

## **Terms and Definitions Developed under the Draft FRAV Guidelines on ADS Safety Requirements**

FRAV submits the following draft terms and definitions to GRVA as a reference that may be informative for other ADS-related activities underway within WP.29. Under the draft ADS safety requirements developed by FRAV, an ADS must be capable of performing the entire Dynamic Driving Task (DDT) within the Operational Design Domain (ODD) of its feature(s). This document provides an explanation regarding the tactical and operational functions that comprise the DDT.

1. “*Automated Driving System (ADS)*” means the hardware and software that are collectively capable of performing the entire DDT on a sustained basis regardless of whether it is limited to a specific operational design domain (ODD).
2. “*(ADS) feature*” means an application of ADS hardware and software designed specifically for use within an ODD.
3. “*(ADS) function*” means an ADS hardware and software capability designed to perform a specific portion of the DDT.
4. “*ADS vehicle*” means a vehicle equipped with an ADS.
4. “*Behavioural competency*” means an expected and verifiable capability of an ADS feature to operate a vehicle within the ODD of the feature.
5. “*Driver*” means a human being who performs in real time part or all of the DDT.
6. “*Dynamic Driving Task (DDT)*” means the real-time operational and tactical functions required to operate the vehicle in on-road traffic.
7. “*(ADS) fallback response*” means an ADS-initiated transition of control or an ADS-controlled procedure to place the vehicle in a minimal risk condition.
8. “*Fallback user*” means a user designated to assume the role of driver upon completion of a transition of control.
9. “*Minimal Risk Condition (MRC)*” means a stable and stopped state of the vehicle that reduces the risk of a crash.
10. “*Operational Design Domain (ODD)*” means the operating conditions under which an ADS feature is specifically designed to function.
11. “*Operational functions*” refer to basic capabilities such as to control lateral and longitudinal motion of the vehicle.
12. “*Other road user (ORU)*” means any entity using a roadway and capable of safety-relevant interaction with an ADS vehicle.

13. “*Priority vehicle*” means a vehicle subject to exemptions, authorizations, and/or right-of-way under traffic laws while performing a specified function.
14. “*Real time*” means the actual time during which a process or event occurs.
15. “*Road-safety agent*” means a human being engaged in directing traffic, enforcing traffic laws, maintaining/constructing roadways, and/or responding to traffic incidents.
16. “*Tactical functions*” refer to the real-time planning, decision, and execution of manoeuvres.
17. “*Traffic scenario*” means a description of one or more real-world driving situations that may occur during a given trip.
  - 17.1. “*Critical scenario*” means a traffic scenario representing unusual and/or unexpected objects, object behaviours, and/or road conditions.
  - 17.2. “*Failure scenario*” means a traffic scenario representing a system failure that compromises the capability of the ADS to perform the entire DDT.
  - 17.3. “*Nominal scenario*” means a traffic scenario representing usual and/or expected objects, object behaviours and/or road conditions.
18. “*Transition of control (TOC)*” means a procedure by which the ADS hands over dynamic control of the vehicle to the fallback user such that the fallback user is given the role of driver upon completion.
19. “*(ADS) User*” means a human being using an ADS where dynamic control of the vehicle is entirely maintained on a sustained basis by the ADS performance of the DDT.
20. “*Useful life (of an ADS vehicle)*” means the duration during which an ADS vehicle is in an operational state under which it may be driven on public roads regardless of the operational state of the ADS.

## Explanation of the Dynamic Driving Task

1. “Dynamic driving task” (DDT), in the context of an ADS-equipped vehicle, means all of the real-time operational and tactical functions required to operate the vehicle, excluding strategic functions such as trip scheduling and selection of destinations and waypoints.
  2. An ADS must have the means to perform all DDT functions (i.e., the entire DDT) on a sustained basis within the Operational Design Domain (ODD), if any, of the ADS feature(s).
  3. DDT functions can logically be grouped into three general categories:
    - Perception,
    - Planning and Decision, and
    - Control.
  4. The perception category includes:
    - Monitoring the driving environment via object and event detection, recognition, and classification, which includes:
      - Perceiving other vehicles and road users, the roadway and its fixtures, objects in the vehicle’s path, and relevant environmental conditions,
      - Sensing the ODD boundaries, if any, of the ADS feature, and
      - Positional awareness.
  5. The planning and decision category includes:
    - Prediction of actions of other road users,
    - Response preparation, and
    - Manoeuvre planning.
  6. The control category includes:
    - Object and event response execution,
    - Lateral vehicle motion control,
    - Longitudinal vehicle motion control, and
    - Enhancing conspicuity via lighting, signalling, etc.
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