

DENM Mapping



About the C2C-CC

Enhancing road safety and traffic efficiency by means of Cooperative Intelligent Transport Systems and Services (C-ITS) is the dedicated goal of the CAR 2 CAR Communication Consortium (C2C-CC). The industrial driven, non-commercial association was founded in 2002 by vehicle manufacturers affiliated with the idea of cooperative road traffic based on Vehicle-to-Vehicle Communications (V2V) and supported by Vehicle-to-Infrastructure Communications (V2I). The Consortium members represent worldwide major vehicle manufactures, equipment suppliers and research organisations.

Over the years, the C2C-CC has evolved to be one of the key players in preparing the initial deployment of C-ITS in Europe and the subsequent innovation phases. C2C members focus on wireless V2V communication applications based on Direct Communication and concentrate all efforts on creating standards to ensure the interoperability of cooperative systems, spanning all vehicle classes across borders and brands. As a key contributor, the C2C-CC and its members work in close cooperation with the European and international standardisation organisations

Disclaimer

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IPRs essential or potentially essential to profiles or specifications may have been declared to the C2C-CC. The declarations pertaining to these essential IPRs, if any, are publicly available for the C2C-CC members and non-members, and can be found in "Essential or potentially Essential IPRs notified to the C2C-CC in respect of C2C-CC profiles or specifications" ([C2CCC IPR R]), which is available with the latest update from the webpage (<https://www.car-2-car.org>) of the C2C-CC.

Pursuant to the C2C-CC's IPR Policy [C2CCC IPR P], no investigation regarding the essentiality of IPRs, including IPR searches, has been carried out by the C2C-CC. No guarantee can be given as to the existence of other IPRs not referenced in [C2CCC IPR R] (or the updates on the C2C-CC web server) which are, or may be, or may become, essential to the present document.

Codes according to DENM/CDD standard			DATEXII (EN 16157-3:2018)
DENM index	CauseCode	SubCauseCode	[(Class:)attribute_Value]
1_0	trafficCondition	unavailable	abnormalTrafficType_other
1_1	trafficCondition	increasedVolumeOfTraffic	abnormalTrafficType_heavyTraffic
1_2	trafficCondition	trafficJamSlowlyIncreasing	abnormalTrafficType_queuingTraffic trafficTrendType_trafficBuildingUp
1_3	trafficCondition	trafficJamIncreasing	abnormalTrafficType_queuingTraffic trafficTrendType_trafficBuildingUp
1_4	trafficCondition	trafficJamStronglyIncreasing	abnormalTrafficType_queuingTraffic trafficTrendType_trafficBuildingUp
1_5	trafficCondition	trafficStationary	abnormalTrafficType_stationaryTraffic
1_6	trafficCondition	trafficJamSlightlyDecreasing	abnormalTrafficType_queuingTraffic trafficTrendType_trafficEasing
1_7	trafficCondition	trafficJamDecreasing	abnormalTrafficType_queuingTraffic trafficTrendType_trafficEasing
1_8	trafficCondition	trafficJamStronglyDecreasing	abnormalTrafficType_queuingTraffic trafficTrendType_trafficEasing
1_9	trafficCondition	trafficJamStable	abnormalTrafficType_queuingTraffic trafficTrendType_trafficStable
2_0	accident	unavailable	accidentType_accident
2_1	accident	multiVehicleAccident	accidentType_multipleVehicleAccident
2_2	accident	heavyAccident	accidentType_seriousInjuryOrFatalAccident
2_3	accident	accidentInvolvingLorry	accidentType_accidentInvolvingHeavyLorries
2_4	accident	accidentInvolvingBus	accidentType_accidentInvolvingPublicTransport
2_5	accident	accidentInvolvingHazardousMaterials	accidentType_accidentInvolvingHazardousMaterials
2_6	accident	accidentOnOppositeLane	
2_7	accident	unsecuredAccident	obstructionType_unprotectedAccidentArea
2_8	accident	assistanceRequested	accidentType_accident
3_0	roadworks	unavailable	roadMaintenanceType_roadworks
3_1	roadworks	majorRoadworks	roadMaintenanceType_roadworks roadworksScale_major

Codes according to DENM/CDD standard			DATEXII (EN 16157-3:2018)
DENM index	CauseCode	SubCauseCode	[(Class:)attribute_Value]
3_2	roadworks	roadMarkingWork	roadMaintenanceType_roadMarkingWork
3_3	roadworks	slowMovingRoadMaintenance	vehicleObstructionType_SlowMovingMaintenanceVehicle roadMaintenanceType_maintenanceWork roadworksDuration_shortTerm
3_4	roadworks	shortTermStationaryRoadworks	mobilityType_stationary
3_5	roadworks	streetCleaning	roadMaintenanceType_roadworks
3_6	roadworks	winterService	roadMaintenanceType_saltingInProgress
4_0	reserved for future usage	-	
5_0	impassability	unavailable	obstructionType_other
5_1	impassability	flooding	environmentalObstructionType_flooding
5_2	impassability	dangerOfAvalanches	environmentalObstructionType_avalanches
5_3	impassability	blastingOfAvalanches	environmentalObstructionType_avalanches
5_4	impassability	landslips	environmentalObstructionType_landslips
5_5	impassability	chemicalSpillage	obstructionType_spillageOnTheRoad
5_6	impassability	winterClosure	environmentalObstructionType_other
5_7	impassability	sinkhole	environmentalObstructionType_other
5_8	impassability	earthquakeDamage	environmentalObstructionType_earthquakeDamage
5_9	impassability	fallenTrees	environmentalObstructionType_fallenTrees
5_10	impassability	rockfalls	environmentalObstructionType_rockfalls
5_11	impassability	sewerOverflow	environmentalObstructionType_sewerOverflow
5_12	impassability	stormDamage	environmentalObstructionType_stormDamage
5_13	impassability	subsidence	environmentalObstructionType_subsidence
5_14	impassability	burstPipe	infrastructureDamageType_burstPipe
5_15	impassability	burstWaterMain	infrastructureDamageType_burstWaterMain
5_16	impassability	fallenPowerCables	infrastructureDamageType_fallenPowerCables
5_17	impassability	snowDrifts	environmentalObstructionType_other
6_0	adverseWeatherCondition-Adhesion	unavailable	weatherRelatedRoadConditionType_slippery
6_1	adverseWeatherCondition-Adhesion	heavyFrostOnRoad	weatherRelatedRoadConditionType_iceBuildUp

Codes according to DENM/CDD standard			DATEXII (EN 16157-3:2018)
DENM index	CauseCode	SubCauseCode	[(Class:)attribute_Value]
6_2	adverseWeatherCondition-Adhesion	fuelOnRoad	nonWeatherRelatedRoadConditionType_petrolOnRoad
6_3	adverseWeatherCondition-Adhesion	mudOnRoad	nonWeatherRelatedRoadConditionType_mudOnRoad
6_4	adverseWeatherCondition-Adhesion	snowOnRoad	weatherRelatedRoadConditionType_snowOnTheRoad
6_5	adverseWeatherCondition-Adhesion	iceOnRoad	weatherRelatedRoadConditionType_ice
6_6	adverseWeatherCondition-Adhesion	blackIceOnRoad	weatherRelatedRoadConditionType_blackIce
6_7	adverseWeatherCondition-Adhesion	oilOnRoad	nonWeatherRelatedRoadConditionType_oilOnRoad
6_8	adverseWeatherCondition-Adhesion	looseChippings	nonWeatherRelatedRoadConditionType_looseChippings
6_9	adverseWeatherCondition-Adhesion	instantBlackIce	weatherRelatedRoadConditionType_blackIce
6_10	adverseWeatherCondition-Adhesion	roadsSalted	weatherRelatedRoadConditionType_roadSurfaceMelting
7_0	aquaplaning	unavailable	weatherRelatedRoadConditionType_surfaceWater
8_0	reserved for future usage	-	
9_0	hazardousLocation-SurfaceCondition	unavailable	nonWeatherRelatedRoadConditionType_roadSurfaceInPoorCondition
9_1	hazardousLocation-SurfaceCondition	rockfalls	environmentalObstructionType_rockfalls
9_2	hazardousLocation-SurfaceCondition	earthquakeDamage	environmentalObstructionType_earthquakeDamage
9_3	hazardousLocation-SurfaceCondition	sewerCollapse	infrastructureDamageType_collapsedSewer
9_4	hazardousLocation-SurfaceCondition	subsidence	environmentalObstructionType_subsidence
9_5	hazardousLocation-SurfaceCondition	snowDrifts	weatherRelatedRoadConditionType_snowDrifts
9_6	hazardousLocation-SurfaceCondition	stormDamage	environmentalObstructionType_stormDamage
9_7	hazardousLocation-SurfaceCondition	burstPipe	infrastructureDamageType_burstPipe
9_8	hazardousLocation-SurfaceCondition	volcanoEruption	environmentalObstructionType_other
9_9	hazardousLocation-SurfaceCondition	fallingIce	environmentalObstructionType_fallingIce
9_10	hazardousLocation-SurfaceCondition	fire	environmentalObstructionType_seriousFire
10_0	hazardousLocation-ObstacleOnTheRoad	unavailable	obstructionType_obstructionOnTheRoad
10_1	hazardousLocation-ObstacleOnTheRoad	shedLoad	obstructionType_shedLoad
10_2	hazardousLocation-ObstacleOnTheRoad	partsOfVehicles	obstructionType_debris
10_3	hazardousLocation-ObstacleOnTheRoad	partsOfTyres	obstructionType_debris
10_4	hazardousLocation-ObstacleOnTheRoad	bigObjects	obstructionType_objectOnTheRoad
10_5	hazardousLocation-ObstacleOnTheRoad	fallenTrees	environmentalObstructionType_fallenTrees

Codes according to DENM/CDD standard			DATEXII (EN 16157-3:2018)
DENM index	CauseCode	SubCauseCode	[(Class:)attribute_Value]
10_6	hazardousLocation-ObstacleOnTheRoad	hubCaps	obstructionType_debris
10_7	hazardousLocation-ObstacleOnTheRoad	waitingVehicles	vehicleObstructionType_other
11_0	hazardousLocation-AnimalOnTheRoad	unavailable	animalPresenceType_animalsOnTheRoad
11_1	hazardousLocation-AnimalOnTheRoad	wildAnimals	animalPresenceType_wildAnimalsOnTheRoad
11_2	hazardousLocation-AnimalOnTheRoad	herdOfAnimals	animalPresenceType_herdOfAnimalsOnTheRoad
11_3	hazardousLocation-AnimalOnTheRoad	smallAnimals	animalPresenceType_smallAnimalsOnTheRoad
11_4	hazardousLocation-AnimalOnTheRoad	largeAnimals	animalPresenceType_largeAnimalsOnTheRoad
11_5	hazardousLocation-AnimalOnTheRoad	wildAnimalsSmall	animalPresenceType_smallAnimalsOnTheRoad
11_6	hazardousLocation-AnimalOnTheRoad	wildAnimalsLarge	animalPresenceType_largeAnimalsOnTheRoad
11_7	hazardousLocation-AnimalOnTheRoad	domesticAnimals	animalPresenceType_animalsOnTheRoad
11_8	hazardousLocation-AnimalOnTheRoad	domesticAnimalsSmall	animalPresenceType_smallAnimalsOnTheRoad
11_9	hazardousLocation-AnimalOnTheRoad	domesticAnimalsLarge	animalPresenceType_largeAnimalsOnTheRoad
12_0	humanPresenceOnTheRoad	unavailable	obstructionType_peopleOnRoadway
12_1	humanPresenceOnTheRoad	childrenOnRoadway	obstructionType_childrenOnRoadway
12_2	humanPresenceOnTheRoad	cyclistOnRoadway	obstructionType_cyclistsOnRoadway
12_3	humanPresenceOnTheRoad	motorcyclistOnRoadway	obstructionType_peopleOnRoadway involvementRoles_motorcyclist
12_4	humanPresenceOnTheRoad	pedestrian	obstructionType_peopleOnRoadway involvementRoles_pedestrian
12_5	humanPresenceOnTheRoad	ordinary-pedestrian	obstructionType_peopleOnRoadway involvementRoles_pedestrian
12_6	humanPresenceOnTheRoad	road-worker	obstructionType_peopleOnRoadway
12_7	humanPresenceOnTheRoad	first-responder	obstructionType_peopleOnRoadway personCategory_medicalStaff
12_8	humanPresenceOnTheRoad	lightVruVehicle	obstructionType_peopleOnRoadway
12_9	humanPresenceOnTheRoad	bicyclist	obstructionType_cyclistsOnRoadway
12_10	humanPresenceOnTheRoad	wheelchair-user	obstructionType_peopleOnRoadway
12_11	humanPresenceOnTheRoad	horse-and-rider	obstructionType_peopleOnRoadway
12_12	humanPresenceOnTheRoad	rollerskater	obstructionType_peopleOnRoadway

Codes according to DENM/CDD standard			DATEXII (EN 16157-3:2018)
DENM index	CauseCode	SubCauseCode	[(Class:)attribute_Value]
12_13	humanPresenceOnTheRoad	e-scooter	obstructionType_peopleOnRoadway
12_14	humanPresenceOnTheRoad	personal-transporter	obstructionType_peopleOnRoadway
12_15	humanPresenceOnTheRoad	pedelec	obstructionType_cyclistsOnRoadway
12_16	humanPresenceOnTheRoad	speed-pedelec	obstructionType_cyclistsOnRoadway
12_17	humanPresenceOnTheRoad	ptw	involvementRoles_motorcyclist
12_18	humanPresenceOnTheRoad	moped	obstructionType_peopleOnRoadway
12_19	humanPresenceOnTheRoad	motorcycle	involvementRoles_motorcyclist
12_20	humanPresenceOnTheRoad	motorcycle-and-sidecar-right	obstructionType_peopleOnRoadway
12_21	humanPresenceOnTheRoad	motorcycle-and-sidecar-left	involvementRoles_motorcyclist
13_0	reserved for future usage	-	
14_0	wrongWayDriving	unavailable	vehicleObstructionType_vehicleOnWrongCarriageway
14_1	wrongWayDriving	wrongLane	vehicleObstructionType_vehicleOnWrongCarriageway
14_2	wrongWayDriving	wrongDirection	vehicleObstructionType_vehicleOnWrongCarriageway
15_0	rescueAndRecoveryWorkInProgress	unavailable	obstructionType_rescueAndRecoveryWork
15_1	rescueAndRecoveryWorkInProgress	emergencyVehicles	obstructionType_rescueAndRecoveryWork
15_2	rescueAndRecoveryWorkInProgress	rescueHelicopterLanding	personCategory_emergencyServicesPerson
15_3	rescueAndRecoveryWorkInProgress	policeActivityOngoing	obstructionType_rescueAndRecoveryWork
15_4	rescueAndRecoveryWorkInProgress	medicalEmergencyOngoing	personCategory_policeman
			obstructionType_rescueAndRecoveryWork
			personCategory_medicalStaff

Codes according to DENM/CDD standard			DATEXII (EN 16157-3:2018)
DENM index	CauseCode	SubCauseCode	[(Class:)attribute_Value]
15_5	rescueAndRecoveryWorkInProgress	childAbductionInProgress	obstructionType_rescueAndRecoveryWork personCategory_child
15_6	rescueAndRecoveryWorkInProgress	prioritizedVehicle	obstructionType_rescueAndRecoveryWork
15_7	rescueAndRecoveryWorkInProgress	rescueAndRecoveryVehicle	obstructionType_rescueAndRecoveryWork
16_0	reserved for future usage	-	
17_0	adverseWeatherCondition- ExtremeWeatherCondition	unavailable	poorEnvironmentType_badWeather
17_1	adverseWeatherCondition- ExtremeWeatherCondition	strongWinds	poorEnvironmentType_strongWinds
17_2	adverseWeatherCondition- ExtremeWeatherCondition	damagingHail	poorEnvironmentType_damagingHail
17_3	adverseWeatherCondition- ExtremeWeatherCondition	hurricane	poorEnvironmentType_hurricaneForceWinds
17_4	adverseWeatherCondition- ExtremeWeatherCondition	thunderstorm	poorEnvironmentType_thunderstorms
17_5	adverseWeatherCondition- ExtremeWeatherCondition	tornado	poorEnvironmentType_tornadoes
17_6	adverseWeatherCondition- ExtremeWeatherCondition	blizzard	poorEnvironmentType_blizzard
18_0	adverseWeatherCondition-Visibility	unavailable	poorEnvironmentType_visibilityReduced
18_1	adverseWeatherCondition-Visibility	fog	poorEnvironmentType_denseFog
18_2	adverseWeatherCondition-Visibility	smoke	poorEnvironmentType_smokeHazard
18_3	adverseWeatherCondition-Visibility	heavySnowfall	poorEnvironmentType_whiteOut
18_4	adverseWeatherCondition-Visibility	heavyRain	poorEnvironmentType_heavyRain
18_5	adverseWeatherCondition-Visibility	heavyHail	poorEnvironmentType_hail
18_6	adverseWeatherCondition-Visibility	lowSunGlare	poorEnvironmentType_lowSunGlare
18_7	adverseWeatherCondition-Visibility	sandstorms	poorEnvironmentType_sandStorms
18_8	adverseWeatherCondition-Visibility	swarmsOfInsects	poorEnvironmentType_swarmsOfInsects
19_0	adverseWeatherCondition-Precipitation	unavailable	poorEnvironmentType_precipitationInTheArea

Codes according to DENM/CDD standard			DATEXII (EN 16157-3:2018)
DENM index	CauseCode	SubCauseCode	[(Class:)attribute_Value]
19_1	adverseWeatherCondition-Precipitation	heavyRain	poorEnvironmentType_heavyRain
19_2	adverseWeatherCondition-Precipitation	heavySnowfall	poorEnvironmentType_heavySnowfall
19_3	adverseWeatherCondition-Precipitation	softHail	poorEnvironmentType_hail
20_0	violence	unavailable	
20_1	violence	reserved for future usage	
20_2	violence	reserved for future usage	
20_3	violence	stoneThrowingPersons	disturbanceActivityType_peopleThrowingObjectsOnTheRoad
21_0	reserved for future usage	-	
22_0	reserved for future usage	-	
23_0	reserved for future usage	-	
24_0	reserved for future usage	-	
25_0	reserved for future usage	-	
26_0	slowVehicle	unavailable	vehicleObstructionType_slowVehicle
26_1	slowVehicle	maintenanceVehicle	vehicleObstructionType_slowVehicle
26_2	slowVehicle	vehiclesSlowingToLookAtAccident	vehicleObstructionType_slowVehicle
26_3	slowVehicle	abnormalLoad	vehicleObstructionType_abnormalLoad
26_4	slowVehicle	abnormalWideLoad	vehicleObstructionType_vehicleWithOverwideLoad
26_5	slowVehicle	convoy	vehicleObstructionType_convoy
26_6	slowVehicle	snowplough	roadMaintenanceType_snowploughsInUse
26_7	slowVehicle	deicing	vehicleObstructionType_slowVehicle
26_8	slowVehicle	saltingVehicles	vehicleObstructionType_slowVehicle
27_0	dangerousEndOfQueue	unavailable	vehicleObstructionType_slowVehicle
27_1	dangerousEndOfQueue	suddenEndOfQueue	vehicleObstructionType_slowVehicle
27_2	dangerousEndOfQueue	queueOverHill	vehicleObstructionType_slowVehicle
27_3	dangerousEndOfQueue	queueAroundBend	vehicleObstructionType_slowVehicle
27_4	dangerousEndOfQueue	queueInTunnel	vehicleObstructionType_slowVehicle
28_0	reserved for future usage	-	
90_0	reserved for future usage	-	

Codes according to DENM/CDD standard			DATEXII (EN 16157-3:2018)
DENM index	CauseCode	SubCauseCode	[(Class:)attribute_Value]
91_0	vehicleBreakdown	unavailable	vehicleObstructionType_brokenDownVehicle
91_1	vehicleBreakdown	lackOfFuel	vehicleObstructionType_brokenDownVehicle vehicleProblemCause_fuelSystem
91_2	vehicleBreakdown	lackOfBatteryPower	vehicleObstructionType_brokenDownVehicle vehicleProblemCause_battery
91_3	vehicleBreakdown	engineProblem	vehicleObstructionType_brokenDownVehicle vehicleProblemCause_motorMechanics
91_4	vehicleBreakdown	transmissionProblem	vehicleObstructionType_brokenDownVehicle vehicleProblemCause_gear
91_5	vehicleBreakdown	engineCoolingProblem	vehicleObstructionType_brokenDownVehicle vehicleProblemCause_coolingSystem
91_6	vehicleBreakdown	brakingSystemProblem	vehicleObstructionType_brokenDownVehicle vehicleProblemCause_brakingSystem
91_7	vehicleBreakdown	steeringProblem	vehicleObstructionType_brokenDownVehicle vehicleProblemCause_other
91_8	vehicleBreakdown	tyrePuncture	vehicleObstructionType_brokenDownVehicle vehicleProblemCause_flatTyre
91_9	vehicleBreakdown	tyrePressureProblem	vehicleObstructionType_brokenDownVehicle vehicleProblemCause_flatTyre
91_10	vehicleBreakdown	vehicleOnFire	vehicleObstructionType_vehicleOnFire vehicleStatus_brokenDown
92_0	postCrash	unavailable	accidentType_accident
92_1	postCrash	accidentWithoutECallTriggered	accidentType_accident
92_2	postCrash	accidentWithECallManuallyTriggered	accidentType_accident
92_3	postCrash	accidentWithECallAutomaticallyTriggered	accidentType_accident
92_4	postCrash	accidentWithECallTriggeredWithoutAccessToCellularNetwork	accidentType_accident obstructionType_incident
93_0	humanProblem	unavailable	injuryStatusType_unknown

Codes according to DENM/CDD standard			DATEXII (EN 16157-3:2018)
DENM index	CauseCode	SubCauseCode	[(Class:)attribute_Value]
93_1	humanProblem	glycemiaProblem	obstructionType_incident injuryStatusType_seriouslyInjured
93_2	humanProblem	heartProblem	obstructionType_incident injuryStatusType_seriouslyInjured
94_0	stationaryVehicle	unavailable	vehicleObstructionType_brokenDownVehicle vehicleType_anyVehicle mobilityType_stationary
94_1	stationaryVehicle	humanProblem	obstructionType_incident injuryStatusType_unknown mobilityType_stationary
94_2	stationaryVehicle	vehicleBreakdown	vehicleObstructionType_brokenDownVehicle mobilityType_stationary
94_3	stationaryVehicle	postCrash	accidentType_accident vehicleStatus_damagedAndImmobilized
94_4	stationaryVehicle	publicTransportStop	
94_5	stationaryVehicle	carryingDangerousGoods	vehicleObstructionType_vehicleCarryingHazardousMaterials mobilityType_stationary
94_6	stationaryVehicle	vehicleOnFire	vehicleObstructionType_vehicleOnFire mobilityType_stationary
95_0	emergencyVehicleApproaching	unavailable	
95_1	emergencyVehicleApproaching	emergencyVehicleApproaching	
95_2	emergencyVehicleApproaching	prioritizedVehicleApproaching	
96_0	hazardousLocation-DangerousCurve	unavailable	
96_1	hazardousLocation-DangerousCurve	dangerousLeftTurnCurve	
96_2	hazardousLocation-DangerousCurve	dangerousRightTurnCurve	
96_3	hazardousLocation-DangerousCurve	multipleCurvesStartingWithUnknownTurnin gDirection	
96_4	hazardousLocation-DangerousCurve	multipleCurvesStartingWithLeftTurn	
96_5	hazardousLocation-DangerousCurve	multipleCurvesStartingWithRightTurn	

Codes according to DENM/CDD standard			DATEXII (EN 16157-3:2018)
DENM index	CauseCode	SubCauseCode	[(Class:)attribute_Value]
97_0	collisionRisk	unavailable	
97_1	collisionRisk	longitudinalCollisionRisk	
97_2	collisionRisk	crossingCollisionRisk	
97_3	collisionRisk	lateralCollisionRisk	
97_4	collisionRisk	vulnerableRoadUser	
98_0	signalViolation	unavailable	
98_1	signalViolation	stopSignViolation	
98_2	signalViolation	trafficLightViolation	
98_3	signalViolation	turningRegulationViolation	
99_0	dangerousSituation	unavailable	
99_1	dangerousSituation	emergencyElectronicBrakeEngaged	
99_2	dangerousSituation	preCrashSystemEngaged	
99_3	dangerousSituation	espEngaged	
99_4	dangerousSituation	absEngaged	
99_5	dangerousSituation	aebEngaged	
99_6	dangerousSituation	brakeWarningEngaged	
99_7	dangerousSituation	collisionRiskWarningEngaged	