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P2 - Public summary report



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OBJECTIVES

Co-operative systems have just recently started to be explored in the context of automated driving, mainly for the purpose of exchanging position and sensor data. The next step in the exploitation of co-operative systems is maneuvering negotiation. Advised maneuvering opens up the possibility of involving also manually driven cars into such co-operation, advising drivers when to initiate a lane-change or when to make space for a merging-in vehicle. However it takes careful system-level design to extend cooperative maneuvering control from handling just well-defined groups, such as platoons, to also managing generic traffic flows. It is the scope of AutoNet2030 to advance previous research results regarding the automation of vehicle platoons, establishing controlled maneuvering over generic traffic flows.

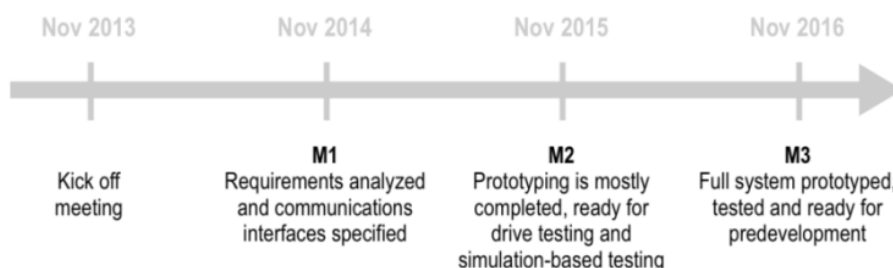
With the growth of urban agglomerations, drivers more frequently need to perform lane changes in congested traffic situations or at unfamiliar locations, which is a source of stress and potential traffic incidents. As urban centers grow, guided and/or automated maneuvering becomes ever more important for traffic safety and efficiency reasons. Furthermore, as automated vehicles become deployed in significant numbers, the interactions among them must be guided by a well-defined and interoperable set of rules.

The main objective of the AutoNet2030 project is therefore to research and validate procedures and algorithms for interaction control among co-operative vehicles, including both automated and manually driven vehicles. The intention is to define a maneuvering control approach that is very scalable with respect to the number of equipped vehicles, is capable of dealing gracefully with failures, and supports both early and late deployment stages of fully automated vehicles.

THE MAIN FOCUS

The AutoNet2030 project shall provide the Automated driving research community with the following results:

- **Specifications of V2X messages for automated driving, also feeding ETSI ITS standardization**
- **Development of maneuvering control algorithms for cooperative automation**
- **Development of cost-effective on-board architecture for integrated sensing and communications**

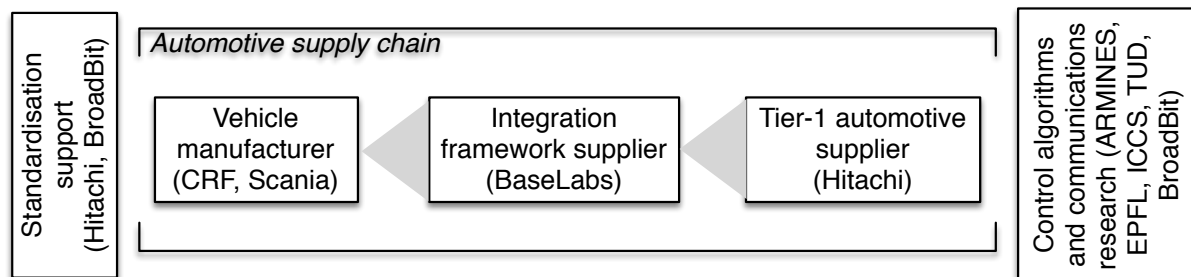


THE PROJECT CONSORTIUM AND WORK PLAN

Project duration: November 1, 2013 - October 31, 2016.

The following figures show the project consortium according to the role of partners and by business domain. The AutoNet2030 partners cover the essential parts of the automotive supply chain.

Participant no.	Participant organisation name	Country
1 (Coordinator)	Institute of Communication & Computer Systems	Greece
2	BaseLabs	Germany
3	CRF	Italy
4	ARMINES	France
5	Scania AB	Sweden
6	Hitachi Europe Ltd.	United Kingdom
7	EPFL	Switzerland
8	Technical University of Dresden	Germany
9	BroadBit Energy Technologies	Slovakia



The planned project work involves approximately 400 person-months of total project effort. The work began by collecting Use cases and requirements, and then progressed this year through specifications and prototyping. The final phases of the project involve system integration of prototyped components, with extensive validation at the test sites.

POTENTIAL IMPACTS

The generally anticipated route to fatality-free road transportation relies on fully automated vehicles, which are impossible to crash under normal operation. Employing precise longitudinal and lateral vehicle control, the maneuvering control algorithm that shall be developed in AutoNet2030 is intended to facilitate exactly such fatality-free road traffic through precluding dangerous incidents from arising. The potential AutoNet2030

impact on vehicle safety is therefore a significant contribution to the elimination of the current road fatalities along with their associated economic burden.

Furthermore, as a result of the cooperative speed adjustment application developed in AutoNet2030, the energy efficiency of the overall traffic flow may be improved.

KEY RESULTS AFTER THE FIRST YEAR

The main achieved results after the first project year include the following:

- Cooperative automated driving use cases and requirements have been developed
- System design specifications for automated driving support are almost complete
- Specifications for the enhancement to existing cooperative communication protocol standards for automated driving support are almost complete

KEY RESULTS AFTER THE SECOND YEAR

The main achieved results after the first project year include the following:

- The project implementation has been completed, and the system integration is ongoing
- The functionality and performance of the implemented technology components has been tested both through laboratory test cases and simulations
- Demonstrated the implementation of cost-optimized automated driving technology, making it more widely deployable

THE MAIN EXPECTED REMAINING RESULTS

The main expected results for the remaining two years include the following:

- Completion of system integration and field testing on test tracks
- Demonstration and validation of inherently safe cooperative maneuvering control algorithms, including also mixed scenarios of manually driven / automated vehicles
- Standardized use of 5.9 GHz V2V communications at service of automated driving

The project website is found at autonet2030.eu, where the public deliverable documents are also published.