**Determine Geographical Position**

**Input documents:**

* Subset 26 §3.6.6

**Description**

Picture + textual description

Manage

Geographical

Position

Store

Geographical

Position

CreateTrain

Geographical

Position

Display

Geographical

Position

Geographical

Positions

Information

ToDMI

Train

Localisation

Packet 79

**Kernel**

**DMI**

ManageAndReportGeographicalPosition

**Functions**

|  |  |  |  |
| --- | --- | --- | --- |
| **Name** | **Occurrence** | **Type** | **Description** |
| Name |  |  | **ManageAndReportGeographicalPosition** |
| Definition | 1 | T\_Definition |  |
| *Input* | *0..n* | *T\_Variable* |  |
| *Output* | *0..n* | *T\_Variable* |  |
| *Local* | *0..n* | *T\_Variable* |  |
| *Parameter* | *0..n* | *T\_Constant* |  |
| *Requirement* | *0..n* | *T\_Requirement* |  |
| *Block* | *1 (optional)* | *T\_FunctionalBlock* |  |
| *Parent* |  | *T\_Function* |  |
| *Allocation* |  | *T\_System* | OBU |

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| **Name** | **Occurrence** | **Type** | **Description** |
| Name |  |  | **StoreGeographicalPosition** |
| Definition | 1 | T\_Definition | Store from the packet 79 the information of the list of relevant geographical position |
| *Input* | *0..n* | *T\_Variable* | *Packet79* |
| *Output* | *0..n* | *T\_Variable* |  |
| *Local* | *0..n* | *T\_Variable* |  |
| *Parameter* | *0..n* | *T\_Constant* |  |
| *Requirement* | *0..n* | *T\_Requirement* |  |
| *Block* | *1 (optional)* | *T\_FunctionalBlock* |  |
| *Parent* |  | *T\_Function* | **ManageAndReportGeographicalPosition** |
| *Allocation* |  | *T\_System* | Kernel |

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| **Name** | **Occurrence** | **Type** | **Description** |
| Name |  |  | **CreateGeographicalPosition** |
| Definition | 1 | T\_Definition | Define the TrainGeographicalPosition |
| *Input* | *0..n* | *T\_Variable* | *ListOfLastReportedBalideGroup, TrainPosition* |
| *Output* | *0..n* | *T\_Variable* |  |
| *Local* | *0..n* | *T\_Variable* |  |
| *Parameter* | *0..n* | *T\_Constant* |  |
| *Requirement* | *0..n* | *T\_Requirement* | *SRS-3.6.6.4, SRS-3.6.6.5, SA\_3.6.6.9-R1, SA\_3.6.6.9-R2, SA\_3.6.6.9-R3, SRS-3.6.6.10* |
| *Block* | *1 (optional)* | *T\_FunctionalBlock* |  |
| *Parent* |  | *T\_Function* | **ManageAndReportGeographicalPosition** |
| *Allocation* |  | *T\_System* | Kernel |

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| **Name** | **Occurrence** | **Type** | **Description** |
| Name |  |  | **ManageGeographicalPosition** |
| Definition | 1 | T\_Definition | Manage the ListOfLastReportedBaliseGroup |
| *Input* | *0..n* | *T\_Variable* | *ListOfLastReportedBalideGroup, TrainPosition* |
| *Output* | *0..n* | *T\_Variable* |  |
| *Local* | *0..n* | *T\_Variable* |  |
| *Parameter* | *0..n* | *T\_Constant* |  |
| *Requirement* | *0..n* | *T\_Requirement* | *SRS-3.6.6.4.1, SRS-3.6.6.4.2, SRS-3.6.6.4.3, SRS-3.6.6.5, SRS-3.6.6.7, SA\_3.6.6.9-R1, SA\_3.6.6.9-R2, SA\_3.6.6.9-R3, SRS-3.6.6.9.1* |
| *Block* | *1 (optional)* | *T\_FunctionalBlock* |  |
| *Parent* |  | *T\_Function* | **ManageAndReportGeographicalPosition** |
| *Allocation* |  | *T\_System* | Kernel |

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| **Name** | **Occurrence** | **Type** | **Description** |
| Name |  |  | **DisplayGeographicPosition** |
| Definition | 1 | T\_Definition | Textual and graphical description of the function |
| *Input* | *0..n* | *T\_Variable* |  |
| *Output* | *0..n* | *T\_Variable* |  |
| *Local* | *0..n* | *T\_Variable* |  |
| *Parameter* | *0..n* | *T\_Constant* |  |
| *Requirement* | *0..n* | *T\_Requirement* | *3.6.6.1-R2* |
| *Block* | *1 (optional)* | *T\_FunctionalBlock* |  |
| *Parent* |  | *T\_Function* | **ManageAndReportGeographicalPosition** |
| *Allocation* |  | *T\_System* | DMI |

**Variables**

**List of variables to define:**

* ListLastRelevantBaliseGroup
  + how to describe a balise ?
  + How much balise groups shall be store ?
  + Which balise groups are concerned ? Relevant ? Reported ? Linking ? Unlinking ?
* TrainPosition
  + MinimalFrontPosition
  + MaximalFrontPosition
  + Direction

|  |  |  |  |
| --- | --- | --- | --- |
| **Name** | **Occurrence** | **Type** | **Description** |
| Name |  |  | GeographicPositionStore |
| Definition | 1 | T\_Definition |  |
| Source | 1 | T\_SourceDocument |  |
| Nature | 1 | T\_VariableNature | Store |
| MinimalValue | 0..1 | T\_Text |  |
| MaximalValue | 0..1 | T\_Text |  |
| SpecialValue | 0..n | T\_Text |  |
| Allocation | 1 | * Interface * Packet * Internal |  |
| *Requirement* | *1..n* | *T\_Requirement* | *The set of requirement which defined the variable (at least one)* |
| Store |  |  |  |

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| --- | --- | --- | --- |
| **Name** | **Occurrence** | **Type** | **Description** |
| Name |  |  | ListGeographicPosition |
| Definition | 1 | T\_Definition |  |
| Source | 1 | T\_SourceDocument |  |
| Nature | 1 | T\_VariableNature |  |
| MinimalValue | 0..1 | T\_Text |  |
| MaximalValue | 0..1 | T\_Text |  |
| SpecialValue | 0..n | T\_Text |  |
| Allocation | 1 | * Interface * Packet * Internal |  |
| *Requirement* | *1..n* | *T\_Requirement* | *The set of requirement which defined the variable (at least one)* |
| Store |  |  | GeographicPositionStore |

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| **Name** | **Occurrence** | **Type** | **Description** |
| Name |  |  | CurrentGeographicalPositionReference |
| Definition | 1 | T\_Definition |  |
| Source | 1 | T\_SourceDocument |  |
| Nature | 1 | T\_VariableNature | T\_GeographicalPosition |
| MinimalValue | 0..1 | T\_Text |  |
| MaximalValue | 0..1 | T\_Text |  |
| SpecialValue | 0..n | T\_Text | Unknown |
| Allocation | 1 | * Interface * Packet * Internal |  |
| *Requirement* | *1..n* | *T\_Requirement* | *SA\_3.6.6.3 !, SA\_3.6.6.9-R1* |
| Store |  |  | GeographicPositionStore |
| Resolution | 1 |  |  |

**T\_GeographicalPosition: SRS\_3.6.6.10**

* BGID
* D\_POSOFF
* Q\_MPOSITION
* M\_POSITION

|  |  |  |  |
| --- | --- | --- | --- |
| **Name** | **Occurrence** | **Type** | **Description** |
| Name |  |  | ListGeographicalPositionReference |
| Definition | 1 | T\_Definition |  |
| Source | 1 | T\_SourceDocument |  |
| Nature | 1 | T\_VariableNature | List of T\_GeographicalPosition |
| MinimalValue | 0..1 | T\_Text |  |
| MaximalValue | 0..1 | T\_Text |  |
| SpecialValue | 0..n | T\_Text |  |
| Allocation | 1 | * Interface * Packet * Internal |  |
| *Requirement* | *1..n* | *T\_Requirement* | *SA\_3.6.6.3 !* |
| Store |  |  | GeographicPositionStore |
| Resolution | 1 |  |  |

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| **Name** | **Occurrence** | **Type** | **Description** |
| Name |  |  | ListLastRelevantBaliseGroup |
| Definition | 1 | T\_Definition |  |
| Source | 1 | T\_SourceDocument |  |
| Nature | 1 | T\_VariableNature | List of 8 T\_BaliseGroup |
| MinimalValue | 0..1 | T\_Text |  |
| MaximalValue | 0..1 | T\_Text |  |
| SpecialValue | 0..n | T\_Text |  |
| Allocation | 1 | * Interface * Packet * Internal |  |
| *Requirement* | *1..n* | *T\_Requirement* | *SA\_3.6.6.3 !* |
| Store |  |  | GeographicPositionStore |
| Resolution | 1 |  |  |

**T\_BaliseGroup:**

* BG\_ID
* Directional
* Location

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| **Name** | **Occurrence** | **Type** | **Description** |
| Name |  |  | Packet79 |
| Definition | 1 | T\_Definition |  |
| Source | 1 | T\_SourceDocument |  |
| Nature | 1 | T\_VariableNature | Store |
| MinimalValue | 0..1 | T\_Text |  |
| MaximalValue | 0..1 | T\_Text |  |
| SpecialValue | 0..n | T\_Text |  |
| Allocation | 1 | * Interface * Packet * Internal |  |
| *Requirement* | *1..n* | *T\_Requirement* | *The set of requirement which defined the variable (at least one)* |
| Store |  |  |  |

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| **Name** | **Occurrence** | **Type** | **Description** |
| Name |  |  | InformationToProvideToDMI |
| Definition | 1 | T\_Definition |  |
| Source | 1 | T\_SourceDocument |  |
| Nature | 1 | T\_VariableNature | Store |
| MinimalValue | 0..1 | T\_Text |  |
| MaximalValue | 0..1 | T\_Text |  |
| SpecialValue | 0..n | T\_Text |  |
| Allocation | 1 | * Interface * Packet * Internal |  |
| *Requirement* | *1..n* | *T\_Requirement* | *The set of requirement which defined the variable (at least one)* |
| Store |  |  |  |

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| **Name** | **Occurrence** | **Type** | **Description** |
| Name |  |  | TrainGeographicalPosition |
| Definition | 1 | T\_Definition |  |
| Source | 1 | T\_SourceDocument |  |
| Nature | 1 | T\_VariableNature |  |
| MinimalValue | 0..1 | T\_Text |  |
| MaximalValue | 0..1 | T\_Text |  |
| SpecialValue | 0..n | T\_Text | Unkown |
| Allocation | 1 | * Interface * Packet * Internal |  |
| *Requirement* | *1..n* | *T\_Requirement* | *SRS\_3.6.6.2 ! SRS\_3.6.6.9, SA\_3.6.6.9-R2* |
| Store |  |  | InformationToProvideToDMI |
| Resolution |  |  | 1m |

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| **Name** | **Occurrence** | **Type** | **Description** |
| Name |  |  | TrackReferencePosition |
| Definition | 1 | T\_Definition |  |
| Source | 1 | T\_SourceDocument |  |
| Nature | 1 | T\_VariableNature |  |
| MinimalValue | 0..1 | T\_Text |  |
| MaximalValue | 0..1 | T\_Text |  |
| SpecialValue | 0..n | T\_Text |  |
| Allocation | 1 | * Interface * Packet * Internal |  |
| *Requirement* | *1..n* | *T\_Requirement* | *The set of requirement which defined the variable (at least one)* |
| Store |  |  | InformationToProvideToDMI |

**Requirements**

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| --- | --- | --- | --- |
| **Name** | **Occurrence** | **Type** | **Description** |
| Name |  |  | SA\_3.6.6.1-R1 |
| Definition | 1 | T\_Definition | The Kernel shall provide the geographical position of the estimated front end of the train in relation to the track kilometre to the DMI. |
| Nature | 1 | * Structural * Functional * Definition |  |
| Source | 1 | T\_SourceDocument | SA |
| Discussion | 1 (Optional) | T\_Text |  |
| Parent |  |  | 3.6.6.1 |
| Allocation |  |  | Kernel |

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| **Name** | **Occurrence** | **Type** | **Description** |
| Name |  |  | SA\_3.6.6.1-R2 |
| Definition | 1 | T\_Definition | The DMI shall display, only on driver request, the geographical position of the estimated front end of the train in relation to the track kilometre. The display of the geographical position shall also be stopped on driver request. |
| Nature | 1 | * Structural * Functional * Definition |  |
| Source | 1 | T\_SourceDocument | SA |
| Discussion | 1 (Optional) | T\_Text |  |
| Parent |  |  | SRS\_3.6.6.1 |
| Allocation |  |  | DMI |

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| **Name** | **Occurrence** | **Type** | **Description** |
| Name |  |  | SA\_3.6.6.3 |
| Definition | 1 | T\_Definition | When receiving new geographical position information (from radio or from balise group), the Kernel shall replace all the ListOfGeographicalPosition by the new one except the CurrentGeographicalPositionReference. |
| Nature | 1 | * Structural * Functional * Definition |  |
| Source | 1 | T\_SourceDocument | SRS |
| Discussion | 1 (Optional) | T\_Text |  |
| Parent |  |  | SRS\_3.6.6.3 |
| Allocation |  |  | DMI |

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| **Name** | **Occurrence** | **Type** | **Description** |
| Name |  |  | SA\_3.6.6.9- R2 |
| Definition | 1 | T\_Definition | The Kernel shall replace the CurrentGeographicalPositionReference by Unknow if : b) it is told not to do so (M\_POSITION), OR  d) no more geographical position information is available (e.g., deleted according to conditions in SRS chapter 4) |
| Nature | 1 | * Structural * Functional * Definition |  |
| Source | 1 | T\_SourceDocument | SA |
| Discussion | 1 (Optional) | T\_Text |  |
| Parent |  |  | SRS\_3.6.6.9 |
| Allocation |  |  | Kernel |

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| **Name** | **Occurrence** | **Type** | **Description** |
| Name |  |  | SA\_3.6.6.9-R2 |
| Definition | 1 | T\_Definition | The Kernel shall replace the current TrainGeographicalPosition by Unknow if : c) the calculated geographical position (TrainGeographicalPosition) becomes negative. |
| Nature | 1 | * Structural * Functional * Definition |  |
| Source | 1 | T\_SourceDocument | SA |
| Discussion | 1 (Optional) | T\_Text |  |
| Parent |  |  | SRS\_3.6.6.9 |
| Allocation |  |  | Kernel |

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| **Name** | **Occurrence** | **Type** | **Description** |
| Name |  |  | SA\_3.6.6.9-R3 |
| Definition | 1 | T\_Definition | The Kernel shall replace the CurrentGeographicalPositionReference by the first t GeographicalPositionReference reached by the Train (offset). |
| Nature | 1 | * Structural * Functional * Definition |  |
| Source | 1 | T\_SourceDocument | SA |
| Discussion | 1 (Optional) | T\_Text |  |
| Parent |  |  | SRS\_3.6.6.9 |
| Allocation |  |  | Kernel |

#### **Exported Requirements :**

#### SRS-3.6.6.6 In cases where the track kilometre is not incremental (jumps, changes in counting direction, scaling error) the reported position might be wrong between the point of irregularity and the next new reference.

**=> To the trackside**

#### SRS-3.6.6.8 Intentionally deleted.

**Type:**

* Boolean
* Integer
* Floating point
* T\_text: textual description
* T\_ident: based on a textual description
* T\_Version = {3.0.0, 3.3.0}
* T\_VariableNature = {Acceleration, Distance, Gradient, Length, Miscellaneous, Number, ClassNumber, IdentityNumber, Qualifier, TimeDate, Speed, Text}
* T\_SourceDocument = {subset-26, subset-34}
* T\_Definition : a textual and graphical description (all kind of picture, table and diagram are allowed)