DATEX II profile for IVI Location

ECo-AT

Version 00-01-00

* 1. Overview

This profile describes the location content for the IVI use case as described in the project ECo-AT using the VMS table publication. There is a second document describing the IVI content information.

Location referencing is done by ALERT-C as well as with a level B extension which is also described in this document. The extension is named as “IviLocation”.

* 1. Data Dictionary for "IVI Location Profile"
     1. "AlertCMethod4Linear" package
        1. "AlertCMethod4Linear" package classes

| **Class name** | **Designation** | **Definition** | **Stereotype** | **Abstract** |
| --- | --- | --- | --- | --- |
| AlertCMethod4Linear | ALERT-C method4 linear | A linear section along a road between two points, Primary and Secondary, which are pre-defined ALERT-C locations plus offset distance. Direction is FROM the Secondary point TO the Primary point, i.e. the Primary point is downstream of the Secondary point. |  | no |

Table 1— Classes of the "AlertCMethod4Linear" package

* + - 1. "AlertCMethod4Linear" package association roles

There are no defined association roles in the "AlertCMethod4Linear" package.

* + - 1. "AlertCMethod4Linear" package attributes

There are no defined attributes in the "AlertCMethod4Linear" package.

* + 1. "AlertCMethod4Point" package
       1. "AlertCMethod4Point" package classes

| **Class name** | **Designation** | **Definition** | **Stereotype** | **Abstract** |
| --- | --- | --- | --- | --- |
| AlertCMethod4Point | ALERT-C method4 point | A single point on the road network defined by reference to a point in a pre-defined ALERT-C location table plus an offset distance and which has an associated direction of traffic flow. |  | no |

Table 2— Classes of the "AlertCMethod4Point" package

* + - 1. "AlertCMethod4Point" package association roles

There are no defined association roles in the "AlertCMethod4Point" package.

* + - 1. "AlertCMethod4Point" package attributes

There are no defined attributes in the "AlertCMethod4Point" package.

* + 1. "Exchange " package
       1. "Exchange" package classes

| **Class name** | **Designation** | **Definition** | **Stereotype** | **Abstract** |
| --- | --- | --- | --- | --- |
| Exchange | Exchange | Details associated with the management of the exchange between the supplier and the client. |  | no |
| InternationalIdentifier | International identifier | An identifier/name whose range is specific to the particular country. |  | no |

**Table 3— Classes of the "Exchange" package**

* + - 1. "Exchange" package association roles

| **Class name** | **Role name** | **Designation** | **Definition** | **Multiplicity** | **Target** |
| --- | --- | --- | --- | --- | --- |
| Exchange | supplierIdentification | Supplier identification | An identifier/name whose range is specific to the particular country. | 1..1 | InternationalIdentifier |

**Table 4— Associations of the "Exchange" package**

* + - 1. "Exchange" package attributes

| **Class name** | **Attribute name** | **Designation** | **Definition** | **Multiplicity** | **Type** |
| --- | --- | --- | --- | --- | --- |
| Exchange | clientIdentification | Client identification | In a data exchange process, an identifier of the organisation or group of organisations which receives information from the DATEX II supplier system. | 0..1 | String |

**Table 5— Attributes of the "Exchange" package**

* + 1. "D2LogicalModel " package
       1. "D2LogicalModel" package classes

| **Class name** | **Designation** | **Definition** | **Stereotype** | **Abstract** |
| --- | --- | --- | --- | --- |
| Exchange | Exchange | Details associated with the management of the exchange between the supplier and the client. |  | no |
| D2LogicalModel | D2 logical model | The DATEX II logical model comprising exchange, content payload and management sub-models. |  | no |
| PayloadPublication | Payload publication | A payload publication of traffic related information or associated management information created at a specific point in time that can be exchanged via a DATEX II interface. |  | yes |

**Table 6— Classes of the "D2LogicalModel" package**

* + - 1. "D2LogicalModel" package association roles

There are no (or not used) association roles in the “D2LogicalModel” package

* + - 1. "D2LogicalModel" package attributes

There are no (or not used) package attributes in the “D2LogicalModel” package

* + 1. "PayloadPublication" package
       1. "PayloadPublication" package classes

| **Class name** | **Designation** | **Definition** | **Stereotype** | **Abstract** |
| --- | --- | --- | --- | --- |
| PayloadPublication | Payload publication | A payload publication of traffic related information or associated management information created at a specific point in time that can be exchanged via a DATEX II interface. |  | no |

Table 7— Classes of the "PayloadPublication" package

* + - 1. "PayloadPublication" package association roles

| **Class name** | **Role name** | **Designation** | **Definition** | **Multiplicity** | **Target** |
| --- | --- | --- | --- | --- | --- |
| PayloadPublication | publicationCreator | Publication creator | An identifier/name whose range is specific to the particular country. | 1..1 | InternationalIdentifier |

Table 8— Associations of the "PayloadPublication" package

* + - 1. "PayloadPublication" package attributes

| **Class name** | **Attribute name** | **Designation** | **Definition** | **Multiplicity** | **Type** |
| --- | --- | --- | --- | --- | --- |
| PayloadPublication | publicationTime | Publication time | Date/time at which the payload publication was created. | 1..1 | DateTime |
| PayloadPublication | lang | Language | The default language used throughout the payload publication. | 1..1 | Language |

Table 9— Attributes of the "PayloadPublication" package

* + 1. "VmsTablePublication" package
       1. "VmsTablePublication" package classes

| **Class name** | **Designation** | **Definition** | **Stereotype** | **Abstract** |
| --- | --- | --- | --- | --- |
| VmsRecord | VMS record | A sub-record in the VMS Unit table defining the characteristics of a single variable message sign that is controlled by a specific VMS unit. Locations are on or adjacent to the road network but may be updated over time if relating to a mobile VMS unit. |  | no |
| VmsTablePublication | VMS table publication | A publication containing one or more VMS Unit Tables each comprising a set of records which hold details of VMS units. |  | no |
| VmsUnitRecord | VMS unit record | A versioned single VMS unit entry/record in the VMS Unit table that defines the characteristics of the VMS unit. | versionedIdentifiable | no |
| VmsUnitTable | VMS unit table | A versioned VMS Unit Table comprising a number of data records, each record defining the characteristics of a specific deployed variable message sign unit. | versionedIdentifiable | no |

Table 10— Classes of the "VmsTablePublication" package

* + - 1. "VmsTablePublication" package association roles

| **Class name** | **Role name** | **Designation** | **Definition** | **Multiplicity** | **Target** |
| --- | --- | --- | --- | --- | --- |
| VmsRecord | vmsLocation | VMS location | The location of the variable message sign. For mobile VMS which are regularly moved this need not be provided. Instead the VMS location should be provided in the VmsPublication along with current settings. | 0..1 | Location |

Table 11— Associations of the "VmsTablePublication" package

* + - 1. "VmsTablePublication" package attributes

| **Class name** | **Attribute name** | **Designation** | **Definition** | **Multiplicity** | **Type** |
| --- | --- | --- | --- | --- | --- |
| VmsRecord | vmsPhysicalMounting | VMS physical mounting | Description of how the VMS is physically mounted or deployed on the road. | 0..1 | PhysicalMountingEnum |
| VmsUnitRecord | numberOfVms | Number of VMS | Number of variable message signs contolled by the unit. | 0..1 | NonNegativeInteger |
| VmsUnitTable | vmsUnitTableIdentification | VMS unit table identification | An alphanumeric identification for the VMS Unit table, possibly human readable. | 0..1 | String |

Table 12— Attributes of the "VmsTablePublication" package

* 1. Data Dictionary for "IVI Location – Location Referencing"
     1. "Location" package

| **Class name** | **Designation** | **Definition** | **Stereotype** | **Abstract** |
| --- | --- | --- | --- | --- |
| AffectedCarriagewayAndLanes | Affected carriageway and lanes | Supplementary positional information which details carriageway and lane locations. Several instances may exist where the element being described extends over more than one carriageway. |  | no |
| AlertCDirection | ALERT-C direction | The direction of traffic flow along the road to which the information relates. |  | no |
| AlertCLocation | ALERT-C location | Identification of a specific point, linear or area location in an ALERT-C location table. |  | no |
| AlertCMethod4PrimaryPointLocation | ALERT-C method4 primary point location | The point (called Primary point) which is either a single point or at the downstream end of a linear road section. The point is specified by a reference to a point in a pre-defined ALERT-C location table plus a non-negative offset distance. |  | no |
| AlertCMethod4SecondaryPointLocation | ALERT-C method4 secondary point location | The point (called Secondary point) which is at the upstream end of a linear road section. The point is specified by a reference to a point in a pre-defined Alert-C location table plus a non-negative offset distance. |  | no |
| Location | Location | The specification of a location either on a network (as a point or a linear location) or as an area. This may be provided in one or more referencing systems. |  | yes |
| NetworkLocation | Network location | The specification of a location on a network (as a point or a linear location). |  | yes |

Table 13— Classes of the "Location" package

* + - 1. "Location" package attributes

| **Class name** | **Attribute name** | **Designation** | **Definition** | **Multiplicity** | **Type** |
| --- | --- | --- | --- | --- | --- |
| AffectedCarriagewayAndLanes | carriageway | Carriageway | Indicates the section of carriageway to which the location relates. | 1..1 | CarriagewayEnum |
|  | lane | Lane | Indicates the specific lane to which the location relates. | 0..\* | LaneEnum |
|  | specificLocation | Specific location | Unique code within the ALERT-C location table which identifies the specific point, linear or area location. | 1..1 | AlertCLocationCode |
| AlertCDirection | alertCDirectionCoded | ALERT-C direction coded | The direction of traffic flow to which the situation, traffic data or information is related. Positive is in the direction of coding of the road. | 1..1 | AlertCDirectionEnum |
|  | alertCDirectionNamed | ALERT-C direction named | ALERT-C name of a direction e.g. Brussels -> Lille. | 0..1 | MultilingualString |
|  | alertCDirectionSense | ALERT-C direction sense | Indicates for circular routes (i.e. valid only for ring roads) the sense in which navigation should be made from the primary location to the secondary location, to avoid ambiguity. TRUE indicates positive RDS direction, i.e. direction of coding of road. | 0..1 | Boolean |
| AlertCLocation | alertCLocationName | ALERT-C location name | Name of ALERT-C location. | 0..1 | MultilingualString |
|  | specificLocation | Specific location | Unique code within the ALERT-C location table which identifies the specific point, linear or area location. | 1..1 | AlertCLocationCode |
| OffsetDistance | offsetDistance | Offset distance | The non negative offset distance from the ALERT-C referenced point to the actual point. The ALERT-C locations in the Primary and Secondary locations must always encompass the linear section being specified, thus Offset Distance is towards the other point. | 1..1 | MetresAsNonNegativeInteger |

**Table 14— Attributes of the "Location" package**

* + 1. "Linear" package

| **Class name** | **Designation** | **Definition** | **Stereotype** | **Abstract** |
| --- | --- | --- | --- | --- |
| AlertCLinear | ALERT-C linear | A linear section along a road defined between two points on the road by reference to a pre-defined ALERT-C location table. |  | yes |
| Linear | Linear | A linear section along a single road with optional directionality defined between two points on the same road. |  | no |

Table 15— Classes of the "Linear" package

* + - 1. "Linear" package attributes

| **Class name** | **Attribute name** | **Designation** | **Definition** | **Multiplicity** | **Type** |
| --- | --- | --- | --- | --- | --- |
| AlertCLinear | alertCLocationCountryCode | ALERT-C location country code | EBU country code. | 1..1 | String |
|  | alertCLocationTableNumber | ALERT-C location table number | Number allocated to an ALERT-C table in a country. Ref. EN ISO 14819-3 for the allocation of a location table number. | 1..1 | String |
|  | alertCLocationTableVersion | ALERT-C location table version | Version number associated with an ALERT-C table reference. | 1..1 | String |

**Table 16— Attributes of the "Linear" package**

* + 1. "IviLocation" package
       1. "IviLocation" package classes

| **Class name** | **Designation** | **Definition** | **Stereotype** | **Abstract** |
| --- | --- | --- | --- | --- |
| ExtendedLocation | Extended location | Extension for Location. |  | no |
| IviLocation | Ivi location | Contains the location of an ivi as specified in the project ECo-AT |  | yes |

Table 17— Classes of the "IviLocation" package

* + - 1. "IviLocation" package association roles

| **Class name** | **Role name** | **Designation** | **Definition** | **Multiplicity** | **Target** |
| --- | --- | --- | --- | --- | --- |
| IviLocation | relevanceZone | Relevance zone | Contains relevance zone trace points. | 1..1 | LinearByCoordinates |
|  | detectionZone | Detection zone | Contains detection zone trace points | 1..1 | LinearByCoordinates |

Table 18— Associations of the "IviLocation" package

* + 1. "LinearByCoordinates" package
       1. "LinearByCoordinates" package classes

| **Class name** | **Designation** | **Definition** | **Stereotype** | **Abstract** |
| --- | --- | --- | --- | --- |
| ExtendedLinear | Extended linear | Extension point for linear Locations. |  | no |
| LinearByCoordinates | Linear by coordinates | A linear location defined by coordinates. |  | no |

Table 19— Classes of the "LinearByCoordinates" package

* + - 1. "LinearByCoordinates" package association roles

| **Class name** | **Role name** | **Designation** | **Definition** | **Multiplicity** | **Target** |
| --- | --- | --- | --- | --- | --- |
| LinearByCoordinates | end | End | End point of a LinearByCoordinates | 1..1 | PointCoordinates |
|  | intermediate | Intermediate | Points of a LinearByCoordinates object that are neither start or end point. | 0..\* | PointCoordinates |
|  | start | Start | Start point of a LinearByCoordinates | 1..1 | PointCoordinates |

Table 20— Associations of the "LinearByCoordinates" package

* + - 1. "LinearByCoordinates" package attributes

| **Class name** | **Attribute name** | **Designation** | **Definition** | **Multiplicity** | **Type** |
| --- | --- | --- | --- | --- | --- |
| LinearByCoordinates | directed | Directed | Whether this linear is directed or not. Default is directed=true | 0..1 | Boolean |
|  | roadName | Road name | Name of the road of which the linear element forms a part. | 0..1 | MultilingualString |
|  | roadNumber | Road number | Identifier/number of the road of which the linear element forms a part. | 0..1 | String |

Table 21— Attributes of the "LinearByCoordinates" package

* 1. Data Dictionary of <<enumerations>> for "IVI location"

This clause contains the definitions of all enumerations which are used in the "IVI location".

* + 1. The <<enumeration>> "AlertCDirectionEnum"

The direction of traffic flow concerned by a situation or traffic data. In ALERT-C the positive (resp. negative) direction corresponds to the positive offset direction within the RDS location table.

| **Enumerated value name** | **Designation** | **Definition** |
| --- | --- | --- |
| both | Both | Indicates that both directions of traffic flow are affected by the situation or relate to the traffic data. |
| negative | Negative | The direction of traffic flow concerned by a situation or traffic data. In ALERT-C the negative direction corresponds to the negative offset direction within the RDS location table. |
| positive | Positive | The direction of traffic flow concerned by a situation or traffic data. In ALERT-C the positive direction corresponds to the positive offset direction within the RDS location table. |
| unknown | Unknown | Unknown direction. |

Table 22— Values contained in the enumeration "AlertCDirectionEnum"

* + 1. The <<enumeration>> "PhysicalMountingEnum"

The ways in which equipments such as VMS are mounted or deployed on the road.

| **Enumerated value name** | **Designation** | **Definition** |
| --- | --- | --- |
| centralReservationMounted | Central reservation mounted | Equipment mounted in the central reservation. |
| gantryMounted | Gantry mounted | Equipment mounted on an overhead gantry across the roadway. |
| overheadBridgeMounted | Overhead bridge mounted | Equipment mounted overhead on a bridge structure. |
| roadsideCantileverMounted | Roadside cantilever mounted | Equipment mounted on a cantilever from the roadside. |
| roadsideMounted | Roadside mounted | Equipment mounted at the roadside. |
| trailerMounted | Trailer mounted | Equipment mounted on a movable trailer. |
| tunnelEntranceMounted | Tunnel entrance mounted | Equipment mounted on the entrance to a tunnel. |
| vehicleMounted | Vehicle mounted | Equipment mounted on a vehicle. |

Table 23— Values contained in the enumeration "PhysicalMountingEnum"

* 1. Alphabetical list of attributes

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Attribute name** | **Class name** | **Designation** | **Definition** | **Multiplicity** | **Type** |
| alertCDirectionCoded | AlertCDirection | ALERT-C direction coded | The direction of traffic flow to which the situation, traffic data or information is related. Positive is in the direction of coding of the road. | 1..1 | AlertCDirectionEnum |
| alertCDirectionNamed | AlertCDirection | ALERT-C direction named | ALERT-C name of a direction e.g. Brussels -> Lille. | 0..1 | MultilingualString |
| alertCDirectionSense | AlertCDirection | ALERT-C direction sense | Indicates for circular routes (i.e. valid only for ring roads) the sense in which navigation should be made from the primary location to the secondary location, to avoid ambiguity. TRUE indicates positive RDS direction, i.e. direction of coding of road. | 0..1 | Boolean |
| alertCLocationCountryCode | AlertCLinear | ALERT-C location country code | EBU country code. | 1..1 | String |
| alertCLocationName | AlertCLocation | ALERT-C location name | Name of ALERT-C location. | 0..1 | MultilingualString |
| alertCLocationTableNumber | AlertCLinear | ALERT-C location table number | Number allocated to an ALERT-C table in a country. Ref. EN ISO 14819-3 for the allocation of a location table number. | 1..1 | String |
| alertCLocationTableVersion | AlertCLinear | ALERT-C location table version | Version number associated with an ALERT-C table reference. | 1..1 | String |
| clientIdentification | Exchange | Client identification | In a data exchange process, an identifier of the organisation or group of organisations which receives information from the DATEX II supplier system. | 0..1 | String |
| directed | LinearByCoordinates | Directed | Whether this linear is directed or not. Default is directed=true | 0..1 | Boolean |
| latitude | PointCoordinates | Latitude | Latitude in decimal degrees using the European Terrestrial Reference System 1989 (ETRS89). | 1..1 | Float |
| longitude | PointCoordinates | Longitude | Longitude in decimal degrees using the European Terrestrial Reference System 1989 (ETRS89). | 1..1 | Float |
| numberOfVms | VmsUnitRecord | Number of VMS | Number of variable message signs contolled by the unit. | 0..1 | NonNegativeInteger |
| publicationTime | PayloadPublication | Publication time | Date/time at which the payload publication was created. | 1..1 | DateTime |
| roadName | LinearByCoordinates | Road name | Name of the road of which the linear element forms a part. | 0..1 | MultilingualString |
| roadNumber | LinearByCoordinates | Road number | Identifier/number of the road of which the linear element forms a part. | 0..1 | String |
| vmsPhysicalMounting | VmsRecord | VMS physical mounting | Description of how the VMS is physically mounted or deployed on the road. | 0..1 | PhysicalMountingEnum |
| vmsUnitTableIdentification | VmsUnitTable | VMS unit table identification | An alphanumeric identification for the VMS Unit table, possibly human readable. | 0..1 | String |

Table 24- Alphabetical list of attributes

* 1. Alphabetical list of roles

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Role name** | **Class name** | **Designation** | **Definition** | **Multiplicity** | **Target** |
| detectionZone | IviLocation | Detection zone | Contains detection zone trace points. | 1..1 | LinearByCoordinates |
| end | LinearByCoordinates | End | End point of a LinearByCoordinates | 1..1 | PointCoordinates |
| intermediate | LinearByCoordinates | Intermediate | Points of a LinearByCoordinates object that are neither start or end point. | 0..\* | PointCoordinates |
| relevanceZone | IviLocation | Relevance zone | Contains relevance zone trace points. | 1..1 | LinearByCoordinates |
| start | LinearByCoordinates | Start | Start point of a LinearByCoordinates | 1..1 | PointCoordinates |
| vmsLocation | VmsRecord | VMS location | The point location of the variable message sign. For mobile VMS which are regularly moved this need not be provided. Instead the VMS location should be provided in the VmsPublication along with current settings. | 0..1 | Location |

Table 25- Alphabetical list of roles

* 1. Figure



Figure 1: IVI Content