



**FlexRay-Based Electronics Architecture  
Audi Pegasus Concept Car**

***TTTech***

"The PEGASUS project is one more instance of our successful cooperation with TTTech. The Vienna-based technology company proved to be a highly competent development partner in the area of FlexRay-based system architecture."

Walter Streit  
Managing Director  
Audi Electronics Venture GmbH (AEV)



The PEGASUS concept car is the outcome of a project between the AUDI AG subsidiary AEV and TTTech Automotive. This cooperation resulted in the development of a new cross-functional concept for a FlexRay-based electronics architecture. PEGASUS, a German acronym meaning pilot project for developing a comprehensive automotive system and software architecture, successfully integrated safety-relevant applications in an intelligent way. An innovative platform for chassis electronics was developed and implemented in an Audi S4 Avant-based concept car.



PEGASUS was conducted within the framework of the A3 – Austrian Advanced Automotive Technology program. Funded by the Austrian Federal Ministry for Transport, Innovation and Technology, this R&D initiative supported numerous projects in the field of automotive technology. PEGASUS was set up as a joint project of three major partners: TTTech Automotive GmbH contributed expertise on time-triggered technology, AEV (Audi Electronics Venture GmbH) provided engineering and tool support, and the Vienna University of Technology supplied diagnostics know-how for real-time systems.



The objective of the PEGASUS project was to demonstrate the benefits of the time-triggered FlexRay technology. Essential vehicle dynamics applications were deployed to illustrate the feasibility of the time-triggered platform. Its assets as compared to today's commonly used CAN topology were highlighted. One of the major challenges was to interconnect different bus systems in the car. Another requirement was to combine existing chassis electronics and software structures of the automotive OEM and the time-triggered FlexRay technology, which had been tried out in other applications.

“We are very pleased that TTTech Automotive could make a significant contribution to the design of the PEGASUS concept car. The project was a major step to implementing the time-triggered FlexRay technology.”

Marc Lang  
Director Sales  
TTTech Automotive



FlexRay was chosen as the communication network for the PEGASUS concept car. This technology has been designed to increase the speed and safety of in-vehicle data communication. When it is used as the backbone for reliable electronics architectures, it enables applications such as active intervention in the car to increase the driving stability and reduce the braking distance. A time-triggered electronics platform combines higher bandwidth and faster data transmission rates with more fault tolerance and better composability.



The FlexRay technology promised to fulfill the higher requirements for integrating in-vehicle functionalities. The PEGASUS project proved the potential of the time-triggered FlexRay-based technology, as it was employed in the integration of vehicle dynamics controls. Besides, a definite migration path for the concrete deployment of FlexRay in future cars was defined. The use of FlexRay-based hardware and software allowed a better integration of existing functionalities and provided a basis for designing new applications.



The PEGASUS concept car is a major milestone in the introduction of a FlexRay-based electronics architecture. The implementation of the time-triggered technology results not only in significant advantages for the driver, but also in important benefits for the environment. As this innovative design approach uses the same amount of electronic control units, switches and cables to enable the development of new applications such as driver assistance systems and vehicle dynamics. This will be a major step towards avoiding waste and saving resources and will advance sustainable automotive industry.

### **About TTech Automotive GmbH**

TTTech Automotive is a subsidiary of TTTech Computertechnik AG and acts as development partner for time-triggered systems in the automotive industry. The company's mission is to advance the use of the time-triggered technology on the basis of the FlexRay standard. TTTech Automotive cooperates with automotive partners to bring time-triggered technology into automotive commercial production.

Further information is available at  
**[www.tttech-automotive.com](http://www.tttech-automotive.com)**

### **About Audi Electronic Venture GmbH**

Audi Electronics Venture GmbH represents a further key component of Audi's electronic strategy. Its major objectives are to realize in-vehicle innovations on the basis of new technologies, to achieve a lasting edge over the competition, and to build up know-how and additional expertise for AUDI AG through technical partnerships with small technology companies in the electronics sector.

Further information is available at  
**[www.audi.com](http://www.audi.com)**

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