

From components to functional orientation - Siemens VDO's new mechatronic roadmap

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Mobility and consequently the automobile are facing new requirements and challenges due to demographic changes and urbanization. Traffic density grows continuously. Increased application of consumer electronics leads to driver's distraction. Drivers and occupant age are increasing.

Accident probability increases and traffic safety suffers, consequently a mutual approach of all parties involved, i.e. government, panels, vehicle manufacturers, suppliers as well as infrastructural is required as counter measures. Especially automotive system enhancements in the area of passive and especially active safety have been introduced. Nevertheless the total number of injuries and fatalities on our streets is still too high. The 2010 target is to halve the number of fatalities and to introduce advanced driver assistance systems.

As the available time is short, system complexity is high as their integration requires additional effort in time and costs, still meeting the undisputable quality standards. Consequently there is a strong need of concept disposals, enabling both OEM's as well as their tier 1 suppliers to develop products and using tool chains based on standardized interfaces.

Unification of tools and processes but also a mutual vision of the common target is necessary. Further potential of established technologies are limited. Innovation for future concepts and new ways are looked for.

The mechatronic opportunities obviously seem to come at the right time.

At Siemens VDO Automotive a concept in close cooperation with suppliers, vehicle certification boards and OEM's recently was initiated.

Target is to realize a platform concept enabling the application and integration of driver assistance systems, driver workplace, multimedia and the chassis/drive train via standardized interfaces. Both homologation/certification processes as well as required tool chains will be taken into account. Last but not least the society, the end customer and the governmental funded research have to be implemented in this high change process towards mechatronic solutions and its acceptance.

The extended platform concept will consist of the new product Pro-Pilot of Siemens VDO Automotive. The project will demonstrate the connection of all driver assistance functions, the HMI concept in the driver workplace and the interlinkage with the vehicle E/E architecture towards a total future system architecture. To make this happen both a migration strategy in the total vehicle architecture as well as function oriented system development compared to a today's concept based on components.

It is also planned to prove further improvement of mechanical integration by system architecture migration. Within this concept the transfer from actual stand alone drive train and chassis elements, i.e. combustion engine, transmission, drive axles with suspension, steering and braking functions to a so-called E-corner will be shown. Also the hints for new driver functions up to the possibility of X-by-wire driving by side sticks are foreseen. An extension of driver assistance functions with comfort and support functions can submit added value other than enhanced traffic safety. This may lead to increased demands and market penetration of assistance systems, enhancing traffic safety for all parties.

By doing so a further step towards improved traffic safety will be initiated, still based on established technologies on one hand as well as the application of advanced sensors and information technologies, the environmental detection and driver strategy on the other.