

# Data for Road Safety Consortium



## Self-Declaration for Obstacle on Road Warning Data



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# Document Version Control









Version	Date	Authors	Comments
1.0	20/10/2023	Group C	First Issue

# Introduction

The mission of the European Data for Road Safety is to improve road safety by maximizing the reach of safety-related traffic information powered by safety data generated by vehicles and infrastructure.

The consortium consists of National Road Authorities, Vehicle Manufacturers and service providers.

The consortium members have signed a MULTI PARTY AGREEMENT to share data on a reciprocal basis to comply with the EU Directive 886/2013, which gives the following 8 data categories:

 <p>Unprotected accident area</p>	 <p>Exceptional weather conditions</p>
 <p>Animal, people, obstacles, debris on the road (broken - down vehicle)</p>	 <p>Short - term road works</p>
 <p>Temporary slippery road</p>	 <p>Wrong - way driver</p>
 <p>Reduced visibility</p>	 <p>Unmanaged blockage of a road</p>

The purpose of this self-declaration is to give publishers of the obstacle on road warning data guidance about expected quality levels and label their data as such. Consumers of the data can then easily perceive the expected quality level.

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# Definitions

**Event** – Anomaly that has material impact on traffic. Attributes include timeliness and location (including start and end point and lane position). Start point for safety, end point for ADAS functions, lane position to help with exact position on carriageway.

**Message** – Single object that creates, updates or terminates an event.

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# Use Case Definition

“**Animal, people, obstacles, debris on the road**” means any situation where animals, debris, obstacles or people are positioned on the road where one would not expect to find them so that an emergency manoeuvre might be required to avoid them.”

- (EC Delegated Regulation No 886/2013)

The following messages belong to the category “Obstacle on Road”:



**Animal/people/obstacles/  
debris on the road**



**Objects on the road**



**Obstructions on the road**



**Shed loads**



**Fallen trees**



**Avalanches**



**Rockfalls**



**Landslips**



**Animals on the road**



**People on roadway**



**Children on roadway**



**Cyclists on roadway**



Large animals on roadway



Herds of animals on roadway



People throwing objects onto the road



Broken down vehicles



Vehicle on fire

(Safety related message sets – Selection of DATEX II Situations, DENM and TPEG2-TEC Causes and TMC Events for EC high level Categories)

## Quality Level

For each provided L3 event the DATEX II field “probabilityOfOccurrence” should be used including one of the two parameters:

### Level A:

**Certain** – Obstacles on road alert with a high confidence level (e.g. feedback from road operator, IoT device, camera, traffic flow). Can be used directly for informing the end user.

### Level B:

**Probable** – Obstacles on road alert with a lower confidence level. Can be used as supporting data.

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# Triggering Conditions

## Stopped vehicle event

Reporting a broken down or stopped vehicle event, all of the following triggering conditions should be fulfilled:

- the vehicle has enabled hazard lights;
- the vehicle is stationary;
- the Triggering Timer has expired.

When the vehicle is stationary, the Triggering Timer shall be set to 30 s and started counting down.

The Triggering Timer shall be further reduced by 10 s for each of the following conditions that is fulfilled:

- a. the automatic transmission (AUT) is set to 'park' for at least 3 s;
- b. the gear box is set to idle for at least 3 s;
- c. the parking brake is enabled for at least 3 s;
- d. an arbitrary number of the seatbelt buckles change from 'connected' to 'disconnected' for at least 3 s;

The Triggering Timer shall be set to 0s if at least one of the following conditions is fulfilled:

- e. an arbitrary number of doors are open for at least 3 s;
- f. the ignition terminal is switched from on to off for at least 3 s;
- g. the boot is open for at least 3 s;
- h. the bonnet is open for at least 3 s.

- (Based on Car2Car Communication Consortium Basic System Profile – Stationary Vehicle)

## Quality Level mapping

### Level A:

**Certain** – The vehicle is stationary, has enabled hazard lights and the triggering timer has reached 0.

### Level B:

**Probable** –The triggering timer is actively counting down.

## Broken down vehicle event

The following precondition shall be satisfied when this use case is triggered: A tell-tale, indicator, or message is shown to the driver, requiring the driver to stop the vehicle because serious damage to the engine or other equipment is immediate or imminent.

Reporting a broken down vehicle event, all of the following triggering conditions should be fulfilled:

- the vehicle has enabled hazard lights;
- the vehicle is stationary;
- the Triggering Timer has expired.

When the vehicle is stationary, the Triggering Timer shall be set to 30 s and started counting down.

The Triggering Timer shall be further reduced by 10 s for each of the following conditions that is fulfilled:

- a. the automatic transmission (AUT) is set to 'park' for at least 3 s;
- b. the gear box is set to idle for at least 3 s;
- c. the parking brake is enabled for at least 3 s;
- d. an arbitrary number of the seatbelt buckles change from 'connected' to 'disconnected' for at least 3 s;

The Triggering Timer shall be set to 0 s if at least one of the following conditions is fulfilled:

- e. an arbitrary number of doors are open for at least 3 s;
- f. the ignition terminal is switched from on to off for at least 3 s;
- g. the boot is open for at least 3 s;
- h. the bonnet is open for at least 3 s.

- (Based on Car2Car Communication Consortium Basic System Profile – Stationary Vehicle)

### Quality Level mapping

#### Level A:

**Certain** – At least one of conditions **e) - h)** is fulfilled.

#### Level B:

**Probable** – None of conditions **a) - h)** are fulfilled.

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# Vehicle detected obstacle

- a. **Single low**-confidence detection of **unspecified** obstacle on road with a longitudinal precision of  $\pm 50$  meters and lateral precision of  $\pm 5$  meters.
- b. **Multiple low**-confidence detections of **unspecified** obstacle on road with a longitudinal precision of  $\pm 50$  meters and lateral precision of  $\pm 5$  meters.
- c. **Single high**-confidence detection of **specified** obstacle on road with a longitudinal precision of  $\pm 10$  meters and lateral precision of  $\pm 3$  meters.
- d. **Multiple high**-confidence detection of **specified** obstacle on road with a longitudinal precision of  $\pm 10$  meters and lateral precision of  $\pm 3$  meters.

“Specified obstacle” in this context refers to the categories mentioned in chapter 3.

## Quality Level mapping

### Level A:

**Certain** – Conditions **c)** or **d)** are fulfilled.

### Level B:

**Probable** – Conditions **a)** or **b)** are fulfilled.

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# Traffic Management generated events

Road Authorities direct sources, crowd sourced or other third-party data that a Road Authority processes to use in their traffic management data including but not limited to the following:

- a. Reports from public via telephone or crowd sourced information
- b. Reports by representative of NRA or trusted authority (e.g. police, tow trucks)
- c. Identified by a monitoring camera
- d. Identified by stopped vehicle detection equipment

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# Quality attributes

Whenever an event related to an obstacle on road occurs, indicated by the triggering conditions listed above, the following quality attributes should apply:

- Maximum delay between event detection and message publishing must be
  - less than 180 seconds (Level A)
  - within 15 minutes (Level B)
- Location of start- and endpoint should have a maximum offset of
  - 25 m (Level A)
  - 1 km (Level B)
- 95% of the time the location should be accurate
- Published event should include the affected lanes and if hard shoulder is affected as well



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# Termination Conditions

Whenever an event related to an obstacle on road is terminated, indicated by a complete removal of all items, the following termination criteria should apply:

- ▶ Maximum delay until termination message is published
  - 180 seconds (Level A)
  - 15 minutes (Level B)

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# Updates

Whenever an event related to an obstacle on road is updated e.g. location is changed, the following update criteria should apply:

- ▶ Maximum delay until update message is published
  - 180 seconds (Level A)
  - 15 minutes (Level B)

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# Message parameters

Every published message requires the following message parameters:

- Locations of obstacles on road events should be published as openLR line strings or openLR point along line
- Timestamps should follow the common DATEX II standard
- “probabilityOfOccurrence” parameter should be always populated (following section 3)

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# References

TISA, DFRS, DATEXII, C2CC (2021), “Safety related message sets – Selection of DATEX II Situations, DENM and TPEG2-TEC Causes and TMC Events for EC high level Categories”, ITSTF20001 v1.5  
[https://tisa.org/wp-content/uploads/ITSTF20001\\_SafetyrelatedMessage-Sets-DATEXII\\_DENM](https://tisa.org/wp-content/uploads/ITSTF20001_SafetyrelatedMessage-Sets-DATEXII_DENM)

Car2Car Communication Consortium Basic System Profile – Stationary Vehicle  
[https://www.car-2-car.org/fileadmin/documents/Basic\\_System\\_Profile/Release\\_1.6.4/C2CCC\\_RS\\_2006\\_StationaryVehicle.pdf](https://www.car-2-car.org/fileadmin/documents/Basic_System_Profile/Release_1.6.4/C2CCC_RS_2006_StationaryVehicle.pdf)



WSP has been acting as Tech Group Chair and coordinator for DFRS at the time of authoring this publication, as such WSP has provided the template for this publication.