“Ageing populations, reducing CO2 emissions and improving road safety are the main drivers for developing new driver assistance systems. Now after introducing a number of these solutions to the market, AdaptIVe is taking the next step toward the development of automated driving applications for daily traffic while considering the needs of new generations of drivers.

With the AdaptIVe applications, vehicles will react more effectively to external threats, will be resilient to different types of human and machine errors and dynamically adapt the level of automation according to the current situation.

Today’s legal framework for automated driving is based on the prerequisite that safe driving is the driver’s sole responsibility. With a move towards automation in driving, controllability by the driver at all times may no longer be a basic design criterion. The requirements set up by the legal framework must provide answers for the ramifications of the fundamental change.

To allow consistent terminology, the project is defining a classification scheme for automated systems and typical scenarios that can occur when using an automated driving system. Legal questions will be raised based on this naming scheme.

AdaptIVe comprehensively reviews the current legal frameworks in various EU member states and assesses their applicability to automated systems. The review will also cover current activities in the United States. The examination of the legal framework will detail the relevant aspects found during the review.

As long as there are no fully autonomous vehicles, systems must always interact with humans at different times and to varying degrees. AdaptIVe investigates the best modes of cooperation between drivers and automated applications in different scenarios. The system design takes into account divergent intentions and actions. AdaptIVe provides guidelines that specify how, where and when information, warnings and interventions should be implemented. Guidelines for the interface and signals, regardless of product type, will be provided for the development of the various functions.

Existing evaluation methods for Advanced Driver Assistance Systems (ADAS) do not cover the requirements for the evaluation of automated driving functions. Therefore new comprehensive applications and test methods are required. AdaptIVe defines specific evaluation methodologies for automated driving functions.

In a synergistic framework, the test and evaluation framework considers the technical, user-related and in-traffic behavior evaluation as well as an impact analysis focused on safety and traffic efficiency. Thereby, the framework includes a specification of methodologies, test procedures, key indicators and experiment design, together with applicable test tools. The impact analysis is being conceived with a pan-European perspective.

Ultimately, the framework and new methodologies will be applied to a set of selected representative functions in order to verify and validate the developed evaluation approaches.
AdaptIVe // Improving automated driving

With 28 partners from all over Europe and 25 million euros budget, AdaptIVe is advancing the technical performance of automated driving systems for cars and trucks. Taking automation to higher levels, the project is aimed at making driving safer, more comfortable and reducing congestion and fuel consumption. The project tests and develops applications for typical traffic scenarios on motorways, in urban environments and for close-distance manoeuvres, covering all levels of traffic complexity and speeds up to 150 km/h.

The project is structured into 4 main clusters: 
- ITS G5
- Collaborative driving
- Automated parking
- Urban traffic

In addition, the project defines and validates specific evaluation methodologies, addressing both the technical functionalities and the impacts of automated driving applications. Insights will be provided for the safety and environmental benefits for European road transport.

AdaptIVe is developing embedded solutions to address the most demanding driving scenarios in a city: the Supervised City Control and City Chauffeur functions. A key point for this development is the integration of an existing new function into one system. Examples include automated parking, feedback on the gas pedal and steering wheel, automated entry and exit of public transport stops. The level of support given to the driver ranges from correction and stabilisation of driver manoeuvres, i.e. in assisted mode, to automatic guidance, i.e. in automated mode.

Improving the everyday driving experience starts within the lowest speed and distance range. A key issue in motorway driving is overtaking. Divergences in speed that haven’t been fully developed yet. Sensory capabilities will be based on the traffic situation: automatic warning systems are also expected by drivers to provide warning to navigate in this area by selectively giving priority to one direction over the other. A robust perception platform is envisaged. Taking into account the latest advances in embedded systems and communication and information technologies. This platform will support decision-making in complex situations. AdaptIVe advances the automated parking at private homes and in outdoor environments, as well as multi-park parking garages where space is a major issue. This & fun function supports parking in close-distance scenarios. The car will fully control the parking process, whereby the user can train his vehicle by becoming familiar with the typical environment. The car should be able to drive and its movements should be interactive, not just controlling without providing any specific insight.

The City Chauffeur performs automatic lane changes, and handles interactions and connections to other vehicles. According to the project’s configured function, it can support other vehicles in merging traffic and improve traffic flow and communications. If another vehicle is attempting to merge in front of the vehicle, the function enables the other vehicle to merge by either reducing the speed to create a gap in front of the vehicle or by completing a lane change, if possible.