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ESI is the pioneer and world-leading solution provider in virtual prototyping.

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[ISIN FR 0004110310](#)

Contact

[ESI Group](#)

Céline Gallerne

T: +33 (0)1 41 73 58 46

Celine.Gallerne@esi-group.com

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CEM Solutions 2014: Integrated Software for the Virtual Prototyping in Electromagnetics

**Across a wide frequency range,
from Radio Frequency to Millimeter-Wave**

Paris, France – June 17, 2014 – [ESI Group](#), pioneer and world-leading solution provider in [Virtual Prototyping](#) for manufacturing industries, announces the release of [CEM Solutions 2014](#). Providing relief from cumbersome processes using different simulation methods, [CEM Solutions 2014](#) offers EMC experts, equipment designers and system integrators an all-in-one solution integrating hybrid and coupled processes to address challenges across a wide electromagnetic spectrum.

Cars of the future will be smarter, safer and more connected. Manufacturers envision a new driving experience, offering even more security, comfort and infotainment capabilities than today. With sophisticated sensors, hundreds of processors and kilometers of wiring, onboard electronics account for up to 40% of the total manufacturing cost and mastering the overall electromagnetic compliance and [Electromagnetic Compatibility \(EMC\)](#) of a fully equipped vehicle has become a key challenge. To address the growing complexity, in the context of shortened development cycles and the desire to reduce the number of real prototypes, ESI offers comprehensive [Virtual Prototyping](#) solutions that can be deployed to pre-certify safe and reliable electromagnetic systems.

[CEM Solutions 2014](#) integrates all major time and frequency methods in Computational Electromagnetics within one framework and together with [Visual-CEM](#), a dedicated portion of ESI's multi-domain simulation platform, provides for efficient simulation of electromagnetic phenomena using coupled and hybrid techniques and enables the development of fully realistic virtual prototypes. This 2014 release comes with a special focus on automotive applications but never-the-less addresses all industry sectors.

For the automotive sector:

- Virtual Testing capabilities have been enhanced with a dedicated Radio Noise process aimed at evaluating the spurious electromagnetic noise created by internal cabling and other emitting components and determining the consequences for onboard antennas, receivers and similar devices.

- To support design optimization and improve electromagnetic performance, the performance of 24 GHz RADAR sensors behind plastic bumpers can now be investigated. [CEM Solutions 2014](#) takes into account precise design parameters, including the 3D shape and surface coating, so that phenomena induced by even very thin metallic paint coatings can be evaluated.
- A highly multiscale modeling process, combining standard computational techniques with analytical formulations is now proposed. This enables the management of realistic scenarios and complete 3D scenes that feature the roadway, metallic rail guards, other nearby vehicles and more.

Note also that [CEM Solutions 2014](#) addresses topical subjects such as the millimeter-wave (77 GHz) radar sensors that are now used in Active Safety applications, Long Range detection, and Advanced Driver Assistance.

Such industrial applications were described by **Mr. Hamada** and **Mrs. Tsurunaga**, of MAZDA Motor Corporation at the [ESI Global Forum 2014](#), held in Paris, France, on May 21-22, 2014. Likewise at that international conference, **Mr. Pokorný** from the BRNO University of Technology (BUT) in Czech Republic presented a paper on [wireless intra-vehicle communications operating in the very high frequency range](#).

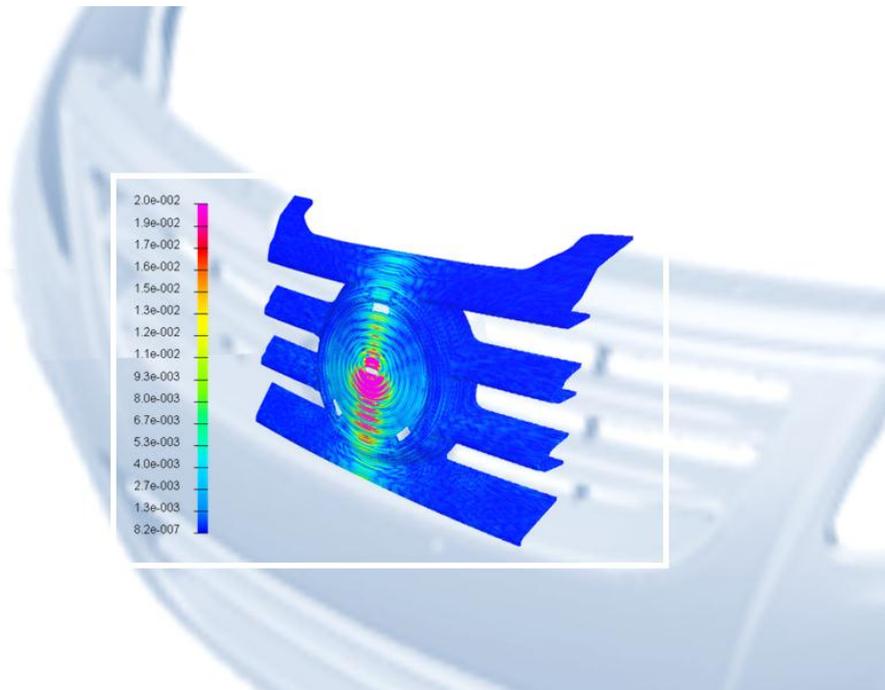


Image: RADAR sensor radiating across front plastic grill (Induced currents at 77 GHz)

Major improvements addressing the Marine, Aeronautics and Defense sectors have also been achieved. [CEM Solutions 2014](#) comes with enhancements to Radar Absorbing Materials (RAM) used for stealth purposes, for multilayer radomes structures, and other phased array antennas deployed onboard very large aircrafts, vessels and ships.



This new release of [CEM Solutions 2014](#) comes with Visual-CEM 9.5, the latest evolution of ESI's [Visual-Environment](#), which now supports computational engines operating in both time and frequency domains, and provides updates to 3D polar plots - a must for antennas design and scattering studies.

For more information about CEM Solutions 2014, please visit www.esi-group.com/CEM

About ESI Group

[ESI](#) is a pioneer and world-leading provider in Virtual Prototyping that takes into account the physics of materials. [ESI](#) boasts a unique know-how in Virtual Product Engineering, based on an integrated suite of coherent, industry-oriented applications. Addressing manufacturing industries, Virtual Product Engineering aims to replace physical prototypes by realistically simulating a product's behavior during testing, to fine-tune fabrication and assembly processes in accordance with desired product performance, and to evaluate the impact on product use under normal or accidental conditions. [ESI's](#) solutions fit into a single collaborative and open environment for End-to-End Virtual Prototyping. These solutions are delivered using the latest technologies, including immersive Virtual Reality, to bring products to life in 3D; helping customers make the right decisions throughout product development. The company employs about 1000 high-level specialists worldwide covering more than 40 countries. [ESI Group](#) is listed in compartment C of NYSE Euronext Paris.

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ESI Group – Media Relations

[Céline Gallerne](#)

T: +33 (0)1 41 73 58 46