

## **RESIST: new design methods to increase reliability, safety and lifetime of automotive and avionics electronics**

### ***A project within the EUREKA CATRENE programme***

Paris, 15 March 2018 – The RESIST (RESILient Integrated SysTems) project, part of the European CATRENE funding programme managed by AENEAS, is developing new design methods for semiconductors and electronic components. These new methods are vital for next generation electronic systems for avionics and automotive applications, where trends to make systems smaller and lighter, and to increase computing power and energy efficiency, are placing ever-higher demands on performance and reliability. The 21 partners in the RESIST project (semiconductor companies, SMEs, academia, research institutes, and industrial end-users from Germany, France and the Netherlands) expect to extend the cost-effectiveness and lifetime of embedded electronic devices, while enabling future highly integrated electronic systems to meet the strictest standards of quality, safety and performance.

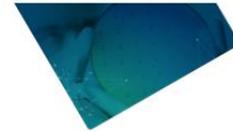
Electronic systems in vehicles (including electric cars), airplanes and satellites are increasingly sophisticated and complex, as well as smaller and lighter. However, this ever-higher integration of semiconductors and electronic components is pushing the limits of the reliability and thus operating life of current devices, particularly in the harsh operating conditions of automotive and avionics applications. For a competitive realization of safety critical system based on advanced electronics, a pure robustness approach might become insufficient in terms of cost performance: awareness of degradation, active system adaption and compensation of errors prior to failure is the target. The RESIST project brings a completely new approach of reliability aware designs and solutions: resilience or reliability 3.0.

European automotive, aviation and aerospace industries rely on the performance, reliability and longevity of electronic systems for their success and to ensure the quality of their products and solutions. Plus, for European semiconductor vendors, there are opportunities to meet demand for embedded electronic devices in growing markets: the automotive semiconductor market was worth \$30 billion in 2016, with an increase of 6.4 % from \$28.2 billion in 2015, rising to \$43 billion in 2023<sup>1</sup>. Five of the RESIST partners were listed in the top 10 automotive IC leaders in 2016<sup>2</sup>. RESIST technologies will also be relevant in other areas such as the energy sector, for instance in meeting the required 25- year lifespan for solar-panel electronics.

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<sup>1</sup>[https://www.mckinsey.com/~media/mckinsey/dotcom/client\\_service/semiconductors/issue%203%20autumn%202013/pdfs/5\\_automotivesemiconductors.ashx](https://www.mckinsey.com/~media/mckinsey/dotcom/client_service/semiconductors/issue%203%20autumn%202013/pdfs/5_automotivesemiconductors.ashx)

<sup>2</sup> March 24, 2017 / By Christoph Hammerschmidt, Semicast Research.  
<http://www.eenewsautomotive.com/news/nxp-holds-pole-position-automotive-semiconductor-ranking>

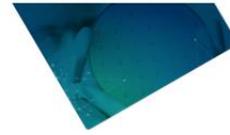


By covering the entire value chain, the consortium developed breakthrough approaches of reliable system designs, demonstrating fail-safe solutions that are key enablers for the automotive and avionics sector. The RESIST partners have successfully delivered four demonstrators with proof of concept resilient features for the automotive and avionic applications but also for more generic safety critical systems. In addition to these hardware demonstrators, many additional State of the Art designs, IPs, models and tools have been developed at components and system level following both reliability aware design and run-time adaptive approaches. The RESIST consortium contributed to multiple advances: cost reduction of 'resilient' solutions, longer lifetime of embedded devices, higher integration density at the same level of reliability and reduction in reliability testing costs.





PRESS RELEASE



About CATRENE:

CATRENE is a EUREKA cluster programme managed by AENEAS. It was created in 2008 and focussed on micro and nanoelectronics research and innovation, which aims at achieving Technological Leadership for a competitive European ICT industry. It is based on the ambition of European countries, in partnership with European companies, to jointly deliver nano- and microelectronics-based solutions that respond to the needs of society at large, improve the economic prosperity of Europe and reinforce the ability of its industry to be at the forefront of global competition.

After 7 years of operation, more than 8 calls and 51 complete and still running programmes, CATRENE projects involving SMEs, large corporations, research institutions and universities have, and are, demonstrating great impact on societal challenges while promoting European economic development in this vital area.

About CATRENE: <http://www.catrene.org>

About AENEAS: <https://aeneas-office.org>

About RESIST:

RESIST is an RD&I project consortium involving 21 European partners from the Netherlands, Germany and France. The project partners are NXP-NL (project leader), ATMEL Nantes SAS, BOSCH, AGI, Airbus Group Innovations, Airbus Defence & Space GmbH, Heliox, IFX, IROC, MunEDA, NXP-D, ST-FR-CRO, Volkswagen AG, CEA-LIST, Fraunhofer IIS/EAS, Institut Polytechnique de Grenoble, ISEN Toulon, Reutlingen University, Technical University Delft, Technical University Eindhoven, Technical University Munich and University of Bremen.

About RESIST: <http://www.resist-catreneproject.eu/home/>

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