



# nSHIELD

*new embedded Systems architecture for multi-Layer Dependable solutions*



## **EXECUTIVE summary**

nSHIELD is the architectural framework project for security, privacy and dependability (SPD) in Embedded Systems (ES). The project will develop new built-in SPD functionalities and will demonstrate the modularity and the composability of them in four different strategic scenarios: Railways Security, Voice/Face Recognition, Dependable Avionic Systems and Social Mobility and Networking.

## **CONTRIBUTION to SRA**

The nSHIELD complaint tool-set, with the possibility to guarantee required SPD level by using integrated metrics, will enable not only development and verification time the certification process expenses to be reduced. Build-in protocol verification and configuration mechanisms in the integrated tool set will help to predict the desired efficacy of the embedded system under development.

nSHIELD project will help to provide early validation methodology focusing on SPD aspects and taking into account the variability of embedded system families addressing important topics of the Artemis Strategic Research Agenda within the 'Design Methods and Tools' area of research:

- > methods and tools for simulation,
- > automatic validation and testing,
- > verification and validation methods and tools for developing embedded systems product lines.

Moreover, the provision of early validation techniques adapted to SPD will further contribute to improving the quality of end products and reducing time to market and costs.

## **MARKET INNOVATION & impact**

Applied to systems for monitoring and protection (railway and urban transport infrastructure, voice and facial recognition, social mobility and avionic system surveillance), the results obtained with nSHIELD are expected to reduce costs and development time as well as improve compliance with the requirements of the SPD and the level of integration between heterogeneous elements. In addition, the project will probably boost system reliability and reduce time to market compared with rival products, with a consequent increase in sales

Finally, nSHIELD will define a standard to result in a generic embedded system with a potential "SHIELD compliant" certification.

## **RELEVANCE & CONTRIBUTIONS to Call 2010/2011 Objectives**

Answering the ARTEMIS Call 2010-1, nSHIELD ensures that security, privacy and dependability can be ensured in the context of integrated and interoperating heterogeneous services, applications, systems and devices. Regardless of the domain of the embedded system, nSHIELD will ensure the highest SPD level. This project will develop a flexible SPD architecture and a related set of advanced SPD functionalities which could be used with minimal engineering effort and adapted to many application domains.

## R&D INNOVATION *and technical excellence*

nSHIELD will approach SPD at four different levels: node, network, middleware and overlay. For each level, the state of the art in SPD of individual technologies and solutions will be improved and integrated. The SPD technologies will be then enhanced with the composability functionality. At the same time, the integrated use of SPD metrics in the framework will have impact on the development cycles of SPD in embedded systems because the qualification, (re-)certification and (re-)validation process of a SHIELD framework will be faster, easier and widely accepted.

With the creation of this innovative, modular, composable, expandable and highly dependable architectural framework, and with the use of common SPD metrics, nSHIELD will be capable of improving the overall SPD level in any specific application domain with minimum engineering effort. Also, the whole ES lifecycle will be supported to provide the highest cross-layer and cross-domain levels of SPD, guaranteeing their maintenance and evolution in time.

## PROJECT *partners*



[www.artemis.eu](http://www.artemis.eu)



### PROJECT COORDINATOR

Cecilia Coveri

### INSTITUTION

SELEX ES a Finmeccanica Company

### EMAIL

[cecilia.coveri@selex-es.com](mailto:cecilia.coveri@selex-es.com)

### WEBSITE

[www.newshield.eu](http://www.newshield.eu)

### START

September 2011

### DURATION

40 months

### TOTAL INVESTMENT

€13.4 M

### PARTICIPATING ORGANISATIONS

23

### NUMBER OF COUNTRIES

7