

## EUREKA SUCCESS STORY &gt; MEDEA+ ELIAS



## DRIVING CHANGES IN AUTOMOTIVE SAFETY

An innovative approach ensuring the durability and reliability of electronic systems in cars is set to make a significant contribution to improve road safety, with the help of EUREKA's nanotech Cluster MEDEA+.



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The total number of cars produced worldwide in 2010 surpassed the 70 million mark. Europe is home to 27 per cent of this total, and with the number of new cars and drivers on the road increasing each year, the need to improve efficiency and safety has become imperative.

Over 40,000 lives are lost in the EU in 2008 as a result of road traffic accidents, with a further 1.7 million citizens injured in such incidents. The European Commission has highlighted passive safety devices, such as electronic stability controls, speed limitation systems and seatbelt reminders as essential tools in reducing this figure. While the automotive industry is continually seeking innovative solutions to improve the functionality of such electrical systems, they are placing greater demands on existing technology, which can compromise reliability and result in costly product recalls.

#### A collaborative approach

ELIAS, a highly collaborative research project consisting of 11 partners from five countries, addressed this issue and has already produced highly promising results which could have a substantial impact on our cars, helping to save money and, more importantly, lives. The EUREKA-supported project was comprised of circuit designers, experts in semiconductor technology and reliability, a computer-aided design (CAD) provider and the German car manufacturer Daimler AG, who all offered insight into the various demands placed on modern electrical systems employed in car design. Together, they worked to develop new test and simulation-based methodologies to improve product reliability and reduce failures.

While the initiative benefited greatly from its highly collaborative nature, project leader Charlotte Rohr (Robert Bosch GmbH, Germany) is eager to assert that the influence and support of EUREKA has been fundamental to their success: "Throughout the project the MEDEA+ review committee within the EUREKA bodies has offered support and recommendations in order to ensure that the investigations are of the highest possible quality." The ELIAS team was awarded the Jean-Pierre Noblanc Award as the most innovative MEDEA+ project in 2009.

ELIAS partners have developed common agreed test methods and quantitative ageing models for the major stress mechanisms at silicon and package level. In addition, they have validated these models using diverse semiconductor technologies, casting light on the various ageing effects that electrical devices are likely to experience, such as high temperatures and voltage. As a major outcome, an ageing simulator suitable has been developed, integrated fully in the project partners' design environments, and introduced into the CAD marketplace.

*"EUREKA was key in the creation of the consortia, creating an open and trusting relationship between all involved"*

Charlotte Rohr, Robert Bosch GmbH

#### Improving reliability, cutting costs