ADE

Image9.png

Carlos

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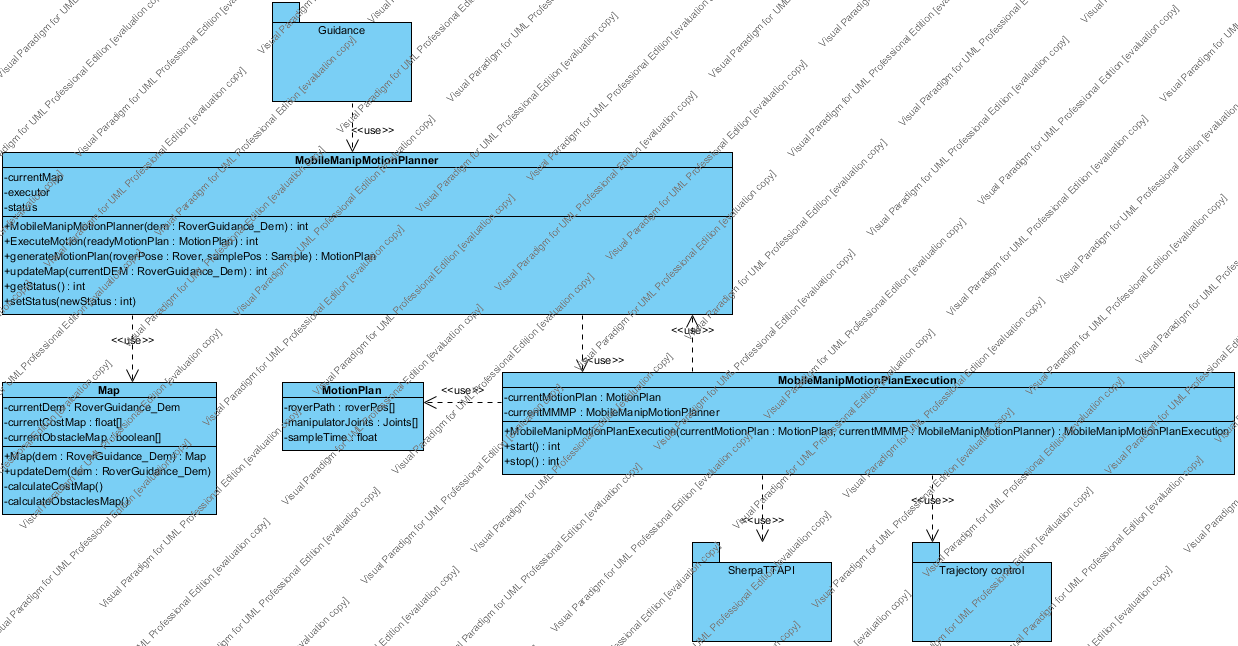
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Class Diagram

# Mobile Manipulation



|  |  |
| --- | --- |
| **Name** | **Value** |
| Name | Mobile Manipulation |
| Author | Carlos |
| Create Date Time | 03-jul-2019 13:18:57 |
| Last Modified | 04-jul-2019 13:58:39 |

## Summary

|  |  |
| --- | --- |
| **Name** | **Documentation** |
| Image1.png [Guidance](#xqqlPdaEs1nSbQWN) |  |
| Image2.png [MobileManipMotionPlanner](#j8rx7daEs1nSbQNW) | It is the main class that receives all the information from other components, start the execution of the coupled rover-manipulator motion, etc. |
| Image2.png [MobileManipMotionPlanExecution](#0nrFPdaEs1nSbQVa) | This object will launch a Thread to execute the motion plan. |
| Image2.png [Map](#ewk5PdaEs1nSbQSW) | This class includes the provide DEM, the cost map and the obstacles map. |
| Image2.png [MotionPlan](#MZwlPdaEs1nSbQVj) |  |
| Image1.png [SherpaTTAPI](#65MlPdaEs1nSbQV4) |  |
| Image1.png [Trajectory control](#381NPdaEs1nSbQYU) |  |

## Details

### Image1.png Guidance

|  |  |
| --- | --- |
| **Name** | **Value** |
| Author | Carlos |
| Create Date Time | 04-jul-2019 13:01:20 |
| Last Modified | 04-jul-2019 13:22:04 |
| Abstract | false |
| Leaf | false |
| Root | false |
| Quality Score | Fair |
| Quality Reason | |  |  | | --- | --- | | **Problem** | **Suggestion** | | Name does not contain glossary terms | Define name as term in glossary | |
| Visibility | public |

#### Relationships

|  |  |
| --- | --- |
| **Unnamed Usage** | |
| To | Image2.png [MobileManipMotionPlanner](#j8rx7daEs1nSbQNW) |
| Author | Carlos |
| Create Date Time | 04-jul-2019 13:01:36 |
| Last Modified | 04-jul-2019 13:22:04 |
| Visibility | Unspecified |
| Stereotypes | use |
| Quality Score | Good |

### Image2.png MobileManipMotionPlanner

|  |  |
| --- | --- |
| **Name** | **Value** |
| Documentation | It is the main class that receives all the information from other components, start the execution of the coupled rover-manipulator motion, etc. |
| Author | Carlos |
| Create Date Time | 03-jul-2019 13:19:12 |
| Last Modified | 04-jul-2019 13:44:32 |
| Active | false |
| Business Key Mutable | true |
| Business Model | false |
| Visibility | public |
| Leaf | false |
| Root | false |
| Quality Score | Fair |
| Quality Reason | |  |  | | --- | --- | | **Problem** | **Suggestion** | | Model element at root | Add model element to a container | | Name does not contain glossary terms | Define name as term in glossary | |

#### Attributes

|  |  |  |  |
| --- | --- | --- | --- |
| **private currentMap** | | | |
| Documentation | Rover surronding map that would be used to generate the rover-manipulator trajectories. | | |
| Author | Carlos | | |
| Create Date Time | 04-jul-2019 12:33:17 | | |
| Last Modified | 04-jul-2019 12:52:26 | | |
| Allow Empty Name | false | | |
| Getter | false | Setter | false |
| Derived | false | | |
| Multiplicity | 1 | | |
| Aggregation | None | | |
| Derived Union | false | | |
| Read Only | false | | |
| Is ID | false | | |
| Leaf | false | | |

|  |  |  |  |
| --- | --- | --- | --- |
| **private executor** | | | |
| Documentation | Object that run the execution of the planned trajectory. | | |
| Author | Carlos | | |
| Create Date Time | 04-jul-2019 12:34:31 | | |
| Last Modified | 04-jul-2019 12:52:26 | | |
| Allow Empty Name | false | | |
| Getter | false | Setter | false |
| Derived | false | | |
| Multiplicity | Unspecified | | |
| Aggregation | None | | |
| Derived Union | false | | |
| Read Only | false | | |
| Is ID | false | | |
| Leaf | false | | |

|  |  |  |  |
| --- | --- | --- | --- |
| **private status** | | | |
| Documentation | Status of the motion planner:  Idle  Processing  Running  TBD | | |
| Author | Carlos | | |
| Create Date Time | 04-jul-2019 12:35:19 | | |
| Last Modified | 04-jul-2019 12:52:26 | | |
| Allow Empty Name | false | | |
| Getter | false | Setter | false |
| Derived | false | | |
| Multiplicity | Unspecified | | |
| Aggregation | None | | |
| Derived Union | false | | |
| Read Only | false | | |
| Is ID | false | | |
| Leaf | false | | |

#### Operations

|  |  |
| --- | --- |
| **public MobileManipMotionPlanner (dem : RoverGuidance\_Dem) : int** | |
| Parameters | |  |  | | --- | --- | | **dem** | | | Documentation | Provided DEM using the same data struct as Airbus | | Author | Carlos | | Create Date Time | 04-jul-2019 12:38:10 | | Last Modified | 04-jul-2019 12:58:41 | | Multiplicity | Unspecified | | Type | RoverGuidance\_Dem | | Direction | inout | |
| Documentation | Constructor, it receives a DEM and generates the Map object. |
| Transit To | Image3.png N/A (Guidance -> MobileManipMotionPlanner) |
| Author | Carlos |
| Create Date Time | 04-jul-2019 12:36:00 |
| Last Modified | 04-jul-2019 13:44:32 |
| Static | false |
| Leaf | false |
| Ordered | false |
| Unique | true |
| Query | false |

|  |  |
| --- | --- |
| **public ExecuteMotion (readyMotionPlan : MotionPlan) : int** | |
| Parameters | |  |  | | --- | --- | | **readyMotionPlan** | | | Documentation | Coupled rover-manipulator motion plan to be followed. | | Author | Carlos | | Create Date Time | 04-jul-2019 12:41:59 | | Last Modified | 04-jul-2019 12:52:26 | | Multiplicity | Unspecified | | Type | MotionPlan | | Direction | inout | |
| Documentation | Run the execution of the motion |
| Transit To | Image3.png N/A (Guidance -> MobileManipMotionPlanner) |
| Author | Carlos |
| Create Date Time | 04-jul-2019 12:41:19 |
| Last Modified | 04-jul-2019 13:44:32 |
| Static | false |
| Leaf | false |
| Ordered | false |
| Unique | true |
| Query | false |

|  |  |
| --- | --- |
| **public generateMotionPlan (roverPose : Rover, samplePos : Sample) : MotionPlan** | |
| Parameters | |  |  | | --- | --- | | **roverPose** | | | Author | Carlos | | Create Date Time | 04-jul-2019 12:44:33 | | Last Modified | 04-jul-2019 12:52:26 | | Multiplicity | Unspecified | | Type | Rover | | Direction | inout |  |  |  | | --- | --- | | **samplePos** | | | Author | Carlos | | Create Date Time | 04-jul-2019 12:44:50 | | Last Modified | 04-jul-2019 12:52:26 | | Multiplicity | Unspecified | | Type | Sample | | Direction | inout | |
| Documentation | It generates a motion plan based on the Map, the rover pose and the sample position. |
| Transit To | Image3.png N/A (Guidance -> MobileManipMotionPlanner) |
| Author | Carlos |
| Create Date Time | 04-jul-2019 12:43:37 |
| Last Modified | 04-jul-2019 13:44:32 |
| Static | false |
| Leaf | false |
| Ordered | false |
| Unique | true |
| Query | false |

|  |  |
| --- | --- |
| **public updateMap (currentDEM : RoverGuidance\_Dem) : int** | |
| Parameters | |  |  | | --- | --- | | **currentDEM** | | | Documentation | DEM using the Airbus data struct | | Author | Carlos | | Create Date Time | 04-jul-2019 12:46:11 | | Last Modified | 04-jul-2019 12:58:41 | | Multiplicity | Unspecified | | Type | RoverGuidance\_Dem | | Direction | inout | |
| Documentation | It updates the stored map |
| Author | Carlos |
| Create Date Time | 04-jul-2019 12:45:42 |
| Last Modified | 04-jul-2019 12:58:41 |
| Static | false |
| Leaf | false |
| Ordered | false |
| Unique | true |
| Query | false |

|  |  |
| --- | --- |
| **public getStatus () : int** | |
| Author | Carlos |
| Create Date Time | 04-jul-2019 13:22:58 |
| Last Modified | 04-jul-2019 13:23:51 |
| Static | false |
| Leaf | false |
| Ordered | false |
| Unique | true |
| Query | false |

|  |  |
| --- | --- |
| **public setStatus (newStatus : int)** | |
| Parameters | |  |  | | --- | --- | | **newStatus** | | | Author | Carlos | | Create Date Time | 04-jul-2019 13:23:14 | | Last Modified | 04-jul-2019 13:23:51 | | Multiplicity | Unspecified | | Type | Image4.png int | | Direction | inout | |
| Author | Carlos |
| Create Date Time | 04-jul-2019 13:23:08 |
| Last Modified | 04-jul-2019 13:23:51 |
| Static | false |
| Leaf | false |
| Ordered | false |
| Unique | true |
| Query | false |

#### Relationships

|  |  |
| --- | --- |
| **Unnamed Usage** | |
| To | Image2.png [Map](#ewk5PdaEs1nSbQSW) |
| Author | Carlos |
| Create Date Time | 04-jul-2019 12:58:51 |
| Last Modified | 04-jul-2019 13:22:04 |
| Visibility | Unspecified |
| Stereotypes | use |
| Quality Score | Good |

|  |  |
| --- | --- |
| **Unnamed Usage** | |
| To | Image2.png [MobileManipMotionPlanExecution](#0nrFPdaEs1nSbQVa) |
| Author | Carlos |
| Create Date Time | 04-jul-2019 13:01:54 |
| Last Modified | 04-jul-2019 13:22:04 |
| Visibility | Unspecified |
| Stereotypes | use |
| Quality Score | Good |

|  |  |
| --- | --- |
| **Unnamed Usage** | |
| From | Image1.png [Guidance](#xqqlPdaEs1nSbQWN) |
| Author | Carlos |
| Create Date Time | 04-jul-2019 13:01:36 |
| Last Modified | 04-jul-2019 13:22:04 |
| Visibility | Unspecified |
| Stereotypes | use |
| Quality Score | Good |

|  |  |
| --- | --- |
| **Unnamed Usage** | |
| From | Image2.png [MobileManipMotionPlanExecution](#0nrFPdaEs1nSbQVa) |
| Author | Carlos |
| Create Date Time | 04-jul-2019 13:21:48 |
| Last Modified | 04-jul-2019 13:34:16 |
| Visibility | Unspecified |
| Stereotypes | use |
| Quality Score | Good |

### Image2.png MobileManipMotionPlanExecution

|  |  |
| --- | --- |
| **Name** | **Value** |
| Documentation | This object will launch a Thread to execute the motion plan. |
| Author | Carlos |
| Create Date Time | 04-jul-2019 12:59:11 |
| Last Modified | 04-jul-2019 13:44:32 |
| Active | false |
| Business Key Mutable | true |
| Business Model | false |
| Visibility | public |
| Leaf | false |
| Root | false |
| Quality Score | Fair |
| Quality Reason | |  |  | | --- | --- | | **Problem** | **Suggestion** | | Model element at root | Add model element to a container | | Name does not contain glossary terms | Define name as term in glossary | |

#### Attributes

|  |  |  |  |
| --- | --- | --- | --- |
| **private currentMotionPlan : MotionPlan** | | | |
| Documentation | Defined motion plan to be followed by the execution. | | |
| Author | Carlos | | |
| Create Date Time | 04-jul-2019 13:14:56 | | |
| Last Modified | 04-jul-2019 13:22:04 | | |
| Type | Image2.png [MotionPlan](#MZwlPdaEs1nSbQVk) | | |
| Allow Empty Name | false | | |
| Getter | false | Setter | false |
| Derived | false | | |
| Multiplicity | Unspecified | | |
| Aggregation | None | | |
| Derived Union | false | | |
| Read Only | false | | |
| Is ID | false | | |
| Leaf | false | | |

|  |  |  |  |
| --- | --- | --- | --- |
| **private currentMMMP : MobileManipMotionPlanner** | | | |
| Documentation | This relation is used to update the status. | | |
| Author | Carlos | | |
| Create Date Time | 04-jul-2019 13:21:17 | | |
| Last Modified | 04-jul-2019 13:22:04 | | |
| Type | Image2.png [MobileManipMotionPlanner](#j8rx7daEs1nSbQNX) | | |
| Allow Empty Name | false | | |
| Getter | false | Setter | false |
| Derived | false | | |
| Multiplicity | Unspecified | | |
| Aggregation | None | | |
| Derived Union | false | | |
| Read Only | false | | |
| Is ID | false | | |
| Leaf | false | | |

#### Operations

|  |  |
| --- | --- |
| **public MobileManipMotionPlanExecution (currentMotionPlan : MotionPlan, currentMMMP : MobileManipMotionPlanner) : MobileManipMotionPlanExecution** | |
| Parameters | |  |  | | --- | --- | | **currentMotionPlan** | | | Author | Carlos | | Create Date Time | 04-jul-2019 13:18:23 | | Last Modified | 04-jul-2019 13:22:04 | | Multiplicity | Unspecified | | Type | Image2.png [MotionPlan](#MZwlPdaEs1nSbQVk) | | Direction | inout |  |  |  | | --- | --- | | **currentMMMP** | | | Author | Carlos | | Create Date Time | 04-jul-2019 13:21:03 | | Last Modified | 04-jul-2019 13:22:04 | | Multiplicity | Unspecified | | Type | Image2.png [MobileManipMotionPlanner](#j8rx7daEs1nSbQNX) | | Direction | inout | |
| Documentation | Constructor |
| Transit To | Image3.png N/A (MobileManipMotionPlanner -> MobileManipMotionPlanExecution) |
| Author | Carlos |
| Create Date Time | 04-jul-2019 13:17:50 |
| Last Modified | 04-jul-2019 13:44:32 |
| Static | false |
| Leaf | false |
| Ordered | false |
| Unique | true |
| Query | false |

|  |  |
| --- | --- |
| **public start () : int** | |
| Transit To | Image3.png N/A (MobileManipMotionPlanner -> MobileManipMotionPlanExecution) |
| Author | Carlos |
| Create Date Time | 04-jul-2019 13:19:43 |
| Last Modified | 04-jul-2019 13:44:32 |
| Static | false |
| Leaf | false |
| Ordered | false |
| Unique | true |
| Query | false |

|  |  |
| --- | --- |
| **public stop () : int** | |
| Author | Carlos |
| Create Date Time | 04-jul-2019 13:19:53 |
| Last Modified | 04-jul-2019 13:22:04 |
| Static | false |
| Leaf | false |
| Ordered | false |
| Unique | true |
| Query | false |

#### Relationships

|  |  |
| --- | --- |
| **Unnamed Usage** | |
| To | Image1.png [SherpaTTAPI](#65MlPdaEs1nSbQV4) |
| Author | Carlos |
| Create Date Time | 04-jul-2019 13:00:54 |
| Last Modified | 04-jul-2019 13:22:04 |
| Visibility | Unspecified |
| Stereotypes | use |
| Quality Score | Good |

|  |  |
| --- | --- |
| **Unnamed Usage** | |
| To | Image2.png [MotionPlan](#MZwlPdaEs1nSbQVj) |
| Author | Carlos |
| Create Date Time | 04-jul-2019 13:07:11 |
| Last Modified | 04-jul-2019 13:22:04 |
| Visibility | Unspecified |
| Stereotypes | use |
| Quality Score | Good |

|  |  |
| --- | --- |
| **Unnamed Usage** | |
| To | Image1.png [Trajectory control](#381NPdaEs1nSbQYU) |
| Author | Carlos |
| Create Date Time | 04-jul-2019 13:16:13 |
| Last Modified | 04-jul-2019 13:22:04 |
| Visibility | Unspecified |
| Stereotypes | use |
| Quality Score | Good |

|  |  |
| --- | --- |
| **Unnamed Usage** | |
| To | Image2.png [MobileManipMotionPlanner](#j8rx7daEs1nSbQNW) |
| Author | Carlos |
| Create Date Time | 04-jul-2019 13:21:48 |
| Last Modified | 04-jul-2019 13:34:16 |
| Visibility | Unspecified |
| Stereotypes | use |
| Quality Score | Good |

|  |  |
| --- | --- |
| **Unnamed Usage** | |
| From | Image2.png [MobileManipMotionPlanner](#j8rx7daEs1nSbQNW) |
| Author | Carlos |
| Create Date Time | 04-jul-2019 13:01:54 |
| Last Modified | 04-jul-2019 13:22:04 |
| Visibility | Unspecified |
| Stereotypes | use |
| Quality Score | Good |

### Image2.png Map

|  |  |
| --- | --- |
| **Name** | **Value** |
| Documentation | This class includes the provide DEM, the cost map and the obstacles map. |
| Author | Carlos |
| Create Date Time | 04-jul-2019 12:51:45 |
| Last Modified | 04-jul-2019 13:50:47 |
| Active | false |
| Business Key Mutable | true |
| Business Model | false |
| Visibility | public |
| Leaf | false |
| Root | false |
| Quality Score | Fair |
| Quality Reason | |  |  | | --- | --- | | **Problem** | **Suggestion** | | Model element at root | Add model element to a container | | Name does not contain glossary terms | Define name as term in glossary | |

#### Attributes

|  |  |  |  |
| --- | --- | --- | --- |
| **private currentDem : RoverGuidance\_Dem** | | | |
| Documentation | The mapping of the data (row/column) onto the 1D data arrays (single index) is defined as follows:  \* index = row \* cols + col | | |
| Author | Carlos | | |
| Create Date Time | 04-jul-2019 12:52:16 | | |
| Last Modified | 04-jul-2019 12:58:41 | | |
| Type | RoverGuidance\_Dem | | |
| Allow Empty Name | false | | |
| Getter | false | Setter | false |
| Derived | false | | |
| Multiplicity | Unspecified | | |
| Aggregation | None | | |
| Derived Union | false | | |
| Read Only | false | | |
| Is ID | false | | |
| Leaf | false | | |

|  |  |  |  |
| --- | --- | --- | --- |
| **private currentCostMap : float[]** | | | |
| Documentation | The mapping of the data (row/column) onto the 1D data arrays (single index) is defined as follows:  \* index = row \* cols + col | | |
| Author | Carlos | | |
| Create Date Time | 04-jul-2019 12:52:30 | | |
| Last Modified | 04-jul-2019 12:58:41 | | |
| Type | float[] | | |
| Allow Empty Name | false | | |
| Getter | false | Setter | false |
| Derived | false | | |
| Multiplicity | Unspecified | | |
| Aggregation | None | | |
| Derived Union | false | | |
| Read Only | false | | |
| Is ID | false | | |
| Leaf | false | | |

|  |  |  |  |
| --- | --- | --- | --- |
| **private currentObstacleMap : boolean[]** | | | |
| Documentation | The mapping of the data (row/column) onto the 1D data arrays (single index) is defined as follows:  \* index = row \* cols + col | | |
| Author | Carlos | | |
| Create Date Time | 04-jul-2019 12:57:16 | | |
| Last Modified | 04-jul-2019 12:58:41 | | |
| Type | boolean[] | | |
| Allow Empty Name | false | | |
| Getter | false | Setter | false |
| Derived | false | | |
| Multiplicity | Unspecified | | |
| Aggregation | None | | |
| Derived Union | false | | |
| Read Only | false | | |
| Is ID | false | | |
| Leaf | false | | |

#### Operations

|  |  |
| --- | --- |
| **public Map (dem : RoverGuidance\_Dem) : Map** | |
| Parameters | |  |  | | --- | --- | | **dem** | | | Author | Carlos | | Create Date Time | 04-jul-2019 13:03:01 | | Last Modified | 04-jul-2019 13:08:50 | | Multiplicity | Unspecified | | Type | RoverGuidance\_Dem | | Direction | inout | |
| Documentation | Constructor that receives the map, process it and generates the cost and obstacles maps. |
| Transit To | Image3.png N/A (MobileManipMotionPlanner -> Map) |
| Author | Carlos |
| Create Date Time | 04-jul-2019 13:02:35 |
| Last Modified | 04-jul-2019 13:44:57 |
| Static | false |
| Leaf | false |
| Ordered | false |
| Unique | true |
| Query | false |

|  |  |
| --- | --- |
| **public updateDem (dem : RoverGuidance\_Dem)** | |
| Parameters | |  |  | | --- | --- | | **dem** | | | Author | Carlos | | Create Date Time | 04-jul-2019 13:04:14 | | Last Modified | 04-jul-2019 13:08:50 | | Multiplicity | Unspecified | | Type | RoverGuidance\_Dem | | Direction | inout | |
| Documentation | It updates currentDem and recalculates the cost and obstacles maps. |
| Author | Carlos |
| Create Date Time | 04-jul-2019 13:03:53 |
| Last Modified | 04-jul-2019 13:08:50 |
| Static | false |
| Leaf | false |
| Ordered | false |
| Unique | true |
| Query | false |

|  |  |
| --- | --- |
| **private calculateCostMap ()** | |
| Documentation | Based on currentDEM, it calculates or recalculates the currentCostMap. |
| Transit To | Image3.png N/A (Map -> Map) |
| Author | Carlos |
| Create Date Time | 04-jul-2019 13:05:04 |
| Last Modified | 04-jul-2019 13:50:47 |
| Static | false |
| Leaf | false |
| Ordered | false |
| Unique | true |
| Query | false |

|  |  |
| --- | --- |
| **private calculateObstaclesMap ()** | |
| Documentation | It calculates o recalculates the obstacles map based on currentDEM |
| Transit To | Image3.png N/A (Map -> Map) |
| Author | Carlos |
| Create Date Time | 04-jul-2019 13:05:53 |
| Last Modified | 04-jul-2019 13:50:47 |
| Static | false |
| Leaf | false |
| Ordered | false |
| Unique | true |
| Query | false |

#### Relationships

|  |  |
| --- | --- |
| **Unnamed Usage** | |
| From | Image2.png [MobileManipMotionPlanner](#j8rx7daEs1nSbQNW) |
| Author | Carlos |
| Create Date Time | 04-jul-2019 12:58:51 |
| Last Modified | 04-jul-2019 13:22:04 |
| Visibility | Unspecified |
| Stereotypes | use |
| Quality Score | Good |

### Image2.png MotionPlan

|  |  |
| --- | --- |
| **Name** | **Value** |
| Author | Carlos |
| Create Date Time | 04-jul-2019 13:00:07 |
| Last Modified | 04-jul-2019 13:22:04 |
| Active | false |
| Business Key Mutable | true |
| Business Model | false |
| Visibility | public |
| Leaf | false |
| Root | false |
| Quality Score | Fair |
| Quality Reason | |  |  | | --- | --- | | **Problem** | **Suggestion** | | Model element at root | Add model element to a container | | Name does not contain glossary terms | Define name as term in glossary | |

#### Attributes

|  |  |  |  |
| --- | --- | --- | --- |
| **private roverPath : roverPos[]** | | | |
| Documentation | Array with x,y rover positions each instant time. | | |
| Author | Carlos | | |
| Create Date Time | 04-jul-2019 13:10:24 | | |
| Last Modified | 04-jul-2019 13:13:05 | | |
| Type | roverPos[] | | |
| Allow Empty Name | false | | |
| Getter | false | Setter | false |
| Derived | false | | |
| Multiplicity | Unspecified | | |
| Aggregation | None | | |
| Derived Union | false | | |
| Read Only | false | | |
| Is ID | false | | |
| Leaf | false | | |

|  |  |  |  |
| --- | --- | --- | --- |
| **private manipulatorJoints : Joints[]** | | | |
| Documentation | Array with manipulator joints position every instant time | | |
| Author | Carlos | | |
| Create Date Time | 04-jul-2019 13:12:11 | | |
| Last Modified | 04-jul-2019 13:14:28 | | |
| Type | Joints[] | | |
| Allow Empty Name | false | | |
| Getter | false | Setter | false |
| Derived | false | | |
| Multiplicity | Unspecified | | |
| Aggregation | None | | |
| Derived Union | false | | |
| Read Only | false | | |
| Is ID | false | | |
| Leaf | false | | |

|  |  |  |  |
| --- | --- | --- | --- |
| **private sampleTime : float** | | | |
| Documentation | sampleTime to be considered during the execution of the planner. | | |
| Author | Carlos | | |
| Create Date Time | 04-jul-2019 13:13:09 | | |
| Last Modified | 04-jul-2019 13:14:28 | | |
| Type | Image4.png float | | |
| Allow Empty Name | false | | |
| Getter | false | Setter | false |
| Derived | false | | |
| Multiplicity | Unspecified | | |
| Aggregation | None | | |
| Derived Union | false | | |
| Read Only | false | | |
| Is ID | false | | |
| Leaf | false | | |

#### Relationships

|  |  |
| --- | --- |
| **Unnamed Usage** | |
| From | Image2.png [MobileManipMotionPlanExecution](#0nrFPdaEs1nSbQVa) |
| Author | Carlos |
| Create Date Time | 04-jul-2019 13:07:11 |
| Last Modified | 04-jul-2019 13:22:04 |
| Visibility | Unspecified |
| Stereotypes | use |
| Quality Score | Good |

### Image1.png SherpaTTAPI

|  |  |
| --- | --- |
| **Name** | **Value** |
| Author | Carlos |
| Create Date Time | 04-jul-2019 13:00:44 |
| Last Modified | 04-jul-2019 13:22:04 |
| Abstract | false |
| Leaf | false |
| Root | false |
| Quality Score | Fair |
| Quality Reason | |  |  | | --- | --- | | **Problem** | **Suggestion** | | Name does not contain glossary terms | Define name as term in glossary | |
| Visibility | public |

#### Relationships

|  |  |
| --- | --- |
| **Unnamed Usage** | |
| From | Image2.png [MobileManipMotionPlanExecution](#0nrFPdaEs1nSbQVa) |
| Author | Carlos |
| Create Date Time | 04-jul-2019 13:00:54 |
| Last Modified | 04-jul-2019 13:22:04 |
| Visibility | Unspecified |
| Stereotypes | use |
| Quality Score | Good |

### Image1.png Trajectory control

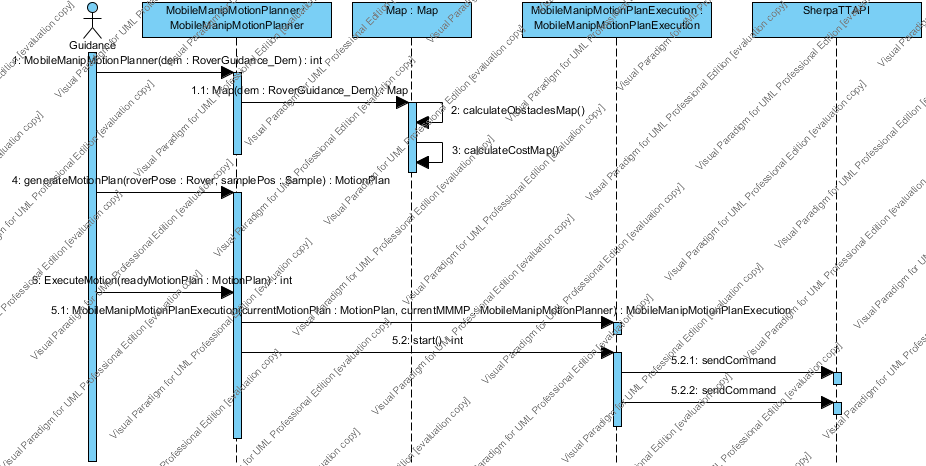
|  |  |
| --- | --- |
| **Name** | **Value** |
| Author | Carlos |
| Create Date Time | 04-jul-2019 13:15:56 |
| Last Modified | 04-jul-2019 13:22:04 |
| Abstract | false |
| Leaf | false |
| Root | false |
| Quality Score | Fair |
| Quality Reason | |  |  | | --- | --- | | **Problem** | **Suggestion** | | Name does not contain glossary terms | Define name as term in glossary | |
| Visibility | public |

#### Relationships

|  |  |
| --- | --- |
| **Unnamed Usage** | |
| From | Image2.png [MobileManipMotionPlanExecution](#0nrFPdaEs1nSbQVa) |
| Author | Carlos |
| Create Date Time | 04-jul-2019 13:16:13 |
| Last Modified | 04-jul-2019 13:22:04 |
| Visibility | Unspecified |
| Stereotypes | use |
| Quality Score | Good |

Sequence Diagram

# Mobile Manipulator Plan Execution



|  |  |
| --- | --- |
| **Name** | **Value** |
| Name | Mobile Manipulator Plan Execution |
| Author | Carlos |
| Create Date Time | 04-jul-2019 13:25:32 |
| Last Modified | 04-jul-2019 13:58:15 |

## Summary

|  |  |
| --- | --- |
| **Name** | **Documentation** |
| Image6.png [Guidance](#NofdPdaEs1nSbQaY) |  |
| Image7.png [MobileManipMotionPlanner : MobileManipMotionPlanner](#o7g9PdaEs1nSbQai) |  |
| Image7.png [Map : Map](#ICT9PdaEs1nSbQbF) |  |
| Image7.png [MobileManipMotionPlanExecution : MobileManipMotionPlanExecution](#Vnn9PdaEs1nSbQbX) |  |
| Image7.png [SherpaTTAPI](#H1_9PdaEs1nSbQbg) |  |

## Details

### Image6.png Guidance

|  |  |
| --- | --- |
| **Name** | **Value** |
| Author | Carlos |
| Create Date Time | 04-jul-2019 13:25:57 |
| Last Modified | 04-jul-2019 13:48:44 |
| Visibility | public |
| Abstract | false |
| Leaf | false |
| Root | false |
| Quality Score | Fair |
| Quality Reason | |  |  | | --- | --- | | **Problem** | **Suggestion** | | Name does not contain glossary terms | Define name as term in glossary | |
| Active | false |
| Business Model | false |

#### Relationships

|  |  |
| --- | --- |
| **Unnamed Message** | |
| To | |  |  | | --- | --- | | **Name** | **Value** | | End Model Element | Image7.png [MobileManipMotionPlanner](#4bg9PdaEs1nSbQah) | | Author | Carlos | | Create Date Time | 04-jul-2019 13:30:42 | |
| Transit From | Image8.png MobileManipMotionPlanner |
| Author | Carlos |
| Create Date Time | 04-jul-2019 13:30:42 |
| Last Modified | 04-jul-2019 13:50:47 |
| Quality Score | Fair |
| Quality Reason | |  |  | | --- | --- | | **Problem** | **Suggestion** | | Name does not contain glossary terms | Define name as term in glossary | |
| Type | Message |
| Sequence Number | 1 |
| Action Type | |  |  | | --- | --- | | **Name** | **Value** | | Name | Call | | Author | Carlos | | Create Date Time | 04-jul-2019 13:41:34 | | Iteration | false | | Asynchronous | false | | Operation | Image8.png MobileManipMotionPlanner | | Operation Type | Operation | |
| Asynchronous | false |

|  |  |
| --- | --- |
| **Unnamed Message** | |
| To | |  |  | | --- | --- | | **Name** | **Value** | | End Model Element | Image7.png [MobileManipMotionPlanner](#4bg9PdaEs1nSbQah) | | Author | Carlos | | Create Date Time | 04-jul-2019 13:34:23 | |
| Transit From | Image8.png generateMotionPlan |
| Author | Carlos |
| Create Date Time | 04-jul-2019 13:34:23 |
| Last Modified | 04-jul-2019 13:50:47 |
| Quality Score | Good |
| Type | Message |
| Sequence Number | 4 |
| Action Type | |  |  | | --- | --- | | **Name** | **Value** | | Name | Call | | Author | Carlos | | Create Date Time | 04-jul-2019 13:40:18 | | Iteration | false | | Asynchronous | false | | Operation | Image8.png generateMotionPlan | | Operation Type | Operation | |
| Asynchronous | false |

|  |  |
| --- | --- |
| **Unnamed Message** | |
| To | |  |  | | --- | --- | | **Name** | **Value** | | End Model Element | Image7.png [MobileManipMotionPlanner](#4bg9PdaEs1nSbQah) | | Author | Carlos | | Create Date Time | 04-jul-2019 13:40:51 | |
| Transit From | Image8.png ExecuteMotion |
| Author | Carlos |
| Create Date Time | 04-jul-2019 13:40:51 |
| Last Modified | 04-jul-2019 13:50:47 |
| Quality Score | Good |
| Type | Message |
| Sequence Number | 5 |
| Action Type | |  |  | | --- | --- | | **Name** | **Value** | | Name | Call | | Author | Carlos | | Create Date Time | 04-jul-2019 13:41:00 | | Iteration | false | | Asynchronous | false | | Operation | Image8.png ExecuteMotion | | Operation Type | Operation | |
| Asynchronous | false |

### Image7.png MobileManipMotionPlanner : MobileManipMotionPlanner

|  |  |
| --- | --- |
| **Name** | **Value** |
| Author | Carlos |
| Create Date Time | 04-jul-2019 13:26:13 |
| Last Modified | 04-jul-2019 13:44:32 |
| Quality Score | Fair |
| Quality Reason | |  |  | | --- | --- | | **Problem** | **Suggestion** | | Name does not contain glossary terms | Define name as term in glossary | |
| Multiplicity | Unspecified |
| Base Classifier | Image2.png [MobileManipMotionPlanner](#j8rx7daEs1nSbQNX) |
| Active | false |
| Stopped | false |
| Multi Object | false |

#### Relationships

|  |  |
| --- | --- |
| **Unnamed Message** | |
| To | |  |  | | --- | --- | | **Name** | **Value** | | End Model Element | Image7.png [MobileManipMotionPlanExecution](#OHn9PdaEs1nSbQbW) | | Author | Carlos | | Create Date Time | 04-jul-2019 13:43:07 | |
| Transit From | Image8.png start |
| Author | Carlos |
| Create Date Time | 04-jul-2019 13:43:07 |
| Last Modified | 04-jul-2019 13:50:47 |
| Type | Message |
| Sequence Number | 5.2 |
| Action Type | |  |  | | --- | --- | | **Name** | **Value** | | Name | Call | | Author | Carlos | | Create Date Time | 04-jul-2019 13:43:10 | | Iteration | false | | Asynchronous | false | | Operation | Image8.png start | | Operation Type | Operation | |
| Asynchronous | false |

|  |  |
| --- | --- |
| **Unnamed Message** | |
| To | |  |  | | --- | --- | | **Name** | **Value** | | End Model Element | Image7.png [Map](#bcT9PdaEs1nSbQbE) | | Author | Carlos | | Create Date Time | 04-jul-2019 13:31:06 | |
| Transit From | Image8.png Map |
| Author | Carlos |
| Create Date Time | 04-jul-2019 13:31:06 |
| Last Modified | 04-jul-2019 13:50:47 |
| Quality Score | Fair |
| Quality Reason | |  |  | | --- | --- | | **Problem** | **Suggestion** | | Name does not contain glossary terms | Define name as term in glossary | |
| Type | Message |
| Sequence Number | 1.1 |
| Action Type | |  |  | | --- | --- | | **Name** | **Value** | | Name | Call | | Author | Carlos | | Create Date Time | 04-jul-2019 13:41:50 | | Iteration | false | | Asynchronous | false | | Operation | Image8.png Map | | Operation Type | Operation | |
| Asynchronous | false |

|  |  |
| --- | --- |
| **Unnamed Message** | |
| To | |  |  | | --- | --- | | **Name** | **Value** | | End Model Element | Image7.png [MobileManipMotionPlanExecution](#OHn9PdaEs1nSbQbW) | | Author | Carlos | | Create Date Time | 04-jul-2019 13:42:48 | |
| Transit From | Image8.png MobileManipMotionPlanExecution |
| Author | Carlos |
| Create Date Time | 04-jul-2019 13:42:48 |
| Last Modified | 04-jul-2019 13:50:47 |
| Type | Message |
| Sequence Number | 5.1 |
| Action Type | |  |  | | --- | --- | | **Name** | **Value** | | Name | Call | | Author | Carlos | | Create Date Time | 04-jul-2019 13:42:59 | | Iteration | false | | Asynchronous | false | | Operation | Image8.png MobileManipMotionPlanExecution | | Operation Type | Operation | |
| Asynchronous | false |

|  |  |
| --- | --- |
| **Unnamed Message** | |
| From | |  |  | | --- | --- | | **Name** | **Value** | | End Model Element | Image6.png [Guidance](#WIfdPdaEs1nSbQaX) | | Author | Carlos | | Create Date Time | 04-jul-2019 13:30:42 | |
| Transit From | Image8.png MobileManipMotionPlanner |
| Author | Carlos |
| Create Date Time | 04-jul-2019 13:30:42 |
| Last Modified | 04-jul-2019 13:50:47 |
| Quality Score | Fair |
| Quality Reason | |  |  | | --- | --- | | **Problem** | **Suggestion** | | Name does not contain glossary terms | Define name as term in glossary | |
| Type | Message |
| Sequence Number | 1 |
| Action Type | |  |  | | --- | --- | | **Name** | **Value** | | Name | Call | | Author | Carlos | | Create Date Time | 04-jul-2019 13:41:34 | | Iteration | false | | Asynchronous | false | | Operation | Image8.png MobileManipMotionPlanner | | Operation Type | Operation | |
| Asynchronous | false |

|  |  |
| --- | --- |
| **Unnamed Message** | |
| From | |  |  | | --- | --- | | **Name** | **Value** | | End Model Element | Image6.png [Guidance](#WIfdPdaEs1nSbQaX) | | Author | Carlos | | Create Date Time | 04-jul-2019 13:34:23 | |
| Transit From | Image8.png generateMotionPlan |
| Author | Carlos |
| Create Date Time | 04-jul-2019 13:34:23 |
| Last Modified | 04-jul-2019 13:50:47 |
| Quality Score | Good |
| Type | Message |
| Sequence Number | 4 |
| Action Type | |  |  | | --- | --- | | **Name** | **Value** | | Name | Call | | Author | Carlos | | Create Date Time | 04-jul-2019 13:40:18 | | Iteration | false | | Asynchronous | false | | Operation | Image8.png generateMotionPlan | | Operation Type | Operation | |
| Asynchronous | false |

|  |  |
| --- | --- |
| **Unnamed Message** | |
| From | |  |  | | --- | --- | | **Name** | **Value** | | End Model Element | Image6.png [Guidance](#WIfdPdaEs1nSbQaX) | | Author | Carlos | | Create Date Time | 04-jul-2019 13:40:51 | |
| Transit From | Image8.png ExecuteMotion |
| Author | Carlos |
| Create Date Time | 04-jul-2019 13:40:51 |
| Last Modified | 04-jul-2019 13:50:47 |
| Quality Score | Good |
| Type | Message |
| Sequence Number | 5 |
| Action Type | |  |  | | --- | --- | | **Name** | **Value** | | Name | Call | | Author | Carlos | | Create Date Time | 04-jul-2019 13:41:00 | | Iteration | false | | Asynchronous | false | | Operation | Image8.png ExecuteMotion | | Operation Type | Operation | |
| Asynchronous | false |

### Image7.png Map : Map

|  |  |
| --- | --- |
| **Name** | **Value** |
| Author | Carlos |
| Create Date Time | 04-jul-2019 13:29:31 |
| Last Modified | 04-jul-2019 13:50:47 |
| Quality Score | Fair |
| Quality Reason | |  |  | | --- | --- | | **Problem** | **Suggestion** | | Name does not contain glossary terms | Define name as term in glossary | |
| Multiplicity | Unspecified |
| Base Classifier | Image2.png [Map](#ewk5PdaEs1nSbQSX) |
| Active | false |
| Stopped | false |
| Multi Object | false |

#### Relationships

|  |  |
| --- | --- |
| **Unnamed Message** | |
| To | |  |  | | --- | --- | | **Name** | **Value** | | End Model Element | Image7.png [Map](#bcT9PdaEs1nSbQbE) | | Author | Carlos | | Create Date Time | 04-jul-2019 13:50:04 | |
| Transit From | Image8.png calculateObstaclesMap |
| Author | Carlos |
| Create Date Time | 04-jul-2019 13:50:04 |
| Last Modified | 04-jul-2019 13:50:47 |
| Type | Self Message |
| Sequence Number | 2 |
| Action Type | |  |  | | --- | --- | | **Name** | **Value** | | Name | Call | | Author | Carlos | | Create Date Time | 04-jul-2019 13:50:04 | | Iteration | false | | Asynchronous | false | | Operation | Image8.png calculateObstaclesMap | | Operation Type | Operation | |
| Asynchronous | false |

|  |  |
| --- | --- |
| **Unnamed Message** | |
| To | |  |  | | --- | --- | | **Name** | **Value** | | End Model Element | Image7.png [Map](#bcT9PdaEs1nSbQbE) | | Author | Carlos | | Create Date Time | 04-jul-2019 13:50:12 | |
| Transit From | Image8.png calculateCostMap |
| Author | Carlos |
| Create Date Time | 04-jul-2019 13:50:12 |
| Last Modified | 04-jul-2019 13:50:47 |
| Type | Self Message |
| Sequence Number | 3 |
| Action Type | |  |  | | --- | --- | | **Name** | **Value** | | Name | Call | | Author | Carlos | | Create Date Time | 04-jul-2019 13:50:12 | | Iteration | false | | Asynchronous | false | | Operation | Image8.png calculateCostMap | | Operation Type | Operation | |
| Asynchronous | false |

|  |  |
| --- | --- |
| **Unnamed Message** | |
| From | |  |  | | --- | --- | | **Name** | **Value** | | End Model Element | Image7.png [MobileManipMotionPlanner](#4bg9PdaEs1nSbQah) | | Author | Carlos | | Create Date Time | 04-jul-2019 13:31:06 | |
| Transit From | Image8.png Map |
| Author | Carlos |
| Create Date Time | 04-jul-2019 13:31:06 |
| Last Modified | 04-jul-2019 13:50:47 |
| Quality Score | Fair |
| Quality Reason | |  |  | | --- | --- | | **Problem** | **Suggestion** | | Name does not contain glossary terms | Define name as term in glossary | |
| Type | Message |
| Sequence Number | 1.1 |
| Action Type | |  |  | | --- | --- | | **Name** | **Value** | | Name | Call | | Author | Carlos | | Create Date Time | 04-jul-2019 13:41:50 | | Iteration | false | | Asynchronous | false | | Operation | Image8.png Map | | Operation Type | Operation | |
| Asynchronous | false |

### Image7.png MobileManipMotionPlanExecution : MobileManipMotionPlanExecution

|  |  |
| --- | --- |
| **Name** | **Value** |
| Author | Carlos |
| Create Date Time | 04-jul-2019 13:30:02 |
| Last Modified | 04-jul-2019 13:44:32 |
| Quality Score | Very Bad |
| Quality Reason | |  |  | | --- | --- | | **Problem** | **Suggestion** | | Name does not contain glossary terms | Define name as term in glossary | | Model element without any relationship | Connect model element with relationship | |
| Multiplicity | Unspecified |
| Base Classifier | Image2.png [MobileManipMotionPlanExecution](#0nrFPdaEs1nSbQVb) |
| Active | false |
| Stopped | false |
| Multi Object | false |

#### Relationships

|  |  |
| --- | --- |
| **sendCommand : Message** | |
| To | |  |  | | --- | --- | | **Name** | **Value** | | End Model Element | Image7.png [SherpaTTAPI](#lV_9PdaEs1nSbQbf) | | Author | Carlos | | Create Date Time | 04-jul-2019 13:43:31 | |
| Author | Carlos |
| Create Date Time | 04-jul-2019 13:43:31 |
| Last Modified | 04-jul-2019 13:50:47 |
| Type | Message |
| Sequence Number | 5.2.1 |
| Asynchronous | false |

|  |  |
| --- | --- |
| **sendCommand : Message** | |
| To | |  |  | | --- | --- | | **Name** | **Value** | | End Model Element | Image7.png [SherpaTTAPI](#lV_9PdaEs1nSbQbf) | | Author | Carlos | | Create Date Time | 04-jul-2019 13:43:42 | |
| Author | Carlos |
| Create Date Time | 04-jul-2019 13:43:42 |
| Last Modified | 04-jul-2019 13:50:47 |
| Type | Message |
| Sequence Number | 5.2.2 |
| Asynchronous | false |

|  |  |
| --- | --- |
| **Unnamed Message** | |
| From | |  |  | | --- | --- | | **Name** | **Value** | | End Model Element | Image7.png [MobileManipMotionPlanner](#4bg9PdaEs1nSbQah) | | Author | Carlos | | Create Date Time | 04-jul-2019 13:43:07 | |
| Transit From | Image8.png start |
| Author | Carlos |
| Create Date Time | 04-jul-2019 13:43:07 |
| Last Modified | 04-jul-2019 13:50:47 |
| Type | Message |
| Sequence Number | 5.2 |
| Action Type | |  |  | | --- | --- | | **Name** | **Value** | | Name | Call | | Author | Carlos | | Create Date Time | 04-jul-2019 13:43:10 | | Iteration | false | | Asynchronous | false | | Operation | Image8.png start | | Operation Type | Operation | |
| Asynchronous | false |

|  |  |
| --- | --- |
| **Unnamed Message** | |
| From | |  |  | | --- | --- | | **Name** | **Value** | | End Model Element | Image7.png [MobileManipMotionPlanner](#4bg9PdaEs1nSbQah) | | Author | Carlos | | Create Date Time | 04-jul-2019 13:42:48 | |
| Transit From | Image8.png MobileManipMotionPlanExecution |
| Author | Carlos |
| Create Date Time | 04-jul-2019 13:42:48 |
| Last Modified | 04-jul-2019 13:50:47 |
| Type | Message |
| Sequence Number | 5.1 |
| Action Type | |  |  | | --- | --- | | **Name** | **Value** | | Name | Call | | Author | Carlos | | Create Date Time | 04-jul-2019 13:42:59 | | Iteration | false | | Asynchronous | false | | Operation | Image8.png MobileManipMotionPlanExecution | | Operation Type | Operation | |
| Asynchronous | false |

### Image7.png SherpaTTAPI

|  |  |
| --- | --- |
| **Name** | **Value** |
| Author | Carlos |
| Create Date Time | 04-jul-2019 13:30:26 |
| Last Modified | 04-jul-2019 13:44:32 |
| Quality Score | Very Bad |
| Quality Reason | |  |  | | --- | --- | | **Problem** | **Suggestion** | | Name does not contain glossary terms | Define name as term in glossary | | Model element without any relationship | Connect model element with relationship | |
| Multiplicity | Unspecified |
| Active | false |
| Stopped | false |
| Multi Object | false |

#### Relationships

|  |  |
| --- | --- |
| **sendCommand : Message** | |
| From | |  |  | | --- | --- | | **Name** | **Value** | | End Model Element | Image7.png [MobileManipMotionPlanExecution](#OHn9PdaEs1nSbQbW) | | Author | Carlos | | Create Date Time | 04-jul-2019 13:43:42 | |
| Author | Carlos |
| Create Date Time | 04-jul-2019 13:43:42 |
| Last Modified | 04-jul-2019 13:50:47 |
| Type | Message |
| Sequence Number | 5.2.2 |
| Asynchronous | false |

|  |  |
| --- | --- |
| **sendCommand : Message** | |
| From | |  |  | | --- | --- | | **Name** | **Value** | | End Model Element | Image7.png [MobileManipMotionPlanExecution](#OHn9PdaEs1nSbQbW) | | Author | Carlos | | Create Date Time | 04-jul-2019 13:43:31 | |
| Author | Carlos |
| Create Date Time | 04-jul-2019 13:43:31 |
| Last Modified | 04-jul-2019 13:50:47 |
| Type | Message |
| Sequence Number | 5.2.1 |
| Asynchronous | false |