



Results from Real Life Testing

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Objectives



How and what was tested



Results



Conclusion

- Platooning Support Function: is it working as defined?
- Validate the specifications and requirements to accelerate the uptake into standardisation
- Prepare and execute testing:
 - scenarios
 - data management
 - test management
- Evaluate the results of the testing and give update on specifications and requirements

How testing was setup



- Preparation
 - Validation methodology
 - Data management plan
- Execution
 - Testing on track: dual/triple/quadruple- and multi-brand
 - Testing on public road
 - Demonstration (September 2021)
- Evaluation
 - Validation of testing
 - Technical evaluation



Testing methodology

Scenario Database Creation



Use Cases &
Specifications

V2V communication

Infrastructure
interactions

Logical Scenarios &
Parameter Space

Allocation
of
Scenarios

Test Plan Definition & Execution

Dual/triple/quadruple-brand
Tests

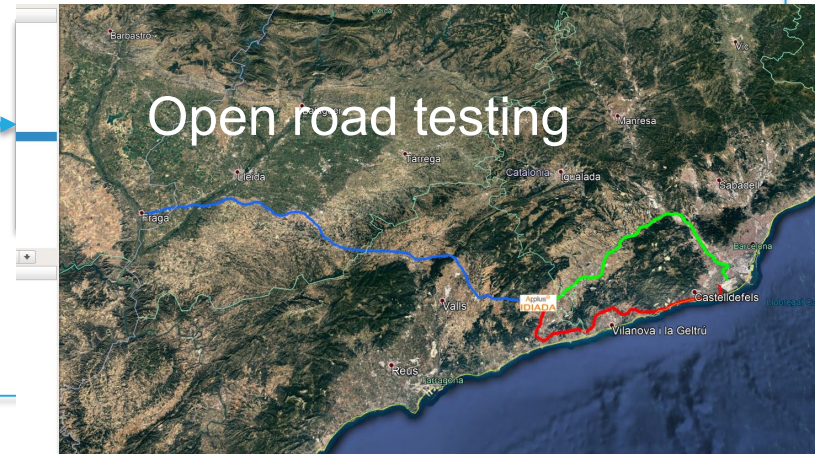
Join from behind
Vehicle cut-in
Emergency braking
...

Multi-brand Test Track

Open road testing

Test Evaluation

Evaluated
scenarios



Dual / Triple / Quadruple testing

9-12 March 2020	AstaZero, Sweden	Volvo group, Scania, MAN
14-16 September, 2020	Helmond, Netherlands	DAF, Daimler, ZF/Wabco
23-25 March, 2021	Aldenhoven, Germany	DAF, IVECO, MAN (comm. only)
14 – 18 June, 2021	AstaZero, Sweden	Scania, Volvo group
21-25 June, 2021	Papenburg, Germany	DAF, Daimler, IVECO, MAN
20 – 22 July, 2021	Helmond, Netherlands	DAF, Daimler
16 – 20 August, 2021	AstaZero, Sweden	Scania, Volvo group
23 – 27 August, 2021	Jeversen, Germany	Daimler, IVECO
06-23 September 2021	IDIADA, Spain	DAF, Daimler, IVECO, MAN, Scania, Volvo Group

done in COVID
times!

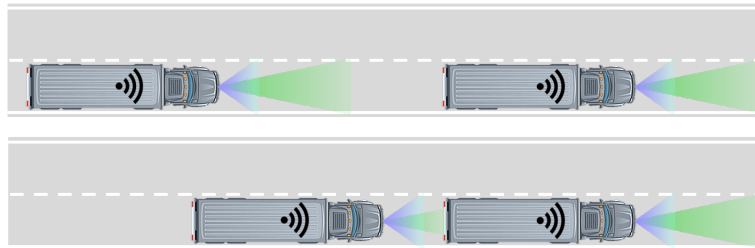


Results

All tested scenarios were performed well:

- Join from behind

- Single vehicle
- Platoon



- Steady State

- Constant speed
- Speed & gap variations

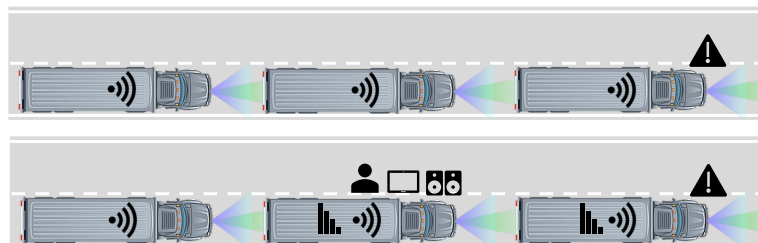
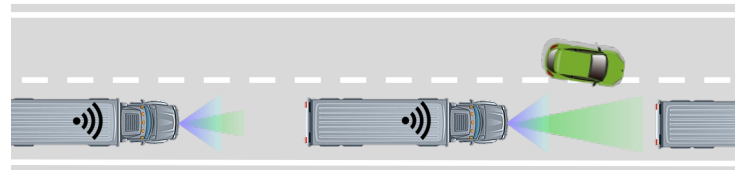
- I2V interaction

- Cut-in / cut-through / cut-out

- Disengage

- Leave
- Split

- Emergency Braking



Lessons learnt from testing

- Testing with more than three different trucks requires much coordination
- Parallel to system design, also system logging must be taken into account
- The infrastructure of the highway (e.g. toll gates, bridges) and real traffic posed an interesting challenge for testing the platooning system



Conclusion Technical Evaluation

- The Platooning Support Function as defined, implemented and tested in ENSEMBLE is technically feasible
 - Use cases
 - Specifications and Requirements
 - Communication Protocol with Security
- Results are being taken into standardisation





Thank you for your attention



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platooningensemble.eu