DENM Mapping
CAR 2 CAR Communication Consortium

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. 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 CAR 2 CAR Communication Consortium has evolved to be one of the key players in preparing the initial deployment of C-ITS in Europe and the subsequent innovation phases. CAR 2 CAR members focus on wireless V2V communication applications based on ITS-G5 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 CAR 2 CAR Communication Consortium and its members work in close cooperation with the European and international standardisation organisations.

Disclaimer

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
3_4	roadworks	shortTermStationaryRoadworks	roadMaintenanceType_maintenanceWork roadworksDuration_shortTerm 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

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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 involvementRoles_motorcyclist
12_17	humanPresenceOnTheRoad	ptw	obstructionType_peopleOnRoadway involvementRoles_motorcyclist
12_18	humanPresenceOnTheRoad	moped	obstructionType_peopleOnRoadway involvementRoles_motorcyclist
12_19	humanPresenceOnTheRoad	motorcycle	obstructionType_peopleOnRoadway involvementRoles_motorcyclist
12_20	humanPresenceOnTheRoad	motorcycle-and-sidecar-right	obstructionType_peopleOnRoadway involvementRoles_motorcyclist
12_21	humanPresenceOnTheRoad	motorcycle-and-sidecar-left	obstructionType_peopleOnRoadway 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 personCategory_emergencyServicesPerson
15_2	rescueAndRecoveryWorkInProgress	rescueHelicopterLanding	obstructionType_rescueAndRecoveryWork personCategory_emergencyServicesPerson
15_3	rescueAndRecoveryWorkInProgress	policeActivityOngoing	obstructionType_rescueAndRecoveryWork personCategory_policeman
15_4	rescueAndRecoveryWorkInProgress	medicalEmergencyOngoing	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
93_0	humanProblem	unavailable	obstructionType_incident 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	multipleCurvesStartingWithUnknownTurningDirection	
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		