Austrian Traffic Data Profile

Version 1.0 Rev.1

* 1. Introduction

ASFINAG provides DATEX II traffic information of Austrian motorways and highways for service providers and other interested institutions.

This document describes the Austrian Traffic Data Profile.

This profile contains the one-minute aggregated cross section data provided by traffic sensors:

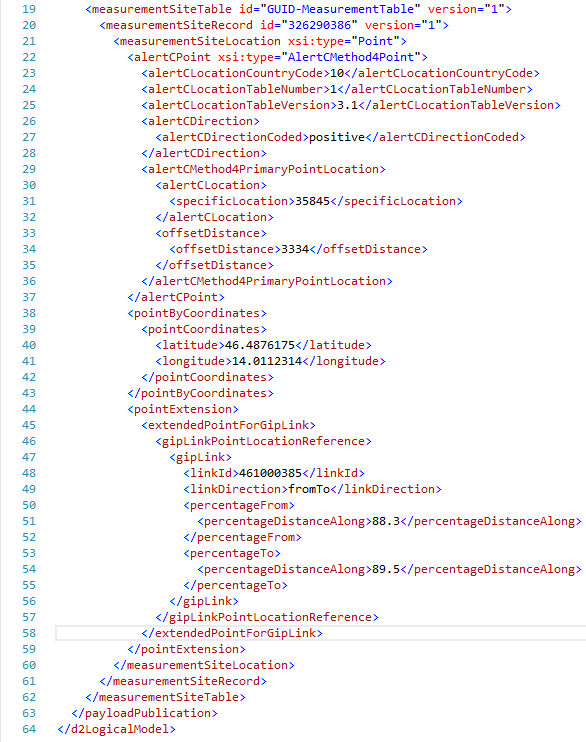
* Mean velocity values grouped by vehicle class (car, trucks)
* Traffic flow
* Occupancy
* Basic statistics (minimum velocity ,maximum velocity, standard deviation)
* Plausibility of the values

For data delivery the traffic data is split in two DATEX II files:

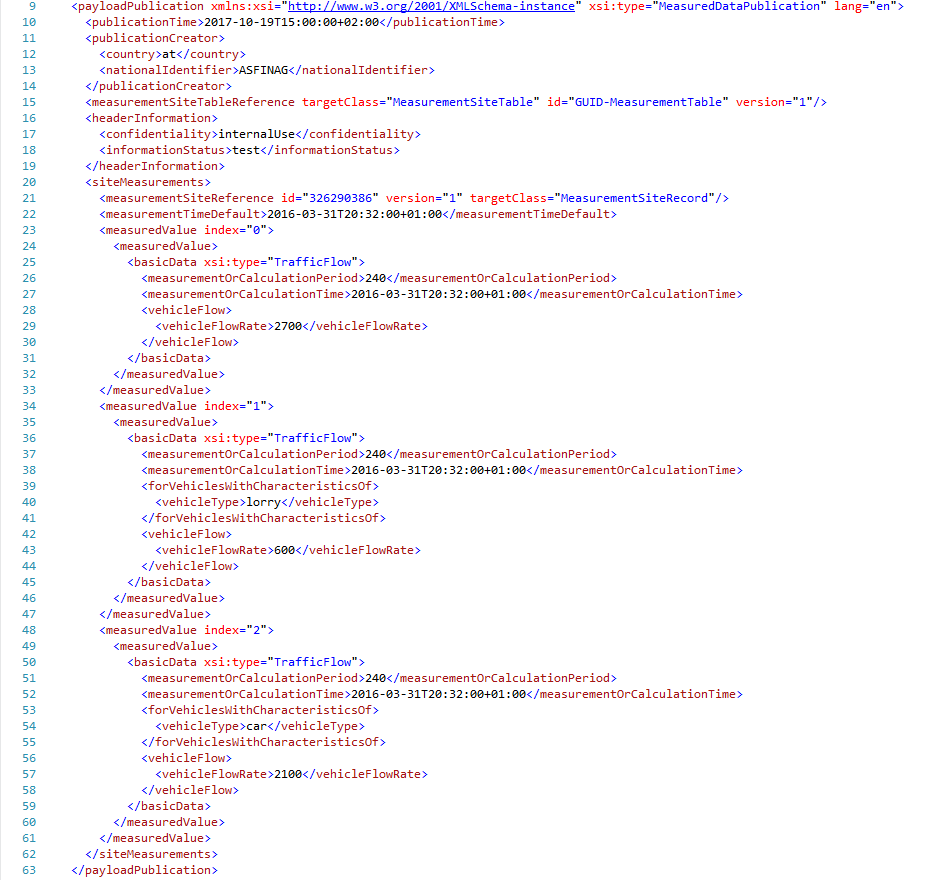
1. **TrafficData\_static**: This file contains the identifiers of the traffic sensors along with the location information for all traffic sensors in different location referencing methods, as described in section **A.2**.
2. **TrafficData\_dynamic**: This file contains the identifiers of the traffic sensors along with the actual measurement values of the traffic sensors.

For providing location information “MeasurementSiteTablePublication” is used, whereas for providing the actual content (measured values), “MeasuredDataPublication” is used.

Example 1 shows an extract of TrafficData\_static and Example 2 shows and extract of TrafficData\_dynamic.



Example 1: Location referencing of measurement site 326290386 (TrafficData\_static)



Example 2: Measurement values for measurement site 326290386 (TrafficData\_dynamic)

* 1. Location Referencing

ASFINAG provides a number of location referencing methods for locating the measurement sites as described in Table 2. An overview about the provided location referencing methods is shown in Table 1**Fehler! Verweisquelle konnte nicht gefunden werden.**.

|  |  |  |
| --- | --- | --- |
| **Location Referencing** | **DATEX II element** | **Description** |
| AlertC location codes | alertCLinear | The *alertCPoint* element defines location using an AlertC Location code, direction and offsetDistance. |
| ASFINAG road km | pointAlongLinearElement | The *pointAlongLinearElement* element contains the road km location as referenced by ASFINAG. Any point on the ASFINAG road network is described by road number, direction and road km provided in meters. |
| WGS84 | pointByCoordinates | The *pointByCoordinates* element contains the latitude/longitude values of the location point. |
| GIP | GIPLink | Location reference of GIP (Graph Integration Platform). GIP provides a digital map of Austria's transport network to all authorities. |

Table 1: Location referencing methods

* 1. Measurement Values

Table 2 shows an overview about the provided measurement values.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **measurement element ASFINAG QTRAFFIC** | **Unit** | **Description** | **DATEX II basicData type** | **DATEX II element** | **DATEX II condition** |
| velo\_KFZ | km/h | Mean velocity all vehicles | TrafficSpeed |  |  |
| velo\_LKW | km/h | Mean velocity lorries | TrafficSpeed |  | vehicleType=lorry |
| velo\_PKW | km/h | Mean velocity cars | TrafficSpeed |  | vehicleType=car |
| st\_velo\_KFZ |  | Plausibility value for velo\_KFZ |  | measurementEquipmentFault |  |
| st\_velo\_LKW |  | Plausibility value for velo\_LKW |  | measurementEquipmentFault |  |
| st\_velo\_PKW |  | Plausibility value for velo\_PKW |  | measurementEquipmentFault |  |
| velo\_Max | km/h | Maximum velocity | TrafficSpeed | maxVehicleSpeed |  |
| velo\_Min | km/h | Minimum velocity | TrafficSpeed | minVehicleSpeed |  |
| velo\_Diff | km/h | Velocity difference | TrafficSpeed | deltaVehicleSpeed |  |
| st\_velo\_Max |  | Plausibility value for velo\_Max |  | measurementEquipmentFault |  |
| st\_velo\_Min |  | Plausibility value for velo\_Min |  | measurementEquipmentFault |  |
| st\_velo\_Diff |  | Plausibility value for velo\_Diff |  | measurementEquipmentFault |  |
| deviation |  | Standard deviation of velocity | TrafficSpeed | standardDeviation |  |
| st\_deviat |  | Plausibility value for deviation |  | measurementEquipmentFault |  |
| numb\_KFZ | veh/h | Traffic flow all vehicles | TrafficFlow |  |  |
| numb\_LKW | veh/h | Traffic flow lorries | TrafficFlow |  | vehicleType=lorry |
| numb\_PKW | veh/h | Traffic flow cars | TrafficFlow |  | vehicleType=car |
| st\_numb\_KFZ |  | Plausibility value for numb\_KFZ |  | measurementEquipmentFault |  |
| st\_numb\_LKW |  | Plausibility value for numb\_LKW |  | measurementEquipmentFault |  |
| st\_numb\_PKW |  | Plausibility value for numb\_PKW |  | measurementEquipmentFault |  |
| unitsPKW | car-units/h | Number of car units | TrafficFlow | pcuFlowRate |  |
| st\_unitsPKW |  | Plausibility value for unitsPKW |  | measurementEquipmentFault |  |
| rate |  | Occupancy rate | TrafficConcentration | occupancy |  |
| density | vehicles/km | traffic density | TrafficConcentration | concentration |  |
| st\_density |  | Plausibility value for density |  | measurementEquipmentFault |  |
| st\_rate |  | Plausibility value for rate |  | measurementEquipmentFault |  |
| max\_rate |  | maximum occupancy rate | TrafficConcentration | maxOccupancy |  |
| st\_max\_rate |  | Plausibility value for max\_rate |  | measurementEquipmentFault |  |
| proz\_LKW | % | percentage of lorries | TrafficFlow | percentageLongVehicles | vehicleType=lorry |
| st\_proz\_LKW |  | Plausibility value for proz\_LKW |  | measurementEquipmentFault |  |
| intervalx | s | Interval length |  | measurementOrCalculationPeriod |  |

Table 2: Provided measurement values

* 1. Data Dictionary for "AustrianTrafficDataProfile

In this document all data elements that are provided by the ASFINAG Content interface are marked in green colour. Other elements, attributes, enumeration and enumeration literals are left open for future use.

* + 1. "AlertCMethod2Point" package
       1. "AlertCMethod2Point" package classes

| **Class name** | **Designation** | **Definition** | **Stereotype** | **Abstract** |
| --- | --- | --- | --- | --- |
| AlertCMethod2Point | ALERT-C method2 point | A single point on the road network defined by reference to a point in a pre-defined ALERT-C location table and which has an associated direction of traffic flow. |  | no |

Table 3— Classes of the "AlertCMethod2Point" package

* + - 1. "AlertCMethod2Point" package association roles

There are no defined association roles in the "AlertCMethod2Point" package.

* + - 1. "AlertCMethod2Point" package attributes

There are no defined attributes in the "AlertCMethod2Point" 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 4— 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. "BasicData" package
       1. "BasicData" package classes

| **Class name** | **Designation** | **Definition** | **Stereotype** | **Abstract** |
| --- | --- | --- | --- | --- |
| BasicData | Basic data | Data that is either measured or calculated (elaborated) at the same time or over the same time period. |  | yes |

Table 5— Classes of the "BasicData" package

* + - 1. "BasicData" package association roles

| **Class name** | **Role name** | **Designation** | **Definition** | **Multiplicity** | **Target** |
| --- | --- | --- | --- | --- | --- |
| BasicData | pertinentLocation | Pertinent location | The location (e.g. the stretch of road or area) to which the data value(s) is or are pertinent/relevant. This may be different from the location of the measurement equipment (i.e. the measurement site location). | 0..1 | GroupOfLocations |

Table 6— Associations of the "BasicData" package

* + - 1. "BasicData" package attributes

| **Class name** | **Attribute name** | **Designation** | **Definition** | **Multiplicity** | **Type** |
| --- | --- | --- | --- | --- | --- |
| BasicData | measurementOrCalculatedTimePrecision | Measurement or calculated time precision | The precision to which the time of measurement or calculation is given. | 0..1 | TimePrecisionEnum |
|  | measurementOrCalculationPeriod | Measurement or calculation period | The time elapsed between the beginning and the end of the sampling or measurement period. This item may differ from the unit attribute; e.g. an hourly flow can be estimated from a 5-minute measurement period. | 0..1 | Seconds |
|  | measurementOrCalculationTime | Measurement or calculation time | Point in time at which this specific value or set of values has been measured or calculated. It may also be a future time at which a data value is predicted. | 0..1 | DateTime |

Table 7— Attributes of the "BasicData" 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 |

Table 8— Classes of the "Exchange" package

* + - 1. "Exchange" package association roles

| **Class name** | **Role name** | **Designation** | **Definition** | **Multiplicity** | **Target** |
| --- | --- | --- | --- | --- | --- |
| Exchange | supplierIdentification | Supplier identification |  | 1..1 | InternationalIdentifier |

Table 9— Associations of the "Exchange" package

* + - 1. "Exchange" package attributes

There are no attributes in the Exchange package

| **Class name** | **Attribute name** | **Designation** | **Definition** | **Multiplicity** | **Type** |
| --- | --- | --- | --- | --- | --- |

Table 10— Attributes of the "Exchange" package

* + 1. "Fault" package
       1. "Fault" package classes

| **Class name** | **Designation** | **Definition** | **Stereotype** | **Abstract** |
| --- | --- | --- | --- | --- |
| Fault | Fault | Information about a fault relating to a specific piece of equipment or process. |  | no |
| MeasurementEquipmentFault | Measurement equipment fault | Details of a fault which is being reported for the related measurement equipment. |  | no |

Table 11— Classes of the "Fault" package

* + - 1. "Fault" package association roles

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

* + - 1. "Fault" package attributes

| **Class name** | **Attribute name** | **Designation** | **Definition** | **Multiplicity** | **Type** |
| --- | --- | --- | --- | --- | --- |
| Fault | faultCreationTime | Fault creation time | The date and time at which the fault was originally recorded/reported. | 0..1 | DateTime |
|  | faultDescription | Fault description | Textual description of the fault. | 0..1 | String |
|  | faultIdentifier | Fault identifier | Unique identifier of the fault. | 0..1 | String |
|  | faultLastUpdateTime | Fault last update time | The date and time at which the fault information as specified in this instance was last updated. | 1..1 | DateTime |
|  | faultSeverity | Fault severity | The severity of the fault in terms of how it affects the usability of the equipment or the reliability of the data generated by the equipment. | 0..1 | FaultSeverityEnum |
| MeasurementEquipmentFault | measurementEquipmentFault | Measurement equipment fault | The type of fault which is being reported for the specified measurement equipment. | 1..1 | MeasurementEquipmentFaultEnum |

Table 12— Attributes of the "Fault" package

* + 1. "GipLinkExtensions" package
       1. "GipLinkExtensions" package classes

| **Class name** | **Designation** | **Definition** | **Stereotype** | **Abstract** |
| --- | --- | --- | --- | --- |
| ExtendedPointForGipLink | Extended point for gip link | An extension for Point to provide GipLink information |  | no |
| GipLink | Gip link | A GIPLink object |  | no |
| GipLinkPointLocationReference | Gip link point location reference | Location referencing for a GIP point |  | no |

Table 13— Classes of the "GipLinkExtensions" package

* + - 1. "GipLinkExtensions" package association roles

| **Class name** | **Role name** | **Designation** | **Definition** | **Multiplicity** | **Target** |
| --- | --- | --- | --- | --- | --- |
| GipLink | percentageFrom | Percentage from | From offset | 1..1 | PercentageDistanceAlongLinearElement |
|  | percentageTo | Percentage to | To offset | 1..1 | PercentageDistanceAlongLinearElement |

Table 14— Associations of the "GipLinkExtensions" package

* + - 1. "GipLinkExtensions" package attributes

| **Class name** | **Attribute name** | **Designation** | **Definition** | **Multiplicity** | **Type** |
| --- | --- | --- | --- | --- | --- |
| GipLink | linkDirection | Link direction | Digitalization direction | 1..1 | GipLinkDirectionEnum |
|  | linkId | Link id | Identifier of the GipLink | 1..1 | String |

Table 15— Attributes of the "GipLinkExtensions" package

* + 1. "GroupOfLocationExtensions" package
       1. "GroupOfLocationExtensions" package classes

| **Class name** | **Designation** | **Definition** | **Stereotype** | **Abstract** |
| --- | --- | --- | --- | --- |
| GroupOfLocationsExtendedAustrianProfile | Group of locations extended austrian profile | Extensions for GroupOfLocations to provide additional information relevant to the AustriaProfile |  | no |
| LocationInfo | Location info | Additional details of the location of a traffic message that are not part of the GroupOfLocations |  | no |
| RoadInfo | Road info | Information related to the street, e.g., roadNumber, roadName, etc. |  | no |

Table 16— Classes of the "GroupOfLocationExtensions" package

* + - 1. "GroupOfLocationExtensions" package association roles

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

* + - 1. "GroupOfLocationExtensions" package attributes

| **Class name** | **Attribute name** | **Designation** | **Definition** | **Multiplicity** | **Type** |
| --- | --- | --- | --- | --- | --- |
| LocationInfo | country | Country | Country where the event lies. The info is important  for the exchange of messages with neighboring countries  or for the import of messages from  neighbouring countries | 1..1 | CountryEnum |
|  | locationName | Location name | Location name if the event location is not on any street. Eg: on a POI. | 0..1 | MultilingualString |
|  | locationText | Location text | Free text for the location: eg. A23 Klagenfurt West, St.Veit at the Glan city center. | 0..1 | MultilingualString |
|  | region | Region | Specification of the federal state, so that messages can be filtered by region. It can also affect several states. | 0..\* | String |
| RoadInfo | roadName | Road name | Road name | 1..1 | MultilingualString |
|  | roadNumber | Road number | Road number | 0..1 | String |
|  | roadOperator | Road operator | Name of the responsible road operator for this road | 1..1 | String |
|  | roadSection | Road section | Specification of the road sections | 0..\* | String |

Table 17— Attributes of the "GroupOfLocationExtensions" package

* + 1. "MeasuredDataPublication" package
       1. "MeasuredDataPublication" package classes

| **Class name** | **Designation** | **Definition** | **Stereotype** | **Abstract** |
| --- | --- | --- | --- | --- |
| LocationCharacteristicsOverride | Location characteristics override | Location characteristics which override values set in the referenced measurement point. |  | no |
| MeasuredDataPublication | Measured data publication | A publication containing one or more measurement data sets, each set being measured at a single measurement site. |  | no |
| MeasuredValue | Measured value | Contains optional characteristics for the specific measured value (indexed to correspond with the defined characteristics of the measurement at the referenced measurement site) which override the static characteristics defined in the MeasurementSiteTable. |  | no |
| SiteMeasurements | Site measurements | A measurement data set derived from a specific measurement site. |  | no |

Table 18— Classes of the "MeasuredDataPublication" package

* + - 1. "MeasuredDataPublication" package association roles

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

* + - 1. "MeasuredDataPublication" package attributes

| **Class name** | **Attribute name** | **Designation** | **Definition** | **Multiplicity** | **Type** |
| --- | --- | --- | --- | --- | --- |
| LocationCharacteristicsOverride | measurementLanesOverride | Measurement lanes override | Overrides for this single measured value instance the lane(s) defined for the set of measurements. | 0..1 | LaneEnum |
|  | reversedFlow | Reversed flow | Indicates that the direction of flow for the measured lane(s) is the reverse of the normal direction of traffic flow. Default is "no", which indicates traffic flow is in the normal sense as defined by the referenced measurement point. | 0..1 | Boolean |
| MeasuredDataPublication | measurementSiteTableReference | Measurement site table reference | A reference to a versioned Measurement Site table. | 1..1 | VersionedReference |
| MeasuredValue | measurementEquipmentTypeUsed | Measurement equipment type used | The type of equipment used to gather the raw information from which the data values are determined, e.g. 'loop', 'ANPR' (automatic number plate recognition) or 'urban traffic management system' (such as SCOOT). | 0..1 | MultilingualString |
| SiteMeasurements | measurementSiteReference | Measurement site reference | A reference to a versioned measurement site record defined in a Measurement Site table. | 1..1 | VersionedReference |
|  | measurementTimeDefault | Measurement time default | The time associated with the set of measurements. It may be the time of the beginning, the end or the middle of the measurement period. | 1..1 | DateTime |

Table 19— Attributes of the "MeasuredDataPublication" package

* + 1. "MeasurementSiteTablePublication" package
       1. "MeasurementSiteTablePublication" package classes

| **Class name** | **Designation** | **Definition** | **Stereotype** | **Abstract** |
| --- | --- | --- | --- | --- |
| MeasurementSiteRecord | Measurement site record | An identifiable single measurement site entry/record in the Measurement Site table. | versionedIdentifiable | no |
| MeasurementSiteTable | Measurement site table | A Measurement Site Table comprising a number of sets of data, each describing the location from where a stream of measured data may be derived. Each location is known as a "measurement site" which can be a point, a linear road section or an area. | versionedIdentifiable | no |
| MeasurementSiteTablePublication | Measurement site table publication | A publication containing one or more Measurment Site Tables. |  | no |
| MeasurementSpecificCharacteristics | Measurement specific characteristics | Characteristics which are specific to an individual measurement type (specified in a known order) at the given measurement site. |  | no |

Table 20— Classes of the "MeasurementSiteTablePublication" package

* + - 1. "MeasurementSiteTablePublication" package association roles

| **Class name** | **Role name** | **Designation** | **Definition** | **Multiplicity** | **Target** |
| --- | --- | --- | --- | --- | --- |
| MeasurementSiteRecord | measurementSiteLocation | Measurement site location |  | 1..1 | GroupOfLocations |
| MeasurementSpecificCharacteristics | specificVehicleCharacteristics | Specific vehicle characteristics |  | 0..1 | VehicleCharacteristics |

Table 21— Associations of the "MeasurementSiteTablePublication" package

* + - 1. "MeasurementSiteTablePublication" package attributes

| **Class name** | **Attribute name** | **Designation** | **Definition** | **Multiplicity** | **Type** |
| --- | --- | --- | --- | --- | --- |
| MeasurementSiteRecord | computationMethod | Computation method | Method of computation which is used to compute the measured value(s) at the measurement site. | 0..1 | ComputationMethodEnum |
|  | measurementEquipmentReference | Measurement equipment reference | The reference given to the measurement equipment at the site. | 0..1 | String |
|  | measurementEquipmentTypeUsed | Measurement equipment type used | The type of equipment used to gather the raw information from which the data values are determined, e.g. 'loop', 'ANPR' (automatic number plate recognition) or 'urban traffic management system' (such as SCOOT). | 0..1 | MultilingualString |
|  | measurementSide | Measurement side | Side of the road on which measurements are acquired, corresponding to the direction of the road. | 0..1 | DirectionEnum |
|  | measurementSiteIdentification | Measurement site identification | Identification of a measurement site used by the supplier or consumer systems. | 0..1 | String |
|  | measurementSiteName | Measurement site name | Name of a measurement site. | 0..1 | MultilingualString |
|  | measurementSiteNumberOfLanes | Measurement site number of lanes | The number of lanes over which the measured value is determined. | 0..1 | NonNegativeInteger |
|  | measurementSiteRecordVersionTime | Measurement site record version time | The date/time that this version of the measurement site record was defined. The identity and version of the measurement site record are defined by the class stereotype implementation. | 0..1 | DateTime |
| MeasurementSiteTable | measurementSiteTableIdentification | Measurement site table identification | An alphanumeric identification for the measurement site table, possibly human readable. | 0..1 | String |
| MeasurementSpecificCharacteristics | accuracy | Accuracy | The extent to which the value is expected to be free from error, measured as a percentage of the data value. 100% means fully accurate. | 0..1 | Percentage |
|  | period | Period | The time elapsed between the beginning and the end of the sampling or measurement period. This item may differ from the unit attribute; e.g. an hourly flow can be estimated from a 5-minute measurement period. | 0..1 | Seconds |
|  | smoothingFactor | Smoothing factor | Coefficient required when a moving average is computed to give specific weights to the former average and the new data. A typical formula is, F being the smoothing factor: New average = (old average) F + (new data) (1 - F). | 0..1 | Float |
|  | specificLane | Specific lane | The lane to which the specific measurement at the measurement site relates. This overrides any lane specified for the measurement site as a whole. | 0..1 | LaneEnum |
|  | specificMeasurementValueType | Specific measurement value type | The type of this specific measurement at the measurement site. | 1..1 | MeasuredOrDerivedDataTypeEnum |

Table 22— Attributes of the "MeasurementSiteTablePublication" package

* + 1. "PayloadPublicationExtensions" package
       1. "PayloadPublicationExtensions" package classes

| **Class name** | **Designation** | **Definition** | **Stereotype** | **Abstract** |
| --- | --- | --- | --- | --- |
| GIPMetaInfo | G i p meta info | Meta information related to the Austrian Graph Integration Platform (GIP). The GIP provides a digital map of Austria's transport network available to all authorities. |  | no |
| LanguageInfo | Language info | Language information |  | no |
| PayloadPublicationExtendedAustrianProfile | Payload publication extended austrian profile | Extension to the payload publication to add additional information needed for AustriaProfile |  | no |

Table 23— Classes of the "PayloadPublicationExtensions" package

* + - 1. "PayloadPublicationExtensions" package association roles

| **Class name** | **Role name** | **Designation** | **Definition** | **Multiplicity** | **Target** |
| --- | --- | --- | --- | --- | --- |
| PayloadPublicationExtendedAustrianProfile | gipMetaInfo | Gip meta info |  | 0..1 | GIPMetaInfo |

Table 24— Associations of the "PayloadPublicationExtensions" package

* + - 1. "PayloadPublicationExtensions" package attributes

| **Class name** | **Attribute name** | **Designation** | **Definition** | **Multiplicity** | **Type** |
| --- | --- | --- | --- | --- | --- |
| GIPMetaInfo | name | Name | Name of the GIP | 1..1 | String |
|  | version | Version | Version number of the GIP | 1..1 | String |
| LanguageInfo | mainLanguage | Main language | Specifies the language in which the message is created | 1..1 | Language |
|  | translation | Translation | Specification of the language used during translation. Multiple translations are possible. | 0..\* | Language |

Table 25— Attributes of the "PayloadPublicationExtensions" package

* + 1. "Point" package
       1. "Point" package classes

| **Class name** | **Designation** | **Definition** | **Stereotype** | **Abstract** |
| --- | --- | --- | --- | --- |
| AlertCPoint | ALERT-C point | A single point on the road network defined by reference to a pre-defined ALERT-C location table and which has an associated direction of traffic flow. |  | yes |
| Point | Point | A single geospatial point. |  | no |
| PointByCoordinates | Point by coordinates | A single point defined only by a coordinate set with an optional bearing direction. |  | no |

Table 26— Classes of the "Point" package

* + - 1. "Point" package association roles

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

* + - 1. "Point" package attributes

| **Class name** | **Attribute name** | **Designation** | **Definition** | **Multiplicity** | **Type** |
| --- | --- | --- | --- | --- | --- |
| AlertCPoint | 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 |
| PointByCoordinates | bearing | Bearing | A bearing at the point measured in degrees (0 - 359). Unless otherwise specified the reference direction corresponding to 0 degrees is North. | 0..1 | NonNegativeInteger |

Table 27— Attributes of the "Point" package

* + 1. "PointAlongLinearElement" package
       1. "PointAlongLinearElement" package classes

| **Class name** | **Designation** | **Definition** | **Stereotype** | **Abstract** |
| --- | --- | --- | --- | --- |
| DistanceAlongLinearElement | Distance along linear element | Distance of a point along a linear element either measured from the start node or a defined referent on that linear element, where the start node is relative to the element definition rather than the direction of traffic flow. |  | yes |
| DistanceFromLinearElementReferent | Distance from linear element referent | Distance of a point along a linear element measured from a "from referent" on the linear element, in the sense relative to the linear element definition rather than the direction of traffic flow or optionally towards a "towards referent". |  | no |
| DistanceFromLinearElementStart | Distance from linear element start | Distance of a point along a linear element measured from the start node of the linear element, where start node is relative to the element definition rather than the direction of traffic flow. |  | no |
| LinearElement | Linear element | A linear element along a single linear object, consistent with ISO 19148 definitions. |  | no |
| PercentageDistanceAlongLinearElement | Percentage distance along linear element | Distance of a point along a linear element measured from the start node expressed as a percentage of the whole length of the linear element, where start node is relative to the element definition rather than the direction of traffic flow. |  | no |
| PointAlongLinearElement | Point along linear element | A point on a linear element where the linear element is either a part of or the whole of a linear object (i.e. a road), consistent with ISO 19148 definitions. |  | no |
| Referent | Referent | A referent on a linear object that has a known location such as a node, a reference marker (e.g. a markerpost), an intersection etc. |  | no |

Table 28— Classes of the "PointAlongLinearElement" package

* + - 1. "PointAlongLinearElement" package association roles

| **Class name** | **Role name** | **Designation** | **Definition** | **Multiplicity** | **Target** |
| --- | --- | --- | --- | --- | --- |
| DistanceFromLinearElementReferent | fromReferent | From referent | A known location along the linear element from which the distanceAlong is measured, termed the "fromReferent" in ISO 19148. | 1..1 | Referent |
|  | towardsReferent | Towards referent | A known location along the linear element towards which the distanceAlong is measured, termed the "towardsReferent" in ISO 19148. | 0..1 | Referent |

Table 29— Associations of the "PointAlongLinearElement" package

* + - 1. "PointAlongLinearElement" package attributes

| **Class name** | **Attribute name** | **Designation** | **Definition** | **Multiplicity** | **Type** |
| --- | --- | --- | --- | --- | --- |
| DistanceFromLinearElementReferent | distanceAlong | Distance along | A measure of distance along a linear element. | 1..1 | MetresAsFloat |
| DistanceFromLinearElementStart | distanceAlong | Distance along | A measure of distance along a linear element. | 1..1 | MetresAsFloat |
| LinearElement | linearElementNature | Linear element nature | An indication of the nature of the linear element. | 0..1 | LinearElementNatureEnum |
|  | linearElementReferenceModel | Linear element reference model | The identifier of a road network reference model which segments the road network according to specific business rules. | 0..1 | String |
|  | linearElementReferenceModelVersion | Linear element reference model version | The version of the identified road network reference model. | 0..1 | String |
|  | 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 |
| PercentageDistanceAlongLinearElement | percentageDistanceAlong | Percentage distance along | A measure of distance along a linear element from the start of the element expressed as a percentage of the total length of the linear object. | 1..1 | Percentage |
| PointAlongLinearElement | administrativeAreaOfPoint | Administrative area of point | Identification of the road administration area which contains the specified point. | 0..1 | MultilingualString |
|  | directionBoundAtPoint | Direction bound at point | The direction of traffic flow at the specified point in terms of general destination direction. | 0..1 | DirectionEnum |
|  | directionRelativeAtPoint | Direction relative at point | The direction of traffic flow at the specified point relative to the direction in which the linear element is defined. | 0..1 | LinearReferencingDirectionEnum |
|  | heightGradeOfPoint | Height grade of point | Identification of whether the point on the linear element is at, above or below the normal elevation of a linear element of that type (e.g. road or road section) at that location, typically used to indicate "grade" separation. | 0..1 | HeightGradeEnum |
| Referent | referentDescription | Referent description | Description of the referent. | 0..1 | MultilingualString |
|  | referentIdentifier | Referent identifier | The identifier of the referent, unique on the specified linear element (i.e. road or part of). | 1..1 | String |
|  | referentName | Referent name | The name of the referent, e.g. a junction or intersection name. | 0..1 | String |
|  | referentType | Referent type | The type of the referent. | 1..1 | ReferentTypeEnum |

Table 30— Attributes of the "PointAlongLinearElement" package

* + 1. "TrafficConcentration" package
       1. "TrafficConcentration" package classes

| **Class name** | **Designation** | **Definition** | **Stereotype** | **Abstract** |
| --- | --- | --- | --- | --- |
| TrafficConcentration | Traffic concentration | Averaged measurements or calculations of traffic concentration. |  | no |

Table 31— Classes of the "TrafficConcentration" package

* + - 1. "TrafficConcentration" package association roles

| **Class name** | **Role name** | **Designation** | **Definition** | **Multiplicity** | **Target** |
| --- | --- | --- | --- | --- | --- |
| TrafficConcentration | concentration | Concentration | An averaged measurement or calculation of the concentration of vehicles at the specified measurement site. | 0..1 | ConcentrationOfVehiclesValue |
|  | occupancy | Occupancy | An averaged measurement or calculation of the percentage of time that a section of road at the specified measurement site is occupied by vehicles. | 0..1 | PercentageValue |

Table 32— Associations of the "TrafficConcentration" package

* + - 1. "TrafficConcentration" package attributes

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

* + 1. "TrafficData" package
       1. "TrafficData" package classes

| **Class name** | **Designation** | **Definition** | **Stereotype** | **Abstract** |
| --- | --- | --- | --- | --- |
| TrafficData | Traffic data | Measured or derived values relating to traffic or individual vehicle movements on a specific section or at a specific point on the road network. |  | yes |

Table 33— Classes of the "TrafficData" package

* + - 1. "TrafficData" package association roles

| **Class name** | **Role name** | **Designation** | **Definition** | **Multiplicity** | **Target** |
| --- | --- | --- | --- | --- | --- |
| TrafficData | forVehiclesWithCharacteristicsOf | For vehicles with characteristics of | Used to define the vehicle characteristics to which the TrafficValue is applicable primarily in Elaborated Data Publications, but may also be used in Measured Data Publications to override vehicle characteristics defined for the measurement site. | 0..1 | VehicleCharacteristics |

Table 34— Associations of the "TrafficData" package

* + - 1. "TrafficData" package attributes

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

* + 1. "TrafficFlow" package
       1. "TrafficFlow" package classes

| **Class name** | **Designation** | **Definition** | **Stereotype** | **Abstract** |
| --- | --- | --- | --- | --- |
| TrafficFlow | Traffic flow | Averaged measurements or calculations of traffic flow rates. |  | no |

Table 35— Classes of the "TrafficFlow" package

* + - 1. "TrafficFlow" package association roles

| **Class name** | **Role name** | **Designation** | **Definition** | **Multiplicity** | **Target** |
| --- | --- | --- | --- | --- | --- |
| TrafficFlow | axleFlow | Axle flow | An averaged measurement or calculation of flow rate defined in terms of the number of vehicle axles passing the specified measurement site. | 0..1 | AxleFlowValue |
|  | pcuFlow | Pcu flow | An averaged measurement or calculation of flow rate defined in terms of the number of passenger car units passing the specified measurement site. | 0..1 | PcuFlowValue |
|  | percentageLongVehicles | Percentage long vehicles | An averaged measurement or calculation of the percentage of long vehicles contained in the traffic flow at the specified measurement site. | 0..1 | PercentageValue |
|  | vehicleFlow | Vehicle flow | An averaged measurement of flow rate defined in terms of the number of vehicles passing the specified measurement site. | 0..1 | VehicleFlowValue |

Table 36— Associations of the "TrafficFlow" package

* + - 1. "TrafficFlow" package attributes

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

* + 1. "TrafficSpeed" package
       1. "TrafficSpeed" package classes

| **Class name** | **Designation** | **Definition** | **Stereotype** | **Abstract** |
| --- | --- | --- | --- | --- |
| SpeedPercentile | Speed percentile | Details of percentage (from an observation set) of vehicles whose speeds fall below a stated value. |  | no |
| TrafficSpeed | Traffic speed | Averaged measurements or calculations of traffic speed. |  | no |

Table 37— Classes of the "TrafficSpeed" package

* + - 1. "TrafficSpeed" package association roles

| **Class name** | **Role name** | **Designation** | **Definition** | **Multiplicity** | **Target** |
| --- | --- | --- | --- | --- | --- |
| SpeedPercentile | speedPercentile | Speed percentile | The speed below which the associated percentage of vehicles in the measurement set are travelling at. | 1..1 | SpeedValue |
|  | vehiclePercentage | Vehicle percentage | The percentage of vehicles from the observation set whose speeds fall below the stated speed (speedPercentile). | 1..1 | PercentageValue |
| TrafficSpeed | averageVehicleSpeed | Average vehicle speed | An averaged measurement or calculation of the speed of vehicles at the specified location. | 0..1 | SpeedValue |

Table 38— Associations of the "TrafficSpeed" package

* + - 1. "TrafficSpeed" package attributes

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

* + 1. "TrafficSpeedExtensions" package
       1. "TrafficSpeedExtensions" package classes

| **Class name** | **Designation** | **Definition** | **Stereotype** | **Abstract** |
| --- | --- | --- | --- | --- |
| TrafficSpeedExtended | Traffic speed extended | Extension class that adds min/max speed to the average speed measurement of level A |  | no |

**Table 37— Classes of the "TrafficSpeed" package**

* + - 1. "TrafficSpeedExtensions" package association roles

| **Class name** | **Role name** | **Designation** | **Definition** | **Multiplicity** | **Target** |
| --- | --- | --- | --- | --- | --- |
| TrafficSpeedExtended | minVehicleSpeed | Min vehicle speed | A minimum measurement or calculation of the speed of vehicles at the specified location. | 0..1 | SpeedValue |
|  | maxVehicleSpeed | Max vehicle speed | A maximum measurement or calculation of the speed of vehicles at the specified location. | 0..1 | SpeedValue |
|  | deltaVehicleSpeed | Delta vehicle speed | Change in vehicle speed | 0..1 | SpeedValue |

**Table 38— Associations of the "TrafficSpeed" package**

* + - 1. "TrafficSpeedExtensions" package attributes

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

* + 1. "VehicleCharacteristics" package
       1. "VehicleCharacteristics" package classes

| **Class name** | **Designation** | **Definition** | **Stereotype** | **Abstract** |
| --- | --- | --- | --- | --- |
| GrossWeightCharacteristic | Gross weight characteristic | Gross weight characteristic of a vehicle. |  | no |
| HeaviestAxleWeightCharacteristic | Heaviest axle weight characteristic | Weight characteristic of the heaviest axle on the vehicle. |  | no |
| HeightCharacteristic | Height characteristic | Height characteristic of a vehicle. |  | no |
| LengthCharacteristic | Length characteristic | Length characteristic of a vehicle. |  | no |
| NumberOfAxlesCharacteristic | Number of axles characteristic | Number of axles characteristic of a vehicle. |  | no |
| VehicleCharacteristics | Vehicle characteristics | The characteristics of a vehicle, e.g. lorry of gross weight greater than 30 tonnes. |  | no |
| WidthCharacteristic | Width characteristic | Width characteristic of a vehicle. |  | no |

Table 398— Classes of the "VehicleCharacteristics" package

* + - 1. "VehicleCharacteristics" package association roles

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

* + - 1. "VehicleCharacteristics" package attributes

| **Class name** | **Attribute name** | **Designation** | **Definition** | **Multiplicity** | **Type** |
| --- | --- | --- | --- | --- | --- |
| GrossWeightCharacteristic | comparisonOperator | Comparison operator | The operator to be used in the vehicle characteristic comparison operation. | 1..1 | ComparisonOperatorEnum |
|  | grossVehicleWeight | Gross vehicle weight | The gross weight of the vehicle and its load, including any trailers. | 1..1 | Tonnes |
| HeaviestAxleWeightCharacteristic | comparisonOperator | Comparison operator | The operator to be used in the vehicle characteristic comparison operation. | 1..1 | ComparisonOperatorEnum |
|  | heaviestAxleWeight | Heaviest axle weight | The weight of the heaviest axle on the vehicle. | 1..1 | Tonnes |
| HeightCharacteristic | comparisonOperator | Comparison operator | The operator to be used in the vehicle characteristic comparison operation. | 1..1 | ComparisonOperatorEnum |
|  | vehicleHeight | Vehicle height | The height of the highest part, excluding antennae, of an individual vehicle above the road surface, in metres. | 1..1 | MetresAsFloat |
| LengthCharacteristic | comparisonOperator | Comparison operator | The operator to be used in the vehicle characteristic comparison operation. | 1..1 | ComparisonOperatorEnum |
|  | vehicleLength | Vehicle length | The overall distance between the front and back of an individual vehicle, including the length of any trailers, couplings, etc. | 1..1 | MetresAsFloat |
| NumberOfAxlesCharacteristic | comparisonOperator | Comparison operator | The operator to be used in the vehicle characteristic comparison operation. | 1..1 | ComparisonOperatorEnum |
|  | numberOfAxles | Number of axles | The total number of axles of an individual vehicle. | 1..1 | NonNegativeInteger |
| VehicleCharacteristics | fuelType | Fuel type | The type of fuel used by the vehicle. | 0..1 | FuelTypeEnum |
|  | loadType | Load type | The type of load carried by the vehicle, especially in respect of hazardous loads. | 0..1 | LoadTypeEnum |
|  | vehicleEquipment | Vehicle equipment | The type of equipment in use or on board the vehicle. | 0..1 | VehicleEquipmentEnum |
|  | vehicleType | Vehicle type | Vehicle type. | 0..\* | VehicleTypeEnum |
|  | vehicleUsage | Vehicle usage | The type of usage of the vehicle (i.e. for what purpose is the vehicle being used). | 0..1 | VehicleUsageEnum |
| WidthCharacteristic | comparisonOperator | Comparison operator | The operator to be used in the vehicle characteristic comparison operation. | 1..1 | ComparisonOperatorEnum |
|  | vehicleWidth | Vehicle width | The maximum width of an individual vehicle, in metres. | 1..1 | MetresAsFloat |

Table 39— Attributes of the "VehicleCharacteristics" package

* 1. Data Dictionary of <<datatypes>> for "AustrianTrafficDataProfile"

This clause contains the definitions of all data types which are used in the "AustrianTrafficDataProfile".

* + 1. The <<datatype>> "MetresAsFloat"

A measure of distance defined in metres in a floating point format.

* + 1. The <<datatype>> "Percentage"

A measure of percentage.

* + 1. The <<datatype>> "Seconds"

Seconds.

* + 1. The <<datatype>> "Tonnes"

A measure of weight defined in metric tonnes.

* 1. Data Dictionary of <<enumerations>> for "AustrianTrafficDataProfile"

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

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

Logical comparison operations.

| **Enumerated value name** | **Designation** | **Definition** |
| --- | --- | --- |
| equalTo | Equal to | Logical comparison operator of "equal to". |
| greaterThan | Greater than | Logical comparison operator of "greater than". |
| greaterThanOrEqualTo | Greater than or equal to | Logical comparison operator of "greater than or equal to". |
| lessThan | Less than | Logical comparison operator of "less than". |
| lessThanOrEqualTo | Less than or equal to | Logical comparison operator of "less than or equal to". |

Table 40— Values contained in the enumeration "ComparisonOperatorEnum"

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

Types of computational methods used in deriving data values for data sets.

| **Enumerated value name** | **Designation** | **Definition** |
| --- | --- | --- |
| arithmeticAverageOfSamplesBasedOnAFixedNumberOfSamples | Arithmetic average of samples based on a fixed number of samples | Arithmetic average of sample values based on a fixed number of samples. |
| arithmeticAverageOfSamplesInATimePeriod | Arithmetic average of samples in a time period | Arithmetic average of sample values in a time period. |
| harmonicAverageOfSamplesInATimePeriod | Harmonic average of samples in a time period | Harmonic average of sample values in a time period. |
| medianOfSamplesInATimePeriod | Median of samples in a time period | Median of sample values taken over a time period. |
| movingAverageOfSamples | Moving average of samples | Moving average of sample values. |

Table 41— Values contained in the enumeration "ComputationMethodEnum"

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

List of countries.

| **Enumerated value name** | **Designation** | **Definition** |
| --- | --- | --- |
| at | at | Austria |
| be | be | Belgium |
| bg | bg | Bulgaria |
| ch | ch | Switzerland |
| cs | cs | Serbia and Montenegro |
| cy | cy | Cyprus |
| cz | cz | Czech Republic |
| de | de | Germany |
| dk | dk | Denmark |
| ee | ee | Estonia |
| es | es | Spain |
| fi | fi | Finland |
| fo | fo | Faroe Islands |
| fr | fr | France |
| gb | gb | Great Britain |
| gg | gg | Guernsey |
| gi | gi | Gibraltar |
| gr | gr | Greece |
| hr | hr | Croatia |
| hu | hu | Hungary |
| ie | ie | Ireland |
| im | im | Isle Of Man |
| is | is | Iceland |
| it | it | Italy |
| je | je | Jersey |
| li | li | Lichtenstein |
| lt | lt | Lithuania |
| lu | lu | Luxembourg |
| lv | lv | Latvia |
| ma | ma | Morocco |
| mc | mc | Monaco |
| mk | mk | Macedonia |
| mt | mt | Malta |
| nl | nl | Netherlands |
| no | no | Norway |
| other | other | Other than as defined in this enumeration. |
| pl | pl | Poland |
| pt | pt | Portugal |
| ro | ro | Romania |
| se | se | Sweden |
| si | si | Slovenia |
| sk | sk | Slovakia |
| sm | sm | San Marino |
| tr | tr | Turkey |
| va | va | Vatican City State |

Table 42— Values contained in the enumeration "CountryEnum"

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

List of directions of travel.

| **Enumerated value name** | **Designation** | **Definition** |
| --- | --- | --- |
| allDirections | All directions | All directions (where more than two are applicable) at this point on the road network. |
| anticlockwise | Anticlockwise | Anti-clockwise. |
| bothWays | Both ways | Both directions that are applicable at this point on the road network. |
| clockwise | Clockwise | Clockwise. |
| eastBound | East bound | East bound general direction. |
| inboundTowardsTown | Inbound towards town | Heading towards town centre direction of travel. |
| innerRing | Inner ring | Inner ring direction. |
| northBound | North bound | North bound general direction. |
| northEastBound | North east bound | North east bound general direction. |
| northWestBound | North west bound | North west bound general direction. |
| opposite | Opposite | Opposite direction to the normal direction of flow at this point on the road network. |
| other | Other | Other than as defined in this enumeration. |
| outboundFromTown | Outbound from town | Heading out of or away from the town centre direction of travel. |
| outerRing | Outer ring | Outer ring direction. |
| southBound | South bound | South bound general direction. |
| southEastBound | South east bound | South east bound general direction. |
| southWestBound | South west bound | South west bound general direction. |
| unknown | Unknown | Direction is unknown. |
| westBound | West bound | West bound general direction. |

Table 433— Values contained in the enumeration "DirectionEnum"

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

Classification of the severity of faults.

| **Enumerated value name** | **Designation** | **Definition** |
| --- | --- | --- |
| high | High | The fault is of high severity which will render the equipment unusable or any data generated by the equipment to be of no value. |
| low | Low | The fault is of low severity and has only limited impact on the usability of the equipment or the value of the data generated by the equipment. |
| medium | Medium | The fault is of medium severity which will significantly limit the usability of the equipment or devalue the usefulness of the data generated by the equipment. |
| unknown | Unknown | The fault is of unknown severity and hence its effect on the usability of the equipment or the usefulness of the data generated by the equipment can not be assessed. |

Table 444— Values contained in the enumeration "FaultSeverityEnum"

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

Type of fuel used by a vehicle.

| **Enumerated value name** | **Designation** | **Definition** |
| --- | --- | --- |
| battery | Battery | Battery. |
| biodiesel | Biodiesel | Biodiesel. |
| diesel | Diesel | Diesel. |
| dieselBatteryHybrid | Diesel battery hybrid | Diesel and battery hybrid. |
| ethanol | Ethanol | Ethanol. |
| hydrogen | Hydrogen | Hydrogen. |
| liquidGas | Liquid gas | Liquid gas of any type including LPG. |
| lpg | LPG | Liquid petroleum gas. |
| methane | Methane | Methane gas. |
| petrol | Petrol | Petrol. |
| petrolBatteryHybrid | Petrol battery hybrid | Petrol and battery hybrid. |

Table 455— Values contained in the enumeration "FuelTypeEnum"

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

Enumeation for GipLink digitalization direction

| **Enumerated value name** | **Designation** | **Definition** |
| --- | --- | --- |
| fromTo | From to |  |
| toFrom | To from |  |

Table 466— Values contained in the enumeration "GipLinkDirectionEnum"

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

List of height or vertical gradings of road sections.

| **Enumerated value name** | **Designation** | **Definition** |
| --- | --- | --- |
| aboveGrade | Above grade | Above or over the normal road grade elevation. |
| atGrade | At grade | At the normal road grade elevation. |
| belowGrade | Below grade | Below or under the normal road grade elevation. |

Table 477— Values contained in the enumeration "HeightGradeEnum"

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

List of descriptors identifying specific lanes.

| **Enumerated value name** | **Designation** | **Definition** |
| --- | --- | --- |
| allLanesCompleteCarriageway | All lanes complete carriageway | In all lanes of the carriageway. |
| busLane | Bus lane | In the bus lane. |
| busStop | Bus stop | In the bus stop lane. |
| carPoolLane | Car pool lane | In the carpool lane. |
| centralReservation | Central reservation | On the central median separating the two directional carriageways of the highway. |
| crawlerLane | Crawler lane | In the crawler lane. |
| emergencyLane | Emergency lane | In the emergency lane. |
| escapeLane | Escape lane | In the escape lane. |
| expressLane | Express lane | In the express lane. |
| hardShoulder | Hard shoulder | On the hard shoulder. |
| heavyVehicleLane | Heavy vehicle lane | In the heavy vehicle lane. |
| lane1 | Lane1 | In the first lane numbered from nearest the hard shoulder to central median. |
| lane2 | Lane2 | In the second lane numbered from nearest the hard shoulder to central median. |
| lane3 | Lane3 | In the third lane numbered from nearest the hard shoulder to central median. |
| lane4 | Lane4 | In the fourth lane numbered from nearest the hard shoulder to central median. |
| lane5 | Lane5 | In the fifth lane numbered from nearest the hard shoulder to central median. |
| lane6 | Lane6 | In the sixth lane numbered from nearest the hard shoulder to central median. |
| lane7 | Lane7 | In the seventh lane numbered from nearest the hard shoulder to central median. |
| lane8 | Lane8 | In the eighth lane numbered from nearest the hard shoulder to central median. |
| lane9 | Lane9 | In the ninth lane numbered from nearest the hard shoulder to central median. |
| layBy | Lay by | In a lay-by. |
| leftHandTurningLane | Left hand turning lane | In the left hand turning lane. |
| leftLane | Left lane | In the left lane. |
| localTrafficLane | Local traffic lane | In the local traffic lane. |
| middleLane | Middle lane | In the middle lane. |
| opposingLanes | Opposing lanes | In the opposing lanes. |
| overtakingLane | Overtaking lane | In the overtaking lane. |
| rightHandTurningLane | Right hand turning lane | In the right hand turning lane. |
| rightLane | Right lane | In the right lane. |
| rushHourLane | Rush hour lane | In the lane dedicated for use during the rush (peak) hour. |
| setDownArea | Set down area | In the area/lane reserved for passenger pick-up or set-down. |
| slowVehicleLane | Slow vehicle lane | In the slow vehicle lane. |
| throughTrafficLane | Through traffic lane | In the through traffic lane. |
| tidalFlowLane | Tidal flow lane | In the lane dedicated for use as a tidal flow lane. |
| turningLane | Turning lane | In the turning lane. |
| verge | Verge | On the verge. |

Table 488— Values contained in the enumeration "LaneEnum"

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

List of indicative natures of linear elements.

| **Enumerated value name** | **Designation** | **Definition** |
| --- | --- | --- |
| other | Other | Other than as defined in this enumeration. |
| road | Road | The nature of the linear element is a road. |
| roadSection | Road section | The nature of the linear element is a section of a road. |
| slipRoad | Slip road | The nature of the linear element is a slip road. |

Table 49— Values contained in the enumeration "LinearElementNatureEnum"

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

Directions of traffic flow relative to the direction in which the linear element is defined.

| **Enumerated value name** | **Designation** | **Definition** |
| --- | --- | --- |
| aligned | Aligned | Indicates that the direction of traffic flow affected by the situation or related to the traffic data is in the same sense as the direction in which the linear element is defined. |
| both | Both | Indicates that both directions of traffic flow are affected by the situation or relate to the traffic data. |
| opposite | Opposite | Indicates that the direction of traffic flow affected by the situation or related to the traffic data is in the opposite sense to the direction in which the linear element is defined. |
| unknown | Unknown | Indicates that the direction of traffic flow affected by the situation or related to the traffic data is unknown. |

Table 50— Values contained in the enumeration "LinearReferencingDirectionEnum"

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

Types of load carried by a vehicle.

| **Enumerated value name** | **Designation** | **Definition** |
| --- | --- | --- |
| abnormalLoad | Abnormal load | A load that exceeds normal vehicle dimensions in terms of height, length, width, gross vehicle weight or axle weight or any combination of these. Generally termed an "abnormal load". |
| ammunition | Ammunition | Ammunition. |
| chemicals | Chemicals | Chemicals of unspecified type. |
| combustibleMaterials | Combustible materials | Combustible materials of unspecified type. |
| corrosiveMaterials | Corrosive materials | Corrosive materials of unspecified type. |
| debris | Debris | Debris of unspecified type. |
| empty | Empty | No load. |
| explosiveMaterials | Explosive materials | Explosive materials of unspecified type. |
| extraHighLoad | Extra high load | A load of exceptional height. |
| extraLongLoad | Extra long load | A load of exceptional length. |
| extraWideLoad | Extra wide load | A load of exceptional width. |
| fuel | Fuel | Fuel of unspecified type. |
| glass | Glass | Glass. |
| goods | Goods | Any goods of a commercial nature. |
| hazardousMaterials | Hazardous materials | Materials classed as being of a hazardous nature. |
| liquid | Liquid | Liquid of an unspecified nature. |
| livestock | Livestock | Livestock. |
| materials | Materials | General materials of unspecified type. |
| materialsDangerousForPeople | Materials dangerous for people | Materials classed as being of a danger to people or animals. |
| materialsDangerousForTheEnvironment | Materials dangerous for the environment | Materials classed as being potentially dangerous to the environment. |
| materialsDangerousForWater | Materials dangerous for water | Materials classed as being dangerous when exposed to water (e.g. materials which may react exothermically with water). |
| oil | Oil | Oil. |
| ordinary | Ordinary | Materials that present limited environmental or health risk. Non-combustible, non-toxic, non-corrosive. |
| other | Other | Other than as defined in this enumeration. |
| perishableProducts | Perishable products | Products or produce that will significantly degrade in quality or freshness over a short period of time. |
| petrol | Petrol | Petrol or petroleum. |
| pharmaceuticalMaterials | Pharmaceutical materials | Pharmaceutical materials. |
| radioactiveMaterials | Radioactive materials | Materials that emit significant quantities of electro-magnetic radiation that may present a risk to people, animals or the environment. |
| refuse | Refuse | Refuse. |
| toxicMaterials | Toxic materials | Materials of a toxic nature which may damage the environment or endanger public health. |
| vehicles | Vehicles | Vehicles of any type which are being transported. |

Table 51— Values contained in the enumeration "LoadTypeEnum"

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

Types of measured or derived data.

| **Enumerated value name** | **Designation** | **Definition** |
| --- | --- | --- |
| humidityInformation | Humidity information | Measured or derived humidity information. |
| individualVehicleMeasurements | Individual vehicle measurements | Measured or derived individual vehicle measurements. |
| pollutionInformation | Pollution information | Measured or derived pollution information. |
| precipitationInformation | Precipitation information | Measured or derived precipitation information. |
| pressureInformation | Pressure information | Measured or derived pressure information. |
| radiationInformation | Radiation information | Measured or derived radiation information. |
| roadSurfaceConditionInformation | Road surface condition information | Measured or derived road surface conditions information. |
| temperatureInformation | Temperature information | Measured or derived temperature information. |
| trafficConcentration | Traffic concentration | Measured or derived traffic concentration information. |
| trafficFlow | Traffic flow | Measured or derived traffic flow information. |
| trafficHeadway | Traffic headway | Measured or derived traffic headway information. |
| trafficSpeed | Traffic speed | Measured or derived traffic speed information. |
| trafficStatusInformation | Traffic status information | Measured or derived traffic status information. |
| travelTimeInformation | Travel time information | Measured or derived travel time information. |
| visibilityInformation | Visibility information | Measured or derived visibility information. |
| windInformation | Wind information | Measured or derived wind information. |

Table 52— Values contained in the enumeration "MeasuredOrDerivedDataTypeEnum"

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

Types of measurement equipment faults.

| **Enumerated value name** | **Designation** | **Definition** |
| --- | --- | --- |
| intermittentDataValues | Intermittent data values | Data values are being produced at intermittent intervals which are not consitent with the expected reporting interval. |
| noDataValuesAvailable | No data values available | No measured data values are currently available. |
| other | Other | Other than as defined in this enumeration. |
| spuriousUnreliableDataValues | Spurious unreliable data values | Spurious or unreliable data values are being produced. |
| unspecifiedOrUnknownFault | Unspecified or unknown fault | An unspecified or unknown fault exists in the measurement equipment. |

Table 53— Values contained in the enumeration "MeasurementEquipmentFaultEnum"

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

A set of types of known points along a linear object such as a road.

| **Enumerated value name** | **Designation** | **Definition** |
| --- | --- | --- |
| boundary | Boundary | A boundary between two jurisdictional or administrative areas. These may be legal boundaries such as between counties or countries, maintenance responsibility boundaries or control boundaries. |
| intersection | Intersection | A crossing of two or more roads where the precise point of intersection is defined according to specific business rules. |
| landmark | Landmark | A visible identifiable physical landmark either alongside or close to the linear object. |
| referenceMarker | Reference marker | A marker which is usually but not necessarily physical that is one of a sequence which are spaced out along the linear object (road) to provide a location reference. The spacing of markers is not necessarily even. |
| roadNode | Road node | A topological node defined on a road network. Such nodes may delineate the segmentation of the road network according to defined business rules or may constitute a purely topological representation of a road network. |

Table 54— Values contained in the enumeration "ReferentTypeEnum"

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

List of precisions to which times can be given.

| **Enumerated value name** | **Designation** | **Definition** |
| --- | --- | --- |
| halfHour | Half hour | Time given to the nearest half hour. |
| hour | Hour | Time given to the nearest hour. |
| minute | Minute | Time given to the nearest minute. |
| quarterHour | Quarter hour | Time given to the nearest quarter hour. |
| second | Second | Time given to the nearest second. |
| tenthsOfSecond | Tenths of second | Time given to the nearest tenth of a second. |

Table 55— Values contained in the enumeration "TimePrecisionEnum"

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

Types of vehicle equipment in use or on board.

| **Enumerated value name** | **Designation** | **Definition** |
| --- | --- | --- |
| notUsingSnowChains | Not using snow chains | Vehicle not using snow chains. |
| notUsingSnowChainsOrTyres | Not using snow chains or tyres | Vehicle not using either snow tyres or snow chains. |
| snowChainsInUse | Snow chains in use | Vehicle using snow chains. |
| snowChainsOrTyresInUse | Snow chains or tyres in use | Vehicle using snow tyres or snow chains. |
| snowTyresInUse | Snow tyres in use | Vehicle using snow tyres. |
| withoutSnowTyresOrChainsOnBoard | Without snow tyres or chains on board | Vehicle which is not carrying on board snow tyres or chains. |

Table 56— Values contained in the enumeration "VehicleEquipmentEnum"

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

Types of vehicle.

| **Enumerated value name** | **Designation** | **Definition** |
| --- | --- | --- |
| agriculturalVehicle | Agricultural vehicle | Vehicle normally used for agricultural purposes, e.g. tractor, combined harvester etc. |
| anyVehicle | Any vehicle | Vehicle of any type. |
| articulatedVehicle | Articulated vehicle | Articulated vehicle. |
| bicycle | Bicycle | Bicycle. |
| bus | Bus | Bus. |
| car | Car | Car. |
| caravan | Caravan | Caravan. |
| carOrLightVehicle | Car or light vehicle | Car or light vehicle. |
| carWithCaravan | Car with caravan | Car towing a caravan. |
| carWithTrailer | Car with trailer | Car towing a trailer. |
| constructionOrMaintenanceVehicle | Construction or maintenance vehicle | Vehicle normally used for construction or maintenance purposes, e.g. digger, excavator, bulldozer, lorry mounted crane etc. |
| fourWheelDrive | Four wheel drive | Four wheel drive vehicle. |
| highSidedVehicle | High sided vehicle | High sided vehicle. |
| lorry | Lorry | Lorry of any type. |
| moped | Moped | Moped (a two wheeled motor vehicle characterized by a small engine typically less than 50cc and by normally having pedals). |
| motorcycle | Motorcycle | Motorcycle. |
| motorcycleWithSideCar | Motorcycle with side car | Three wheeled vehicle comprising a motorcycle with an attached side car. |
| motorscooter | Motorscooter | Motorscooter (a two wheeled motor vehicle characterized by a step-through frame and small diameter wheels). |
| other | Other | Other than as defined in this enumeration. |
| tanker | Tanker | Vehicle with large tank for carrying bulk liquids. |
| threeWheeledVehicle | Three wheeled vehicle | Three wheeled vehicle of unspecified type. |
| trailer | Trailer | Trailer. |
| tram | Tram | Tram. |
| twoWheeledVehicle | Two wheeled vehicle | Two wheeled vehicle of unspecified type. |
| van | Van | Van. |
| vehicleWithCaravan | Vehicle with caravan | Vehicle (of unspecified type) towing a caravan. |
| vehicleWithCatalyticConverter | Vehicle with catalytic converter | Vehicle with catalytic converter. |
| vehicleWithoutCatalyticConverter | Vehicle without catalytic converter | Vehicle without catalytic converter. |
| vehicleWithTrailer | Vehicle with trailer | Vehicle (of unspecified type) towing a trailer. |
| withEvenNumberedRegistrationPlates | With even numbered registration plates | Vehicle with even numbered registration plate. |
| withOddNumberedRegistrationPlates | With odd numbered registration plates | Vehicle with odd numbered registration plate. |

Table 57— Values contained in the enumeration "VehicleTypeEnum"

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

Types of usage of a vehicle.

| **Enumerated value name** | **Designation** | **Definition** |
| --- | --- | --- |
| agricultural | Agricultural | Vehicle used for agricultural purposes. |
| commercial | Commercial | Vehicle which is limited to non-private usage or public transport usage. |
| emergencyServices | Emergency services | Vehicle used by the emergency services. |
| military | Military | Vehicle used by the military. |
| nonCommercial | Non commercial | Vehicle used for non-commercial or private purposes. |
| patrol | Patrol | Vehicle used as part of a patrol service, e.g. road operator or automobile association patrol vehicle. |
| recoveryServices | Recovery services | Vehicle used to provide a recovery service. |
| roadMaintenanceOrConstruction | Road maintenance or construction | Vehicle used for road maintenance or construction work purposes. |
| roadOperator | Road operator | Vehicle used by the road operator. |
| taxi | Taxi | Vehicle used to provide an authorised taxi service. |

Table 58— Values contained in the enumeration "VehicleUsageEnum"

* 1. Extensions

The Level B Extensions are summarised in this section.

* + 1. GroupOfLocationsExtensions



**Figure A.5.2.1 Extensions for GroupOfLocations**

The following classes are added to the GroupOfLocations class:

* **LocationInfo**: - Specifies the information such as country and region (or regions), where the event lies. In addition it also specifies the custom location name (locationName) and free text (locationText) related to the location of the traffic message.
* **RoadInfo**: - Specifies the information related to the Road, such as road number, road name, operator name, and one or more road sections.
  + 1. GipLinkExtensions

To add the GIP location referencing the **Point** type is extended. The GIP location referencing method is composed of one or more GIP nodes. Each GIP node is represented as a GIPLink, which contains an id, digitalization direction, a begin offset (in percentage) and an end offset (in percentage). Note that the GIP is a proprietary standard used by multiple stake holders within Austria. In addition to these details clients also requires the shape files of the GIP digital map to interpret the location.

* + - 1. GipLinkPointExtension

This extension specifies the point location of a traffic message by one or more GIP links. In most cases one GIP link is sufficient to represent the point location, however for a point at intersection there may be more than one GIP link.



**Figure A.5.3.1 Extension for Point**

* + 1. TrafficSpeedExtensions

The class TrafficSpeed is extended to provide maxVehicleSpeed, maxVehicleSpeed, and deltaVehicleSpeed.



**Figure A.5.4.1 Extension for TrafficSpeed**