



中国汽车技术研究中心有限公司

China Automotive Technology and Research Center Co., Ltd.

FRAV 3rd Task Report

“Other Road User”

2021.05.20

目录

Contents

- 1 General Workplan and Milestone
- 2 Consensus Present to FRAV
- 3 ORU cases involving human interactions
- 4 Examples of ORU Case Properties

General Workplan and Milestone

For each specific ORU that ADS could encounter during DDT, our task should provide the following information according to the steps:

Step 1 (May): Define a term for each ORU, based on its properties and safety concerns associated with ADS

Step 2 (June): Propose safety needs of ORU based on an analysis of the physical, functional, and/or behavioral properties of the ORU cases(example raised in annex 2)

Step 3 (July): Define the general ADS safety requirements corresponding to ORU's safety needs, if necessary, complete terms and definitions for particular categories used in the requirements.

Consensus Present to FRAV

1. There are many different ORU relevant to ADS safety.
2. Five general categories of ORU have been identified:
 - Vehicles
 - Pedestrians and other VRU
 - Cyclists
 - Animals
 - Inanimate obstacles
3. “Vehicles”, “pedestrians”, and “cyclists” involve interactions with human beings and therefore require especially close attention.
4. The ORU task has produced 42 cases representative of these ORU (Annex 1).
5. The ORU task will also address the general cases of “animals” and “inanimate obstacles”.

Consensus Present to FRAV

6. ORU can be described in terms of **physical, functional, and/or behavioral properties** relevant to ADS interactions and safety (examples in Annex 2).
7. The ORU task will consider the properties of the ORU cases in order to understand **common properties** and to note properties that may be specific to **particular cases**.
8. These properties will be used to determine **safety needs relevant to the common properties and the particular cases** for the June FRAV session.
9. In accordance with the FRAV work plan, these safety needs would be used to determine **general safety requirements** relevant to ORU safety for **the July session**.
10. As needed to ensure clear requirements, terms and definitions for categories of ORU would be proposed.

Annex 1: ORU cases involving human interactions

Category	Subclass	Enumerations		Further views
vehicle	Common Vehicle/ Emergency Vehicle/ Special Vehicle	<ol style="list-style-type: none"> 1. Passenger cars 2. Buses 3. School buses 4. Trams 5. Goods vehicles 6. Dangerous goods vehicles 7. Long, large vehicles 8. Vehicles transporting protruding cargo 9. Vehicles towing trailers 10. Vehicles towing combination trailers 11. Special convoys, slow-moving vehicles 	<ol style="list-style-type: none"> 12. Caravans/recreational vehicles, including towing trailers 13. Agricultural vehicles 14. Fire trucks 15. Ambulances 16. Police vehicles 17. Rescue vehicles 18. Street sweepers 19. Road sprinklers 20. Training cars 21. Cranes, NRMM 22. Other automated/connected (V2V) vehicles 23. Disabled (broken down) vehicles 	<ol style="list-style-type: none"> 1. The breakdown depends upon the physical, functional, and behavioral properties of the subsets and their relevance to ADS safety and performance. 2. Traffic laws may be relevant to the definition of ORU categories. 3. Consider the diversity of cases in order to identify common properties that can be the basis for defining categories.

Annex 1: ORU cases involving human interactions

Category	Enumerations	
Pedestrian	<ol style="list-style-type: none">1. Child pedestrian2. Adult pedestrian3. Persons with disabilities4. Hearing-impaired pedestrians5. Visually-impaired pedestrians6. Road-work crews	<ol style="list-style-type: none">7. Police officer (on foot)8. Police officer (in vehicle)9. Persons directing traffic10. Persons pushing strollers11. Persons in wheelchairs12. Motorists on the roadside (stranded vehicles, changing tire)

Category	Enumerations	
Cyclist	<ol style="list-style-type: none">1. Bicyclists2. e-Bike users3. Skaters (roller, skateboard)4. Motorcycles	<ol style="list-style-type: none">5. Mopeds/scooters6. Powered three-wheelers7. Quadricycles

ORU cases of inanimate obstacles

Category	Enumerations	Further views
Animals	Small size animals	Neither “animals” nor “obstacles” are willful road users or would be expected to consciously interact with an ADS vehicle. Therefore, need FRAV to confirm whether these categories need to be addressed under “other road users”.
	Medium size animals	
	Large size animals	
Category	Enumerations	
Obstacles	Stationary vehicles	
	Debris	
	Construction equipment	

Annex 2: Examples of ORU Case Properties

ORU cases	Common Properties			Special Properties
	Physical	Functional	Behavioral	
Fire trucks	Special audible and light signals and visual markings to indicate their special status.	These vehicles have authorization to exceed speed limits so they may arrive as quickly as possible at their destinations. Under traffic laws, other vehicles are often required to yield the right of way to these vehicles.	These vehicles in exercising their functions may move at higher speeds and navigate quickly through traffic, such as passing through intersections against a red light.	
Ambulances				
Rescue vehicles				
Police vehicles				Law enforcement : <ul style="list-style-type: none"> • Signal a vehicle to pull to the side of the road and stop; • Determine the behavior of an individual in the driver's seat; • Determine the necessity of the presence of a human driver • ...