGetViewData		
Returns a snapshot of the current view and returns contained data.		
Parameter	Type	Description
getViewData_trailDescriptions	TrailDescriptions	Descriptions in order of the current view
getViewData_snapshotPos	ViewSnapshotPosition	information how the message view snapshot is positioned within the list

## 7.1.7 setSettings

requestSetSettings		
Get trail settings.		
Parameter	Type	Description
setSettings_R_settings	Settings	

responseSetSettings		
Get trail settings.		
Parameter	Type	Description

## 7.1.8 setViewAnchor

### requestSetViewAnchor

set a stable element inside the current view snapshot. The client should use an available snapshot of a view to maintain focused elements within the view if possible, and change the view position only if an element to be focused is outside of the given view. A snapshot is generated whenever querying the data contained in a view. Together with that data, the ViewSnapshotPosition is provided. The initial snapshot of the view is always [0, min(viewSize-1, listSize-1)] with anchor offset 0. When creating a new view snapshot, the last call of setViewPosition or setViewAnchor (whichever was the last one) will be the relevant information to reposition the new view snapshot. If setViewAnchor was the last call, the anchor element of the old view snapshot is used for repositioning. (This method only needs to be used if the current view snapshot is outdated because the list has been updated.)

The following rules are applied to set the position of the new view snapshot [newFrom, newTo], given a snapshot [from, to] and anchor offset aOff: Let elem(k) denote the element at key k in the old snapshot and new(e) denote the key the element e will have (would have if deleted) in the new snapshot (see also examples below). newFrom is set to new(elem(from+aOff)) - aOff. If any of these calculated values are out of the range of the list [0, listSize-1], they will be truncated to fit into the list. As a consequence, whenever possible, the anchor element of the old snapshot will be at the same offset within the new snapshot.

As an example for the case in which the data was updated: old list {"a", "b", "c", "d", "e", "f"} with view snapshot ["c", "d"] with viewSize 2 and viewKey 2 new list {"b", "d", "f", "h", "j", "l"} setViewAnchor(0) => elem(from+aOff) is "c", new(elem(from+aOff)) is 1 ("c" would be inserted at index 1) => ["d", "f"] with ViewSnapshotPosition 6, listKey=1, anchorOffset=0. setViewAnchor(1) => elem(from+aOff) is "d", new(elem(from+aOff)) is 1 => ["b", "d"] with ViewSnapshotPosition 6, listKey=0, anchorOffset=1.

Parameter	Type	Description
setViewAnchor_R_view	<a href="#">ViewId</a>	identifies the view to apply this operation upon.
setViewAnchor_R_anchor	<a href="#">AnchorOffset</a>	relative anchor position in the view, referenced from ListKey Please note: only positive values and 0 are allowed

## 7.1.9 setViewPosition

### requestSetViewPosition

set the absolute view position to element key. The client should use an available snapshot of a view to maintain focused elements within the view if possible, and change the view position only if an element to be focused is outside of the given view. A snapshot is generated whenever querying the data contained in a view. Together with that data, the ViewSnapshotPosition is provided. The initial snapshot of the view is always [0, min(viewSize-1, listSize-1)]. When creating a new view snapshot, the last call of setViewPosition or setViewAnchor (whichever was the last one) will be the relevant information to reposition the new view snapshot. If setViewPosition was the last call, the view is moved such that the provided key refers to the absolute position on the current snapshot of the view. (This becomes important if the current view snapshot is outdated because the list has been updated.)



**requestSetViewPosition**

The following rules are applied to set the position of the new view snapshot [newFrom, newTo], given a snapshot [from, to]: Let elem(k) denote the element at key k in the old snapshot and new(e) denote the key the element e will have (would have if deleted) in the new snapshot (see also examples (1)-(3) below). (1) If key is less than from, then newFrom will be set to new(elem(from)) - (from-key). (2) If key is contained in [from, to], then newKey will be set to new(elem(key)). (3) If key is greater than to, then newFrom will be set to new(elem(to)) + (key-to). If any of these calculated values are out of the range of the list [0, listSize-1], they will be truncated to fit into the list. (Note that the resulting newFrom is always equal to key if the data wasn't updated, but it doesn't have to be equal to key if the data was updated.) After setting the view position the anchor offset will automatically be set to 0. There are two special key values to allow scrolling to the top/bottom of the list, independently from the above rules: The key value 0xFFFE always positions the view to the top of the list. The key value 0xFFFF always positions the view to the bottom of the list.

As an example for the case in which the data was updated: old list {"a", "b", "c", "d", "e", "f"} with view snapshot ["c", "d"] with viewSize 2 and viewKey 2 new list {"b", "d", "f", "h", "j", "l"} (1) setViewPosition(0) => [from, to] is [2, 3], elem(from) is "c", new(elem(from)) is 1 => ["b", "d"] with ViewSnapshotPosition 6, listKey=0, anchorOffset=0. (2) setViewPosition(3) => [from, to] is [2, 3], elem(key) is "d", new(elem(key)) is 1 => ["d", "f"] with ViewSnapshotPosition 6, listKey=1, anchorOffset=0. (3) setViewPosition(4) => [from, to] is [2, 3], elem(to) is "d", new(elem(d)) is 1 => ["f", "h"] with ViewSnapshotPosition 6, listKey=2, anchorOffset=0.

Parameter	Type	Description
setViewPosition_R_view	<a href="#">ViewId</a>	identifies the view to apply this operation upon.
setViewPosition_R_key	<a href="#">ListKey</a>	element to position the view upon, according to view policy.

## 7.1.10 setViewSize

**requestSetViewSize**

adjust the view size. It is allowed to set view size to a larger value than the actual size of the list, but less or equal than the maximum size of the list. The implementation may limit the maximum view size for resource reasons. After adjusting the window size the client must receive an update.

Parameter	Type	Description
setViewSize_R_view	<a href="#">ViewId</a>	identifies the view to apply this operation upon.
setViewSize_R_new_size	<a href="#">ViewSize</a>	new view size

**responseSetViewSize**

adjust the view size. It is allowed to set view size to a larger value than the actual size of the list, but less or equal than the maximum size of the list. The implementation may limit the maximum view size for resource reasons. After adjusting the window size the client must receive an update.

Parameter	Type	Description
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## 7.1.11 listSize

informationListSize		
informs the client about changes of the list size.		
Parameter	Type	Description
listSize_id	ListId	list id related to the list size update
listSize_size	ListSize	changed list size information

## 7.1.12 viewUpdate

informationViewUpdate		
indicate to the client that the underlying list of a certain view has changed Whenever elements get inserted/removed or the content of element gets changed, the size or the sorting order of a list might change. This might influence the current view and especially the position of the anchor element in the list. To allow a client to react on such changes in an appropriate manner, the viewUpdate broadcast will provide all necessary information to its client. It is up to the client to reposition the view to its needs based on the provided information, using the methods setViewPosition or setViewAnchor.		
Parameter	Type	Description
viewUpdate_view	ViewId	unique identifier of a view
viewUpdate_size	ListSize	current size of the underlying list
viewUpdate_viewChanged	boolean	at least one element of the currently active view snapshot has changed
viewUpdate_listChanged	boolean	at least one element of the list has changed (this might lead to a different new view snapshot)

## 7.1.13 Error

Error	
This is the type for error responses.	
Literal	Description
ERROR_TrailError_INVALID	
ERROR_TrailError_GET_SETTINGS_ERROR	
ERROR_TrailError_SET_SETTINGS_ERROR	
ERROR_TrailError_GET_DETAILS_ERROR	
ERROR_ListError_INVALID	

Error	
ERROR_ListError_INVALID_LIST_ID	
ERROR_ListError_INVALID_VIEW	
ERROR_ListError_INVALID_PARAMETER	
ERROR_ListError_SIZE_LIMIT_EXCEEDED	
ERROR_ListError_OUT_OF_RESSOURCES	
ERROR_ListError_OUT_OF_RANGE_POSITION	
ERROR_ListError_POLICY_DENIED	

## 7.2 org\_harman\_nav\_ctrl\_In\_TraitTypes

Interface Version: 1.0

### 7.2.1 SettingKey

SettingKey	
Literal	Description
SettingKey_RECORDING_ENABLED	
SettingKey_MAX_TRAIL_LENGTH	

Referenced by : [org\\_harman\\_nav\\_ctrl\\_In\\_TraitTypes::SettingKeys](#)

### 7.2.2 SettingKeys

Vector of element type [SettingKey](#)

Referenced by : [org\\_harman\\_nav\\_ctrl\\_In\\_Trails::getSettings](#)

### 7.2.3 SettingValue

SettingValue		
Variant Element	Type	Description
boolValue	boolean	
distance	<a href="#">Distance</a>	

## 7.2.4 Settings

Settings		
Map between settings and values.		
Map Element	Type	Description
keyType	<a href="#">SettingKey</a>	
valueType	<a href="#">SettingValue</a>	

Referenced by : [org\\_harman\\_nav\\_ctrl\\_In\\_Trails::getSettings](#),  
[org\\_harman\\_nav\\_ctrl\\_In\\_Trails::setSettings](#)

## 7.2.5 TrailDescription

TrailDescription		
Structure Element	Type	Description
handle	<a href="#">TrailHandle</a>	
description	String	

Referenced by : [org\\_harman\\_nav\\_ctrl\\_In\\_TrailTypes::TrailDescriptions](#)

## 7.2.6 TrailDescriptions

Vector of element type [TrailDescription](#)

Referenced by : [org\\_harman\\_nav\\_ctrl\\_In\\_Trails::getViewData](#)

## 7.2.7 TrailDetails

TrailDetails		
Trail object.		
Structure Element	Type	Description
handle	<a href="#">TrailHandle</a>	
timeStart	<a href="#">Timestamp</a>	
timeEnd	<a href="#">Timestamp</a>	
posStart	<a href="#">Coordinate3D</a>	

TrailDetails		
posEnd	<a href="#">Coordinate3D</a>	
length	<a href="#">Distance</a>	

## 7.2.8 TrailError

TrailError	
Literal	Description
TrailError_BasicEnum_INVALID	
TrailError_GET_SETTINGS_ERROR	
TrailError_SET_SETTINGS_ERROR	
TrailError_GET_DETAILS_ERROR	

## 7.2.9 TrailHandle

Alias of actual type: **UInt32**

Referenced by : [org\\_harman\\_nav\\_ctrl\\_In\\_TraitTypes::TrailDescription](#),  
[org\\_harman\\_nav\\_ctrl\\_In\\_TraitTypes::TrailDetails](#), [org\\_harman\\_nav\\_ctrl\\_In\\_TraitTypes::TrailHandles](#)

## 7.2.10 TrailHandles

Vector of element type **TrailHandle**

Referenced by : [org\\_harman\\_nav\\_ctrl\\_In\\_Trails::getDetails](#)

## 7.2.11 Trails

Trails		
Map between trail handle and its object.		
Map Element	Type	Description
keyType	<a href="#">TrailHandle</a>	
valueType	<a href="#">TrailDetails</a>	Trail object.

Referenced by : [org\\_harman\\_nav\\_ctrl\\_In\\_Trails::getDetails](#)

## 8 LocationMemory Service

### 8.1 org\_harman\_nav\_ctrl\_memory\_LocationMemory

Interface Version: 5.0

#### 8.1.1 addItem

requestAddItem		
add a exsisting Location Memory Item to another list.		
Parameter	Type	Description
addItem_R_sourceViewId	<a href="#">ViewId</a>	source view id which is where this source item comes from.
addItem_R_sourceItemKey	<a href="#">ViewKey</a>	source item key which has to be added
addItem_R_destinationListId	<a href="#">ListId</a>	destination list where this item place to

responseAddItem		
add a exsisting Location Memory Item to another list.		
Parameter	Type	Description
addItem_itemId	<a href="#">TItemId</a>	Item id

#### 8.1.2 addItemLocation

requestAddItemLocation		
add a new Location Memory Item to a list. If a new item is created a name for the item is created.		
Parameter	Type	Description
addItemLocation_R_listId	<a href="#">ListId</a>	list to add the item to.
addItemLocation_R_location	<a href="#">LocationItem</a>	location to add

responseAddItemLocation		
add a new Location Memory Item to a list. If a new item is created a name for the item is created.		
Parameter	Type	Description
addItemLocation_itemId	<a href="#">TItemId</a>	Item id

## 8.1.3 createSpeechFile

requestCreateSpeechFile		
create an ECO file with the list entries The file is saved as path/listname.eco		
Parameter	Type	Description
createSpeechFile_R_listId	ListId	Identifies the list the file should be generated for.
createSpeechFile_R_path	String	path where the file should be saved

responseCreateSpeechFile		
create an ECO file with the list entries The file is saved as path/listname.eco		
Parameter	Type	Description

## 8.1.4 createView

requestCreateView		
create a new view to the mother array. This view will be maintained until the client uses destroyView, unsubscribes or service/proxy exit. After creating a view the client must receive an update. Only one created view is allowed to modify the list entries.		
Parameter	Type	Description
createView_R_list	ListId	list to create the view upon.
createView_R_viewsize	ViewSize	individual size of the requested view. The max size could be smaller or equal than max list size
createView_R_position	ListKey	element to position the view upon, according to view policy.

responseCreateView		
create a new view to the mother array. This view will be maintained until the client uses destroyView, unsubscribes or service/proxy exit. After creating a view the client must receive an update. Only one created view is allowed to modify the list entries.		
Parameter	Type	Description
createView_view	ViewId	view identification used to distinguish several instances of a view for one client. It is never changed by the service nor the client.

## 8.1.5 deleteView

requestDeleteView		
delete the given view instance		
Parameter	Type	Description
deleteView_R_view	ViewId	identifies the view to apply this operation upon.

responseDeleteView		
delete the given view instance		
Parameter	Type	Description

## 8.1.6 exportFullList

requestExportFullList		
export the entire list to an external source		
Parameter	Type	Description
exportFullList_R_source	EExternalSources	where to store the export

responseExportFullList		
export the entire list to an external source		
Parameter	Type	Description
exportFullList_success	boolean	successfull export.
exportFullList_message	String	a message to help identify the particular error type which can be used for the HMI.

## 8.1.7 filterView

requestFilterView		
The items of the given view is filtered by the string input. As this functionality was not designed in ListViewBase, the first version implementation is to response the items. Future, the functionality will be updated with the view data updated .. i.e. the view is updated and only matching items remain in the view. If no match is found then the result will be an empty view. An empty searchString will restore the view.		
Parameter	Type	Description



requestFilterView		
filterView_R_view	ViewId	view identification
filterView_R_pattern	String	pattern to match the items
filterView_R_deepMatch	boolean	Extension to match item internal data (currently not supported)

responseFilterView		
The items of the given view is filtered by the string input. As this functionality was not designed in ListViewBase, the first version implementation is to response the items. Future, the functionality will be updated with the view data updated .. i.e. the view is updated and only matching items remain in the view. If no match is found then the result will be an empty view. An empty searchString will restore the view.		
Parameter	Type	Description
filterView_listItems	THBVector_Item_	result items based on the search string

## 8.1.8 getActiveAutoNavItems

requestGetActiveAutoNavItems		
getActiveAutoNavItems for the Fixed_Favorite list to check which items are at the current time in an auto-navigate timeslot (i.e. return list of keys).		
Parameter	Type	Description
getActiveAutoNavItems_R_view	ViewId	Identifies the view this result list is applied for.

responseGetActiveAutoNavItems		
getActiveAutoNavItems for the Fixed_Favorite list to check which items are at the current time in an auto-navigate timeslot (i.e. return list of keys).		
Parameter	Type	Description
getActiveAutoNavItems_resultPos	PosKey	list key of the first entry into the received result list.
getActiveAutoNavItems_listItems	THBVector_Item_	result items based on the requested position and key what is related to the given view id.

## 8.1.9 getActiveItems

requestGetActiveItems		
return all items with matching timeslot (to current time) Empty list is returned if none match.		

requestGetActiveItems		
Parameter	Type	Description
getActiveItems_R_view	<a href="#">ViewId</a>	view identification

responseGetActiveItems		
return all items with matching timeslot (to current time) Empty list is returned if none match.		
Parameter	Type	Description
getActiveItems_itemKeys	<a href="#">THBVector_ViewKey_</a>	items which are currently active

## 8.1.10 getItemDetails

requestGetItemDetails		
return all data for a Location Memory Item.		
Parameter	Type	Description
getItemDetails_R_view	<a href="#">ViewId</a>	view identification
getItemDetails_R_itemKey	<a href="#">ViewKey</a>	item key to retrieve the details for

responseGetItemDetails		
return all data for a Location Memory Item.		
Parameter	Type	Description
getItemDetails_location	<a href="#">LocationItem</a>	location details

## 8.1.11 getItemDetailsExt

requestGetItemDetailsExt		
return all data for a Location Memory items.		
Parameter	Type	Description
getItemDetailsExt_R_items	<a href="#">UniqueltemIdList</a>	

responseGetItemDetailsExt		
return all data for a Location Memory items.		
Parameter	Type	Description
getItemDetailsExt_locations	<a href="#">LocationList</a>	location details

## 8.1.12 getListSize

<b>requestGetListSize</b>		
get the current number of contained elements in the given list. This should be used create a view with a view size which has to be smaller or equal then size of the resulted list size. @see createView		
Parameter	Type	Description
getListSize_R_list	ListId	

<b>responseGetListSize</b>		
get the current number of contained elements in the given list. This should be used create a view with a view size which has to be smaller or equal then size of the resulted list size. @see createView		
Parameter	Type	Description
getListSize_size	ListSize	

## 8.1.13 getResultList

<b>requestGetResultList</b>		
getResultList		
Parameter	Type	Description
getResultList_R_view	ViewId	Identifies the view this result list is applied for.

<b>responseGetResultList</b>		
getResultList		
Parameter	Type	Description
getResultList_snapshotPos	ViewSnapshotPosition	information how the item view snapshot is positioned within the list
getResultList_listItems	THBVector_Item_	result items based on the requested position and key what is related to the given view id.

## 8.1.14 getSortOrder

<b>requestGetSortOrder</b>		
retrieve the sort order of a view instance		

requestGetSortOrder		
Parameter	Type	Description
getSortOrder_R_view	ViewId	identifies the view to apply this operation upon.

responseGetSortOrder		
retrieve the sort order of a view instance		
Parameter	Type	Description
getSortOrder_order	SortOption	the sort order currently used for this view instance.

## 8.1.15 importFullList

requestImportFullList		
import the entire list from an external source		
Parameter	Type	Description
importFullList_R_source	EExternalSources	where to initiate the import from

responseImportFullList		
import the entire list from an external source		
Parameter	Type	Description
importFullList_success	boolean	successfull import.
importFullList_message	String	a message to help identify the particular error type which can be used for the HMI.

## 8.1.16 importLocationItemList

requestImportLocationItemList		
import a given list of tuples (name, location) into a destination list. Typical use-case download of POIs from a server, or USB stick bulk import.		
Parameter	Type	Description
importLocationItemList_R_destination	LocationListId	the destination list, see availableLists attribute, for example "FAVORITES"
importLocationItemList_R_items	List<BVector_NameLocationItem>	list of of tuples (name, location) to be imported

**responseImportLocationItemList**

import a given list of tuples (name, location) into a destination list. Typical use-case download of POIs from a server, or USB stick bulk import.

Parameter	Type	Description
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## 8.1.17 removeAll

**requestRemoveAll**

remove all items which are related to the given List id.

Parameter	Type	Description
removeAll_R_list	ListId	list to create the view upon.

**responseRemoveAll**

remove all items which are related to the given List id.

Parameter	Type	Description
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## 8.1.18 removeItem

**requestRemoveItem**

remove one Item which is based on the given itemKey and a given list id. If the item is available in the given list it is removed from that list. If it is only available in that list it is completely removed(set listId with invalid value).

Parameter	Type	Description
removeItem_R_view	ViewId	Identifies the list the item is removed from.
removeItem_R_itemKey	ViewKey	item key which is used
removeItem_R_listId	ListId	list the item is removed from

**responseRemoveItem**

remove one Item which is based on the given itemKey and a given list id. If the item is available in the given list it is removed from that list. If it is only available in that list it is completely removed(set listId with invalid value).

Parameter	Type	Description
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## 8.1.19 setItemName

<b>requestSetItemName</b>		
set the name of an item.		
Parameter	Type	Description
setItemName_R_listId	ListId	list to set the name for the item to.
setItemName_R_itemId	TItemId	Item id(uniq during LC)
setItemName_R_name	TItemName	new name to use

<b>responseSetItemName</b>		
set the name of an item.		
Parameter	Type	Description

## 8.1.20 setLocationItem

<b>requestSetLocationItem</b>		
change the item		
Parameter	Type	Description
setLocationItem_R_view	ViewId	view identification
setLocationItem_R_itemKey	ViewKey	Item to manipulate
setLocationItem_R_location	LocationItem	location to add

<b>responseSetLocationItem</b>		
change the item		
Parameter	Type	Description
setLocationItem_item	Item	basic data of item (with proposed name)

## 8.1.21 setSortOrder

<b>requestSetSortOrder</b>		
configure the sort order of a view instance. Changing the sort order of a view may trigger a view update.		

requestSetSortOrder		
Parameter	Type	Description
setSortOrder_R_view	<a href="#">ViewId</a>	identifies the view to apply this operation upon.
setSortOrder_R_order	<a href="#">SortOption</a>	the sort order to use for this view instance.

responseSetSortOrder		
configure the sort order of a view instance. Changing the sort order of a view may trigger a view update.		
Parameter	Type	Description

## 8.1.22 setTimeslot

requestSetTimeslot		
change the timeslot of an item		
Parameter	Type	Description
setTimeslot_R_view	<a href="#">ViewId</a>	view identification
setTimeslot_R_itemKey	<a href="#">ViewKey</a>	Item to manipulate
setTimeslot_R_timeslot	<a href="#">Timeslot</a>	new timeslot to set

responseSetTimeslot		
change the timeslot of an item		
Parameter	Type	Description

## 8.1.23 setViewAnchor

requestSetViewAnchor		
set a stable element inside the current view snapshot. The client should use an available snapshot of a view to maintain focused elements within the view if possible, and change the view position only if an element to be focused is outside of the given view. A snapshot is generated whenever querying the data contained in a view. Together with that data, the ViewSnapshotPosition is provided. The initial snapshot of the view is always [0, min(viewSize-1, listSize-1)] with anchor offset 0. When creating a new view snapshot, the last call of setViewPosition or setViewAnchor (whichever was the last one) will be the relevant information to reposition the new view snapshot. If setViewAnchor was the last call, the		

**requestSetViewAnchor**

anchor element of the old view snapshot is used for repositioning. (This method only needs to be used if the current view snapshot is outdated because the list has been updated.)

The following rules are applied to set the position of the new view snapshot [newFrom, newTo], given a snapshot [from, to] and anchor offset aOff: Let elem(k) denote the element at key k in the old snapshot and new(e) denote the key the element e will have (would have if deleted) in the new snapshot (see also examples below). newFrom is set to new(elem(from+aOff)) - aOff. If any of these calculated values are out of the range of the list [0, listSize-1], they will be truncated to fit into the list. As a consequence, whenever possible, the anchor element of the old snapshot will be at the same offset within the new snapshot.

As an example for the case in which the data was updated: old list {"a", "b", "c", "d", "e", "f"} with view snapshot ["c", "d"] with viewSize 2 and viewKey 2 new list {"b", "d", "f", "h", "j", "l"} setViewAnchor(0) => elem(from+aOff) is "c", new(elem(from+aOff)) is 1 ("c" would be inserted at index 1) => ["d", "f"] with ViewSnapshotPosition 6, listKey=1, anchorOffset=0. setViewAnchor(1) => elem(from+aOff) is "d", new(elem(from+aOff)) is 1 => ["b", "d"] with ViewSnapshotPosition 6, listKey=0, anchorOffset=1.

Parameter	Type	Description
setViewAnchor_R_view	<a href="#">ViewId</a>	identifies the view to apply this operation upon.
setViewAnchor_R_anchor	<a href="#">AnchorOffset</a>	relative anchor position in the view, referenced from ListKey Please note: only positive values and 0 are allowed

## 8.1.24 setViewPosition

**requestSetViewPosition**

set the absolute view position to element key. The client should use an available snapshot of a view to maintain focused elements within the view if possible, and change the view position only if an element to be focused is outside of the given view. A snapshot is generated whenever querying the data contained in a view. Together with that data, the ViewSnapshotPosition is provided. The initial snapshot of the view is always [0, min(viewSize-1, listSize-1)]. When creating a new view snapshot, the last call of setViewPosition or setViewAnchor (whichever was the last one) will be the relevant information to reposition the new view snapshot. If setViewPosition was the last call, the view is moved such that the provided key refers to the absolute position on the current snapshot of the view. (This becomes important if the current view snapshot is outdated because the list has been updated.)

The following rules are applied to set the position of the new view snapshot [newFrom, newTo], given a snapshot [from, to]: Let elem(k) denote the element at key k in the old snapshot and new(e) denote the key the element e will have (would have if deleted) in the new snapshot (see also examples (1)-(3) below). (1) If key is less than from, then newFrom will be set to new(elem(from)) - (from-key). (2) If key is contained in [from, to], then newKey will be set to new(elem(key)). (3) If key is greater than to, then newFrom will be set to new(elem(to)) + (key-to). If any of these calculated values are out of the range of the list [0, listSize-1], they will be truncated to fit into the list. (Note that the resulting newFrom is always equal to key if the data wasn't updated, but it doesn't have to be equal to key if the data was updated.) After setting the view position the anchor offset will automatically be set to 0. There are two special key values to allow scrolling to the top/bottom of the list, independently from the above rules:



**requestSetViewPosition**

The key value 0xFFFE always positions the view to the top of the list. The key value 0xFFFF always positions the view to the bottom of the list.

As an example for the case in which the data was updated: old list {"a", "b", "c", "d", "e", "f"} with view snapshot ["c", "d"] with viewSize 2 and viewKey 2 new list {"b", "d", "f", "h", "j", "l"} (1) setViewPosition(0) => [from, to] is [2, 3], elem(from) is "c", new(elem(from)) is 1 => ["b", "d"] with ViewSnapshotPosition 6, listKey=0, anchorOffset=0. (2) setViewPosition(3) => [from, to] is [2, 3], elem(key) is "d", new(elem(key)) is 1 => ["d", "f"] with ViewSnapshotPosition 6, listKey=1, anchorOffset=0. (3) setViewPosition(4) => [from, to] is [2, 3], elem(to) is "d", new(elem(d)) is 1 => ["f", "h"] with ViewSnapshotPosition 6, listKey=2, anchorOffset=0.

Parameter	Type	Description
setViewPosition_R_view	<a href="#">ViewId</a>	identifies the view to apply this operation upon.
setViewPosition_R_key	<a href="#">ListKey</a>	element to position the view upon, according to view policy.

## 8.1.25 setViewSize

**requestSetViewSize**

adjust the view size. It is allowed to set view size to a larger value than the actual size of the list, but less or equal than the maximum size of the list. The implementation may limit the maximum view size for resource reasons. After adjusting the window size the client must receive an update.

Parameter	Type	Description
setViewSize_R_view	<a href="#">ViewId</a>	identifies the view to apply this operation upon.
setViewSize_R_new_size	<a href="#">ViewSize</a>	new view size

**responseSetViewSize**

adjust the view size. It is allowed to set view size to a larger value than the actual size of the list, but less or equal than the maximum size of the list. The implementation may limit the maximum view size for resource reasons. After adjusting the window size the client must receive an update.

Parameter	Type	Description
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## 8.1.26 listSize

**informationListSize**

informs the client about changes of the list size.

informationListSize		
Parameter	Type	Description
listSize_id	ListId	list id related to the list size update
listSize_size	ListSize	changed list size information

## 8.1.27 viewUpdate

informationViewUpdate		
indicate to the client that the underlying list of a certain view has changed Whenever elements get inserted/removed or the content of element gets changed, the size or the sorting order of a list might change. This might influence the current view and especially the position of the anchor element in the list. To allow a client to react on such changes in an appropriate manner, the viewUpdate broadcast will provide all necessary information to its client. It is up to the client to reposition the view to its needs based on the provided information, using the methods setViewPosition or setViewAnchor.		
Parameter	Type	Description
viewUpdate_view	ViewId	unique identifier of a view
viewUpdate_size	ListSize	current size of the underlying list
viewUpdate_viewChanged	boolean	at least one element of the currently active view snapshot has changed
viewUpdate_listChanged	boolean	at least one element of the list has changed (this might lead to a different new view snapshot)

## 8.1.28 aavailableConfiguration

Attribute aavailableConfiguration	
contains all available View Configuration to create view instances upon	
Type	Notification Type
Configurations	ON_CHANGE

## 8.1.29 aavailableLists

Attribute aavailableLists	
The list ids which can be queried from this interface	
Type	Notification Type
THBVector_ListId_	ON_CHANGE

## 8.1.30 Error

Error	
This is the type for error responses.	
Literal	Description
ERROR_ListError_INVALID	
ERROR_ListError_INVALID_LIST_ID	
ERROR_ListError_INVALID_VIEW	
ERROR_ListError_INVALID_PARAMETER	
ERROR_ListError_SIZE_LIMIT_EXCEEDED	
ERROR_ListError_OUT_OF_RESSOURCES	
ERROR_ListError_OUT_OF_RANGE_POSITION	
ERROR_ListError_POLICY_DENIED	
ERROR_LocationMemoryError_INVALID	
ERROR_LocationMemoryError_INVALID_LIST_ID	
ERROR_LocationMemoryError_INVALID_VIEW	
ERROR_LocationMemoryError_INVALID_PARAMETER	
ERROR_LocationMemoryError_SIZE_LIMIT_EXCEEDED	
ERROR_LocationMemoryError_OUT_OF_RESSOURCES	
ERROR_LocationMemoryError_OUT_OF_RANGE_POSITION	
ERROR_LocationMemoryError_POLICY_DENIED	
ERROR_LocationMemoryError_INVALID_PATH	
ERROR_LocationMemoryError_PATH_NOT_WRITABLE	
ERROR_LocationMemoryError_EMPTY_LIST	

## 8.1.31 THBVector\_Item\_

result items based on the requested position and key what is related to the given view id. Vector of element type [Item](#)

Referenced by : [org\\_harman\\_nav\\_ctrl\\_memory\\_LocationMemory::getResultList](#),  
[org\\_harman\\_nav\\_ctrl\\_memory\\_LocationMemory::getActiveAutoNavItems](#),  
[org\\_harman\\_nav\\_ctrl\\_memory\\_LocationMemory::filterView](#)

## 8.1.32 THBVector\_ListId\_

The list ids which can be queried from this interface Vector of element type [ListId](#)

Referenced by : [org\\_harman\\_nav\\_ctrl\\_memory\\_LocationMemory::aavailableLists](#)

### 8.1.33 THBVector\_NameLocationItem\_

list of of tuples (name, location) to be imported Vector of element type [NameLocationItem](#)

Referenced by : [org\\_harman\\_nav\\_ctrl\\_memory\\_LocationMemory::importLocationItemList](#)

### 8.1.34 THBVector\_ViewKey\_

items which are currently active Vector of element type [ViewKey](#)

Referenced by : [org\\_harman\\_nav\\_ctrl\\_memory\\_LocationMemory::getActiveItems](#)

## 8.2 org\_harman\_nav\_ctrl\_memory\_LocationMemory

Interface Version: 3.4

### 8.2.1 Configurations

Configurations		
Configuration settings		
Map Element	Type	Description
keyType	<a href="#">EProvidedListTypes</a>	
valueType	<a href="#">ListSetting</a>	supported Location Memory Listsettings

Referenced by : [org\\_harman\\_nav\\_ctrl\\_memory\\_LocationMemory::aavailableConfiguration](#)

### 8.2.2 Dayslot

Dayslot		
Definition of a dayslot. User must ensure that start is less than end (Otherwise it would be undefined if previous/next day is meant)		
Structure Element	Type	Description
active	boolean	if slot is active
start_min	UInt16	start time in minutes since midnight, hour = start_min / 60 , min = start_min % 60
end_min	UInt16	end time in minutes since midnight

Referenced by : [org\\_harman\\_nav\\_ctrl\\_memory\\_LocationMemoryTypes::DayslotList](#)

## 8.2.3 DayslotList

Array for the timeslot for each day, 7 slots starting with monday. Vector of element type **Dayslot**

Referenced by : [org\\_harman\\_nav\\_ctrl\\_memory\\_LocationMemoryTypes::Timeslot](#)

## 8.2.4 EExternalSources

EExternalSources	
Literal	Description
EExternalSources_E_EXTERNAL_MEDIA	media storage

Referenced by : [org\\_harman\\_nav\\_ctrl\\_memory\\_LocationMemory::importFullList](#),  
[org\\_harman\\_nav\\_ctrl\\_memory\\_LocationMemory::exportFullList](#)

## 8.2.5 EltemType

EltemType	
Literal	Description
EltemType_E_LM_TYPE_POI	
EltemType_E_LM_TYPE_ADDRESS	
EltemType_E_LM_TYPE_CONTACT	
EltemType_E_LM_TYPE_TOUR	
EltemType_E_LM_TYPE_EMPTY	

Referenced by : [org\\_harman\\_nav\\_ctrl\\_memory\\_LocationMemoryTypes::Location](#),  
[org\\_harman\\_nav\\_ctrl\\_memory\\_LocationMemoryTypes::LocationItem](#),  
[org\\_harman\\_nav\\_ctrl\\_memory\\_LocationMemoryTypes::Item](#)

## 8.2.6 EProvidedListTypes

EProvidedListTypes
--------------------

EProvidedListTypes	
Literal	Description
EProvidedListTypes_E_LIST_RECENT	recent list, only fifo sorting
EProvidedListTypes_E_LIST_FAVOURITES	favorite list, alphabetical
EProvidedListTypes_E_LIST_FIXED_FAVOURITES	fixed favorites, only custom sorted (fixed)
EProvidedListTypes_E_LIST_WEATHER	

Referenced by : [org\\_harman\\_nav\\_ctrl\\_memory\\_LocationMemoryTypes::TItemMembership](#)

## 8.2.7 Item

Item		
short item data		
Structure Element	Type	Description
id	<a href="#">TItemId</a>	
name	<a href="#">TItemName</a>	
type	<a href="#">EItemType</a>	
lists	<a href="#">TItemMembership</a>	

Referenced by : [org\\_harman\\_nav\\_ctrl\\_memory\\_LocationMemory::setLocationItem](#),  
[org\\_harman\\_nav\\_ctrl\\_memory\\_LocationMemory::THBVector\\_Item\\_](#),  
[org\\_harman\\_nav\\_ctrl\\_memory\\_LocationMemoryTypes::ItemList](#)

## 8.2.8 ItemList

List of Item. Vector of element type [Item](#)

## 8.2.9 ListSetting

ListSetting		
supported Location Memory Listsettings		
Structure Element	Type	Description
listId	<a href="#">ListId</a>	
availableSortings	<a href="#">THBVector_SortOption_</a>	
policy	<a href="#">ModificationPolicy</a>	

ListSetting		
maxListSize	UInt32	

## 8.2.10 Location

Location		
Description of a single location enriched with a type.		
Structure Element	Type	Description
type	<a href="#">ElmType</a>	Type as tour can consist of Poi,Contact,Address
address	<a href="#">Address</a>	Location from LocationInputTypes
poiDetails	<a href="#">SearchResultDetails</a>	details for POIs

Referenced by : [org\\_harman\\_nav\\_ctrl\\_di\\_OneBoxSearch::getEntry](#),  
[org\\_harman\\_nav\\_ctrl\\_memory\\_LocationMemoryTypes::LocationList](#)

## 8.2.11 LocationItem

LocationItem		
All data for a location		
Structure Element	Type	Description
type	<a href="#">ElmType</a>	type of location
locations	<a href="#">LocationList</a>	list of locations
time	<a href="#">Timeslot</a>	used timeslot, used only for fixed favorite list

Referenced by : [org\\_harman\\_nav\\_ctrl\\_memory\\_LocationMemory::addItemLocation](#),  
[org\\_harman\\_nav\\_ctrl\\_memory\\_LocationMemory::getItemDetails](#),  
[org\\_harman\\_nav\\_ctrl\\_memory\\_LocationMemory::setLocationItem](#),  
[org\\_harman\\_nav\\_ctrl\\_memory\\_LocationMemoryTypes::LocationItemList](#),  
[org\\_harman\\_nav\\_ctrl\\_memory\\_LocationMemoryTypes::NameLocationItem](#)

## 8.2.12 LocationItemList

List of LocationItem. Vector of element type [LocationItem](#)

## 8.2.13 LocationList

List of destinations. A regular address will be a single entry, a contact can consist of home and office address, a poi of postal and entry address, a tour of several (concrete) destinations. Vector of element type [Location](#)

Referenced by : [org\\_harman\\_nav\\_ctrl\\_di\\_OneBoxSearch::requestResultList](#),  
[org\\_harman\\_nav\\_ctrl\\_memory\\_LocationMemory::getItemDetailsExt](#),  
[org\\_harman\\_nav\\_ctrl\\_memory\\_LocationMemoryTypes::LocationItem](#)

## 8.2.14 LocationMemoryError

LocationMemoryError	
Literal	Description
LocationMemoryError_ListError_INVALID_LIST_ID	occurs if the list id was invalid.
LocationMemoryError_ListError_INVALID_VIEW	view identification used to distinguish several instances of a view for one client. It is never changed by the service nor the client.
LocationMemoryError_ListError_INVALID_PARAMETERS	occurs if one of the provided parameters was not acceptable.
LocationMemoryError_ListError_SIZE_LIMIT_EXCEEDED	occurs if the implementation can not provide such large views.
LocationMemoryError_ListError_OUT_OF_RESOURCES	occurs if there are not enough resources available to create another view (e.g. memory).
LocationMemoryError_ListError_OUT_OF_RANGE_POSITION	there is request a position which is not available
LocationMemoryError_ListError_POLICY_DENIED	Some policy could not be executed.
LocationMemoryError_INVALID_PATH	path is not existing.
LocationMemoryError_PATH_NOT_WRITABLE	path is not writable.
LocationMemoryError_EMPTY_LIST	occurs if the list was empty.

## 8.2.15 NameLocationItem

NameLocationItem		
A tuple containing the user define name in the list. Example: location = POI "Pasing Arcaden" with address: Josef-Felder-Strae 53, 81241 Mnchen, Deutschland name = a user given name like "Mein Lieblingsplatz"		
Structure Element	Type	Description
name	<a href="#">TItemName</a>	User given name for a location in the list
location	<a href="#">LocationItem</a>	the location saved in the list



Referenced by : [org\\_harman\\_nav\\_ctrl\\_memory\\_LocationMemory::THBVector\\_NameLocationItem\\_](#)

## 8.2.16 THBVector\_SortOption\_

Vector of element type [SortOption](#)

Referenced by : [org\\_harman\\_nav\\_ctrl\\_memory\\_LocationMemoryTypes::ListSetting](#)

## 8.2.17 TItemId

Unick Alias of actual type: **UInt16**

Referenced by : [org\\_harman\\_nav\\_ctrl\\_memory\\_LocationMemory::addItem](#),  
[org\\_harman\\_nav\\_ctrl\\_memory\\_LocationMemory::addItemLocation](#),  
[org\\_harman\\_nav\\_ctrl\\_memory\\_LocationMemory::setItemName](#),  
[org\\_harman\\_nav\\_ctrl\\_memory\\_LocationMemoryTypes::Item](#)

## 8.2.18 TItemMembership

shows on which lists an item is present Vector of element type [EProvidedListTypes](#)

Referenced by : [org\\_harman\\_nav\\_ctrl\\_memory\\_LocationMemoryTypes::Item](#)

## 8.2.19 TItemName

Alias of actual type: **String**

Referenced by : [org\\_harman\\_nav\\_ctrl\\_memory\\_LocationMemory::setItemName](#),  
[org\\_harman\\_nav\\_ctrl\\_memory\\_LocationMemoryTypes::NameLocationItem](#),  
[org\\_harman\\_nav\\_ctrl\\_memory\\_LocationMemoryTypes::Item](#)

## 8.2.20 Timeslot

Timeslot		
Definition of a timeslot		
Structure Element	Type	Description
active	boolean	if timeslot is currently active
dayslots	<a href="#">DayslotList</a>	slots for each day, 0 = Monday

Referenced by : [org\\_harman\\_nav\\_ctrl\\_memory\\_LocationMemory::setTimeslot](#),  
[org\\_harman\\_nav\\_ctrl\\_memory\\_LocationMemoryTypes::LocationItem](#)

## 8.2.21 UniqueltemId

Absolute unique (list independent) item ID, blackbox for the client Alias of actual type: **Buffer**

Referenced by : [org\\_harman\\_nav\\_ctrl\\_memory\\_LocationMemoryTypes::UniqueltemIdList](#),  
[org\\_harman\\_nav\\_ctrl\\_GuidanceTypes::WaypointInfo](#)

## 8.2.22 UniqueltemIdList

List of item ids Vector of element type [UniqueltemId](#)

Referenced by : [org\\_harman\\_nav\\_ctrl\\_memory\\_LocationMemory::getItemDetailsExt](#)

## 8.2.23 ViewKeyList

List of Item. Vector of element type [ViewKey](#)

## 9 Positioning Service

### 9.1 org\_harman\_nav\_ctrl\_Positioning

Interface Version: 0.2

#### 9.1.1 getAddress

requestGetAddress		
getAddress = This method returns the current address		
Parameter	Type	Description
getAddress_R_valuesToReturn	<a href="#">THBVector_AddressItemKey_</a>	

responseGetAddress		
getAddress = This method returns the current address		
Parameter	Type	Description
getAddress_address	<a href="#">AddressItemDict</a>	

#### 9.1.2 getCurrentRoadAttributes

requestGetCurrentRoadAttributes		
getCurrentRoadAttributes = This method returns the current road attributes.		
Parameter	Type	Description
getCurrentRoadAttributes_R_keys	<a href="#">RoadAttributeKeys</a>	

responseGetCurrentRoadAttributes		
getCurrentRoadAttributes = This method returns the current road attributes.		
Parameter	Type	Description
getCurrentRoadAttributes_dict	<a href="#">RoadAttributeDict</a>	

#### 9.1.3 getPosition

requestGetPosition		
getPosition = This method returns the current position		

requestGetPosition		
Parameter	Type	Description
getPosition_R_valuesToReturn	<a href="#">THBVector_PositionItemKey_</a>	

responseGetPosition		
getPosition = This method returns the current position		
Parameter	Type	Description
getPosition_position	<a href="#">PositionItemDict</a>	

## 9.1.4 getStatus

requestGetStatus		
getStatus = This method returns the current status		
Parameter	Type	Description
getStatus_R_valuesToReturn	<a href="#">THBVector_PositionStatus_</a>	

responseGetStatus		
getStatus = This method returns the current status		
Parameter	Type	Description
getStatus_status	<a href="#">PositionStatusDict</a>	

## 9.1.5 addressUpdate

informationAddressUpdate		
addressUpdate = This signal is called to notify a client application that the current address changed		
Parameter	Type	Description
addressUpdate_changedValues	<a href="#">AddressItemDict</a>	

## 9.1.6 currentRoadAttributesChanged

informationCurrentRoadAttributesChanged		
currentRoadAttributesChanged = This signal is emitted when the current road attributes have changed.		
Parameter	Type	Description

informationCurrentRoadAttributesChanged		
currentRoadAttributesChanged	ChangedValues	

## 9.1.7 offRoadPositionChanged

informationOffRoadPositionChanged		
offroadPositionChanged = This signal is emitted when the heading and the distance to the closest point on the road network changes		
Parameter	Type	Description
offRoadPositionChanged_distance	uint32	distance = distance in meters to the closest point on the road network
offRoadPositionChanged_direction	uint32	direction = direction in degrees relatively to the closest point on the road network. Range [0:360]

## 9.1.8 positionUpdate

informationPositionUpdate		
positionUpdate = This signal is called to notify a client application of a position change. The update frequency is implementation specific. The maximal allowed frequency is 10Hz		
Parameter	Type	Description
positionUpdate_changedValues	PositionItemDict	

## 9.1.9 statusUpdate

informationStatusUpdate		
statusUpdate = This signal is emitted to notify a client application that the current status changed		
Parameter	Type	Description
statusUpdate_changedValues	PositionStatusDict	

## 9.1.10 agpsRTC

Attribute <i>agpsRTC</i>	
Real-time GPS clock corrected by leap-seconds.	
Type	Notification Type

Attribute <i>agpsRTC</i>	
GpsTime	ON_CHANGE

### 9.1.11 THBVector\_AddressItemKey\_

Vector of element type [AddressItemKey](#)

Referenced by : [org\\_harman\\_nav\\_ctrl\\_Positioning::getAddress](#)

### 9.1.12 THBVector\_PositionItemKey\_

Vector of element type [PositionItemKey](#)

Referenced by : [org\\_harman\\_nav\\_ctrl\\_Positioning::getPosition](#)

### 9.1.13 THBVector\_PositionStatus\_

Vector of element type [PositionStatus](#)

Referenced by : [org\\_harman\\_nav\\_ctrl\\_Positioning::getStatus](#)

## 9.2 org\_harman\_nav\_ctrl\_PositioningTypes

Interface Version: 1.2

### 9.2.1 AddressItemDict

AddressItemDict		
Map Element	Type	Description
keyType	<a href="#">AddressItemKey</a>	
valueType	<a href="#">AddressItemValue</a>	

Referenced by : [org\\_harman\\_nav\\_ctrl\\_Positioning::getAddress](#),  
[org\\_harman\\_nav\\_ctrl\\_Positioning::addressUpdate](#)

### 9.2.2 AddressItemKey

<b>AddressItemKey</b>
-----------------------

AddressItemKey	
Literal	Description
AddressItemKey_BasicEnum_INVALID	
AddressItemKey_TIMESTAMP	TIMESTAMP type is CommonTypes.Timestamp.
AddressItemKey_COUNTRY	COUNTRY type is String.
AddressItemKey_COUNTRYCODE	COUNTRYCODE type is String.
AddressItemKey_STATE	STATE type is String.
AddressItemKey_CITY	CITY type is String.
AddressItemKey_STREET	STREET type is String.
AddressItemKey_ROAD_NUMBER	ROAD_NUMBER type is String.
AddressItemKey_HOUSENUMBER	HOUSENUMBER type is String.
AddressItemKey_HOUSENAME	HOUSENAME type is String.
AddressItemKey_CROSSING	CROSSING type is String.
AddressItemKey_DISTRICT	DISTRICT type is String.
AddressItemKey_TIMEZONE_OFFSET	TIMEZONE_OFFSET type is Int16.
AddressItemKey_DAYLIGHT_OFFSET	DAYLIGHT_OFFSET type is Int16.
AddressItemKey_MATCH_TYPE	MATCH_TYPE type is PositioningTypes.MatchMode.

Referenced by : [org.harman\\_nav\\_ctrl\\_Positioning::THBVector\\_AddressItemKey\\_](#)

## 9.2.3 AddressItemValue

AddressItemValue		
Variant Element	Type	Description
addressField	String	
offset	Int16	
timestamp	<a href="#">Timestamp</a>	
matchMode	<a href="#">MatchMode</a>	

## 9.2.4 EIntersection

EIntersection	
Literal	Description

Intersection	
EIntersection_INTERSECT_NA	
EIntersection_INTERSECTION_JUNCTION	

Referenced by : [org\\_harman\\_nav\\_ctrl\\_PositioningTypes::RoadAttributeValue](#)

## 9.2.5 ERoadClass

ERoadClass	
Literal	Description
ERoadClass_BasicEnum_INVALID	
ERoadClass_ROADCLASS_GLOBAL	
ERoadClass_ROADCLASS_MAIN	
ERoadClass_ROADCLASS_REGIONAL	
ERoadClass_ROADCLASS_LOCAL	
ERoadClass_ROADCLASS_PRIVATE	

Referenced by : [org\\_harman\\_nav\\_ctrl\\_PositioningTypes::RoadAttributeValue](#),  
[org\\_harman\\_nav\\_ctrl\\_GuidanceTypes::ManeuverDetails](#),  
[org\\_harman\\_nav\\_ctrl\\_GuidanceTypes::RoadInfo](#)

## 9.2.6 ERoadType

ERoadType	
Literal	Description
ERoadType_ROADTYPE_NONE	
ERoadType_ROADTYPE_RAMP	
ERoadType_ROADTYPE_ROUNDABOUT	
ERoadType_ROADTYPE_PARALLEL	
ERoadType_ROADTYPE_SERVICE	
ERoadType_ROADTYPE_MAIN	
ERoadType_ROADTYPE_SQUARE	
ERoadType_ROADTYPE_PARKING	
ERoadType_ROADTYPE_PEDESTRIAN	



ERoadType	
ERoadType_ROADTYPE_CONTROLLED	

Referenced by : [org\\_harman\\_nav\\_ctrl\\_PositioningTypes::RoadAttributeValue](#)

## 9.2.7 ESpeedLimitStatus

ESpeedLimitStatus	
Literal	Description
ESpeedLimitStatus_AVAILABLE	
ESpeedLimitStatus_NOT_AVAILABLE	
ESpeedLimitStatus_NO_LIMIT	

Referenced by : [org\\_harman\\_nav\\_ctrl\\_PositioningTypes::SpeedLimit](#)

## 9.2.8 ExitInfo

ExitInfo		
Structure Element	Type	Description
present	boolean	

Referenced by : [org\\_harman\\_nav\\_ctrl\\_PositioningTypes::RoadAttributeValue](#)

## 9.2.9 GnnsFixStatus

GnnsFixStatus	
Literal	Description
GnnsFixStatus_BasicEnum_INVALID	
GnnsFixStatus_NO_FIX	
GnnsFixStatus_TIME_FIX	
GnnsFixStatus_FIX_2D	

<b>GnnsFixStatus</b>	
GnnsFixStatus_FIX_3D	

Referenced by : [org\\_harman\\_nav\\_ctrl\\_PositioningTypes::PositionStatusValue](#),  
[org\\_harman\\_nav\\_ctrl\\_PositioningTypes::PositionItemValue](#)

## 9.2.10 GpsTime

<b>GpsTime</b>		
Structure Element	Type	Description
time	<a href="#">Timestamp</a>	
quality	<a href="#">GpsTimeQuality</a>	

Referenced by : [org\\_harman\\_nav\\_ctrl\\_Positioning::agpsRTC](#)

## 9.2.11 GpsTimeQuality

<b>GpsTimeQuality</b>	
Literal	Description
GpsTimeQuality_GOOD	
GpsTimeQuality_POOR	

Referenced by : [org\\_harman\\_nav\\_ctrl\\_PositioningTypes::GpsTime](#)

## 9.2.12 MatchMode

<b>MatchMode</b>	
Literal	Description
MatchMode_INVALID	
MatchMode_ON_ROAD	
MatchMode_OFF_ROAD	
MatchMode_ON_FERRY	
MatchMode_IN_TUNNEL	

MatchMode	
MatchMode_ON_CARPARK	

Referenced by : [org\\_harman\\_nav\\_ctrl\\_PositioningTypes::AddressItemValue](#)

## 9.2.13 PositionItemDict

PositionItemDict		
Map Element	Type	Description
keyType	<a href="#">PositionItemKey</a>	
valueType	<a href="#">PositionItemValue</a>	

Referenced by : [org\\_harman\\_nav\\_ctrl\\_Positioning::getPosition](#),  
[org\\_harman\\_nav\\_ctrl\\_Positioning::positionUpdate](#), [org\\_harman\\_nav\\_ctrl\\_Simulation::setPosition](#)

## 9.2.14 PositionItemKey

PositionItemKey	
Literal	Description
PositionItemKey_PositionStatus_TIMESTAMP	TIMESTAMP type is <a href="#">CommonTypes.Timestamp</a> .
PositionItemKey_PositionStatus_GNSS_FIX_STATUS	GNSS_FIX_STATUS type is <a href="#">PositioninTypes.GnnsFixStatus</a> .
PositionItemKey_PositionStatus_DR_STATUS	DR_STATUS type is Boolean.
PositionItemKey_PositionStatus_MM_STATUS	MM_STATUS type is Boolean.
PositionItemKey_PositionStatus_SIMULATION_MODE	SIMULATION_MODE type is Boolean.
PositionItemKey_LATITUDE	LATITUDE type is Double.
PositionItemKey_LONGITUDE	LONGITUDE type is Double.
PositionItemKey_ALTITUDE	ALTITUDE type is Double.
PositionItemKey_HEADING	HEADING type is Double.
PositionItemKey_SPEED	SPEED type is Double.
PositionItemKey_CLIMB	CLIMB type is Double.
PositionItemKey_NUM_SATELLITES_VISIBLE	NUM_SATELLITES_VISIBLE type is <a href="#">Int32</a> .
PositionItemKey_NUM_SATELLITES_USED	NUM_SATELLITES_USED type is <a href="#">Int32</a> .

Referenced by : [org\\_harman\\_nav\\_ctrl\\_Positioning::THBVector\\_PositionItemKey\\_](#)

## 9.2.15 PositionItemValue

PositionItemValue		
Variant Element	Type	Description
timestamp	<a href="#">Timestamp</a>	
status	boolean	
fix	<a href="#">GnnsFixStatus</a>	
doubleValue	double	
intValue	Int32	
measurement	<a href="#">UnitOfMeasurement</a>	

## 9.2.16 PositionStatus

PositionStatus	
Literal	Description
PositionStatus_BasicEnum_INVALID	
PositionStatus_TIMESTAMP	TIMESTAMP type is CommonTypes.Timestamp.
PositionStatus_GNSS_FIX_STATUS	GNSS_FIX_STATUS type is PositioninTypes.GnnsFixStatus.
PositionStatus_DR_STATUS	DR_STATUS type is Boolean.
PositionStatus_MM_STATUS	MM_STATUS type is Boolean.
PositionStatus_SIMULATION_MODE	SIMULATION_MODE type is Boolean.

Referenced by : [org\\_harman\\_nav\\_ctrl\\_Positioning::THBVector\\_PositionStatus\\_](#)

## 9.2.17 PositionStatusDict

PositionStatusDict		
Map Element	Type	Description
keyType	<a href="#">PositionStatus</a>	
valueType	<a href="#">PositionStatusValue</a>	

Referenced by : [org\\_harman\\_nav\\_ctrl\\_Positioning::getStatus](#),  
[org\\_harman\\_nav\\_ctrl\\_Positioning::statusUpdate](#)

## 9.2.18 PositionStatusValue

PositionStatusValue		
Variant Element	Type	Description
statusValue	boolean	
fixStatus	<a href="#">GnnsFixStatus</a>	
timestamp	<a href="#">Timestamp</a>	

## 9.2.19 RoadAttributeDict

RoadAttributeDict		
Map Element	Type	Description
keyType	<a href="#">RoadAttributeKey</a>	
valueType	<a href="#">RoadAttributeValue</a>	

Referenced by : [org\\_harman\\_nav\\_ctrl\\_Positioning::getCurrentRoadAttributes](#),  
[org\\_harman\\_nav\\_ctrl\\_Positioning::currentRoadAttributesChanged](#)

## 9.2.20 RoadAttributeKey

RoadAttributeKey	
Literal	Description
RoadAttributeKey_BasicEnum_INVALID	
RoadAttributeKey_ROAD_CLASS	ROAD_CLASS type is PositioningTypes.ERoadClass.
RoadAttributeKey_ROAD_TYPE	ROAD_TYPE type is PositioningTypes.ERoadType.
RoadAttributeKey_CONTROLLED_ACCESS	CONTROLLED_ACCESS type is Boolean.
RoadAttributeKey_URBAN	URBAN type is Boolean.
RoadAttributeKey_SPEED_LIMIT	SPEED_LIMIT type is Float with speed in km per hour.
RoadAttributeKey_LEFT_HAND_TRAFFIC	LEFT_HAND_TRAFFIC type is Boolean.
RoadAttributeKey_INTERSECTION_TYPE	INTERSECTION_TYPE type is PositioningTypes.EIntersection.
RoadAttributeKey_EXIT_INFO	EXIT_INFO type is PositioningTypes.ExitInfo.

Referenced by : [org\\_harman\\_nav\\_ctrl\\_PositioningTypes::RoadAttributeKeys](#)

## 9.2.21 RoadAttributeKeys

Vector of element type [RoadAttributeKey](#)

Referenced by : [org\\_harman\\_nav\\_ctrl\\_Positioning::getCurrentRoadAttributes](#)

## 9.2.22 RoadAttributeValue

RoadAttributeValue		
Variant Element	Type	Description
boolValue	boolean	
floatValue	float	
intersectionValue	<a href="#">EIntersection</a>	
roadclassValue	<a href="#">ERoadClass</a>	
roadValue	<a href="#">ERoadType</a>	
exitInfoValue	<a href="#">ExitInfo</a>	
speedLimitValue	<a href="#">SpeedLimit</a>	

## 9.2.23 SpeedLimit

SpeedLimit		
Structure Element	Type	Description
status	<a href="#">ESpeedLimitStatus</a>	
speedLimit	UInt32	

Referenced by : [org\\_harman\\_nav\\_ctrl\\_PositioningTypes::RoadAttributeValue](#)

# 10 Traffic Service

## 10.1 org\_harman\_nav\_ctrl\_traffic\_TrafficInformation

Interface Version: 2.1

### 10.1.1 SetConfiguration

requestSetConfiguration		
configuration attribute of the TrafficInformation interface		
this attribute must be set by client/hmi at startup and everytime a basic configuration (e.g. language selection) has changed.		
Parameter	Type	Description
s_Configuration	SConfig	configuration attribute of the TrafficInformation interface  this attribute must be set by client/hmi at startup and everytime a basic configuration (e.g. language selection) has changed.

responseSetConfiguration		
configuration attribute of the TrafficInformation interface		
this attribute must be set by client/hmi at startup and everytime a basic configuration (e.g. language selection) has changed.		
Parameter	Type	Description
s_Configuration	SConfig	configuration attribute of the TrafficInformation interface  this attribute must be set by client/hmi at startup and everytime a basic configuration (e.g. language selection) has changed.

### 10.1.2 createView

requestCreateView
create a new view to the mother array. This view will be maintained until the client uses destroyView, unsubscribes or service/proxy exit. After creating a view the client must receive an update. Only one

requestCreateView		
created view is allowed to modify the list entries. Please note: a valid usecase is to specify a viewSize which is bigger than the initial list size		
Parameter	Type	Description
createView_R_list	ListId	list to create the view upon.
createView_R_viewsize	ViewSize	individual size of the requested view.

responseCreateView		
create a new view to the mother array. This view will be maintained until the client uses destroyView, unsubscribes or service/proxy exit. After creating a view the client must receive an update. Only one created view is allowed to modify the list entries. Please note: a valid usecase is to specify a viewSize which is bigger than the initial list size		
Parameter	Type	Description
createView_view	ViewId	view identification used to distinguish several instances of a view for one client. It is never changed by the service nor the client. This id is unique!

### 10.1.3 deleteView

requestDeleteView		
delete the given view instance		
Parameter	Type	Description
deleteView_R_view	ViewId	identifies the view to apply this operation upon.

responseDeleteView		
delete the given view instance		
Parameter	Type	Description

### 10.1.4 getAvailableTmcStations

requestGetAvailableTmcStations		
get a list of all TMC stations, which are currently available in the tuner		



requestGetAvailableTmcStations		
Parameter	Type	Description

responseGetAvailableTmcStations		
get a list of all TMC stations, which are currently available in the tuner		
Parameter	Type	Description
getAvailableTmcStations_availableTmcStations	ArrayOfTmcStationString	list of all TMC stations, which are currently available in the tuner

## 10.1.5 getListSize

requestGetListSize		
get the current number of contained elements in the given list.		
Parameter	Type	Description
getListSize_R_list	ListId	

responseGetListSize		
get the current number of contained elements in the given list.		
Parameter	Type	Description
getListSize_size	ListSize	

## 10.1.6 getMessageData

requestGetMessageData		
gets the message information associated with one message identifier		
Parameter	Type	Description
getMessageData_R_messageId	MessageId	identifier of the message for which data shall be retrieved

responseGetMessageData		
gets the message information associated with one message identifier		
Parameter	Type	Description
getMessageData_message	SMessage	information about the traffic event or flow

## 10.1.7 getSupportedOnlineFallbackSources

requestGetSupportedOnlineFallbackSources		
get a list of all supported fallback sources for traffic data if online data cannot be retrieved (e.g., no connection, no roaming allowed)		
Parameter	Type	Description

responseGetSupportedOnlineFallbackSources		
get a list of all supported fallback sources for traffic data if online data cannot be retrieved (e.g., no connection, no roaming allowed)		
Parameter	Type	Description
getSupportedOnlineFallbackSources_fallbackSources	<a href="#">THBVector_SourceSelection</a>	list of all supported fallback sources for traffic data

## 10.1.8 getSupportedSources

requestGetSupportedSources		
get a list of all supported sources for traffic data		
Parameter	Type	Description

responseGetSupportedSources		
get a list of all supported sources for traffic data		
Parameter	Type	Description
getSupportedSources_sources	<a href="#">THBVector_SourceSelection</a>	list of all supported sources for traffic data

## 10.1.9 getViewData

requestGetViewData		
creates a snapshot of the current view of the traffic message list and returns the contained messages' data. Using the set view position or set view anchor (whichever was set last), the view snapshot is positioned within the list. The information about the snapshot position and the traffic messages contained in the view snapshot are returned to the client.		
Parameter	Type	Description

requestGetViewData		
getViewData_R_view	ViewId	identifies the view to apply this operation upon.

responseGetViewData		
creates a snapshot of the current view of the traffic message list and returns the contained messages' data. Using the set view position or set view anchor (whichever was set last), the view snapshot is positioned within the list. The information about the snapshot position and the traffic messages contained in the view snapshot are returned to the client.		
Parameter	Type	Description
getViewData_messages	TMessages	the messages contained in the current view snapshot
getViewData_snapshotPos	ViewSnapshotPosition	information how the message view snapshot is positioned within the list

## 10.1.10 refreshOnlineTrafficData

requestRefreshOnlineTrafficData		
Triggers a new query for traffic data from the online traffic data provider. This call will only have an effect if the currently selected source is Online (see attribute source) and if Manual refresh mode was configured (see attribute configuration.refreshSetting.mode).		
Parameter	Type	Description

## 10.1.11 setViewAnchor

requestSetViewAnchor
<p>set a stable element inside the current view snapshot. The client should use an available snapshot of a view to maintain focused elements within the view if possible, and change the view position only if an element to be focused is outside of the given view. A snapshot is generated whenever querying the data contained in a view. Together with that data, the ViewSnapshotPosition is provided. The initial snapshot of the view is always [0, min(viewSize-1, listSize-1)] with anchor offset 0. When creating a new view snapshot, the last call of setViewPosition or setViewAnchor (whichever was the last one) will be the relevant information to reposition the new view snapshot. If setViewAnchor was the last call, the anchor element of the old view snapshot is used for repositioning. (This method only needs to be used if the current view snapshot is outdated because the list has been updated.)</p> <p>The following rules are applied to set the position of the new view snapshot [newFrom, newTo], given a snapshot [from, to] and anchor offset aOff: Let elem(k) denote the element at key k in the old snapshot and new(e) denote the key the element e will have (would have if deleted) in the new</p>

**requestSetViewAnchor**

snapshot (see also examples below). newFrom is set to new(elem(from+aOff)) - aOff. If any of these calculated values are out of the range of the list [0, listSize-1], they will be truncated to fit into the list. As a consequence, whenever possible, the anchor element of the old snapshot will be at the same offset within the new snapshot.

As an example for the case in which the data was updated: old list {"a", "b", "c", "d", "e", "f"} with view snapshot ["c", "d"] with viewSize 2 and viewKey 2 new list {"b", "d", "f", "h", "j", "l"} setViewAnchor(0) => elem(from+aOff) is "c", new(elem(from+aOff)) is 1 ("c" would be inserted at index 1) => ["d", "f"] with ViewSnapshotPosition 6, listKey=1, anchorOffset=0. setViewAnchor(1) => elem(from+aOff) is "d", new(elem(from+aOff)) is 1 => ["b", "d"] with ViewSnapshotPosition 6, listKey=0, anchorOffset=1.

Parameter	Type	Description
setViewAnchor_R_view	<a href="#">ViewId</a>	identifies the view to apply this operation upon.
setViewAnchor_R_anchor	<a href="#">AnchorOffset</a>	relative anchor position in the view, referenced from ListKey Please note: only positive values and 0 are allowed

## 10.1.12 setViewPosition

**requestSetViewPosition**

set the absolute view position to element key. The client should use an available snapshot of a view to maintain focused elements within the view if possible, and change the view position only if an element to be focused is outside of the given view. A snapshot is generated whenever querying the data contained in a view. Together with that data, the ViewSnapshotPosition is provided. The initial snapshot of the view is always [0, min(viewSize-1, listSize-1)]. When creating a new view snapshot, the last call of setViewPosition or setViewAnchor (whichever was the last one) will be the relevant information to reposition the new view snapshot. If setViewPosition was the last call, the view is moved such that the provided key refers to the absolute position on the current snapshot of the view. (This becomes important if the current view snapshot is outdated because the list has been updated.)

The following rules are applied to set the position of the new view snapshot [newFrom, newTo], given a snapshot [from, to]: Let elem(k) denote the element at key k in the old snapshot and new(e) denote the key the element e will have (would have if deleted) in the new snapshot (see also examples (1)-(3) below). (1) If key is less than from, then newFrom will be set to new(elem(from)) - (from-key). (2) If key is contained in [from, to], then newKey will be set to new(elem(key)). (3) If key is greater than to, then newFrom will be set to new(elem(to)) + (key-to). If any of these calculated values are out of the range of the list [0, listSize-1], they will be truncated to fit into the list. (Note that the resulting newFrom is always equal to key if the data wasn't updated, but it doesn't have to be equal to key if the data was updated.) After setting the view position the anchor offset will automatically be set to 0. There are two special key values to allow scrolling to the top/bottom of the list, independently from the above rules: The key value 0xFFFFE always positions the view to the top of the list. The key value 0xFFFF always positions the view to the bottom of the list.

As an example for the case in which the data was updated: old list {"a", "b", "c", "d", "e", "f"} with view snapshot ["c", "d"] with viewSize 2 and viewKey 2 new list {"b", "d", "f", "h", "j", "l"} (1) setViewPosition(0) => [from, to] is [2, 3], elem(from) is "c", new(elem(from)) is 1 => ["b", "d"] with

**requestSetViewPosition**

ViewSnapshotPosition 6, listKey=0, anchorOffset=0. (2) setViewPosition(3) => [from, to] is [2, 3], elem(key) is "d", new(elem(key)) is 1 => ["d", "f"] with ViewSnapshotPosition 6, listKey=1, anchorOffset=0. (3) setViewPosition(4) => [from, to] is [2, 3], elem(to) is "d", new(elem(d)) is 1 => ["f", "h"] with ViewSnapshotPosition 6, listKey=2, anchorOffset=0.

Parameter	Type	Description
setViewPosition_R_view	<a href="#">ViewId</a>	identifies the view to apply this operation upon.
setViewPosition_R_key	<a href="#">ListKey</a>	element to position the view upon, according to view policy.

## 10.1.13 setViewSize

**requestSetViewSize**

adjust the view size. It is allowed to set view size to a larger value than the actual size of the list, but less or equal than the maximum size of the list. The implementation may limit the maximum view size for resource reasons. After adjusting the window size the client must receive an update.

Parameter	Type	Description
setViewSize_R_view	<a href="#">ViewId</a>	identifies the view to apply this operation upon.
setViewSize_R_new_size	<a href="#">ViewSize</a>	new view size

**responseSetViewSize**

adjust the view size. It is allowed to set view size to a larger value than the actual size of the list, but less or equal than the maximum size of the list. The implementation may limit the maximum view size for resource reasons. After adjusting the window size the client must receive an update.

Parameter	Type	Description
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## 10.1.14 toggleDetourStatus

**requestToggleDetourStatus**

toggle the detour status of a certain ti message

according to the toyota specification a user can select a certain message for detour. With this request the client/hmi can switch the detour flag of a certain TI message.

Parameter	Type	Description
toggleDetourStatus_R_id	<a href="#">TMessageId</a>	unique identifier of the message, for which the detour status shall be toggled

responseToggleDetourStatus		
toggle the detour status of a certain ti message		
according to the toyota specification a user can select a certain message for detour. With this request the client/hmi can switch the detour flag of a certain TI message.		
Parameter	Type	Description
toggleDetourStatus_message	SMessage	resulting message (with toggled detour flag and possibly updated content, e.g., updated icons)

## 10.1.15 listSize

informationListSize		
informs the client about changes of the list size.		
Parameter	Type	Description
listSize_id	ListId	list id related to the list size update
listSize_size	ListSize	changed list size information

## 10.1.16 popUpIndication

informationPopUpIndication		
indicate a popup caused by TI-messages to the customer		
This broadcast is used to indicate any kind of popup that is caused by one or more TI messages (according to spec, a single message is trigger condition). There are two kind of popups: dynamic reroute suggestion caused by TI-delay and emergency notification Furthermore we've added an additional popup type MISC which can be used to indicate any other type of popup (not yet specified nor used)		
Parameter	Type	Description
popUpIndication_type	PopupType	reason for the popup
popUpIndication_responsibleMessages	Messages	messages, which have caused the popup

## 10.1.17 viewUpdate

informationViewUpdate		
indicate to the client that the underlying list of a certain view has changed. Whenever elements get inserted/removed or the content of element gets changed, the size or the sorting order of a list might		

**informationViewUpdate**

change. This might influence the current view and especially the position of the anchor element in the list. To allow a client to react on such changes in an appropriate manner, the viewUpdate broadcast will provide all necessary information to its client. It is up to the client to reposition the view to its needs based on the provided information, using the methods `setViewPosition` or `setViewAnchor`.

Parameter	Type	Description
viewUpdate_view	<a href="#">ViewId</a>	unique identifier of a view
viewUpdate_size	<a href="#">ListSize</a>	current size of the underlying list
viewUpdate_viewChanged	boolean	at least one element of the currently active view snapshot has changed
viewUpdate_listChanged	boolean	at least one element of the list has changed (this might lead to a different new view snapshot)

## 10.1.18 aavailableLists

**Attribute aavailableLists**

The list ids which can be queried from this interface

Type	Notification Type
<a href="#">THBVector_ListId_</a>	ON_CHANGE

## 10.1.19 aconfiguration

**Attribute aconfiguration**

configuration attribute of the TrafficInformation interface

this attribute must be set by client/hmi at startup and everytime a basic configuration (e.g. language selection) has changed.

Type	Notification Type
<a href="#">SConfig</a>	ON_CHANGE

## 10.1.20 acurrentTmcStation

**Attribute acurrentTmcStation**

the tmc station to which the radio is currently tuned (or empty string if no reception)

Type	Notification Type
------	-------------------

Attribute <i>acurrentTmcStation</i>	
String	ON_CHANGE

## 10.1.21 asource

Attribute <i>asource</i>	
indicator of currently available TrafficInformation source	
Type	Notification Type
<a href="#">SourceSelection</a>	ON_CHANGE

## 10.1.22 Error

Error	
This is the type for error responses.	
Literal	Description
ERROR_ListError_INVALID	
ERROR_ListError_INVALID_LIST_ID	
ERROR_ListError_INVALID_VIEW	
ERROR_ListError_INVALID_PARAMETER	
ERROR_ListError_SIZE_LIMIT_EXCEEDED	
ERROR_ListError_OUT_OF_RESSOURCES	
ERROR_ListError_OUT_OF_RANGE_POSITION	
ERROR_ListError_POLICY_DENIED	
ERROR_TrafficInformationError_MESSAGE_NOT_AVAILABLE	
ERROR_TrafficInformationError_FAILED	

## 10.1.23 THBVector\_CHBString\_

list of all TMC stations, which are currently available in the tuner Vector of element type **String**

Referenced by : [org\\_harman\\_nav\\_ctrl\\_traffic\\_TrafficInformation::getAvailableTmcStations](#)

## 10.1.24 THBVector\_ListId\_

The list ids which can be queried from this interface Vector of element type **ListId**

Referenced by : [org\\_harman\\_nav\\_ctrl\\_traffic\\_TrafficInformation::aavailableLists](#)



## 10.1.25 THBVector\_SourceSelection\_

list of all supported sources for traffic data Vector of element type [SourceSelection](#)

Referenced by : [org\\_harman\\_nav\\_ctrl\\_traffic\\_TrafficInformation::getSupportedSources](#),  
[org\\_harman\\_nav\\_ctrl\\_traffic\\_TrafficInformation::getSupportedOnlineFallbackSources](#)

## 10.2 org\_harman\_nav\_ctrl\_traffic\_TrafficInformation

Interface Version: 2.1

### 10.2.1 Direction

Direction	
Literal	Description
Direction_North	
Direction_NorthWest	
Direction_West	
Direction_SouthWest	
Direction_South	
Direction_SouthEast	
Direction_East	
Direction_NorthEast	

Referenced by : [org\\_harman\\_nav\\_ctrl\\_traffic\\_TrafficInformationTypes::SBaseMessage](#)

### 10.2.2 OnlineRefreshMode

OnlineRefreshMode	
Literal	Description
OnlineRefreshMode_Auto	set to automodus, frequency specifies high (!=0) or low (0) frequency
OnlineRefreshMode_Manual	refresh frequency will be provided explicitly, the frequency 0 will be interpreted as "only on explicit request"

Referenced by : [org\\_harman\\_nav\\_ctrl\\_traffic\\_TrafficInformationTypes::SOnlineRefreshSetting](#)

## 10.2.3 PopupType

PopupType	
Literal	Description
PopupType_Misc	a generic popup caused by a ti-message
PopupType_Emergency	a ti emergency message is received
PopupType_Reroute	a dynamic detour/reroute suggestion (because of ti message)

Referenced by : [org\\_harman\\_nav\\_ctrl\\_traffic\\_TrafficInformation::popUpIndication](#)

## 10.2.4 RouteDynamics

RouteDynamics	
Literal	Description
RouteDynamics_Off	no route dynamics
RouteDynamics_Automatic	automatic rerouting in case of message-on-route
RouteDynamics_Manual	user will get informed and decides if a new route will be guided

Referenced by : [org\\_harman\\_nav\\_ctrl\\_traffic\\_TrafficInformationTypes::SConfig](#)

## 10.2.5 SBaseMessage

SBaseMessage		
representation of a base TI message		
this struct will be used to represent the content of a TI messages as it is expected in the overview-list. A TI message is uniquely identified by it's id. According to spec, we suggest to use the SBaseMessage in the following way: -----		
RoadIcon	routeSegmentFrom - routeSegmentTo	eventIcon
distance	headingIcon	
	/ routeSegmentDesc	
		-----

SBaseMessage		
Structure Element	Type	Description
id	<a href="#">TMessageId</a>	unique identifier of the traffic message
roadIcon	<a href="#">SIcon</a>	icon, which indicates the road on which the traffic event is located (e.g., road number sign)
routeSegmentFrom	String	name of the route segment, at which the traffic event starts
routeSegmentTo	String	name of the route segment, at which the traffic event ends
routeSegmentDesc	String	description of the route segment, on which the traffic event is located
eventIcon	<a href="#">SIcon</a>	icon, which indicates the incident associated with the traffic event
direction	<a href="#">Direction</a>	value, which indicates the cardinal direction, in which the event is located
distance	<a href="#">TDistance_dm</a>	distance (in decimeters) to the traffic event
isOnroute	boolean	flag, which indicates whether the traffic event is located on the guided route
isDetoured	boolean	flag, which indicates whether the traffic event is actively detoured (see <a href="#">toggleDetourStatus</a> )
hasRouteFromTo	boolean	tbc

Referenced by : [org\\_harman\\_nav\\_ctrl\\_traffic\\_TrafficInformationTypes::SMessage](#),  
[org\\_harman\\_nav\\_ctrl\\_traffic\\_TrafficInformationTypes::TBaseMessages](#)

## 10.2.6 SConfig

SConfig		
configuration structure to set customer related settings for traffic messages		
Structure Element	Type	Description
source	<a href="#">SourceSelection</a>	selected TI source
roamingAllowed	boolean	flag, which indicates whether online is allowed as source in roaming state
refreshSetting	<a href="#">SOnlineRefreshSetting</a>	refresh setting for online ti data
onlineFallbackSource	<a href="#">SourceSelection</a>	source selection if online cannot be used (e.g., no connection, no roaming desired)

SConfig		
selectedTmcStation	String	manual selection of TMC station (empty string indicates that the system shall automatically tune to a suitable station)
radiusFilter_km	UInt8	only TI messages in this radius are shown
routesettings	<a href="#">RouteDynamics</a>	dynamic route behaviour (off/auto/manual)

Referenced by : [org\\_harman\\_nav\\_ctrl\\_traffic\\_TrafficInformation::SetConfiguration](#),  
[org\\_harman\\_nav\\_ctrl\\_traffic\\_TrafficInformation::SetConfiguration](#),  
[org\\_harman\\_nav\\_ctrl\\_traffic\\_TrafficInformation::aconfiguration](#)

## 10.2.7 SMessage

SMessage		
representation of a TI message		
this struct will be used in order to display the details of a certain TI message. It contains a nested SBaseMessage which is used to identify the basic credentials of the TI messages. Furthermore it provides a length of the incident, followed by a description. The description is given in the language selected via config or - if no appropriate translation is available - in the fallback language. Please note: the description is a list of strings in which each entry represents a description of one event/incident (imagine multi-events). In other words: an entry does not represent a textline in the HMI!		
Structure Element	Type	Description
indexInList	Int32	index of the traffic message within the message list
base	<a href="#">SBaseMessage</a>	basic credentials of traffic message
length	<a href="#">TDistance_dm</a>	length on guided route, which is affected by the traffic message
delay	<a href="#">TTime_sec</a>	delay caused on the guided route by this traffic message
fromLocation	String	location, at which the traffic event starts
toLocation	String	location, at which the traffic event ends
description	<a href="#">THBVector_CHBString_</a>	textual description of the traffic event (multi-events: each entry represents the description of one event/incident)

Referenced by : [org\\_harman\\_nav\\_ctrl\\_highwaymode\\_HighwayModeTypes::HighwayItemDetails](#),  
[org\\_harman\\_nav\\_ctrl\\_traffic\\_TrafficInformation::getMessageData](#),  
[org\\_harman\\_nav\\_ctrl\\_traffic\\_TrafficInformation::toggleDetourStatus](#),  
[org\\_harman\\_nav\\_ctrl\\_traffic\\_TrafficInformationTypes::TMessages](#)

## 10.2.8 SOnlineRefreshSetting

SOnlineRefreshSetting		
describes the refresh settings for online connection This struct is used to specify the frequency in which the online data will be fetched from server. Currently there are two modes available. With auto mode the refresh rate is specified by server. The client can select between high and low frequency by setting the frequency to 0 - low and !=0 - high. In manual mode the frequency specifies an interval in seconds in which new online data is requested from server, if the value 0 is set, traffic data will only be refreshed on explicit request.		
Structure Element	Type	Description
mode	<a href="#">OnlineRefreshMode</a>	refresh setting (auto, manual, ...)
frequency	UInt16	frequency in seconds, in which the online data shall be queried In auto mode only values "!=0"=>"high" and "==0"=>"low" will be distinguished. In manual mode, values "!=0"=>"frequency in seconds" and "==0"=>"only on explicit request" will be distinguished.

Referenced by : [org\\_harman\\_nav\\_ctrl\\_traffic\\_TrafficInformationTypes::SConfig](#)

## 10.2.9 SourceSelection

SourceSelection	
Literal	Description
SourceSelection_Off	TI is disabled
SourceSelection_RDS	radio reception e.g. TMC
SourceSelection_Digital	digital radio reception e.g. TMC
SourceSelection_Satellite	digital satellite reception e.g. TMC-SiriusXM
SourceSelection_Online	point-2-point online reception e.g. TPEG

Referenced by : [org\\_harman\\_nav\\_ctrl\\_traffic\\_TrafficInformation::asource](#),  
[org\\_harman\\_nav\\_ctrl\\_traffic\\_TrafficInformation::THBVector\\_SourceSelection\\_](#),  
[org\\_harman\\_nav\\_ctrl\\_traffic\\_TrafficInformationTypes::SConfig](#),  
[org\\_harman\\_nav\\_ctrl\\_traffic\\_TrafficInformationTypes::SConfig](#)

## 10.2.10 TBaseMessages

a list of basemessages - used e.g. for the sorted list of TI-messages Vector of element type [SBaseMessage](#)

## 10.2.11 THBVector\_CHBString\_

textual description of the traffic event (multi-events: each entry represents the description of one event/incident) Vector of element type **String**

Referenced by : [org\\_harman\\_nav\\_ctrl\\_traffic\\_TrafficInformationTypes::SMessage](#)

## 10.2.12 TMessageId

unique identifier of a certain TI message Alias of actual type: **UInt64**

Referenced by : [org\\_harman\\_nav\\_ctrl\\_traffic\\_TrafficInformation::getMessageData](#),  
[org\\_harman\\_nav\\_ctrl\\_traffic\\_TrafficInformation::toggleDetourStatus](#),  
[org\\_harman\\_nav\\_ctrl\\_traffic\\_TrafficInformationTypes::SBaseMessage](#),  
[org\\_harman\\_nav\\_ctrl\\_traffic\\_TrafficInformationTypes::TMessageIds](#)

## 10.2.13 TMessageIds

Vector of element type **TMessageId**

Referenced by : [org\\_harman\\_nav\\_ctrl\\_Guidance::alternativeTIRouteAvailable](#)

## 10.2.14 TMessages

list of ti messages Vector of element type **SMessage**

Referenced by : [org\\_harman\\_nav\\_ctrl\\_traffic\\_TrafficInformation::getViewData](#),  
[org\\_harman\\_nav\\_ctrl\\_traffic\\_TrafficInformation::popUpIndication](#)

## 10.2.15 TrafficInformationError

TrafficInformationError	
Literal	Description
TrafficInformationError_MESSAGE_NOT_AVAILABLE	The message for which the request was triggered is not available
TrafficInformationError_FAILED	Unspecified error

## 10.3 org\_harman\_nav\_ctrl\_speedcam\_SpeedCamOn

Interface Version: 1.0

## 10.3.1 createSession

requestCreateSession		
Each client (online service) must establish a session to the speedcam service to send data. The session should be deleted if service gets unavailable. In this case all client related data gets removed from the service. As input parameter the service expects a source enumeration which identifies the camera service. Furthermore it expects a boolean which tells the service if feedback loop is supported or not (see broadcast feedback for further details) Please note: during shutdown all existing sessions will get deleted automatically		
Parameter	Type	Description
createSession_R_source	<a href="#">EDataSource</a>	Source identifier of provider
createSession_R_isFeedbackSupported	Boolean	True, if provider supports custom cam reports, false otherwise

responseCreateSession		
Each client (online service) must establish a session to the speedcam service to send data. The session should be deleted if service gets unavailable. In this case all client related data gets removed from the service. As input parameter the service expects a source enumeration which identifies the camera service. Furthermore it expects a boolean which tells the service if feedback loop is supported or not (see broadcast feedback for further details) Please note: during shutdown all existing sessions will get deleted automatically		
Parameter	Type	Description
createSession_session	<a href="#">Handle</a>	Handle to the new session

## 10.3.2 deleteSession

requestDeleteSession		
Delete session and release data. This method should be called whenever an online client gets unavailable. The retrieved data of the corresponding client gets removed from service. Please note: During shutdown, all existing sessions will get removed automatically		
Parameter	Type	Description
deleteSession_R_session	<a href="#">Handle</a>	Handle to the session to close

## 10.3.3 push

requestPush		
Push speedcam data The online client will use this method to push speedcam data to the service. As parameter a SDataUpdate structure is expected which contains a bytearray and the update type		

**requestPush**

(update or delete). The format stored in the bytearray depends on the registered datasource (see createSession) and the project-specific format agreements. The response of the method will indicate as soon as the service is ready to accept more data.

Parameter	Type	Description
push_R_session	<a href="#">Handle</a>	Handle to the open client session
push_R_data	<a href="#">SDataUpdate</a>	Structure holding the raw data

**responsePush**

Push speedcam data The online client will use this method to push speedcam data to the service. As parameter a SDataUpdate structure is expected which contains a bytearray and the update type (update or delete). The format stored in the bytearray depends on the registered datasource (see createSession) and the project-specific format agreements. The response of the method will indicate as soon as the service is ready to accept more data.

Parameter	Type	Description
-----------	------	-------------

## 10.3.4 feedback

**informationFeedback**

Provide feedback about existing or new speedcameras. The scs supports a feedback loop which allows a customer to report new cameras or confirm/ revoke existing cameras. The SSPEEDCamFeedback structure describes the position as well as some characteristics of the reported cam. The service will trigger the feedback broadcast only if the supportFeedback flag was set during create session call.

Parameter	Type	Description
feedback_session	<a href="#">Handle</a>	Handle to the open client session
feedback_speedcam	<a href="#">SSPEEDCamFeedback</a>	Feedback about reported/confirmed/ revoked cams

## 10.4 org\_harman\_nav\_ctrl\_speedcam\_SpeedCamOnlineService

Interface Version: 1.0

### 10.4.1 CountryIso

Country code (ISO 3166-1 alpha-3) Alias of actual type: **String**

Referenced by :

[org\\_harman\\_nav\\_ctrl\\_speedcam\\_SpeedCamOnlineServiceTypes::SSPEEDCamFeedback](#)



## 10.4.2 EDataSource

EDataSource	
Literal	Description
EDataSource_AHA	Data from the online service of AHA radio (Cyclops)
EDataSource_Coyote	Data from the Coyote app
EDataSource_Onboard	Data from onboard database
EDataSource_Custom	Pending data reported by the Hmi

Referenced by : [org\\_harman\\_nav\\_ctrl\\_speedcam\\_SpeedCamOnlineService::createSession](#)

## 10.4.3 EDataUpdate

EDataUpdate	
Literal	Description
EDataUpdate_Update	Data tile is to be updated
EDataUpdate_Delete	Data tile is to be removed

Referenced by : [org\\_harman\\_nav\\_ctrl\\_speedcam\\_SpeedCamOnlineServiceTypes::SDataUpdate](#)

## 10.4.4 EFeedback

EFeedback	
Literal	Description
EFeedback_New	New speed cam is reported
EFeedback_Confirmation	Existing speed cam is confirmed
EFeedback_Revocation	Existing speed cam is revoked

Referenced by :  
[org\\_harman\\_nav\\_ctrl\\_speedcam\\_SpeedCamOnlineServiceTypes::SSpeedCamFeedback](#)

## 10.4.5 Handle

Used to identify a session Alias of actual type: **UInt16**

Referenced by : [org\\_harman\\_nav\\_ctrl\\_speedcam\\_SpeedCamOnlineService::createSession](#),  
[org\\_harman\\_nav\\_ctrl\\_speedcam\\_SpeedCamOnlineService::deleteSession](#),  
[org\\_harman\\_nav\\_ctrl\\_speedcam\\_SpeedCamOnlineService::push](#),  
[org\\_harman\\_nav\\_ctrl\\_speedcam\\_SpeedCamOnlineService::feedback](#)

## 10.4.6 Heading

Geographic heading in degree Alias of actual type: **UInt16**

Referenced by : [org\\_harman\\_nav\\_ctrl\\_speedcam\\_SpeedCamOnlineServiceTypes::SDirectedPosition](#)

## 10.4.7 Id

Generic id. concrete format of the data is agreed between service and client: AHA: string, Coyote: UInt32 Alias of actual type: **Buffer**

Referenced by :  
[org\\_harman\\_nav\\_ctrl\\_speedcam\\_SpeedCamOnlineServiceTypes::SSpeedCamFeedback](#)

## 10.4.8 Latitude

Latitude in degree Alias of actual type: **double**

Referenced by : [org\\_harman\\_nav\\_ctrl\\_speedcam\\_SpeedCamOnlineServiceTypes::SDirectedPosition](#)

## 10.4.9 Longitude

Longitude in degree Alias of actual type: **double**

Referenced by : [org\\_harman\\_nav\\_ctrl\\_speedcam\\_SpeedCamOnlineServiceTypes::SDirectedPosition](#)

## 10.4.10 RawData

All incoming data is stored as a bytearray. The concrete format of the data is agreed between service and client: AHA: KML-format as string, Coyote: Serialized HBTD as binary Alias of actual type: **Buffer**

Referenced by : [org\\_harman\\_nav\\_ctrl\\_speedcam\\_SpeedCamOnlineServiceTypes::SDataUpdate](#)

## 10.4.11 SDataUpdate

SDataUpdate		
Update data structure contains update type (update/insert or delete) and generic raw-data bytearray		
Structure Element	Type	Description

SDataUpdate		
type	<a href="#">EDataUpdate</a>	Data update operation type
tile	<a href="#">TileId</a>	Tile identifier (in case of delete)
data	<a href="#">RawData</a>	Tile raw data (in case of update)

Referenced by : [org\\_harman\\_nav\\_ctrl\\_speedcam\\_SpeedCamOnlineService::push](#)

## 10.4.12 SDirectedPosition

SDirectedPosition		
Detailed position of a speedcam		
Structure Element	Type	Description
latitude	<a href="#">Latitude</a>	Latitude in degree
longitude	<a href="#">Longitude</a>	Longitude in degree
heading	<a href="#">Heading</a>	Geographic heading in degree

Referenced by :  
[org\\_harman\\_nav\\_ctrl\\_speedcam\\_SpeedCamOnlineServiceTypes::SSpeedCamFeedback](#)

## 10.4.13 SSpeedCamFeedback

SSpeedCamFeedback		
Feedback data for speed cams. For new reported cams, the speed cam identifier is empty.		
Structure Element	Type	Description
type	<a href="#">EFeedback</a>	Type of feedback
id	<a href="#">Id</a>	Speed cam identifier
pos	<a href="#">SDirectedPosition</a>	Speed cam location
limit	<a href="#">Speed</a>	Speed cam speed limit
country	<a href="#">CountryIso</a>	Country code (ISO 3166-1 alpha-3)
timeStamp	<a href="#">Timestamp</a>	Time stamp (seconds, Unix time)

Referenced by : [org\\_harman\\_nav\\_ctrl\\_speedcam\\_SpeedCamOnlineService::feedback](#)

## 10.4.14 Speed

Speed in km/h Alias of actual type: **UInt16**

Referenced by :

[org\\_harman\\_nav\\_ctrl\\_speedcam\\_SpeedCamOnlineServiceTypes::SSpeedCamFeedback](#)

## 10.4.15 TileId

Tile id Alias of actual type: **Int32**

Referenced by : [org\\_harman\\_nav\\_ctrl\\_speedcam\\_SpeedCamOnlineServiceTypes::SDataUpdate](#)

# 10.5 org\_harman\_nav\_ctrl\_speedcam\_SpeedCamSe

Interface Version: 3.0

## 10.5.1 confirmExistingSpeedCam

requestConfirmExistingSpeedCam		
Confirms an existing speedcam instance.		
Parameter	Type	Description
confirmExistingSpeedCam_R_session	<a href="#">Session</a>	Handle to the open client session
confirmExistingSpeedCam_R_speedCamId	<a href="#">TileId</a>	Identifier of the existing cam

## 10.5.2 confirmSpeedCam

requestConfirmSpeedCam		
Confirms a previously reported speedcam location. This method should be called by the client, if the driver reports an entirely new speed cam. The attributes of the new speed cam have to be added to the report.		
Parameter	Type	Description
confirmSpeedCam_R_session	<a href="#">Handle</a>	Handle to the open client session
confirmSpeedCam_R_reportId	<a href="#">SReportId</a>	Identifier of the report to confirm
confirmSpeedCam_R_data	<a href="#">SSpeedCamConfirmationData</a>	Confirmation data for new cam

## 10.5.3 createSession

requestCreateSession		
Opens a new session on the speedcam controller		

requestCreateSession		
Parameter	Type	Description

responseCreateSession		
Opens a new session on the speedcam controller		
Parameter	Type	Description
createSession_session	Handle	Handle to the new session

## 10.5.4 declineExistingSpeedCam

requestDeclineExistingSpeedCam		
Declines an existing speedcam instance.		
Parameter	Type	Description
declineExistingSpeedCam_R_session	Handle	Handle to the open client session
declineExistingSpeedCam_R_speedCamId	SpeedCamId	Identifier of the existing cam

## 10.5.5 declineSpeedCam

requestDeclineSpeedCam		
Declines a previously reported speedcam location This method should be called by the client, if the driver cancels the dialog for reporting a cam.		
Parameter	Type	Description
declineSpeedCam_R_session	Handle	Handle to the open client session
declineSpeedCam_R_reportId	SReportId	Identifier of the report to decline

## 10.5.6 deleteSession

requestDeleteSession		
Closes an existing session on the speedcam controller		
Parameter	Type	Description
deleteSession_R_session	Handle	Handle to the session to close

## 10.5.7 reportSpeedcam

requestReportSpeedcam		
Reports the location of a potential speedcam This method allows the driver to report an either new or existing speedcam spot. As a result the caller will get a report identifier which may be used to decline or to confirm the report with additional information later		
Parameter	Type	Description
reportSpeedcam_R_session	<a href="#">Handle</a>	Handle to the open client session

responseReportSpeedcam		
Reports the location of a potential speedcam This method allows the driver to report an either new or existing speedcam spot. As a result the caller will get a report identifier which may be used to decline or to confirm the report with additional information later		
Parameter	Type	Description
reportSpeedcam_reportId	<a href="#">SReportId</a>	Report identifier

## 10.5.8 forthcomingEvent

informationForthcomingEvent		
Informs the client about the closest forthcoming speedcam within the configured range. If guidance is running, the look-ahead is based on the guided route, otherwise it is based on the predicted driving path.		
Parameter	Type	Description
forthcomingEvent_session	<a href="#">Handle</a>	Handle to the open client session
forthcomingEvent_event	<a href="#">SSpeedCamEvent</a>	Event information associated to closest cam

## 10.6 org\_harman\_nav\_ctrl\_speedcam\_SpeedCamSe

Interface Version: 3.0

### 10.6.1 EDirection

EDirection	
Literal	Description

EDirection	
EDirection_DRIVING_DIRECTION	Speed cam is measuring in driving direction
EDirection_AGAINST_DRIVING_DIRECTION	Speed cam is measuring against driving direction
EDirection_BOTH DIRECTIONS	Speed cam is measuring in both directions

Referenced by :

[org\\_harman\\_nav\\_ctrl\\_speedcam\\_SpeedCamServiceTypes::SSpeedCamConfirmationData](#)

## 10.6.2 ESpeedCamProvider

ESpeedCamProvider	
Literal	Description
ESpeedCamProvider_AHA_CYCLOPSE	Data from the online service of AHA radio (Cyclopse)
ESpeedCamProvider_COYOTE	Data from the Coyote app
ESpeedCamProvider_ONBOARD	Data from onboard database
ESpeedCamProvider_CUSTOMER	Pending data reported by the Hmi

Referenced by : [org\\_harman\\_nav\\_ctrl\\_speedcam\\_SpeedCamServiceTypes::SSpeedCamEvent](#)

## 10.6.3 ESpeedCamType

ESpeedCamType	
Literal	Description
ESpeedCamType_UNKNOWN_SPEEDCAM	Type of speed cam not supported or unknown
ESpeedCamType_FIXED_SPEEDCAM_POINT	A single speed cam installed at a fixed location
ESpeedCamType_FIXED_TRAFFIC_LIGHT_CAM_POINT	A traffic light cam mounted to a fixed location
ESpeedCamType_FIXED_TRAFFIC_LIGHT_AND_SPEEDCAM_POINT	A traffic light cam + speed cam mounted to a fixed location
ESpeedCamType_MOBILE_SPEEDCAM_POINT	A mobile speed cam, temporarily operated at one location
ESpeedCamType_FIXED_DANGER_ZONE	A fixed risk zone (e.g. accident zone, black spot)
ESpeedCamType_FIXED_AVERAGE_SPEED_ZONE	A zone, where average speed between begin and end location is evaluated
ESpeedCamType_MOBILE_RISK_ZONE	Risk zone with frequent mobile speed cam operations within

Referenced by :

[org\\_harman\\_nav\\_ctrl\\_speedcam\\_SpeedCamServiceTypes::SSpeedCamConfirmationData](#),  
[org\\_harman\\_nav\\_ctrl\\_speedcam\\_SpeedCamServiceTypes::SSpeedCamEvent](#)

## 10.6.4 SReportId

SReportId		
Speed cam report identifier. This identifier is unique within the set of newly reported and not yet confirmed speed cameras.		
Structure Element	Type	Description
id	UInt64	Inner report identifier.

Referenced by : [org\\_harman\\_nav\\_ctrl\\_speedcam\\_SpeedCamService::reportSpeedcam](#),  
[org\\_harman\\_nav\\_ctrl\\_speedcam\\_SpeedCamService::declineSpeedCam](#),  
[org\\_harman\\_nav\\_ctrl\\_speedcam\\_SpeedCamService::confirmSpeedCam](#)

## 10.6.5 SSpeedCamConfirmationData

SSpeedCamConfirmationData		
Speedcam feedback confirmation. This structure contains the required information for confirming a new speed cam. Beneath the direction indication, this involves an optional speedlimit information (use 0 to let engine determine speed limit) and the type of cam		
Structure Element	Type	Description
direction	<a href="#">EDirection</a>	The road orientation of the speed cam
speedlimit	<a href="#">TSpeed_kmh</a>	The speed limit of the speed cam in km/h
camType	<a href="#">ESpeedCamType</a>	The type of the speed cam

Referenced by : [org\\_harman\\_nav\\_ctrl\\_speedcam\\_SpeedCamService::confirmSpeedCam](#)

## 10.6.6 SSpeedCamEvent

SSpeedCamEvent		
Forthcoming speedcam event. Beneath the unique identifier of the cam and the remaining distance to it, this event also holds a wide range of attributes associated to the cam itself		
Structure Element	Type	Description



SSpeedCamEvent		
distanceTo	<a href="#">TDistance_dm</a>	Distance indication to forthcoming speed cam
isDistanceToZoneEnd	boolean	True, if distance is related to the end of a speed cam zone, false in any other case
speedCam	<a href="#">TId</a>	Unique identifier of the speed cam (used for feedback loop)
camProvider	<a href="#">ESpeedCamProvider</a>	The provider of the speed cam data
camType	<a href="#">ESpeedCamType</a>	The type of the speed cam
camIcon	<a href="#">SIcon</a>	Map icon of the speed cam
camSpeedlimit	<a href="#">TSpeed_kmh</a>	Speed limit of the speed cam in km/h
isSpeedlimitExceeded	boolean	True, if the cam speed limit is currently being exceeded by own speed, false otherwise

Referenced by : [org\\_harman\\_nav\\_ctrl\\_speedcam\\_SpeedCamService::forthcomingEvent](#)

## 10.6.7 TId

Alias of actual type: **UInt64**

Referenced by : [org\\_harman\\_nav\\_ctrl\\_speedcam\\_SpeedCamService::declineExistingSpeedCam](#),  
[org\\_harman\\_nav\\_ctrl\\_speedcam\\_SpeedCamService::confirmExistingSpeedCam](#),  
[org\\_harman\\_nav\\_ctrl\\_speedcam\\_SpeedCamServiceTypes::SSpeedCamEvent](#)

## 10.6.8 TSpeed\_kmh

Alias of actual type: **UInt16**

Referenced by :  
[org\\_harman\\_nav\\_ctrl\\_speedcam\\_SpeedCamServiceTypes::SSpeedCamConfirmationData](#),  
[org\\_harman\\_nav\\_ctrl\\_speedcam\\_SpeedCamServiceTypes::SSpeedCamEvent](#)

# 11 Icon Service

## 11.1 org\_harman\_nav\_ctrl\_icon\_IconProvider

Interface Version: 0.2

### 11.1.1 createSession

requestCreateSession		
initialize an icon session. Prerequisite and mandatory to any other IconProvider call. The client need to specify an iconFilePath, where all requested resources can be copied to.		
Parameter	Type	Description
createSession_R_iconFilePath	String	writeable and accessable file path

responseCreateSession		
initialize an icon session. Prerequisite and mandatory to any other IconProvider call. The client need to specify an iconFilePath, where all requested resources can be copied to.		
Parameter	Type	Description
createSession_iconSessionHandle	Handle	icon session handle

### 11.1.2 deleteSession

requestDeleteSession		
deletes an icon session and all associated resources which were requested		
Parameter	Type	Description
deleteSession_R_iconSessionHandle	Handle	

responseDeleteSession		
deletes an icon session and all associated resources which were requested		
Parameter	Type	Description

### 11.1.3 getIconResource

requestGetIconResource		
generic icon request call to get a navigation based icon		

requestGetIconResource		
Parameter	Type	Description
getIconResource_R_iconSessionHandle	<a href="#">SessionHandle</a>	mandatory icon session handle
getIconResource_R_iconResourceSetId	<a href="#">IconResourceSetId</a>	icon resource id which is provided by other navigation domains and is used to address one dedicated icon resource set
getIconResource_R_iconDesignParameters	<a href="#">DesignParameters</a>	description of the requested icon design

responseGetIconResource		
generic icon request call to get a navigation based icon		
Parameter	Type	Description
getIconResource_icon	<a href="#">IconResponseData</a>	

## 11.2 org\_harman\_nav\_ctrl\_icon\_IconProviderTypes

Interface Version: 1.0

### 11.2.1 DesignParameters

DesignParameters		
describes the desired icon design		
Structure Element	Type	Description
imageEncoding	<a href="#">ImageEncoding</a>	
displayRepresentation	<a href="#">IconDisplayRepresentation</a>	
dayNightRepresentation	<a href="#">IconDayNightRepresentation</a>	
isHighlighted	boolean	

Referenced by : [org\\_harman\\_nav\\_ctrl\\_icon\\_IconProvider::getIconResource](#)

### 11.2.2 ErrorCode

ErrorCode	
Literal	Description
ErrorCode_NO_ERROR	

ErrorCode	
ErrorCode_ERROR_UNSPECIFIED	
ErrorCode_ERROR_ICONRESOURCE_NOT_AVAILABLE	
ErrorCode_ERROR_ICON_FILE_PATH_INVALID	

Referenced by : [org\\_harman\\_nav\\_ctrl\\_icon\\_IconProviderTypes::IconResponseData](#)

## 11.2.3 IconDayNightRepresentation

IconDayNightRepresentation	
Literal	Description
IconDayNightRepresentation_DAY	
IconDayNightRepresentation_NIGHT	

Referenced by : [org\\_harman\\_nav\\_ctrl\\_icon\\_IconProviderTypes::DesignParameters](#)

## 11.2.4 IconDisplayRepresentation

IconDisplayRepresentation	
Literal	Description
IconDisplayRepresentation_DEFAULT	
IconDisplayRepresentation_MAP	
IconDisplayRepresentation_HMI	
IconDisplayRepresentation_GUIDANCE	
IconDisplayRepresentation_ICD	
IconDisplayRepresentation_HEAD_UP_DISPLAY	

Referenced by : [org\\_harman\\_nav\\_ctrl\\_icon\\_IconProviderTypes::DesignParameters](#)

## 11.2.5 IconResourceSetId

Alias of actual type: **UInt32**

Referenced by : [org\\_harman\\_nav\\_ctrl\\_icon\\_IconProvider::getIconResource](#)

## 11.2.6 IconResponseData

IconResponseData		
contains icon response information		
Structure Element	Type	Description
url	String	
iconType	<a href="#">IconType</a>	
iconWidthInPixel	UInt32	
iconHeightInPixel	UInt32	
errorCode	<a href="#">ErrorCode</a>	

Referenced by : [org\\_harman\\_nav\\_ctrl\\_icon\\_IconProvider::getIconResource](#)

## 11.2.7 IconType

IconType	
Literal	Description
IconType_POI	
IconType_TRAFFIC_EVENT	
IconType_TRAFFIC_ROAD_NUMBER	
IconType_ROAD_SIGN	
IconType_SIGN_POST	
IconType_COUNTRY_FLAG	

Referenced by : [org\\_harman\\_nav\\_ctrl\\_icon\\_IconProviderTypes::IconResponseData](#)

## 11.2.8 ImageEncoding

ImageEncoding	
Literal	Description
ImageEncoding_RAW_RGBA8888	
ImageEncoding_PNG	

Referenced by : [org\\_harman\\_nav\\_ctrl\\_icon\\_IconProviderTypes::DesignParameters](#)

# 12 Common Types

## 12.1 org\_harman\_nav\_ctrl\_CommonTypes

Interface Version: 1.0

### 12.1.1 Area

Alias of actual type: [Polygon](#)

### 12.1.2 BasicEnum

BasicEnum	
Literal	Description
BasicEnum_INVALID	

### 12.1.3 Coordinate2D

Coordinate2D		
Structure Element	Type	Description
latitude	double	
longitude	double	

Referenced by : [org\\_harman\\_nav\\_ctrl\\_CommonTypes::Rectangle](#),  
[org\\_harman\\_nav\\_ctrl\\_CommonTypes::Rectangle](#), [org\\_harman\\_nav\\_ctrl\\_CommonTypes::Polygon](#),  
[org\\_harman\\_nav\\_ctrl\\_CommonTypes::Coordinate3D](#),  
[org\\_harman\\_nav\\_ctrl\\_di\\_LocationInput::reverseGeocode](#),  
[org\\_harman\\_nav\\_ctrl\\_di\\_POIServiceTypes::THBVector\\_Coordinate2D\\_](#),  
[org\\_harman\\_nav\\_ctrl\\_mapv\\_MapViewControl::setCameraHeadingToTarget](#),  
[org\\_harman\\_nav\\_ctrl\\_mapv\\_MapViewControl::getCameraHeading](#),

[org\\_harman\\_nav\\_ctrl\\_mapv\\_MapViewControl::THBVector\\_Coordinate2D\\_](#),  
[org\\_harman\\_nav\\_ctrl\\_mapv\\_MapViewControlTypes::CustomElement](#),  
[org\\_harman\\_nav\\_ctrl\\_mapv\\_MapViewControlTypes::SelectedMapElement](#),  
[org\\_harman\\_nav\\_ctrl\\_GuidanceTypes::LaneGuidanceInfo](#),  
[org\\_harman\\_nav\\_ctrl\\_GuidanceTypes::ManeuverInfo](#),  
[org\\_harman\\_nav\\_ctrl\\_RoutingTypes::IntermediatePoint](#)

## 12.1.4 Coordinate3D

Coordinate3D		
Structure Element	Type	Description
_base	<a href="#">Coordinate2D</a>	
altitude	Int32	

Referenced by : [org\\_harman\\_nav\\_ctrl\\_di\\_LocationInputTypes::AddressValue](#),  
[org\\_harman\\_nav\\_ctrl\\_di\\_POIContentAccessModule::THBVector\\_Coordinate3D\\_](#),  
[org\\_harman\\_nav\\_ctrl\\_di\\_POISearch::setCenter](#),  
[org\\_harman\\_nav\\_ctrl\\_di\\_POIServiceTypes::PoiDetails](#),  
[org\\_harman\\_nav\\_ctrl\\_di\\_POIServiceTypes::PoiAddedDetails](#),  
[org\\_harman\\_nav\\_ctrl\\_di\\_POIServiceTypes::PoiCAMDetails](#),  
[org\\_harman\\_nav\\_ctrl\\_di\\_POIServiceTypes::PreviewDetails](#),  
[org\\_harman\\_nav\\_ctrl\\_In\\_TrailTypes::TrailDetails](#), [org\\_harman\\_nav\\_ctrl\\_In\\_TrailTypes::TrailDetails](#),  
[org\\_harman\\_nav\\_ctrl\\_mapv\\_MapViewControl::setTargetPoint](#),  
[org\\_harman\\_nav\\_ctrl\\_mapv\\_MapViewControl::getTargetPoint](#),  
[org\\_harman\\_nav\\_ctrl\\_mapv\\_MapViewControl::setCameraPosition](#),  
[org\\_harman\\_nav\\_ctrl\\_mapv\\_MapViewControl::getCameraPosition](#),  
[org\\_harman\\_nav\\_ctrl\\_mapv\\_MapViewControlTypes::ScreenStatus](#),  
[org\\_harman\\_nav\\_ctrl\\_GuidanceTypes::WaypointInfo](#),  
[org\\_harman\\_nav\\_ctrl\\_RouteInfoTypes::SegmentDetails](#),  
[org\\_harman\\_nav\\_ctrl\\_RouteInfoTypes::SegmentDetails](#)

## 12.1.5 Distance

Alias of actual type: **double**

Referenced by : [org\\_harman\\_nav\\_ctrl\\_In\\_TrailTypes::TrailDetails](#),  
[org\\_harman\\_nav\\_ctrl\\_In\\_TrailTypes::SettingValue](#),  
[org\\_harman\\_nav\\_ctrl\\_GuidanceTypes::LaneGuidanceInfo](#),  
[org\\_harman\\_nav\\_ctrl\\_GuidanceTypes::TravelCosts](#),  
[org\\_harman\\_nav\\_ctrl\\_GuidanceTypes::ManeuverInfo](#),  
[org\\_harman\\_nav\\_ctrl\\_GuidanceTypes::ManeuverInfo](#),  
[org\\_harman\\_nav\\_ctrl\\_RouteInfoTypes::SegmentItem](#)

## 12.1.6 Handle

Alias of actual type: **UInt32**

Referenced by : [org\\_harman\\_nav\\_ctrl\\_di\\_LocationInput::createLocationInput](#),  
[org\\_harman\\_nav\\_ctrl\\_di\\_LocationInput::deleteLocationInput](#),  
[org\\_harman\\_nav\\_ctrl\\_di\\_LocationInput::setAddress](#),  
[org\\_harman\\_nav\\_ctrl\\_di\\_LocationInput::setSelectionCriterion](#),  
[org\\_harman\\_nav\\_ctrl\\_di\\_LocationInput::spell](#), [org\\_harman\\_nav\\_ctrl\\_di\\_LocationInput::search](#),  
[org\\_harman\\_nav\\_ctrl\\_di\\_LocationInput::requestListUpdate](#),  
[org\\_harman\\_nav\\_ctrl\\_di\\_LocationInput::selectEntry](#), [org\\_harman\\_nav\\_ctrl\\_di\\_LocationInput::getEntry](#),  
[org\\_harman\\_nav\\_ctrl\\_di\\_LocationInput::validateAddress](#),  
[org\\_harman\\_nav\\_ctrl\\_di\\_LocationInput::reverseGeocode](#),  
[org\\_harman\\_nav\\_ctrl\\_di\\_LocationInput::currentSelectionCriterion](#),  
[org\\_harman\\_nav\\_ctrl\\_di\\_LocationInput::spellResult](#),  
[org\\_harman\\_nav\\_ctrl\\_di\\_LocationInput::searchResultList](#),  
[org\\_harman\\_nav\\_ctrl\\_di\\_LocationInput::searchResultListSizeChanged](#),  
[org\\_harman\\_nav\\_ctrl\\_di\\_LocationInput::contentUpdated](#),  
[org\\_harman\\_nav\\_ctrl\\_di\\_LocationInput::addressValidationResult](#),  
[org\\_harman\\_nav\\_ctrl\\_di\\_OneBoxSearch::createOneBoxSearch](#),  
[org\\_harman\\_nav\\_ctrl\\_di\\_OneBoxSearch::deleteOneBoxSearch](#),  
[org\\_harman\\_nav\\_ctrl\\_di\\_OneBoxSearch::setSearchCountry](#),  
[org\\_harman\\_nav\\_ctrl\\_di\\_OneBoxSearch::setSearchLanguage](#),  
[org\\_harman\\_nav\\_ctrl\\_di\\_OneBoxSearch::setSearchParameters](#),  
[org\\_harman\\_nav\\_ctrl\\_di\\_OneBoxSearch::startOneBoxSearch](#),  
[org\\_harman\\_nav\\_ctrl\\_di\\_OneBoxSearch::cancelOneBoxSearch](#),  
[org\\_harman\\_nav\\_ctrl\\_di\\_OneBoxSearch::requestResultList](#),  
[org\\_harman\\_nav\\_ctrl\\_di\\_OneBoxSearch::selectEntry](#),  
[org\\_harman\\_nav\\_ctrl\\_di\\_OneBoxSearch::getEntry](#),  
[org\\_harman\\_nav\\_ctrl\\_di\\_OneBoxSearch::searchStatus](#),  
[org\\_harman\\_nav\\_ctrl\\_di\\_OneBoxSearch::searchResultList](#),  
[org\\_harman\\_nav\\_ctrl\\_di\\_OneBoxSearch::searchResultListSizeChanged](#),  
[org\\_harman\\_nav\\_ctrl\\_di\\_POIContentAccessModule::poiSearchStarted](#),  
[org\\_harman\\_nav\\_ctrl\\_di\\_POIContentAccessModule::poiSearchCanceled](#),  
[org\\_harman\\_nav\\_ctrl\\_di\\_POIContentAccessModule::resultListRequested](#),  
[org\\_harman\\_nav\\_ctrl\\_di\\_POIContentAccessModule::searchStatus](#),  
[org\\_harman\\_nav\\_ctrl\\_di\\_POISearch::createPoiSearchHandle](#),  
[org\\_harman\\_nav\\_ctrl\\_di\\_POISearch::deletePoiSearchHandle](#),  
[org\\_harman\\_nav\\_ctrl\\_di\\_POISearch::setCenter](#),  
[org\\_harman\\_nav\\_ctrl\\_di\\_POISearch::setRouteHandle](#),  
[org\\_harman\\_nav\\_ctrl\\_di\\_POISearch::setRouteHandle](#),  
[org\\_harman\\_nav\\_ctrl\\_di\\_POISearch::setCategories](#),  
[org\\_harman\\_nav\\_ctrl\\_di\\_POISearch::setSearchRadius](#),  
[org\\_harman\\_nav\\_ctrl\\_di\\_POISearch::setMaximumResults](#),  
[org\\_harman\\_nav\\_ctrl\\_di\\_POISearch::setAttributes](#),  
[org\\_harman\\_nav\\_ctrl\\_di\\_POISearch::startPoiSearch](#),  
[org\\_harman\\_nav\\_ctrl\\_di\\_POISearch::cancelPoiSearch](#),  
[org\\_harman\\_nav\\_ctrl\\_di\\_POISearch::requestResultList](#),  
[org\\_harman\\_nav\\_ctrl\\_di\\_POISearch::poiStatus](#),  
[org\\_harman\\_nav\\_ctrl\\_di\\_POISearch::resultListChanged](#),  
[org\\_harman\\_nav\\_ctrl\\_di\\_POISearch::getPoiData](#),



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org_harman_nav_ctrl_di_SpeechLocationInput::getSpeechModesList,  
org_harman_nav_ctrl_di_SpeechLocationInput::getSpeechList,  
org_harman_nav_ctrl_di_SpeechLocationInput::getSpeechOrthographies,  
org_harman_nav_ctrl_icon_IconProvider::createSession,  
org_harman_nav_ctrl_icon_IconProvider::deleteSession,  
org_harman_nav_ctrl_icon_IconProvider::getIconResource,  
org_harman_nav_ctrl_mapv_MapViewControl::createMapViewInstance,  
org_harman_nav_ctrl_mapv_MapViewControl::createMapViewInstance,  
org_harman_nav_ctrl_mapv_MapViewControl::releaseMapViewInstance,  
org_harman_nav_ctrl_mapv_MapViewControl::releaseMapViewInstance,  
org_harman_nav_ctrl_mapv_MapViewControl::getMapViewType,  
org_harman_nav_ctrl_mapv_MapViewControl::setTargetPoint,  
org_harman_nav_ctrl_mapv_MapViewControl::setTargetPoint,  
org_harman_nav_ctrl_mapv_MapViewControl::getTargetPoint,  
org_harman_nav_ctrl_mapv_MapViewControl::setFollowCarMode,  
org_harman_nav_ctrl_mapv_MapViewControl::setFollowCarMode,  
org_harman_nav_ctrl_mapv_MapViewControl::getFollowCarMode,  
org_harman_nav_ctrl_mapv_MapViewControl::setCameraPosition,  
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org_harman_nav_ctrl_mapv_MapViewControl::getCameraPosition,  
org_harman_nav_ctrl_mapv_MapViewControl::setCameraHeadingAngle,  
org_harman_nav_ctrl_mapv_MapViewControl::setCameraHeadingAngle,  
org_harman_nav_ctrl_mapv_MapViewControl::setCameraHeadingToTarget,  
org_harman_nav_ctrl_mapv_MapViewControl::setCameraHeadingToTarget,  
org_harman_nav_ctrl_mapv_MapViewControl::setCameraHeadingTrackUp,  
org_harman_nav_ctrl_mapv_MapViewControl::setCameraHeadingTrackUp,  
org_harman_nav_ctrl_mapv_MapViewControl::getCameraHeading,  
org_harman_nav_ctrl_mapv_MapViewControl::setCameraTiltAngle,  
org_harman_nav_ctrl_mapv_MapViewControl::setCameraTiltAngle,  
org_harman_nav_ctrl_mapv_MapViewControl::getCameraTiltAngle,  
org_harman_nav_ctrl_mapv_MapViewControl::setCameraRollAngle,  
org_harman_nav_ctrl_mapv_MapViewControl::setCameraRollAngle,  
org_harman_nav_ctrl_mapv_MapViewControl::getCameraRollAngle,  
org_harman_nav_ctrl_mapv_MapViewControl::setCameraDistanceFromTargetPoint,  
org_harman_nav_ctrl_mapv_MapViewControl::setCameraDistanceFromTargetPoint,  
org_harman_nav_ctrl_mapv_MapViewControl::getCameraDistanceFromTargetPoint,  
org_harman_nav_ctrl_mapv_MapViewControl::setMapViewScaleMode,  
org_harman_nav_ctrl_mapv_MapViewControl::setMapViewScaleMode,  
org_harman_nav_ctrl_mapv_MapViewControl::getMapViewScaleMode,  
org_harman_nav_ctrl_mapv_MapViewControl::getSupportedMapViewScaleModes,  
org_harman_nav_ctrl_mapv_MapViewControl::setCameraHeight,  
org_harman_nav_ctrl_mapv_MapViewControl::setCameraHeight,  
org_harman_nav_ctrl_mapv_MapViewControl::getCameraHeight,  
org_harman_nav_ctrl_mapv_MapViewControl::setMapViewPerspective,  
org_harman_nav_ctrl_mapv_MapViewControl::setMapViewPerspective,  
org_harman_nav_ctrl_mapv_MapViewControl::getMapViewPerspective,  
org_harman_nav_ctrl_mapv_MapViewControl::setMapViewObjectVisibility,  
org_harman_nav_ctrl_mapv_MapViewControl::setMapViewObjectVisibility,  
org_harman_nav_ctrl_mapv_MapViewControl::getMapViewObjectVisibility,  
org_harman_nav_ctrl_mapv_MapViewControl::getSupportedMapViewObjectVisibilities,  
org_harman_nav_ctrl_mapv_MapViewControl::getScaleList,
```

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org_harman_nav_ctrl_mapv_MapViewControl::setMapViewScale,
org_harman_nav_ctrl_mapv_MapViewControl::setMapViewScale,
org_harman_nav_ctrl_mapv_MapViewControl::setMapViewScaleByDelta,
org_harman_nav_ctrl_mapv_MapViewControl::setMapViewScaleByDelta,
org_harman_nav_ctrl_mapv_MapViewControl::setMapViewScaleByMetersPerPixel,
org_harman_nav_ctrl_mapv_MapViewControl::setMapViewScaleByMetersPerPixel,
org_harman_nav_ctrl_mapv_MapViewControl::getMapViewScale,
org_harman_nav_ctrl_mapv_MapViewControl::setMapViewBoundingBox,
org_harman_nav_ctrl_mapv_MapViewControl::setMapViewBoundingBox,
org_harman_nav_ctrl_mapv_MapViewControl::getMapViewBoundingBox,
org_harman_nav_ctrl_mapv_MapViewControl::setMapViewSaveArea,
org_harman_nav_ctrl_mapv_MapViewControl::setMapViewSaveArea,
org_harman_nav_ctrl_mapv_MapViewControl::getMapViewSaveArea,
org_harman_nav_ctrl_mapv_MapViewControl::setMapViewPan,
org_harman_nav_ctrl_mapv_MapViewControl::setMapViewPan,
org_harman_nav_ctrl_mapv_MapViewControl::setMapViewRotation,
org_harman_nav_ctrl_mapv_MapViewControl::setMapViewRotation,
org_harman_nav_ctrl_mapv_MapViewControl::getMapViewRotation,
org_harman_nav_ctrl_mapv_MapViewControl::setMapViewVisibilityMode,
org_harman_nav_ctrl_mapv_MapViewControl::setMapViewVisibilityMode,
org_harman_nav_ctrl_mapv_MapViewControl::getMapViewVisibilityMode,
org_harman_nav_ctrl_mapv_MapViewControl::setMapViewPerformanceLevel,
org_harman_nav_ctrl_mapv_MapViewControl::setMapViewPerformanceLevel,
org_harman_nav_ctrl_mapv_MapViewControl::getMapViewPerformanceLevel,
org_harman_nav_ctrl_mapv_MapViewControl::displayRoute,
org_harman_nav_ctrl_mapv_MapViewControl::displayRoute,
org_harman_nav_ctrl_mapv_MapViewControl::displayRoute,
org_harman_nav_ctrl_mapv_MapViewControl::hideRoute,
org_harman_nav_ctrl_mapv_MapViewControl::hideRoute,
org_harman_nav_ctrl_mapv_MapViewControl::hideRoute,
org_harman_nav_ctrl_mapv_MapViewControl::getDisplayedRoutes,
org_harman_nav_ctrl_mapv_MapViewControl::addKml,
org_harman_nav_ctrl_mapv_MapViewControl::addKml,
org_harman_nav_ctrl_mapv_MapViewControl::addKml,
org_harman_nav_ctrl_mapv_MapViewControl::deleteKml,
org_harman_nav_ctrl_mapv_MapViewControl::deleteKml,
org_harman_nav_ctrl_mapv_MapViewControl::deleteKml,
org_harman_nav_ctrl_mapv_MapViewControl::setKmlVisibility,
org_harman_nav_ctrl_mapv_MapViewControl::setKmlVisibility,
org_harman_nav_ctrl_mapv_MapViewControl::setKmlVisibility,
org_harman_nav_ctrl_mapv_MapViewControl::pushSettings,
org_harman_nav_ctrl_mapv_MapViewControl::pushSettings,
org_harman_nav_ctrl_mapv_MapViewControl::popSettings,
org_harman_nav_ctrl_mapv_MapViewControl::popSettings,
org_harman_nav_ctrl_mapv_MapViewControl::resetSettings,
org_harman_nav_ctrl_mapv_MapViewControl::resetSettings,
org_harman_nav_ctrl_mapv_MapViewControl::displayObjectList,
org_harman_nav_ctrl_mapv_MapViewControl::displayObjectList,
org_harman_nav_ctrl_mapv_MapViewControl::hideObjectList,
org_harman_nav_ctrl_mapv_MapViewControl::hideObjectList,
org_harman_nav_ctrl_mapv_MapViewControl::highlightObjectListItem,
```

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org_harman_nav_ctrl_mapv_MapViewControl::highlightObjectListItem,
org_harman_nav_ctrl_mapv_MapViewControl::centerOnObjectListItems,
org_harman_nav_ctrl_mapv_MapViewControl::centerOnObjectListItems,
org_harman_nav_ctrl_mapv_MapViewControl::getPoiCategoriesVisible,
org_harman_nav_ctrl_mapv_MapViewControl::setPoiCategoriesVisible,
org_harman_nav_ctrl_mapv_MapViewControl::setPoiCategoriesVisible,
org_harman_nav_ctrl_mapv_MapViewControl::setPoiCategoriesVisibleMode,
org_harman_nav_ctrl_mapv_MapViewControl::setPoiCategoriesVisibleMode,
org_harman_nav_ctrl_mapv_MapViewControl::setPoiCategoriesVisibleWithinLimits,
org_harman_nav_ctrl_mapv_MapViewControl::setPoiCategoriesVisibleWithinLimits,
org_harman_nav_ctrl_mapv_MapViewControl::setPoiCategoriesNotVisible,
org_harman_nav_ctrl_mapv_MapViewControl::setPoiCategoriesNotVisible,
org_harman_nav_ctrl_mapv_MapViewControl::setTrafficIncidentsVisibility,
org_harman_nav_ctrl_mapv_MapViewControl::setTrafficIncidentsVisibility,
org_harman_nav_ctrl_mapv_MapViewControl::setMapViewTheme,
org_harman_nav_ctrl_mapv_MapViewControl::setMapViewTheme,
org_harman_nav_ctrl_mapv_MapViewControl::getMapViewTheme,
org_harman_nav_ctrl_mapv_MapViewControl::convertPixelCoordsToGeoCoords,
org_harman_nav_ctrl_mapv_MapViewControl::convertPixelCoordsToGeoCoords,
org_harman_nav_ctrl_mapv_MapViewControl::convertGeoCoordsToPixelCoords,
org_harman_nav_ctrl_mapv_MapViewControl::convertGeoCoordsToPixelCoords,
org_harman_nav_ctrl_mapv_MapViewControl::displayCustomElements,
org_harman_nav_ctrl_mapv_MapViewControl::displayCustomElements,
org_harman_nav_ctrl_mapv_MapViewControl::hideCustomElements,
org_harman_nav_ctrl_mapv_MapViewControl::hideCustomElements,
org_harman_nav_ctrl_mapv_MapViewControl::getDisplayedCustomElements,
org_harman_nav_ctrl_mapv_MapViewControl::selectElementsOnMap,
org_harman_nav_ctrl_mapv_MapViewControl::mapViewGesture,
org_harman_nav_ctrl_mapv_MapViewControl::mapViewGesture,
org_harman_nav_ctrl_mapv_MapViewControl::mapShowRouteOverview,
org_harman_nav_ctrl_mapv_MapViewControl::mapShowRouteOverview,
org_harman_nav_ctrl_mapv_MapViewControl::mapSetStyle,
org_harman_nav_ctrl_mapv_MapViewControl::mapSetStyle,
org_harman_nav_ctrl_mapv_MapViewControl::getMapModeList,
org_harman_nav_ctrl_mapv_MapViewControl::setMapMode,
org_harman_nav_ctrl_mapv_MapViewControl::setMapMode,
org_harman_nav_ctrl_mapv_MapViewControl::getMapMode,
org_harman_nav_ctrl_mapv_MapViewControl::getMapMode,
org_harman_nav_ctrl_mapv_MapViewControl::setAutozoomSetting,
org_harman_nav_ctrl_mapv_MapViewControl::setAutozoomSetting,
org_harman_nav_ctrl_mapv_MapViewControl::getAutozoomSetting,
org_harman_nav_ctrl_mapv_MapViewControl::getAutozoomSetting,
org_harman_nav_ctrl_mapv_MapViewControl::setAutozoomEnabled,
org_harman_nav_ctrl_mapv_MapViewControl::setAutozoomEnabled,
org_harman_nav_ctrl_mapv_MapViewControl::getAutozoomEnabled,
org_harman_nav_ctrl_mapv_MapViewControl::getAutozoomEnabled,
org_harman_nav_ctrl_mapv_MapViewControl::mapViewScaleChanged,
org_harman_nav_ctrl_mapv_MapViewControl::mapViewVisibilityChanged,
org_harman_nav_ctrl_mapv_MapViewControl::displayedRoutes,
org_harman_nav_ctrl_mapv_MapViewControl::THBVector_Handle_,
org_harman_nav_ctrl_mapv_MapViewControlTypes::ObjectList,

```

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org_harman_nav_ctrl_mapv_MapViewControlTypes::ElementValue,
org_harman_nav_ctrl_mapv_MapViewControlTypes::DisplayedRoute,
org_harman_nav_ctrl_mapv_MapViewControlTypes::ScreenStatus,
org_harman_nav_ctrl_Guidance::startGuidance, org_harman_nav_ctrl_Guidance::getGuidanceStatus,
org_harman_nav_ctrl_Guidance::selectAlternativeTIRoute,
org_harman_nav_ctrl_Guidance::guidanceStatusChanged,
org_harman_nav_ctrl_Guidance::alternativeTIRouteInvalidated,
org_harman_nav_ctrl_GuidanceTypes::RouteCostData, org_harman_nav_ctrl_Routing::createRoute,
org_harman_nav_ctrl_Routing::deleteRoute, org_harman_nav_ctrl_Routing::setCostModel,
org_harman_nav_ctrl_Routing::getCostModel, org_harman_nav_ctrl_Routing::setRoutePreferences,
org_harman_nav_ctrl_Routing::getRoutePreferences,
org_harman_nav_ctrl_Routing::setRouteSchedule, org_harman_nav_ctrl_Routing::getRouteSchedule,
org_harman_nav_ctrl_Routing::setWaypoints, org_harman_nav_ctrl_Routing::getWaypoints,
org_harman_nav_ctrl_Routing::calculateRoute,
org_harman_nav_ctrl_Routing::cancelRouteCalculation,
org_harman_nav_ctrl_Routing::calculateAlternateRoute,
org_harman_nav_ctrl_Routing::getRouteOverview,
org_harman_nav_ctrl_Routing::setBlockedRouteStretch, org_harman_nav_ctrl_Routing::routeDeleted,
org_harman_nav_ctrl_Routing::routeCalculationCancelled,
org_harman_nav_ctrl_Routing::routeCalculationSuccessful,
org_harman_nav_ctrl_Routing::routeCalculationFailed,
org_harman_nav_ctrl_Routing::routeCalculationProgressUpdate,
org_harman_nav_ctrl_Routing::THBVector_Handle_,
org_harman_nav_ctrl_speedcam_SpeedCamService::createSession,
org_harman_nav_ctrl_speedcam_SpeedCamService::deleteSession,
org_harman_nav_ctrl_speedcam_SpeedCamService::reportSpeedcam,
org_harman_nav_ctrl_speedcam_SpeedCamService::declineSpeedCam,
org_harman_nav_ctrl_speedcam_SpeedCamService::confirmSpeedCam,
org_harman_nav_ctrl_speedcam_SpeedCamService::declineExistingSpeedCam,
org_harman_nav_ctrl_speedcam_SpeedCamService::confirmExistingSpeedCam,
org_harman_nav_ctrl_speedcam_SpeedCamService::forthcomingEvent

```

## 12.1.7 LinkId

Alias of actual type: **Buffer**

## 12.1.8 Polygon

Vector of element type **Coordinate2D**

## 12.1.9 Rectangle

Rectangle		
Structure Element	Type	Description
topLeft	<b>Coordinate2D</b>	

<b>Rectangle</b>		
bottomRight	<a href="#">Coordinate2D</a>	

## 12.1.10 Slcon

<b>Slcon</b>		
Structure Element	Type	Description
dummy	Int32	

Referenced by : [org\\_harman\\_nav\\_ctrl\\_highwaymode\\_HighwayModeTypes::HighwayItem](#),  
[org\\_harman\\_nav\\_ctrl\\_speedcam\\_SpeedCamServiceTypes::SSpeedCamEvent](#),  
[org\\_harman\\_nav\\_ctrl\\_traffic\\_TrafficInformationTypes::SBaseMessage](#),  
[org\\_harman\\_nav\\_ctrl\\_traffic\\_TrafficInformationTypes::SBaseMessage](#)

## 12.1.11 TDistance\_dm

Type to represent distances and lengths. Unit is decimeter (=0.1 m = 10 cm). This unit was chosen because: - it is small enough to represent "feet" distances in a unique way (e.g. when distances to maneuver points are displayed in feet units), and - for smaller units, like cm or mm, the maximum 32 bit value would be close to possible route lengths ( $2^{32}$  dm ~ 400,000 km, which is 10 times around the world). This type was chosen to be "unsigned" because no use case with negative distances was found. Alias of actual type: **UInt32**

Referenced by : [org\\_harman\\_nav\\_ctrl\\_speedcam\\_SpeedCamServiceTypes::SSpeedCamEvent](#),  
[org\\_harman\\_nav\\_ctrl\\_traffic\\_TrafficInformationTypes::SBaseMessage](#),  
[org\\_harman\\_nav\\_ctrl\\_traffic\\_TrafficInformationTypes::SMessage](#)

## 12.1.12 TTime\_sec

Alias of actual type: **UInt32**

Referenced by : [org\\_harman\\_nav\\_ctrl\\_traffic\\_TrafficInformationTypes::SMessage](#)

## 12.1.13 Timestamp

Alias of actual type: **UInt64**

Referenced by : [org\\_harman\\_nav\\_ctrl\\_In\\_TrailTypes::TrailDetails](#),  
[org\\_harman\\_nav\\_ctrl\\_In\\_TrailTypes::TrailDetails](#), [org\\_harman\\_nav\\_ctrl\\_PositioningTypes::GpsTime](#),  
[org\\_harman\\_nav\\_ctrl\\_PositioningTypes::AddressItemValue](#),  
[org\\_harman\\_nav\\_ctrl\\_PositioningTypes::PositionStatusValue](#),

[org\\_harman\\_nav\\_ctrl\\_PositioningTypes::PositionItemValue](#),  
[org\\_harman\\_nav\\_ctrl\\_speedcam\\_SpeedCamOnlineServiceTypes::SSpeedCamFeedback](#)

## 12.1.14 Version

Version		
version.		
Structure Element	Type	Description
versionMajor	UInt16	when the major changes, then backward compatibility with previous releases is not granted.
versionMinor	UInt16	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).
versionMicro	UInt16	when the micro changes, then backward compatibility with previous releases is granted (bug fixes or documentation modifications).
date	String	release date (e.g. 21-06-2011).

Referenced by : [org\\_harman\\_nav\\_ctrl\\_di\\_LocationInput::getVersion](#),  
[org\\_harman\\_nav\\_ctrl\\_di\\_OneBoxSearch::getVersion](#),  
[org\\_harman\\_nav\\_ctrl\\_di\\_POIContentAccessModule::getVersion](#),  
[org\\_harman\\_nav\\_ctrl\\_di\\_POISearch::getVersion](#),  
[org\\_harman\\_nav\\_ctrl\\_mapv\\_MapViewControl::getVersion](#)

## 12.2 org\_harman\_nav\_ctrl\_common\_list\_ListTypes

Interface Version: 1.0

### 12.2.1 AnchorOffset

the relative view anchor based on position ListKey Alias of actual type: **UInt16**

Referenced by : [org\\_harman\\_nav\\_ctrl\\_common\\_list\\_ListTypes::ViewSnapshotPosition](#),  
[org\\_harman\\_nav\\_ctrl\\_highwaymode\\_HighwayMode::setViewAnchor](#),  
[org\\_harman\\_nav\\_ctrl\\_In\\_Trails::setViewAnchor](#),  
[org\\_harman\\_nav\\_ctrl\\_memory\\_LocationMemory::setViewAnchor](#),  
[org\\_harman\\_nav\\_ctrl\\_RouteInfo::setViewAnchor](#),  
[org\\_harman\\_nav\\_ctrl\\_traffic\\_TrafficInformation::setViewAnchor](#)

## 12.2.2 ListError

ListError	
Literal	Description
ListError_BasicEnum_INVALID	
ListError_INVALID_LIST_ID	occurs if the list id was invalid.
ListError_INVALID_VIEW	view identification used to distinguish several instances of a view for one client. It is never changed by the service nor the client.
ListError_INVALID_PARAMETER	occurs if one of the provided parameters was not acceptable.
ListError_SIZE_LIMIT_EXCEEDED	occurs if the implementation can not provide such large views.
ListError_OUT_OF_RESSOURCES	occurs if there are not enough resources available to create another view (e.g. memory).
ListError_OUT_OF_RANGE_POSITION	occurs if there is request a position which is not available
ListError_POLICY_DENIED	Some policy could not be executed.

## 12.2.3 ListId

ListId		
The ListId is the name of a list.		
Structure Element	Type	Description
listname	String	

Referenced by : [org\\_harman\\_nav\\_ctrl\\_highwaymode\\_HighwayMode::getListSize](#),  
[org\\_harman\\_nav\\_ctrl\\_highwaymode\\_HighwayMode::createView](#),  
[org\\_harman\\_nav\\_ctrl\\_highwaymode\\_HighwayMode::listSize](#),  
[org\\_harman\\_nav\\_ctrl\\_In\\_Trails::getListSize](#), [org\\_harman\\_nav\\_ctrl\\_In\\_Trails::createView](#),  
[org\\_harman\\_nav\\_ctrl\\_In\\_Trails::listSize](#), [org\\_harman\\_nav\\_ctrl\\_memory\\_LocationMemory::getListSize](#),  
[org\\_harman\\_nav\\_ctrl\\_memory\\_LocationMemory::createView](#),  
[org\\_harman\\_nav\\_ctrl\\_memory\\_LocationMemory::removeAll](#),  
[org\\_harman\\_nav\\_ctrl\\_memory\\_LocationMemory::removeItem](#),  
[org\\_harman\\_nav\\_ctrl\\_memory\\_LocationMemory::addItem](#),  
[org\\_harman\\_nav\\_ctrl\\_memory\\_LocationMemory::addItemLocation](#),  
[org\\_harman\\_nav\\_ctrl\\_memory\\_LocationMemory::setItemName](#),  
[org\\_harman\\_nav\\_ctrl\\_memory\\_LocationMemory::createSpeechFile](#),  
[org\\_harman\\_nav\\_ctrl\\_memory\\_LocationMemory::importLocationItemList](#),  
[org\\_harman\\_nav\\_ctrl\\_memory\\_LocationMemory::listSize](#),  
[org\\_harman\\_nav\\_ctrl\\_memory\\_LocationMemory::THBVector\\_ListId\\_](#),

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org_harman_nav_ctrl_memory_LocationMemoryTypes::ListSetting,
org_harman_nav_ctrl_RouteInfo::getListSize, org_harman_nav_ctrl_RouteInfo::createView,
org_harman_nav_ctrl_RouteInfo::listSize, org_harman_nav_ctrl_RouteInfo::THBVector_ListId_,
org_harman_nav_ctrl_traffic_TrafficInformation::getListSize,
org_harman_nav_ctrl_traffic_TrafficInformation::createView,
org_harman_nav_ctrl_traffic_TrafficInformation::listSize,
org_harman_nav_ctrl_traffic_TrafficInformation::THBVector_ListId_
```

## 12.2.4 ListKey

Absolute position within the whole list Alias of actual type: **UInt16**

Referenced by : [org\\_harman\\_nav\\_ctrl\\_common\\_list\\_ListTypes::ViewSnapshotPosition](#),  
[org\\_harman\\_nav\\_ctrl\\_highwaymode\\_HighwayMode::setViewPosition](#),  
[org\\_harman\\_nav\\_ctrl\\_highwaymode\\_HighwayMode::getResultList](#),  
[org\\_harman\\_nav\\_ctrl\\_In\\_Trails::setViewPosition](#),  
[org\\_harman\\_nav\\_ctrl\\_memory\\_LocationMemory::createView](#),  
[org\\_harman\\_nav\\_ctrl\\_memory\\_LocationMemory::setViewPosition](#),  
[org\\_harman\\_nav\\_ctrl\\_memory\\_LocationMemory::getActiveAutoNavItems](#),  
[org\\_harman\\_nav\\_ctrl\\_RouteInfo::setViewPosition](#),  
[org\\_harman\\_nav\\_ctrl\\_traffic\\_TrafficInformation::setViewPosition](#)

## 12.2.5 ListSize

total size of the whole list Alias of actual type: **UInt16**

Referenced by : [org\\_harman\\_nav\\_ctrl\\_common\\_list\\_ListTypes::ViewSnapshotPosition](#),  
[org\\_harman\\_nav\\_ctrl\\_highwaymode\\_HighwayMode::getListSize](#),  
[org\\_harman\\_nav\\_ctrl\\_highwaymode\\_HighwayMode::viewUpdate](#),  
[org\\_harman\\_nav\\_ctrl\\_highwaymode\\_HighwayMode::listSize](#),  
[org\\_harman\\_nav\\_ctrl\\_In\\_Trails::getListSize](#), [org\\_harman\\_nav\\_ctrl\\_In\\_Trails::viewUpdate](#),  
[org\\_harman\\_nav\\_ctrl\\_In\\_Trails::listSize](#), [org\\_harman\\_nav\\_ctrl\\_memory\\_LocationMemory::getListSize](#),  
[org\\_harman\\_nav\\_ctrl\\_memory\\_LocationMemory::listSize](#),  
[org\\_harman\\_nav\\_ctrl\\_memory\\_LocationMemory::viewUpdate](#),  
[org\\_harman\\_nav\\_ctrl\\_RouteInfo::getListSize](#), [org\\_harman\\_nav\\_ctrl\\_RouteInfo::viewUpdate](#),  
[org\\_harman\\_nav\\_ctrl\\_RouteInfo::listSize](#), [org\\_harman\\_nav\\_ctrl\\_traffic\\_TrafficInformation::getListSize](#),  
[org\\_harman\\_nav\\_ctrl\\_traffic\\_TrafficInformation::viewUpdate](#),  
[org\\_harman\\_nav\\_ctrl\\_traffic\\_TrafficInformation::listSize](#)

## 12.2.6 ModificationPolicy

ModificationPolicy	
Literal	Description
ModificationPolicy_E_POLICY_ADD	
ModificationPolicy_E_POLICY_REMOVE	



ModificationPolicy	
ModificationPolicy_E_POLICY_REMOVE_ALL	

Referenced by : [org\\_harman\\_nav\\_ctrl\\_memory\\_LocationMemoryTypes::ListSetting](#)

## 12.2.7 SortOption

SortOption	
Literal	Description
SortOption_BasicEnum_INVALID	
SortOption_TYPE	
SortOption_NAME	
SortOption_TIME	
SortOption_CUSTOM_SORT_1	
SortOption_CUSTOM_SORT_2	
SortOption_CUSTOM_SORT_3	
SortOption_CUSTOM_SORT_4	
SortOption_CUSTOM_SORT_5	
SortOption_CUSTOM_SORT_6	
SortOption_CUSTOM_SORT_7	
SortOption_CUSTOM_SORT_8	

Referenced by : [org\\_harman\\_nav\\_ctrl\\_common\\_list\\_ListTypes::SortOptionList](#),  
[org\\_harman\\_nav\\_ctrl\\_memory\\_LocationMemory::setSortOrder](#),  
[org\\_harman\\_nav\\_ctrl\\_memory\\_LocationMemory::getSortOrder](#),  
[org\\_harman\\_nav\\_ctrl\\_memory\\_LocationMemoryTypes::THBVector\\_SortOption\\_](#)

## 12.2.8 SortOptionList

Vector of element type [SortOption](#)

## 12.2.9 ViewId

every create view is assigned to one view id Alias of actual type: **UInt16**

Referenced by : [org\\_harman\\_nav\\_ctrl\\_highwaymode\\_HighwayMode::createView](#),  
[org\\_harman\\_nav\\_ctrl\\_highwaymode\\_HighwayMode::deleteView](#),

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org_harman_nav_ctrl_highwaymode_HighwayMode::setViewSize,
org_harman_nav_ctrl_highwaymode_HighwayMode::setViewPosition,
org_harman_nav_ctrl_highwaymode_HighwayMode::setViewAnchor,
org_harman_nav_ctrl_highwaymode_HighwayMode::getResultList,
org_harman_nav_ctrl_highwaymode_HighwayMode::getMessageDetails,
org_harman_nav_ctrl_highwaymode_HighwayMode::viewUpdate,
org_harman_nav_ctrl_In_Trails::createView, org_harman_nav_ctrl_In_Trails::deleteView,
org_harman_nav_ctrl_In_Trails::setViewSize, org_harman_nav_ctrl_In_Trails::setViewPosition,
org_harman_nav_ctrl_In_Trails::setViewAnchor, org_harman_nav_ctrl_In_Trails::getViewData,
org_harman_nav_ctrl_In_Trails::viewUpdate,
org_harman_nav_ctrl_memory_LocationMemory::createView,
org_harman_nav_ctrl_memory_LocationMemory::deleteView,
org_harman_nav_ctrl_memory_LocationMemory::setViewSize,
org_harman_nav_ctrl_memory_LocationMemory::setViewPosition,
org_harman_nav_ctrl_memory_LocationMemory::setViewAnchor,
org_harman_nav_ctrl_memory_LocationMemory::setSortOrder,
org_harman_nav_ctrl_memory_LocationMemory::getSortOrder,
org_harman_nav_ctrl_memory_LocationMemory::removeItem,
org_harman_nav_ctrl_memory_LocationMemory::getResultList,
org_harman_nav_ctrl_memory_LocationMemory::getActiveAutoNavItems,
org_harman_nav_ctrl_memory_LocationMemory::addItem,
org_harman_nav_ctrl_memory_LocationMemory::getItemDetails,
org_harman_nav_ctrl_memory_LocationMemory::getActiveItems,
org_harman_nav_ctrl_memory_LocationMemory::setTimeslot,
org_harman_nav_ctrl_memory_LocationMemory::filterView,
org_harman_nav_ctrl_memory_LocationMemory::setLocationItem,
org_harman_nav_ctrl_memory_LocationMemory::viewUpdate,
org_harman_nav_ctrl_RouteInfo::createView, org_harman_nav_ctrl_RouteInfo::deleteView,
org_harman_nav_ctrl_RouteInfo::setViewSize, org_harman_nav_ctrl_RouteInfo::setViewPosition,
org_harman_nav_ctrl_RouteInfo::setViewAnchor, org_harman_nav_ctrl_RouteInfo::getResultList,
org_harman_nav_ctrl_RouteInfo::getItemDetails, org_harman_nav_ctrl_RouteInfo::viewUpdate,
org_harman_nav_ctrl_traffic_TrafficInformation::createView,
org_harman_nav_ctrl_traffic_TrafficInformation::deleteView,
org_harman_nav_ctrl_traffic_TrafficInformation::setViewSize,
org_harman_nav_ctrl_traffic_TrafficInformation::setViewPosition,
org_harman_nav_ctrl_traffic_TrafficInformation::setViewAnchor,
org_harman_nav_ctrl_traffic_TrafficInformation::getViewData,
org_harman_nav_ctrl_traffic_TrafficInformation::viewUpdate

```

## 12.2.10 ViewKey

relative position within the view window only starting from the first view element Alias of actual type:  
**UInt16**

Referenced by : [org\\_harman\\_nav\\_ctrl\\_common\\_list\\_ListTypes::ViewKeyList](#),  
[org\\_harman\\_nav\\_ctrl\\_memory\\_LocationMemory::removeItem](#),  
[org\\_harman\\_nav\\_ctrl\\_memory\\_LocationMemory::addItem](#),  
[org\\_harman\\_nav\\_ctrl\\_memory\\_LocationMemory::getItemDetails](#),  
[org\\_harman\\_nav\\_ctrl\\_memory\\_LocationMemory::setTimeslot](#),  
[org\\_harman\\_nav\\_ctrl\\_memory\\_LocationMemory::setLocationItem](#),  
[org\\_harman\\_nav\\_ctrl\\_memory\\_LocationMemory::THBVector\\_ViewKey\\_](#),

[org\\_harman\\_nav\\_ctrl\\_memory\\_LocationMemoryTypes::ViewKeyList](#),  
[org\\_harman\\_nav\\_ctrl\\_RouteInfo::getItemDetails](#)

## 12.2.11 ViewKeyList

Vector of element type [ViewKey](#)

## 12.2.12 ViewSize

size related to the created view only Alias of actual type: [ListSize](#)

Referenced by : [org\\_harman\\_nav\\_ctrl\\_highwaymode\\_HighwayMode::createView](#),  
[org\\_harman\\_nav\\_ctrl\\_highwaymode\\_HighwayMode::setViewSize](#),  
[org\\_harman\\_nav\\_ctrl\\_In\\_Trails::createView](#), [org\\_harman\\_nav\\_ctrl\\_In\\_Trails::setViewSize](#),  
[org\\_harman\\_nav\\_ctrl\\_memory\\_LocationMemory::createView](#),  
[org\\_harman\\_nav\\_ctrl\\_memory\\_LocationMemory::setViewSize](#),  
[org\\_harman\\_nav\\_ctrl\\_RouteInfo::createView](#), [org\\_harman\\_nav\\_ctrl\\_RouteInfo::setViewSize](#),  
[org\\_harman\\_nav\\_ctrl\\_traffic\\_TrafficInformation::createView](#),  
[org\\_harman\\_nav\\_ctrl\\_traffic\\_TrafficInformation::setViewSize](#)

## 12.2.13 ViewSnapshotPosition

ViewSnapshotPosition		
description of how the snapshot of a view was positioned when querying the data contained in a view		
Structure Element	Type	Description
listSize	<a href="#">ListSize</a>	size of the underlying list
listKey	<a href="#">ListKey</a>	key of the first element of the view snapshot
anchorOffset	<a href="#">AnchorOffset</a>	offset of the anchor element within the view snapshot

Referenced by : [org\\_harman\\_nav\\_ctrl\\_In\\_Trails::getViewData](#),  
[org\\_harman\\_nav\\_ctrl\\_memory\\_LocationMemory::getResultList](#),  
[org\\_harman\\_nav\\_ctrl\\_RouteInfo::getResultList](#),  
[org\\_harman\\_nav\\_ctrl\\_traffic\\_TrafficInformation::getViewData](#)