Data set/Title	Short description	Data elements	Source	Receiver	Minimum frequency	Willing to share	Preferred way of exchange of data (raw data/service)	Data Type	Mobility services	Road traffic management	Data collection	near term /mid term	Standards available	Sharing model	Partner	Short description of the service for which the data is needed
Name of the data element – if an official term exists please use this one	*Short description and key characteristics (e.g. short latency, real time information, static, dynamic) of the data element*		*Source of the data*	*Receiver of the data*	*Which is the minimum frequency needed for the intended purpose*	*Who is willing to share this data*	*Please indicate if the data should be exchanged as raw data or already in form of a service.*	*int, float,…*	*Please indicate to which category of services the data will contribute*				*Are standards already available? (available / work in progress / planned / no)*	*Indicate if there is a sharing model (considering the columns "Source", "Receiver", and "Willing to share")*		*Name of the service, to whom is it provided, what does it contain, etc.*
FCD	The principle of FCD is to collect real-time traffic data by locating the vehicle via mobile phones or GPS over the road network. This basically means that every vehicle is equipped with mobile phone or GPS which acts as a sensor for the road network. Data such as Time stamp, car location, speed and direction of travel, vehicle class are sent anonymously to a TMC. After being collected and fused in the TMC, useful information (e.g. status of traffic, alternative routes) can be redistributed to the drivers on the road. FCD is also understood as passively collected FCD from SIM cards in vehicles received via the cellular network: minimum data elements: time stamp, vehicle position, vehicle speed, vehicle direction, vehicle class, local traffic and hazard situations	Vehicle ID (anonymized)	vehicles, Mobility service provider (Fleet operator, Taxi operator, Insurance companies, telecom operator)	Service provider / road operators / traffic managers	every 5 minutes	Mobility service providers, Taxi operators, Fleet operators, insurance companies, Road operators	raw data /aggregated data		x x x x x x x x			near	no	service fee - mobility service providers, taxi operators, Fleet opertors, insurance companies, are the data owners. There is need of agreement between the above entities and the public authorities (Road operators)		Traffic management and control strategies (Improve the predication model out comes) for operators Congestion detection, Adaptive and dynamic control, Collective routing, Improved level of services (LOS) for operators Advanced traffic information services: Incident detection Road Hazard warning
		Time stamp	-,-	-,-	-,-	-,-	-,-		x x x x x x x x			near				
		Position	-,-	-,-	-,-	-,-	-,-		x x x x x x x x			near				
		Speed	-,-	-,-	-,-	-,-	-,-		x x x x x x x x			near				
		Heading	-,-	-,-	-,-	-,-	-,-		x x x x x x x x			near				
PVD	Data coming from coopertaive systems V2V and V2I communication through long range communication 3G, LTE and short range communication DSRC. Data type speed, heading, acceleration, position. PVD is referred as actively collected vehicle probe data via C-ITS infrastructure or via cellular networks. PVD data elements include: 1. vehicle data elements: time stamp, position, motion (speed, heading, acceleration), ABS/ESC activity 2. weather data: rain sensor, wiper status, headlights, ambient air pressure, temperature	Vehicle ID (anonymized)	Vehicles, Mobility service providers	Service provider / road operators / traffic managers	every minute	mobility service provider / road operator	raw data		x x x x x x x x			mid	CAM, CEN/ISO DT8.2 (in development)	service fee from road operators to telecom providers, none in case of dedicated C-ITS infrastructure, compensation of road operators		Individual routing Traffic management and control strategies (Improve the predication model out comes) Adaptive and dynamic control Collective routing Improved level of services (LOS) C-ITS services (Traffic light service such as speed advice, count down, Road hazard warning, In-vehicle signage) Special vehicle priority (PT priority, heavy vehicles, emergency vehicles using CAM messages) More detailed information on the current state of traffic Speed profiles & Traffic Information Services for users/drivers; for OEMs; for Road Operators and Public Authorities
		Time stamp	-,-	-,-	-,-	-,-	-,-		x x x x x x x x			mid				
		Position	-,-	-,-	-,-	-,-	-,-		x x x x x x x x			mid				
		Speed	-,-	-,-	-,-	-,-	-,-		x x x x x x x x			mid				
		Heading	-,-	-,-	-,-	-,-	-,-		x x x x x x x x			mid				
		Vehicle class	-,-	-,-	-,-	-,-	-,-		x x x x x x x x			mid				
		Acceleration	-,-	-,-	-,-	-,-	-,-		x x x x x x x x			mid				
		ABS/ESC status	-,-	-,-	-,-	-,-	-,-		x x x x x x x x			mid				
		Wiper status on/off	-,-	-,-	-,-	-,-	-,-		x x x x x x x x			mid				
		Headlights status on/off	-,-	-,-	-,-	-,-	-,-		x x x x x x x x			mid				
		Ambient temperature sensor status/value	-,-	-,-	-,-	-,-	-,-		x x x x x x x			mid				
		Ambient air pressure sensor status/value	-,-	-,-	-,-	-,-	-,-		x x x x x x x			mid				
Event driven cooperative vehicle data	Event driven vehicle data (DENM messages) for information about traffic incidents, like roadwork warning, broken vehicle warning, emergency brake activation, traffic jam warning. Event driven vehicle data received via a C-ITS infrastructure (DENM messages) for information about traffic incidents	broken vehicle warning	Vehicles	road operators	event driven	road operator	raw data			x x x x x		mid	in progress	compensation for sharing data		Detection of traffic relevant incidents
		Traffic jam warning	-,-	-,-	-,-	-,-	-,-			x x x x x		mid	in progress			
Post processed traffic data	Real-time traffic data and route guidance provided by mobility service providers. Data provided by mobility service providers: travel time estimation, traffic jam, accidents	Level Of Service (LOS)	mobility service providers, road operators	road operators, vehicles, OEMs	every 2 minutes	mobility service provider	aggregated data		x x x x x x x x			near	no	service fee		Speed profiles & Traffic Information Services for users/drivers; for OEMs; for Road Operators and Public Authorities
		travel time estimation	-,-	-,-	-,-	-,-	-,-		x x x x x x x			near	no			
		Alternate route guidance	mobility service providers													
		Traffic Jam Tail Warning	-,-													
Individual route plans	Origin-Destination (OD) route plan provided by drivers (pre-trip, anonymized): origin, destination, main waypoints. OD route plan provided by drivers (pre-trip, anonymized)OD data does not need to breach personal privacy: OD data can be segmented into road network grids with different sizes depending on need for accuracy. The routing information provided back to the drivers is part of the aggregated traffic data elements	Vehicle ID	Vehicles	Mobility service providers, road operators	pull every 5 minutes / event driven	drivers, mobility service providers	raw data			x x x x x x		mid	no	service fee in case of route plan provision to road operators via service providers		network deployment plan and/or city structure plan incorporating the basic traffic behavior information including traffic O-D demand. OD data does not need to breach personal privacy: OD data can be segmented into road network grids with different sizes depending on need for accuracy. Traffic management and control strategies (Improve the predication model out comes) for operators Congestion detection, Adaptive and dynamic control,
		Trip origin (GPS position or map coordinates)	-,-	-,-	-,-	-,-	-,-			x x x x x		mid	no			
		Trip destination (GPS position or map coordinates)	-,-	-,-	-,-	-,-	-,-			x x x x x		mid	no			
		Main trip waypoints (GPS positions or map coordinates)	-,-	-,-	-,-	-,-	-,-			x x x x x		mid	no			
Stationary detectors data	Includes Bluetooth detectors	Detector ID	Road operator	Mobility service provider, Traffic managers, road operators	Every minute	Road operator	aggregated data			x x x x		near	partly	compensation for sharing data		Traffic management and control strategies Congestion detection, Adaptive and dynamic control, Collective routing, Congestion detection, Collective routing
		Vehicle ID	-,-	-,-	-,-	-,-	-,-			x x x x		near	partly	-,-		
		Direction	-,-	-,-	-,-	-,-	-,-			x x x x		near	partly	-,-		
		Speed	-,-	-,-	-,-	-,-	-,-			x x x x		near	partly	-,-		
		Heading	-,-	-,-	-,-	-,-	-,-			x x x x		near	partly	-,-		
		Vehicle class	-,-	-,-	-,-	-,-	-,-			x x x x		near	partly	-,-		
		Traffic count	-,-	-,-	-,-	-,-	-,-			x x x x		near	partly	-,-		
		Time Gap (between vehicles)	-,-	-,-	-,-	-,-	-,-			x x x x		near	partly	-,-		
Traffic management measures according to traffic management plans	Traffic managers' plans to deal with incidents, events, the environment. Should include information about goals, level of bindingness, reason / data basis used for activating the plan, references to (TMC-) reports about events that caused activation of the plan	Alternate route guidance	road operators	Mobility service providers	tbd	road operators	Datex II			x x x x x		near	available for Datex II	compensation for operational costs		Advanced Navigation services taking TMPs into account
		VMS Speed limit	road operators	Mobility service providers	tbd	road operators	Datex II			x x x x		near	available for Datex II	compensation for operational costs		Advanced Navigation services taking capacity into account for prediction purposes
		VMS No overtaking	-,-	-,-	-,-	-,-	-,-						-,-	-,-		
	Examples: centrally orchestrated changes in traffic light phases,	VMS Snow chains compulsory	-,-	-,-	-,-	-,-	-,-						-,-	-,-		

Category	Description	Data element	(c1)	(c2)	(c3)	(c4)	(c5)																	(timing)	(c6)	(c7)		Use case
Traffic management relevant measures	activation / deactivation of green waves, opening / closing of lanes or shoulder lanes, reversal of directions, network management by VMS	VMS General warning	-.-	-.-	-.-	-.-	-.-																		-.-	-.-	-.-		
		VMS Warning slippery road	-.-	-.-	-.-	-.-	-.-																		-.-	-.-	-.-		
		VMS Warning strong side wind	-.-	-.-	-.-	-.-	-.-																		-.-	-.-	-.-		
		VMS Warning road works	-.-	-.-	-.-	-.-	-.-																		-.-	-.-	-.-		
		VMS Warning traffic jam	-.-	-.-	-.-	-.-	-.-																		-.-	-.-	-.-		
		VMS Lane closed	-.-	-.-	-.-	-.-	-.-																		-.-	-.-	-.-		
		VMS Road closed	-.-	-.-	-.-	-.-	-.-																		-.-	-.-	-.-		
Scheduled events	Like construction work, demonstrations, closures – but with more detail and quality than today, and beyond TMC	road works dates	road operators	Mobility service providers	event driven	road operators	Datex II				x	x	x	x	x									near	available for Datex II	compensation for operational costs		Navigation services
		road works lane closures	-.-	-.-	-.-	-.-	-.-				x	x	x	x	x									-.-	-.-	-.-		-.-
Safety critical messages	Broadcasted to any operable service provider, messages according to EU road safety-related minimum universal traffic information service	temporary slippery road;	road operators	Mobility service providers	event driven	road operators	raw data /aggregated data	x	x		x	x		x										near				Traffic provision enhancement, including safety related info
		animal, people, obstacles, debris on the road	-.-	-.-	-.-	-.-	-.-	x	x		x	x		x										near				
		unprotected accident area	-.-	-.-	-.-	-.-	-.-	x	x		x	x		x										near				
		short-term road works	-.-	-.-	-.-	-.-	-.-	x	x		x	x		x										near				
		reduced visibility	-.-	-.-	-.-	-.-	-.-	x	x		x	x		x										near				
		wrong-way driver	-.-	-.-	-.-	-.-	-.-	x	x		x	x		x										near				
		unmanaged blockage of a road	-.-	-.-	-.-	-.-	-.-	x	x		x	x		x										near				
		exceptional weather conditions	-.-	-.-	-.-	-.-	-.-	x	x		x	x		x										near				
Social media data	Check-in service of social networks & Individual Geolocated tweets. Data includs event detection, position, Time stamp, speed, trip type (single, shared), aggregation level highly dependent on the engineering of the collection tools	Event detection	End user as a service provider/ part of the loop		event driven		aggregated data		x	x		x					x		x					mid				Individual multimodal coaching (e.g. Park and ride), Car sharing,
		Position (WGS84)	-.-		-.-		-.-	x	x		x					x		x					mid				
		Timestamp	-.-		-.-		-.-	x	x		x					x		x					mid				
		Speed	-.-		-.-		-.-	x	x		x					x		x					mid				
		Trip type (single, shared)	-.-		-.-		-.-	x	x		x					x		x					mid				