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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **CHANGE REQUEST** | | | | | | | | | | | | | | | |
|  | ETSI TS 102 894-2 | | | **Version** | V0.0.1\_2.1.1 | **CR** | | *8* | | **rev** | | | | - |  |
|  | | | | | | | | | | | | | | | |
| **CR Title** | | Clearly define which document specifies the value causeCode and subCauseCode | | | | | | | | | | | | | |
|  | |  | | | | | | | | | | | | | |
| **Original Source** | | ITS WG 1 | | | | | | | | | | | | | |
|  | |  | | | | | | | | | | | | | |
| **Work Item Ref** | | REN/ITS-00194 | | | | | **Submission date** | | | | |  | | | |
| **Approving TB** | | ITS | | | | | **Approval date** | | | | | 02.07.2021 | | | |
| **Category:** | | **F** | **Release** | | | | | | | | 2 | | |  | |
|  | | Use **one** of the following categories: **F** (correction) **A** (correction in an earlier release) **B** (addition of feature)  **C** (functional modification of feature) **D** (editorial modification) | | | | | | | | | | |  | | |
|  | |  | | | | | | | | | | | | | |
| **Reason for change** | | | The CDD “describes” causeCode and subCauseCode values but then points to DENM for their “definition”.  Table 10 in DENM also lists the values and their “description”.  The definition of evenType in DENM in turn points to both table 10 and CDD ETSI TS 102 894-2. This is in essence a circular reference. | | | | | | | | | | | | |
|  | | |  | | | | | | | | | | | | |
| **Consequence if not approved** | | | Confusion / unclear specification / misalignment between lists. | | | | | | | | | | | | |
|  | | |  | | | | | | | | | | | | |
| **Summary of change** | | | Delete the sentences that point to ETSI EN 302 637-3 [i.3].  Use ETSI TS 102 894-2 as the source of the causeCode and SubCauseCode. Refer from DENM to CDD but not vice-versa. | | | | | | | | | | | | |
|  | | |  | | | | | | | | | | | | |
| **Clauses affected** | | | See below | | | | | | | | | | | | |
|  | | |  | | | | | | | | | | | | |
| **Linked Change Requests** | | |  | | | | | |  | | | | | | |
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|  | | |  | | | | | | | | | | | | |
| **Other comments** | | |  | | | | | | | | | | | | |
|  | | |  | | | | | | | | | | | | |

# A.3 DE\_AccidentSubCauseCode

|  |  |
| --- | --- |
| **Descriptive Name** | AccidentSubCauseCode |
| **Identifier** | DataType\_ 3 |
| **ASN.1 representation** | AccidentSubCauseCode ::= INTEGER {unavailable(0), multiVehicleAccident(1), heavyAccident(2), accidentInvolvingLorry(3), accidentInvolvingBus(4), accidentInvolvingHazardousMaterials(5), accidentOnOppositeLane(6), unsecuredAccident(7), assistanceRequested(8)} (0..255) |
| **Definition** | Encoded value of the sub cause codes of the event type "accident" as defined in clause A.10.  The sub cause values are specified as following:   * unavailable(0): in case the information on the sub cause of the accident is unavailable, * multiVehicleAccident(1): in case more than two vehicles are involved in accident, * heavyAccident(2): in case the airbag of the vehicle involved in the accident is triggered, the accident requires important rescue and/or recovery work, * accidentInvolvingLorry(3): in case the accident involves a lorry, * accidentInvolvingBus(4): in case the accident involves a bus, * accidentInvolvingHazardousMaterials(5): in case the accident involves hazardous material, * accidentOnOppositeLane(6): in case the accident happens on opposite lanes, * unsecuredAccident(7): in case the accident is not secured, * assistanceRequested(8): in case rescue and assistance are requested, * value 9-255: reserved for future usage. |
| **Unit** | N/A |
| **Category** | Traffic information |

# A.4 DE\_AdverseWeatherCondition-AdhesionSubCauseCode

|  |  |
| --- | --- |
| **Descriptive Name** | AdverseWeatherCondition-AdhesionSubCauseCode |
| **Identifier** | DataType\_ 4 |
| **ASN.1 representation** | AdverseWeatherCondition-AdhesionSubCauseCode ::= INTEGER {unavailable(0), heavyFrostOnRoad(1), fuelOnRoad(2), mudOnRoad(3), snowOnRoad(4), iceOnRoad(5), blackIceOnRoad(6), oilOnRoad(7), looseChippings(8), instantBlackIce(9), roadsSalted(10)} (0..255) |
| **Definition** | Encoded value of the sub cause codes of the event type "adverseWeatherCondition-Adhesion" as specified in clause A.10.  The sub cause values are specified as following:   * unavailable(0): in case information on the cause of the low road adhesion is unavailable, * heavyFrostOnRoad(1): in case the low road adhesion is due to heavy frost on the road, * fuelOnRoad(2): in case the low road adhesion is due to fuel on the road, * mudOnRoad(3): in case the low road adhesion is due to mud on the road, * snowOnRoad(4): in case the low road adhesion is due to snow on the road, * iceOnRoad(5): in case the low road adhesion is due to ice on the road, * blackIceOnRoad(6): in case the low road adhesion is due to black ice on the road, * oilOnRoad(7): in case the low road adhesion is due to oil on the road, * looseChippings(8): in case the low road adhesion is due to loose gravel or stone fragments detached from a road surface or from a hazard, * instantBlackIce(9): in case the low road adhesion is due to instant black ice on the road surface, * roadsSalted(10): when the low road adhesion is due to salted road, * value 11-255: reserved for future usage. |
| **Unit** | N/A |
| **Category** | Traffic information |

# A.5 DE\_AdverseWeatherCondition-ExtremeWeatherConditionSubCauseCode

|  |  |
| --- | --- |
| **Descriptive Name** | AdverseWeatherCondition-ExtremeWeatherConditionSubCauseCode |
| **Identifier** | DataType\_ 5 |
| **ASN.1 representation** | AdverseWeatherCondition-ExtremeWeatherConditionSubCauseCode ::= INTEGER {unavailable(0), strongWinds(1), damagingHail(2), hurricane(3), thunderstorm(4), tornado(5), blizzard(6)} (0..255) |
| **Definition** | Encoded value of the sub cause codes of the event type "adverseWeatherCondition-ExtremeWeatherCondition" as specified in clause A.10.  The sub cause values are specified as following:   * unavailable(0): in case information on the type of extreme weather condition is unavailable, * strongWinds(1): in case the type of extreme weather condition is strong wind, * damagingHail(2): in case the type of extreme weather condition is damaging hail, * hurricane(3): in case the type of extreme weather condition is hurricane, * thunderstorm(4): in case the type of extreme weather condition is thunderstorm, * tornado(5): in case the type of extreme weather condition is tornado, * blizzard(6): in case the type of extreme weather condition is blizzard, * value 7-255: reserved for future usage. |
| **Unit** | N/A |
| **Category** | Traffic information |

# A.6 DE\_AdverseWeatherCondition-PrecipitationSubCauseCode

|  |  |
| --- | --- |
| **Descriptive Name** | AdverseWeatherCondition-PrecipitationSubCauseCode |
| **Identifier** | DataType\_ 6 |
| **ASN.1 representation** | AdverseWeatherCondition-PrecipitationSubCauseCode ::= INTEGER {unavailable(0), heavyRain(1), heavySnowfall(2), softHail(3)} (0..255) |
| **Definition** | Encoded value of the sub cause codes of the event type "adverseWeatherCondition-Precipitation" as specified in clause A.10.  The sub cause values are specified as following:   * unavailable(0): in case information on the type of precipitation is unavailable, * heavyRain(1): in case the type of precipitation is heavy rain, * heavySnowfall(2): in case the type of precipitation is heavy snow fall, * softHail(3): in case the type of precipitation is soft hail, * value 4-255: reserved for future usage. |
| **Unit** | N/A |
| **Category** | Traffic information |

# A.7 DE\_AdverseWeatherCondition-VisibilitySubCauseCode

|  |  |
| --- | --- |
| **Descriptive Name** | AdverseWeatherCondition-VisibilitySubCauseCode |
| **Identifier** | DataType\_ 7 |
| **ASN.1 representation** | AdverseWeatherCondition-VisibilitySubCauseCode ::= INTEGER {unavailable(0), fog(1), smoke(2), heavySnowfall(3), heavyRain(4), heavyHail(5), lowSunGlare(6), sandstorms(7), swarmsOfInsects(8)} (0..255) |
| **Definition** | Encoded value of the sub cause codes of the event type "adverseWeatherCondition-Visibility" as specified in clause A.10.  The sub cause values are specified as following:   * unavailable(0): in case information on the cause of low visibility is unavailable, * fog(1): in case the cause of low visibility is fog, * smoke(2): in case the cause of low visibility is smoke, * heavySnowfall(3): in case the cause of low visibility is heavy snow fall, * heavyRain(4): in case the cause of low visibility is heavy rain, * heavyHail(5): in case the cause of low visibility is heavy hail, * lowSunGlare(6): in case the cause of low visibility is sun glare, * sandstorms(7): in case the cause of low visibility is sand storm, * swarmsOfInsects(8): in case the cause of low visibility is swarm of insects, * value 9-255: reserved for future usage. |
| **Unit** | N/A |
| **Category** | Traffic information |

# A.12 DE\_CollisionRiskSubCauseCode

|  |  |
| --- | --- |
| **Descriptive Name** | CollisionRiskSubCauseCode |
| **Identifier** | DataType\_ 12 |
| **ASN.1 representation** | CollisionRiskSubCauseCode ::= INTEGER {unavailable(0), longitudinalCollisionRisk(1), crossingCollisionRisk(2), lateralCollisionRisk(3), vulnerableRoadUser(4)} (0..255) |
| **Definition** | Encoded value of the sub cause codes of the event type "collisionRisk" as specified in clause A.10.  The sub cause values are specified as following:   * unavailable(0): in case information on the type of collision risk is unavailable, * longitudinalCollisionRisk(1): in case the type of detected collision risk is longitudinal collision risk, e.g. forward collision or face to face collision, * crossingCollisionRisk(2): in case the type of detected collision risk is crossing collision risk, * lateralCollisionRisk(3): in case the type of detected collision risk is lateral collision risk, * vulnerableRoadUser(4): in case the type of detected collision risk involves vulnerable road users e.g. pedestrians or bicycles, * value 5-255: reserved for future usage. |
| **Unit** | N/A |
| **Category** | Traffic information |

# A.16 DE\_DangerousEndOfQueueSubCauseCode

|  |  |
| --- | --- |
| **Descriptive Name** | DangerousEndOfQueueSubCauseCode |
| **Identifier** | DataType\_ 16 |
| **ASN.1 representation** | DangerousEndOfQueueSubCauseCode ::= INTEGER {unavailable(0), suddenEndOfQueue(1), queueOverHill(2), queueAroundBend(3), queueInTunnel(4)} (0..255) |
| **Definition** | Encoded value of the sub cause codes of the event type "dangerousEndOfQueue" as specified in clause A.10.  The sub cause values are specified as following:   * unavailable(0): in case information on the type of dangerous queue is unavailable, * suddenEndOfQueue(1): in case a sudden end of queue is detected, e.g. due to accident or obstacle, * queueOverHill(2): in case the dangerous end of queue is detected on the road hill, * queueAroundBend(3): in case the dangerous end of queue is detected around the road bend, * queueInTunnel(4): in case queue is detected in tunnel, * value 5-255: reserved for future usage. |
| **Unit** | N/A |
| **Category** | Traffic information |

# A.18 DE\_DangerousSituationSubCauseCode

|  |  |
| --- | --- |
| **Descriptive Name** | DangerousSituationSubCauseCode |
| **Identifier** | DataType\_ 18 |
| **ASN.1 representation** | DangerousSituationSubCauseCode ::= INTEGER {unavailable(0), emergencyElectronicBrakeEngaged(1), preCrashSystemEngaged(2), espEngaged(3), absEngaged(4), aebEngaged(5), brakeWarningEngaged(6), collisionRiskWarningEngaged(7)} (0..255) |
| **Definition** | Encoded value of the sub cause codes of the event type "dangerousSituation" as specified in clause A.10.  The sub cause values are specified as following:   * unavailable(0): in case information on the type of dangerous situation is unavailable, * emergencyElectronicBrakeEngaged(1): in case emergency electronic brake is engaged, * preCrashSystemEngaged(2): in case pre-crash system is engaged, * espEngaged(3): in case Electronic Stability Program (ESP) system is engaged, * absEngaged(4): in case Anti-lock braking system (ABS) is engaged, * aebEngaged(5): in case Autonomous Emergency Braking (AEB) system is engaged, * brakeWarningEngaged(6): in case brake warning is engaged, * collisionRiskWarningEngaged(7): in case collision risk warning is engaged, * value 8-255: reserved for future usage. |
| **Unit** | N/A |
| **Category** | Traffic information |

# A.26 DE\_EmergencyVehicleApproachingSubCauseCode

|  |  |
| --- | --- |
| **Descriptive Name** | EmergencyVehicleApproachingSubCauseCode |
| **Identifier** | DataType\_ 26 |
| **ASN.1 representation** | EmergencyVehicleApproachingSubCauseCode ::= INTEGER {unavailable(0), emergencyVehicleApproaching(1), prioritizedVehicleApproaching(2)} (0..255) |
| **Definition** | Encoded value of the sub cause codes of the event type "emergencyVehicleApproaching" as specified in clause A.10.  The sub cause values are specified as following:   * unavailable(0): in case further detailed information on the emergency vehicle approaching event is unavailable, * emergencyVehicleApproaching(1): in case an operating emergency vehicle is approaching, * prioritizedVehicleApproaching(2): in case a prioritized vehicle (e.g. bus) is approaching, * value 3-255: reserved for future usage. |
| **Unit** | N/A |
| **Category** | Traffic information |

# A.30 DE\_HazardousLocation-AnimalOnTheRoadSubCauseCode

|  |  |
| --- | --- |
| **Descriptive Name** | HazardousLocation-AnimalOnTheRoadSubCauseCode |
| **Identifier** | DataType\_ 30 |
| **ASN.1 representation** | HazardousLocation-AnimalOnTheRoadSubCauseCode ::= INTEGER {unavailable(0), wildAnimals(1), herdOfAnimals(2), smallAnimals(3), largeAnimals(4)} (0..255) |
| **Definition** | Encoded value of the sub cause codes of the event type "hazardousLocation-AnimalOnTheRoad" as specified in clause A.10.  The sub cause values are specified as following:   * unavailable(0): in case further detailed information on the animal on the road event is unavailable, * wildAnimals(1): in case wild animals are detected on the road, * herdOfAnimals(2): in case herd of animals are detected on the road, * smallAnimals(3): in case small size animal is detected on the road, * largeAnimals(4): in case large size animal is detected on the road, * value 5-255: reserved for future usage. |
| **Unit** | N/A |
| **Category** | Traffic information |

# A.31 DE\_HazardousLocation-DangerousCurveSubCauseCode

|  |  |
| --- | --- |
| **Descriptive Name** | HazardousLocation-DangerousCurveSubCauseCode |
| **Identifier** | DataType\_ 31 |
| **ASN.1 representation** | HazardousLocation-DangerousCurveSubCauseCode ::= INTEGER {unavailable(0), dangerousLeftTurnCurve(1), dangerousRightTurnCurve(2), multipleCurvesStartingWithUnknownTurningDirection(3), multipleCurvesStartingWithLeftTurn(4), multipleCurvesStartingWithRightTurn(5)} (0..255) |
| **Definition** | Encoded value of the sub cause codes of the event type "hazardousLocation-DangerousCurve" as specified in clause A.10.  The sub cause values are specified as following:   * unavailable(0): in case further detailed information on the dangerous curve is unavailable, * dangerousLeftTurnCurve(1): in case the dangerous curve is a left turn curve, * dangerousRightTurnCurve(2): in case the dangerous curve is a right turn curve, * multipleCurvesStartingWithUnknownTurningDirection(3): in case of multiple curves for which the starting curve turning direction is not known, * multipleCurvesStartingWithLeftTurn(4): in case of multiple curves starting with a left turn curve, * multipleCurvesStartingWithRightTurn(5): in case of multiple curves stating with a right turn curve, * value 6-255: reserved for future usage.   The definition of whether a curve is dangerous may vary according to region and according to vehicle types/mass and vehicle speed driving on the curve. This definition is out of scope of the present document. |
| **Unit** | N/A |
| **Category** | Traffic information |

# A.32 DE\_HazardousLocation-ObstacleOnTheRoadSubCauseCode

|  |  |
| --- | --- |
| **Descriptive Name** | HazardousLocation-ObstacleOnTheRoadSubCauseCode |
| **Identifier** | DataType\_ 32 |
| **ASN.1 representation** | HazardousLocation-ObstacleOnTheRoadSubCauseCode ::= INTEGER {unavailable(0), shedLoad(1), partsOfVehicles(2), partsOfTyres(3), bigObjects(4), fallenTrees(5), hubCaps(6), waitingVehicles(7)} (0..255) |
| **Definition** | Encoded value of the sub cause codes of the event type "hazardousLocation-ObstacleOnTheRoad" as specified in clause A.10.  The sub cause values are specified as following:   * unavailable(0): in case further detailed information on the detected obstacle is unavailable, * shedLoad(1): in case detected obstacle is large amount of obstacles (shedload), * partsOfVehicles(2): in case detected obstacles are parts of vehicles, * partsOfTyres(3): in case the detected obstacles are parts of tyres, * bigObjects(4): in case the detected obstacles are big objects, * fallenTrees(5): in case the detected obstacles are fallen trees, * hubCaps(6): in case the detected obstacles are hub caps, * waitingVehicles(7): in case the detected obstacles are waiting vehicles, * value 8-255: reserved for future usage. |
| **Unit** | N/A |
| **Category** | Traffic information |

# A.33 DE\_HazardousLocation-SurfaceConditionSubCauseCode

|  |  |
| --- | --- |
| **Descriptive Name** | HazardousLocation-SurfaceConditionSubCauseCode |
| **Identifier** | DataType\_ 33 |
| **ASN.1 representation** | HazardousLocation-SurfaceConditionSubCauseCode ::= INTEGER {unavailable(0), rockfalls(1), earthquakeDamage(2), sewerCollapse(3), subsidence(4), snowDrifts(5), stormDamage(6), burstPipe(7), volcanoEruption(8), fallingIce(9)} (0..255) |
| **Definition** | Encoded value of the sub cause codes of the event type "hazardousLocation-SurfaceCondition" as specified in clause A.10.  The sub cause values are specified as following:   * unavailable(0): in case further detailed information on the road surface condition is unavailable, * rockfalls(1): in case rock falls are detected on the road surface, * earthquakeDamage(2): in case the road surface is damaged by earthquake, * sewerCollapse(3): in case of sewer collapse on the road surface, * subsidence(4): in case road surface is damaged by subsidence, * snowDrifts(5): in case road surface is damaged due to snow drift, * stormDamage(6): in case road surface is damaged by strong storm, * burstPipe(7): in case road surface is damaged due to pipe burst, * volcanoEruption(8): in case road surface is damaged due to volcano eruption, * fallingIce(9): in case road surface damage is due to falling ice, * value 10-255: reserved for future usage. |
| **Unit** | N/A |
| **Category** | Traffic information |

# A.81 DE\_SubCauseCodeType

|  |  |
| --- | --- |
| **Descriptive Name** | SubCauseCodeType |
| **Identifier** | DataType\_ 81 |
| **ASN.1 representation** | SubCauseCodeType ::= INTEGER (0..255) |
| Definition | Type of sub cause of a detected event.The encoded values are defined in A.3, A.4, A.5, A.6, A.7, A.12, A.16, A.18, A.26. A.30, A.31, A.32, A.33  The DE is used in CauseCode DF as defined in clause A.104.  NOTE 1: The sub cause code value assignment varies based on the value of causeCode as defined in clause A.10. |
| **Unit** | N/A |
| **Category** | Traffic information |

# A.104 DF\_CauseCode

|  |  |
| --- | --- |
| **Descriptive Name** | CauseCode |
| **Identifier** | DataType\_ 104 |
| **ASN.1 representation** | CauseCode ::= SEQUENCE {  causeCode CauseCodeType,  subCauseCode SubCauseCodeType,  ...  } |
| **Definition** | Encoded value of a traffic event type.  The DF shall include the following information:   * causeCode: the type of a direct cause of a detected event. It shall be presented as defined in clause A.10 *CauseCodeType*, * subCauseCode: sub type of the direct cause. It shall be presented as defined in clause A.81 *SubCauseCodeType*. |
| **Unit** | N/A |
| **Category** | Traffic information |