Preparing for the Factory of the Future
Managing your Product Performance Lifecycle

EP Tender Generators Approved for Launch After Testing with ESI Virtual Performance Solution
INNOVATIONS UNLEASH POTENTIALS OF FUTURE HPC

Huawei FusionServer E9000
★ 12U, 16x nodes, 64x CPUs
★ 40GE, 100GE & IB EDR Switching
★ Supports 45°C Warm Water Cooling

Optimized HPC System Certified for ESI Virtual Performance Solution
Contents

04 special report
Preparing for the Factory of the Future
Managing your Product Performance Lifecycle

06 interview
3 Questions for Cristian Tanasescu

07 customer success
EP Tender Generators Approved for Launch After Testing with ESI Virtual Performance Solution
Adam Opel AG Moves towards Lightweight Vehicles with Help from ESI PAM-STAMP
Hot Forming Systems Builder AP&T Halves their Production Cycle with ESI PAM-STAMP
Lear Corporation Creates an Optimal Seating Experience using ESI Virtual Seat Solution during the Conception Phase
Bombardier Exceeds Customer Expectations with ESI's Virtual Reality Solution

12 product news
Visually Test Sensors in Ultra-Realistic 3D Scenes with ESI Pro-SiVIC™ 2016
Addressing the Need to Build Virtual Prototypes of Composites Parts
ESI INENDI to Secure IT Infrastructures and Power Big Data Technologies
ESI and JMDA Team Up to Enable the Virtual Prototyping of Child Car Seats
CAE is Now Available On-Demand with ESI Cloud
Reduce Turnaround Times with ESI ProCAST 2016
New Version of ESI VA One Provides Unparalleled Capability for Aero-Vibro-Acoustic Simulation
Latest Version of ESI IC.IDO, Virtual Reality Solution for Industrial Applications
Minimizing Manufacturing Costs and Time with ESI's Welding & Assembly Solution for Body Manufacturing
ESI Launches Virtual Seat Solution 2016
Virtual Performance Solution Version 2016 Includes New Functionalities to Answer Lightweight and Environmental Challenges

19 corporate news
Recent Acquisitions Extend ESI's Offering, Paving the Way for Even Smarter Virtual Prototypes
ESI China's COO Recognized as One of the “Top 10 Ladies in Chinese Economy”
Huawei and ESI Partner to Foster Innovative HPC Solutions

22 events

23 financial news
Appointment of a New Independent Board Member
2015 Annual Results

Editorial

Dear Reader,

As we enter the Fall season and the end of the year approaches, we at ESI are eager to share with you all the progress we have made in the last few months.

After the acquisitions of ITI and Mineset, during the first half of this year we've been excited to get to know our new colleagues and integrate the new technologies they bring along with them, disseminating the knowledge of systems simulation and big data analytics within ESI Group. Feedback from our customers is great so far, and we look forward to creating further synergies within ESI's product portfolio.

Both technologies are cornerstones to push the envelope of Virtual Prototyping and enable the Factory of the Future, by optimizing the performance of a product throughout its lifecycle. Traditional business models are transforming to deliver complete solutions that produce quantifiable business outcomes. Not only ventures like Uber or Airbnb, but also manufacturing companies like Rolls-Royce embrace that transformation. In such a context, understanding and optimizing the performance of products and solutions throughout their lifecycle are of vital importance.

Our special report (page 4) covers precisely why and how ESI has initiated the next fundamental shift in Virtual Prototyping, stepping from Product Lifecycle Management into Product Performance Lifecycle, bringing us that much closer to the Factory of the Future.

Because our customers’ successes best illustrate of the value ESI delivers, be sure to check out the latest stories (pages 7-11). Among others, you will learn about how EP Tender relied on Virtual Performance Solution to obtain regulatory approval for their innovative mobile energy module for full-electric cars. Also in this issue, you'll read about how we've been busy keeping our solutions ahead of the game, taking into account our valued customer feedback as well as new technical advances as they become available. Read through our product news (pages 12-18), including the release of ESI Cloud, offering full CAE on-demand and on the web. In a related action, we're very proud to announce that we have signed a Memorandum of Understanding with our partner Huawei to collaborate on High-Performance Computing (HPC) and cloud computing (page 21).

Last but not least, the ESI team looks forward to connecting with you, be it virtually on our customer portal myESI (mesys esi-group.com), or in person during one of our upcoming User Forums (page 22)!

Enjoy reading!
In order to develop smarter products, and the emerging class of autonomous products, designers and engineers must anticipate multiple unknowns and associated risks. Among these are the somewhat unclear ways different sensors and systems, upon which “intelligent” products rely, may interact and function/dysfunction together. Furthermore, it becomes increasingly critical to be able to predict system faults, that can result from design weaknesses, fabrication defects, or wear and tear, and to mitigate detrimental consequences right from the conception phase. Here, simulation has a huge and critical role to play.

Simulating use cases for virtual “smart” products equipped with virtual sensors creates huge volumes of data. This parallels the ominous swell of data coming from various real sensors, as in our vehicles, phones, homes, and all the other “smart” objects in our daily life that are increasingly interconnected through the pervasive growth of the “Internet of Things”. In this context it is essential and critical that not only data analysts, but also engineers, designers and other stakeholders learn how to make sense of and create value out of, the mass of “big data” and to benefit from intelligence continuously created.

With recent acquisitions of pioneering technologies in Systems Modeling, Cloud delivery, Data Analytics, and Machine Learning (namely: CyDesign, Amoeba/Presto, Ciespace, PicViz/INENDI, Civitec, ITI and Mineset Inc.), ESI has dramatically extended the customer value of its core business of Virtual Prototyping, and made it more accessible. Indeed, ESI is introducing a complete and transformational offering to help industrial manufacturers develop what has been coined as the “Virtual Twin” of their real-world product; one that can be used to make smarter decisions in all product lifecycle stages; from design, development, testing, fabrication, operations and maintenance-repair to phase-out. With the Factory of the Future aiming at interconnecting every step of the manufacturing process for higher end quality and reliability, manufacturers are now able to leapfrog their traditional “Product Lifecycle Management” (PLM), which focuses on design and development, and manage...
“ESI’s innovative strategy to combine Virtual Prototyping with data-driven analytics and the immersive Virtual Reality experience enables industrial manufacturers to maximize the useful and reliable operational lifetime of their products through constant performance management. Product Performance Lifecycle (PPL) strongly differentiates ESI from traditional PLM vendors.”

Cristian Tanasescu, Executive Vice President, System Modeling & Data Analytics, ESI Group

instead their “Product Performance Lifecycle” (PPL) to anticipate the entire operational life of a product far beyond its manufacturing.

Product Performance Lifecycle (PPL) implementation is especially relevant to the autonomous systems market (including the rapidly emerging world of autonomous vehicles) and by extension, to all other markets related to exponential growth of connected sensors and cyber-objects. ESI’s Virtual Prototyping solutions, which already combine 3D-4D detailed ‘passive’ modeling and 0D-1D reduced ‘active’ system integration, are now acquiring a ‘learning’ aptitude to get autonomous and smart. Virtual Prototyping immersed in PPL is set to reach a larger community of professional consumers in the world of smart operations, predictive maintenance & competitive services. The users of ESI’s Virtual Prototyping solutions are entitled, and expect, to leverage the latest advancements in Data Analytics and Machine Learning technologies in an intuitive way, so as to get quicker answers from their virtual prototypes and to anticipate any failures in their end product operations.

Illustration of the concept of “Virtual Twin”

CAE has historically focused on solving problems encountered in the design and use of products. We have now moved to a new paradigm in which we build virtual prototypes that allow us to anticipate and detect design problems before they occur. This opens the door to building a complete virtual representation of the product – a Virtual Twin – which can co-exist throughout the lifecycle of the actual product – from creation (manufacture), through operational life and to disposal. This can provide essential insights into both the design

**Physics-based Virtual Prototype**

3D/4D model involving detailed physics

Reduced order system model 0D/1D (including fault augmentation)

**Data-driven model of Virtual Prototype**

Machine Learning (ML) generated model

Generate “reduced order ML models” to predict faults using proxy measurements (for example, use voltage and current drawn by motor to predict downstream faults such as a cracked crankshaft)

Estimate cost of various maintenance parameters (when to take asset off-line, which tests to perform in which order, risks associated with different maintenance tasks, etc.), in order to maximize customer ROI

**Instrumented Physical Asset**

Monitor streaming sensor data

Apply ML models on edge/cloud hybrid solutions to predict performance, faults, and when to maintain equipment

of the product and its overall quality. ESI delivers Virtual Prototyping as the foundation of the Virtual Twin and when combined with Simulation Data Mining, it can be used to maximize the useful life of a product through intelligent predictive maintenance.

With ESI Cloud, its new web-based platform, ESI also aims to deliver virtual prototyping and data analytics solutions to any ‘mobile’ user around the world, without any significant hardware investment (read more page 16).

ESI is poised to equip industrial leaders with the right tools to develop connected products and predict operation and maintenance conditions from a very early stage of product design and development: smarter Virtual Prototyping for a smarter factory.
**3 Questions for Cristian Tanasescu**

**Cristian Tanasescu**  
Executive Vice President  
System Modeling & Data Analytics  
ESI Group

---

**Could you comment on the value of connecting Virtual Prototyping to Product Operational Performance?**

Virtual Prototyping, leveraging the physics of materials, simulates the complete product, giving engineers the ability to manage and optimize their design before producing a physical prototype.

The Product Performance Lifecycle (PPL) is a transformational approach to maximize the useful and reliable operating lifecycle by helping manufacturers deliver optimal economic value thanks to the optimization of the product operational lifecycle while in service.

The relationship between Virtual Prototyping and Product Performance Lifecycle thus becomes clear and the synergy is bidirectional. From physics-based modeling conducted by experts, to the development of data-driven reasoning based on operating conditions in the physical world, real product maintenance needs can be anticipated by professional consumers. Data collected from sensors on the physical asset can have business value for beyond reducing the maintenance cost. Used intelligently, servicing can be scheduled before a component breaks, and the supply chain can be optimized by identifying the higher quality suppliers.

Using the PPL reverse link between the physical and virtual domains – operational data, system level simulation, high-fidelity model – engineers can redesign components that fail unexpectedly, leading to maximizing the useful life of a product and hence monetizing the development investment.

---

**How would you differentiate Product Performance Lifecycle from Product Lifecycle Management?**

Product Performance Lifecycle (PPL) overlaps with Product Lifecycle Management (PLM) to a certain degree. Summarizing the distinction, PPL represents the core business of an industrial manufacturer, whereas PLM is a support function for their business, albeit an important one. PPL spans the entire lifecycle of a product while PLM focuses on the warranty period and an accurate BoM (Bill of Materials). Customer satisfaction is achieved when the customer can use or operate the product at the designed specifications during its entire lifecycle.

PPL is at the same time an extension of PLM. While PLM manages primarily costs and BoM addressing the overhead aspects of the business, PPL goes one step further: looking at how well the product performs once it is in operation and at the quality of the manufacturing processes. Today, ESI is a leader in Virtual Prototyping with its art of modeling based on the single core model concept. Expanding from Virtual Prototyping to Product Performance Lifecycle defines the growth path for ESI and the value proposition for our customers.

**Could you give us some insights into oncoming ESI solutions supporting the Product Performance Lifecycle?**

Looking back to our company evolution, ESI Group has been offering industry-recognized Virtual Prototyping solutions for over 40 years. ESI has recently added to its portfolio new technologies related to visual Machine Learning through the acquisition of Mineset Inc., a visual analytics and machine learning specialist, and the integration of Picviz Labs (now ESI INENDI developers of advanced), visualization technology for data discovery.

INENDI version 4.1 is already available on the market and Mineset 1.0 has been recently released online on ESI Cloud. ESI also plans to embed analytics and machine learning in its Visual-Environment platform, thereby supporting all ESI Virtual Prototyping solutions and third-party software in the goal to enable design space exploration, multi-disciplinary optimization and simulation data mining will hence become an essential part of post-processing.

In a similar way, we will offer data analytics as an optional module to our system-modeling product SimulationX (recently acquired, along with company ITI). Starting in 2017, system simulation will be able to detect failure as well as assess reliability and maintainability in the virtual world.

Regarding the operational data space, ESI is poised to engage in co-creation projects addressing predictive maintenance problems with hybrid physics - and data driven models that can be efficiently integrated to combine advantages of both models.

Developing new machine learning based applications with strategic partners will demonstrate that ESI’s analytics platform has a much broader applicability and business value to come.

---

for more information


EP Tender Generators Approved for Launch after Testing with ESI Virtual Performance Solution

With even further improved design, without the expense of creating and testing multiple physical prototypes

EP Tender

In an effort to reduce CO₂ emissions, new technical solutions are emerging, such as enhanced batteries or plug-in hybrid electric vehicles (PHEV). Only 2% of automotive trips exceed 200 km, yet when choosing a vehicle consumers consistently value extended range over reduced cost, fearing to run out of energy and getting stranded. As a result, for electric vehicles to gain significant market share against internal combustion engine vehicles, supplemental energy must be made available for those times when it is needed.

Supported by H2020 European Union funding, EP Tender formulated a pay-per-use business model that would address this dilemma. They proposed that a customer could rent an electric mobile energy module (a fuel-powered electric generator) mounted on a trailer that would be hauled behind an electric vehicle and used as a range extender.

The purpose of this project was to demonstrate the ability of the trailer to resist even the most severe rear crash configuration listed in the FMVSS 301 US regulation.

That regulation requires fuel tanks to remain sealed after a crash. To satisfy the requirement, EP Tender developed a design that includes a mechanism involving a patented structure that would preserve the generator’s fuel tank by shifting it downward during an impact. As part of the project, they simulated crash into the trailer using ESI Virtual Performance Solution (VPS); using the standardized National Highway Traffic Safety Administration (NHTSA) barrier model as an impactor.

The fuel tank performance was critical to the study and viability of the design. EP Tender started by modeling an empty fuel tank with added mass for the fuel it would contain. Later VPS’s new water flow module was used in order to accurately model the fuel. The first simulation allowed them to validate the crash scenario and the amount of energy absorbed by the trailer. They confirmed that the trailer contributes to 30% of the energy absorption compared to a stand-alone vehicle. The trailer brings additional energy absorption capacity and therefore less damage to the car. The crash tests also demonstrated that the tank would not rupture so the tender met the FMVSS 301 regulations.

As far as the fuel tank integrity is concerned, the usage of VPS’s water flow module for tank sloshing has shown a significant change in the result compared to a standard added mass hypothesis. This has clearly demonstrated that accurate modeling of fluid for this kind of simulation is essential.

About EP Tender

EP Tender is a startup developing a range extending service for Electric Vehicles: Tender’Lib. This innovative approach enables disconnecting the peak range capacity from the initial cost of the EV, and to offer this peak range as a pay per use service. EP Tender owns exclusive rights on two granted international patents for the fuel tank safety and for the self-steering of the trailer when backing.
Adam Opel AG Moves towards Lightweight Vehicles with Help from ESI PAM-STAMP

Introduction of a new design strategy improving the final shape of the stamped parts and the robustness of the entire manufacturing process

Due to new regulations for admissible CO₂ emissions, the transportation industry must find innovative solutions to produce lightweight vehicles requiring less fuel consumption while maintaining, and preferably improving, occupant safety levels. In the automotive sector, one way to achieve this goal is to reduce the overall weight of a vehicle by using lightweight materials or reducing the thickness of raw materials and parts.

Adam Opel AG, one of Europe’s largest automakers, started to look into the possibility of replacing their steel grades with thinner Advanced High Strength Steel (AHSS). Providing a promising alternative. AHSS has extensive advantages including performance flexibility, lower cost and reduced weight. However, manufacturing to the required specification requires new ways to control its susceptibility to springback and twisting during forming.

Working with ESI, Adam Opel AG set out to develop process that would reduce, or even preferably eliminate, this springback and twisting behavior.

Firstly, a geometrical stiffness was induced through a double-S-profile in the punch radius of metal forming tools. Adam Opel AG used ESI PAM-STAMP to understand how to replace the original punch radius with the double-S-profile and studied the influence of the three different radii on the final wall opening and twisting.

Opel then investigated the influence of the blankholder pressure. After the parameter study done with PAM-STAMP, the Opel team found an optimal combination of 2-10-2 mm for the three radii that resulted in the smallest deviations from the nominal part shape. In addition, and contrary to initial expectations, it also turned out that a decrease in blankholder pressure reduced the deviations even further! To verify the results, Adam Opel AG produced the actual tools and compared the try-out results with the ones obtained using PAM-STAMP simulation.

Results were an accurate match for trimmed and untrimmed geometries; revealing the impact of the geometrical (illustration below) modifications on the wall opening, bending springback and twisting.

Based on these positive results, Adam Opel AG has decided to proceed with further investigations on how to incorporate the AHSS grades into its manufacturing processes.

About Opel AG

Adam Opel AG, founded in Germany, and its British sister brand Vauxhall, sell over one million vehicles annually, making them the third largest passenger car brand in the European Union in 2014.

for more information
www.esi-group.com/PAM-STAMP
www.opel.com
Hot Forming Systems Builder AP&T Halves their Production Cycle with ESI PAM-STAMP

And visualizes their formed parts in Virtual Reality, using ESI IC.IDO

Swedish company AP&T develops, manufactures and markets complete production systems for formed metal parts and supplies production systems to companies all over the world. The company focuses on production systems that ensure that finished parts deliver specific properties; such as reduced weight, a high degree of safety, or energy efficiency.

To this aim, AP&T uses many advanced metal forming processes, including hot forming with in-die quenching. The latter offers the possibility to shape special steels into complex parts, and thereby reduce fabrication, welding and sub-assembly tasks, as well as the entire production cycle time. Hot forming with in-die quenching also allows die design engineers to make some sections of parts very rigid so that they protect vehicle occupants in a crash, while other sections remain ductile and absorb crash energy.

Advanced high-strength steels (AHSS) and ultra-high strength steels (UHSS) processed are far stronger than the “mild” steels used for most sheet metal body components but they have a tendency to crack, wrinkle, undergo local striction, and exhibit strong springback during conventional blanking, stamping and forming operations. Hot forming with in-die quenching solves most of these issues, but demands complex tooling design: the die must be robust enough to perform the forming operations, and must provide a cooling cycle fast enough to allow the austenite-martensite transformations needed for proper quenching.

It used to take AP&T a year or longer to engineer, build, test and install a new hot forming production system. Today, the company typically delivers a hot forming die set in less than six months. To achieve this performance, AP&T relies heavily on process simulation; using Virtual Manufacturing to follow and evaluate each step of the part development in the proposed production system.

AP&T using ESI PAM-STAMP engineers use ESI’s Virtual Reality (VR) solution, IC.IDO, which brings the parts and processes to life with life-size, 3D immersive presentations.

“Not long ago, we needed 3-5 people working on each system during tryouts to identify and solve problems, and sometimes that could take several weeks. Now, troubleshooting is usually done rapidly via Virtual Reality. Overall, PAM-STAMP and other simulations probably save us 25% to 30% of cost and time versus no simulation,” Wigren concludes.

About AP&T

AP&T focuses on production systems, automation, presses and tools that give the finished part properties such as reduced weight, high degree of safety and energy efficiency.

for more information
www.esi-group.com/PAM-STAMP
www.aptgroup.com
As a leading manufacturer of fully integrated seating systems, Lear has a proven track record in delivering quality seating systems to the auto industry. To stay at the forefront of technological innovation, they decided to use a new method - virtual seat prototyping - for their newest concept, the ProActive™ Posture Seating System.

The ProActive™ Posture Seating System optimizes a driver's seating position, by utilizing Lear’s MySeat by Lear™ app. This enables automatic adjustment of the bladders in the seat, based on sensor data and personal settings.

The use of ESI’s Virtual Seat solution early in the seat development process has enabled virtual seat testing and optimization of several air bladder configurations.

By using ESI’s Virtual Seat Solution, Lear was able to accurately predict the occupant’s posture before and after the air bladders were inflated.

Lear first determined, for multiple anthropometries, the exact position of an occupant when he or she initially settles into the seat.

With this reference posture, as well as demographic, anthropometric and subjective feedback data, the optimal seat position for each type of driver was determined. Then, Lear's team worked on controlling the bladder system within the seat to position each occupant in their ideal driving position, promoting proper posture and improving long term wellness. Virtual Seat Solution enabled the modelling of the inflation of the bladders and predicted how the bladders would affect the posture of the occupant.

By simulating the inflation of the bladders and the impact on the occupant's posture, Lear was able to optimize their seat concept. “The information allowed us to place the multi-contour bladder positions appropriately in the seat structure,” says Missy Pereny, Seat Comfort Engineer for Lear.

Finally, they created the MySeat by Lear™ algorithm, TheraMetric™. This app allows the driver to enter their personal information, and the TheraMetric™ algorithm then optimizes their seating position, by processing this personal data alongside sensor data. The app controls the system within the seat, inflating and deflating the bladders as needed, maneuvering the driver into the ideal position. A secondary setting then takes the driver into a ‘wellness’ position, which promotes focused support to the thoracic region of the spine and secondary support to the upper back, lumbar and sacral regions of the spine.

The project was fully successful in faithfully simulating LEAR’s lumbar support system and its effects on driver posture, allowing for more predictable results earlier in the development phase and an optimized final product in line with LEAR’s expectations.

About Lear Corporation

Lear Corporation is one of the world’s leading suppliers of automotive seating and electrical systems. Lear serves every major automaker in the world, and Lear content can be found on more than 350 vehicle nameplates. Lear’s world-class products are designed, engineered and manufactured by a diverse team of approximately 140,000 employees located in 36 countries. Lear currently ranks #154 on the Fortune 500. Lear’s headquarters are in Southfield, Michigan. Further information about Lear is available at lear.com and on Twitter @LearCorporation.

for more information
www.esi-group.com/virtual-seat-solution
www.lear.com
Bombardier Exceeds Customer Expectations with ESI’s Virtual Reality Solution

Bombardier won a $385 million contract to supply 47 INNOVIA METRO 300 rotary two-car trains for a metro line to be opened in 2018 in Riyadh, Saudi Arabia. To prove its capability and its capacity to deliver on time and to a high standard, the Bombardier team decided to use a technology they already knew: ESI IC.IDO, Virtual Reality (VR) software. IC.IDO enabled them to configure the product and optimize the manufacturing process; streamlining the product lifecycle and substantially improving communication in the design team and with customers.

Data flows seamlessly from the Company’s CATIA V5 CAD system via its product lifecycle management system into IC.IDO to generate virtual 3D models. “We can view the developed vehicle on high resolution “powerwalls”, – and even touch it”, says Helmut Dietz, Head of Digital Manufacturing at Bombardier Transportation.

“Internally, we all understood how VR helped us with validating designs, manufacturability, accessibility, ergonomics, even maintenance,” explains Christophe Tilan, Project Manager Rolling Stock for the Riyadh metro project. “We thought, if it helps us communicate internally, it’ll help us communicate with our customers too. We were right.”

The Bombardier team decided to take its VR model to Saudi Arabia, so that all the key stakeholders, including the Governor of the province, members of the Royal Family, and Government Ministers could appreciate the train in all its subtlety.

The virtual engineering models used internally by Bombardier are scrupulously accurate, but lack textural and lighting effects. In order to make the model of the virtual train more realistic, Bombardier asked ESI to add these effects. In addition to the aesthetics, the team also wanted the audience in Saudi Arabia to be able to interrogate the model thoroughly in real-time, so doors and storage compartments were made to open and different viewpoints could be achieved.

During the demonstration on a 4m x 3m powerwall shipped from Germany and installed by ESI, the 20-strong audience, who all donned 3D glasses, were able to make requests. The Governor spotted an immediate change that needed to be made to improve flow within the train.

“Being able to make an early design change like this undoubtedly saved time and money,” explains Tilan. “The feedback we received was overwhelmingly positive. We succeeded in our goal of exceeding our customer’s expectations. As a result of this experience, we have decided to roll-out VR sessions with our customers as a standard for all new contracts in the future.”

About Bombardier

As the world’s leading manufacturer of both planes and trains, Bombardier builds an extensive and diverse portfolio of winning mobility solutions.
With the rising integration of perception sensors into everyday items such as our cars, phones or homes, objects are becoming smart and increasingly autonomous. Unfortunately, this intelligence generates a complexity that may compromise the operational performance of these products.

In 2015, ESI acquired the company CIVITEC, along with their sensor simulation platform now renamed ESI Pro-SiVIC™, to enable meeting this challenge head-on. Pro-SiVIC™ allows industrial manufacturers to virtually test the operational performance of various perception systems onboard a vehicle or aircraft. The simulation platform is used to build realistic 3D scenarios and experience them interactively and in real-time, eliminating the need for physical prototypes. In doing this, users can quickly and precisely study the performance of embedded systems in typical or critical use cases and ensure products are safe and reliable once they hit the market.

With the latest release of ESI Pro-SiVIC™, ESI is prepared to support the significant R&D efforts required by the fast growing markets of Advanced Driver Assistance Systems (ADAS) and autonomous vehicles. Addressing sensor specialists, ADAS designers, integration and validation teams, ESI Pro-SiVIC™ integrates key sensor models based on a wide range of technologies including cameras, RADAR, LIDAR (laser scanners), ultrasonic sensors, GPS, odometer, and communication devices.

For example, ESI Pro-SiVIC™ 2016 introduces new RADAR sensor models, covering not only the functional aspect of the sensors but also offering fully detailed models that include antenna characteristics and their impact on performance, on-board processing and the characteristics of radar targets (such as Radar Cross-Sections). These advanced options are possible thanks to the ability to link ESI Pro-SiVIC™ with ESI’s Computational Electromagnetic solution, ESI CEM One.

These new unique capabilities, along with the possibility of integrating sensors into realistic 3D scenes, make the solution suitable for applications in various industries that use sensing for the control and command of systems; in the automotive, aeronautics, marine and other sectors.

Today, the ESI sensor simulation platform is undoubtedly a technology of choice to support the development of autonomous vehicles. Leading organizations promoting international development of the French economy and foreign investment — Business France and BPI France — have chosen Pro-SiVIC™ as one of the 8 French technologies to embark on their program “UbiMobility — Connected Cars France”, which is a 10-month program designed to enable French companies to compete in the North American autonomous vehicle market.

“As their virtual prototypes integrate sensor behavior, industrial manufacturers become fully equipped to consider various design options that are not only based on multi-domain product performance, but also on the product’s performance when in operation. They can now ensure product robustness and reliability thanks to the ability to investigate different failure modes early in product development process.”

Serge Laverdure,
Director of Virtual Systems & Controls, ESI Group
Addressing the Need to Build Virtual Prototypes of Composites Parts

ESI and the UK National Composites Center are collaborating to enable the delivery of winning solutions in the field of composite materials

Using ESI’s range of industry-oriented solutions, the manufacturing processes of composite parts can be realistically simulated from end to end. The benefit is being clearly demonstrated at the UK National Composites Center (NCC) where ESI has been collaborating to apply such predictive simulation technology to Liquid Composite Molding (LCM) processes, such as Resin Transfer Molding (RTM).

Virtual Prototyping is also used for structural analysis, to assess the strength of composite parts and analyze residual stresses and distortions before any lay-up is started, again saving both time and money.

Tooling design is one of the most critical processes in the composite product definition. By applying simulation to the RTM process, the tooling design and process strategy can be enhanced through the analysis of inlet and vent gate type and location, tool heating strategy, and injection pressures.

“Such parameters are defined in order to control the resin flow front, avoid dry spots, optimize the injection time, understand tool heat flux, and avoid excessive exothermic temperatures,” adds Mr Stojkovic.

ESI and NCC have been using ESI PAM-COMPOSITES to predict and resolve problems in press forming, and its distortion module to understand and manage thermal distortion.

There’s still work to be done convincing industrials of the significant benefit of using simulation during tool development. Addressing that need, ESI and UK National Composites Center continue to explore and promote opportunities that Virtual Prototyping brings to the manufacturing industry.

As published in the September/October edition of the magazine Composites in Manufacturing.

Miroslav Stojkovic, Engineering Capability Manager, NCC

for more information
www.esi-group.com/composites
www.nccuk.com
ESI INENDI to Secure IT Infrastructures and Power Big Data Technologies

Advanced data visualization enables first-class cyber security and supports the development of intelligent products

A new set of skills and a new team of experts joined ESI with the acquisition of the French start-up Picviz Labs, in April 2015. Their software solution was re-launched last January under the name ESI INENDI: a platform that provides a credible answer to evolving cyber security challenges, while enabling the processing, visualization, and advanced investigation of large volumes of complex data, strengthened by a great deal of detailed mathematical and scientific knowledge.

With ESI INENDI, industrial manufacturers can now grasp fundamental cyber security issues they’re not able to detect otherwise. Indeed, the cyber security market – and associated hacking techniques – are evolving at a fast pace. A common choice to ensure the cyber security of IT infrastructure, Security Information and Event Management software (SIEM) can deliver real-time analysis of security alerts generated by network hardware and applications, unfortunately this approach no longer suffices to tackle today’s innovative hacking approaches.

INENDI is the perfect complement to SIEM infrastructures, and its refined data visualization capabilities represent a breakthrough for virtual engineering, especially as Machine Learning is being integrated at the heart of most upcoming technologies. “As IT tools gain more autonomy, it has become absolutely essential to master mathematical and scientific concepts with an understanding of the “mindset” required for manipulating machine learning technologies,” says Philippe Saadé, Director of Cyber Security and Data Analysis at ESI.

For product engineering, ESI INENDI’s enhanced data visualization can enable early fault prediction at an operational level in an intuitive way, right from the product design phase. Engineers can get quicker answers from their virtual prototypes and anticipate failures in their end product operations. What’s more, as manufacturers start to collect data from multi-connected devices, INENDI has the potential to help them investigate operational product data and feed this precious information back to their design teams. (See our special report on Preparing for the Factory of the Future on page 4).

for more information
www.esi-group.com/data-analytics
ESI and JMDA Team Up to Enable the Virtual Prototyping of Child Car Seats

Virtually testing child seats with restraint systems early in the design phase to reach higher performance levels

Having recently signed a strategic partnership, ESI and JMDA, global child car seat design and development specialist, have joined forces to enable child car seat manufacturers to reach new levels of technical understanding and design excellence.

Combining child car seat design and Virtual Prototyping brings great benefit: a proposed design can be virtually tested to gain information about expected product performance and regulatory compliance, before committing to major investments. Using ESI Virtual Seat Solution, the seat and its restraint system can be optimized early on in the design phase; reaching higher performance levels, while reducing product development and manufacturing costs. What’s more, Virtual Seat Solution enables manufacturers to achieve Virtual Pre-Certification, accelerating the product certification process while lowering R&D costs and making less conservative design decisions.

“Our alliance with ESI Group is an important landmark in JMDA’s history, marrying together our vast experience in child restraint design and development with state-of-the-art simulation software, Virtual Seat Solution. It opens up fresh opportunities to innovate, prove new concepts, test the limits and establish sound due diligence evaluations for new designs. We can also research the impact of planned changes in regulations to further support the industry,” states Derrick Barker, Managing Director of JMDA.

Marco Aloe, General Manager of ESI UK, adds: “As leader in Virtual Prototyping for the automotive industry for over 40 years, ESI proposes a wide range of multi-domain simulation solutions, including Virtual Seat Solution: a unique software solution to design and develop car seats completely virtually, from end-to-end. For our partner JMDA, as for other industry players, ESI’s Virtual Prototyping solutions provide the best method available to catch up with the fast evolving regulations, and to launch new innovations within the time and budget available. Working hand in hand with JMDA, we are looking forward to strengthening the expertise that enables us to respond to the specific needs of the child restraint market.”

“Working together with ESI, we have over 65 years combined technical capability which we will continue to use to help evolve product design and ultimately make child car seats even safer!”

Derrick Barker, Managing Director, JMDA

About JMDA

JMDA Design specializes in the design and development of a diverse range of products including child car seats, stair lifts, showers, smoke alarms and high chairs. JMDA has obtained many awards for innovation and international activity.

for more information
www.esi-group.com/virtual-seat-solution
www.jmdadesign.com
CAE is Now Available On-Demand with ESI Cloud

Offering elasticity of hardware resources, scalability, parallel workflows and real time collaboration

“ESI Cloud provides the CAE world with a unique solution that leverages cloud technology to enhance team collaboration — in real time, across sites and across multiple domains of physics — unleashing the true potential of end-to-end Virtual Prototyping,” says Christopher St John, COO, ESI Group.

Powered by the innovative technology developed by Ciespace, located in California’s Silicon Valley and acquired by ESI Group in 2015, ESI Cloud provides a reliable, scalable, multitenant and highly secure SaaS Platform with capabilities covering the full chain of CAE processes, end-to-end, from geometry to meshing, multi-domain simulation, workflow and simulation management, and results visualization.

Substantially lowering the cost of ownership and the need for in-house expertise, ESI’s new portal is a significant step towards the democratization of Virtual Prototyping. ESI Cloud is the only Computer Aided Engineering (CAE) cloud platform on the market that includes parallel workflows, templates and sample projects, which enable even novice users to become productive quickly. The first offerings by ESI Cloud are an end-to-end CFD Solution, enabling effective use of the open source software OpenFOAM, on-demand use of ESI Virtual Performance Solution, and more recently ESI MINESET data analytics solution. ESI plans to release several more SaaS and hybrid solutions as well as industry specific vertical applications in the coming months.

ESI’s subscription plans are designed to fit the needs of everyone: from students, to occasional users, professionals and enterprises.

Reduce Turnaround Times with ESI ProCAST 2016

ESI ProCAST is a Virtual Manufacturing solution that enables foundries to improve the design and quality of the parts they produce without the need for costly physical try-outs. Consequently, they can correct part design and manufacturing processes well-ahead of production, achieving lower scrap rates and delivering quality parts in a consistent way.

ProCAST 2016 promises even quicker turnaround times with new workflows dedicated to Gravity Casting and High Pressure Die Casting. Indeed, set-up time for gravity casting — the most widespread sand casting process — is reduced to just a few minutes. In addition the workflow for high pressure die casting (HPDC), ProCAST 2016 addresses addresses machine selection, and bridges the gap between design and production to deliver increased efficiency on the shop floor.

Casting simulation helps industrial manufacturers and foundries comply with new and increasingly stringent market expectations and achieve the highest quality and productivity possible. To that end, ESI ProCAST provides a complete solution, covering all casting processes and the alloys used in diverse industry sectors. The latest 2016 version focuses on key industrial challenges specifically related to sand, investment and die casting processes in the automotive, aerospace and heavy industries.

“Finally, a die casting machine and a simulation software are now able to communicate properly to facilitate the lives of the foundries. Transform real into virtual and vice versa is no longer just a project, but a reality for all our customers.”

Davide Colosio, CEO, Colosio S.r.l
New Version of ESI VA One Provides Unparalleled Capability for Aero- Vibro-Acoustic Simulation

ESI VA One is the only full-frequency, single-environment simulation software available for solving a wide range of noise and vibration design challenges in automotive, aerospace, marine and industrial applications. ESI VA One 2016 seamlessly combines Finite Elements, Boundary Elements and Statistical Energy Analysis into one flexible modeling environment."

"Customers have asked us for support in solving larger models, especially Boundary Element Models, which require a long time to compute, particularly for higher frequencies. Enhancements to VA One take advantage of multi-core processing on individual machines as well as distributed machines (clusters) and provide significant improvements in overall model run time," says Chad Musser, Director of Vibro-Acoustics Solution, ESI Group.

In addition, ESI VA One introduces unique capabilities for flexibly modeling complex loads and is able to robustly address the growing challenge faced by the automotive and aerospace industries to accurately predict wind and other noise due to turbulent flow effects.

The key highlights of VA One 2016 include:

- A unique enhancement providing the ability to accurately apply complex aero-vibro-acoustic (AVA) loads to SEA (Statistical Energy Analysis) models.
- Enhanced non-uniform acoustic FE mean-flow predictive capabilities to accurately model the effect of flow on muffler Transmission Loss (TL) via automated OpenFOAM analysis for reactive mufflers, or porous, sound absorbing muffler materials such as fiberglass.

Users of VA One 2016 will also benefit from performance, speed and productivity enhancement, specifically for multi-core BEM (Boundary Element Method) calculations.

Latest Version of ESI IC.IDO, Virtual Reality Solution for Industrial Applications

Enabling real-time 3D simulation of physical behavior

Among the many solutions available on the market, ESI IC.IDO excels at providing a Virtual Reality solution tailored to industrial needs. In particular, IC.IDO features models in real-scale and real-time. Its unequalled capacity to integrate material physics make it a powerful collaborative tool that is used by leading industry players across many industrial sectors, including Audi AG, Bausch & Stroebel, Boeing, Bombardier, Caterpillar, Ford, Gabler, MAN, Mitsubishi Hitachi Power Systems Europe, Renault, Trumpf, and more.

With version IC.IDO 10.2, ESI has strengthened its solution with the new modules IDO.SolidMechanics and IDO.Elastic, while significantly improving pre-existing modules. Benefiting from ESI’s unique knowledge of material physics, the two new modules are based on a novel physical simulation solver, which provides unprecedented fidelity of real-time behavior for rigid and elastic parts. ESI IC.IDO is available for CAVE/power wall set-up and also on the desktop.

“Our ability to consistently translate customer needs into software enhancements gives our customers a competitive cost and time advantage in bringing innovative products to market, and underscores ESI’s position as the industry leader in vibro-acoustic simulation.”

Chad Musser, Director of Vibro-Acoustics Solution, ESI Group

"The desktop version of IC.IDO enables collaborative work between engineering teams, while significantly reducing hardware cost. Thanks to this high-end DMU (Digital Mock-Up) solution, many issues can be solved immediately at the desktop, while preparing immersive review meetings."

Michael Bock, VR Expert, Volkswagen

for more information
www.esi-group.com/ICIDO

for more information
www.esi-group.com/VAOne

Thanks to Virtual Reality, Audi can virtually simulate assembly processes in immersive 3D and optimize them step-by-step. Image courtesy of Audi AG
Minimizing Manufacturing Costs and Time with ESI’s Welding & Assembly Solution

Today, the automotive industry requires parts with complex shapes manufactured to tight tolerances, and use of lightweight materials that have more springback and less formability. This is the context of the need to develop cost effectively and in shorter timeframes. Mechanical load and heat effects of a welded assembly process modify material characteristics and introduce residual stresses, which lead to dimensional inaccuracies in final components. Design engineers seek to compensate for the deformed shape by managing the assembly & welding, as correction on the stamping side would be either very costly or highly impractical.

ESI’s software solution for Welding & Assembly is an end-to-end simulation chain that accounts for stamping, welding and assembly manufacturing effects right from the start – in the design phase. The user can control and validate distortion tolerances, material characteristics and residual stresses and therefore better predict product performance.

The solution includes every design feature of a welding assembly process, such as pin locators, guides, and RPS. It delivers real structural predictions by incorporating the manufacturing history of stamping and accounting for all mechanical load effects of the assembly processes as well as hot/cold spots and seam joining effects. Realistic material properties, residual stresses and distortions are provided throughout the virtual manufacturing process. Moreover, the user gets realistic input for advanced/ refined performance validations.

ESI co-created and verified this predictive solution with key European and Asian automotive manufacturers. Ultimately, ESI’s solution for Welding & Assembly minimizes the cost of manufacturing planning, try-out and fabrication validation, and time to market.

for more information
www.esi-group.com/welding-assembly

ESI Launches Virtual Seat Solution 2016

Inevitably today’s aircraft seat designers are faced with challenges to reduce weight as a means of lowering fuel cost for the airline companies. Seat designers need to discover solutions without compromising passenger safety and while remaining in compliance with evolving safety regulations.

French company Expliseat, for instance, quickly gained certification for their revolutionary Titanium seat, the lightest seat ever certified by the European Aviation Safety Agency (EASA).

ESI Virtual Seat Solution 2016 also delivers key improvements for the automotive market to enable performance assessment early in the seat development process. With its new functionality for guided seat model generation, the 2016 version provides significant flexibility and time gains to engineers. As for whiplash testing to ensure passenger safety, Virtual Seat Solution 2016 now supports whiplash testing to comply with the ChinaNCAP process; adding to the software’s existing capabilities for assisting EuroNCAP and JNCAP certifications.

for more information
www.esi-group.com/virtual-seat-solution
Virtual Performance Solution Version 2016 Includes New Functionalities to Answer Lightweight and Environmental Challenges

ESI’s flagship software Virtual Performance Solution is unique in that it allows manufacturers to face emerging design challenges — including those related to lightweight and green vehicles — while avoiding over-engineering. Virtual Performance Solution offers a distinctive approach, enabling the virtual testing of product performance across multiple domains using a single core model.

In Virtual Performance Solution 2016 OEMs will find new functionalities to help them tackle challenges related to the introduction of new materials, and thereby design the next generation of lightweight vehicles: through use of new dynamic re-meshing capabilities, rupture propagation after an impact is now better captured; important as engineers investigate in detail what happens in the crash rupture area when using new materials and novel assembly methods.

The European Commission recently introduced stringent noise limitations, which will become applicable as of 2026. In the case of electric and hybrid vehicles, which are exceedingly quiet, legislators are considering adding noise so as to reduce the risk of collision with pedestrians. To solve noise related problematics in an effective way, the latest release of Virtual Performance Solution offers extended capabilities for Noise, Vibration & Harshness (NVH). The prediction of noise radiation is handled by combining the Finite Element Method for the structure and the Boundary Element Method for the outside of the car. A single-core model is used for the complete vehicle, and thus for all engineering teams, bringing drastic reduction of development cycles and costs.

With a single core model approach, engineers can not only perform regulatory crash and NVH tests, they can also run virtual tests to evaluate the real driving conditions. VPS delivers truly multi-domain capability and using the new water flow module, users can early detect potential leakages and assess how rain will affect driving visibility.

for more information
www.esi-group.com/VPS
Recent Acquisitions Extend ESI’s Offering, Paving the Way for Even Smarter Virtual Prototypes

ITI GmbH: 25 Years of Expertise in Dynamic Systems

The acquisition of the German company ITI GmbH, a global leader in the realistic simulation of mechatronic and multi-domain systems, allows ESI to expand its positioning upstream in the industrial product manufacturing value chain. Counting over 700 customers worldwide, including prominent players, such as Ford, Liebherr, Nikon, Siemens, and Total, in diverse industrial sectors and in 27 countries, ITI GmbH has built its commercial and technological success based on its flagship product, SimulationX.

Concept development enabled by realistic modeling of 0D-1D systems and multi-domain Virtual Prototyping in a 3D-4D immersive environment are two fundamental stages in a product’s development cycle.

Although typically considered separately, these representations interface with each other and are intimately complementary when designing an integrated, dynamic and complex product such as an automobile. Building on mature technologies, ESI’s new value proposition is to offer the combined real-time simulation throughout the product development cycle.

“ESI Group’s collaborative virtual engineering platform will provide direct access to a product’s functional features and enable more efficient and faster decisions to be made at the system level”, says Alain de Rouvray, ESI Group’s Chairman and CEO.

Mineset Inc.: Simple by Design, Power on Demand

“The incorporation of our two technologies within one offer will bring a new and disruptive value proposition that we believe will significantly accelerate the democratization of virtual engineering.”

Andreas Uhlig, CEO, ITI GmbH

“While the exponential growth of the Information and Communication Technologies finds an accelerated usage in all economic domains, it also generates massive amounts of data (‘big data’). This trend imposes a critical pressure on industrialists confronted with the need to link virtual simulation models to the real world data of the Internet of Things, says Alain de Rouvray, ESI Group’s Chairman and CEO.

The acquisition of Mineset Inc., a subsidiary of Silicon Graphics International Corp. (SGI), global leader in high-performance solutions for computing, data analytics and data management, complements the recent integration of Picviz Labs (now ESI INENDI) and its technology for big data mining. Indeed, the combination of INENDI’s data correlation detection with Mineset’s pattern recognition and linked to ESI Virtual Prototyping solutions provides new transformative processes and sources of value creation.

Mineset Inc.’s team of world-class experts, based in California, has developed a visual analytics platform with an easy-to-use Cloud-based user interface, that tightly integrates advanced visualization with machine-learning technology. The integration within ESI’s overall Virtual Prototyping offering will bring new capabilities in terms of simulation results analysis, discovery of hidden correlations, fault detection, predictive maintenance, and design optimization. This will contribute to the delivery of better simulation and modeling results and, subsequently, to a reduction in production and maintenance times.

for more information
www.esi-group.com/SIMULATIONX

for more information
www.mineset.com

ESI’s San Jose Bay Area office

“We are excited to see ESI Group take this technology to the next level, delivering transformational solutions to help customers design better products and to further machine learning.”

Jorge Titinger, President and CEO, SGI

for more information
www.itisim.com
www.mineset.com
ESI China’s COO Recognized as One of the “Top 10 Ladies in Chinese Economy”

Highlighting her instrumental role in the regional development of ESI Group

Zhimin Cui, Chief Operating Officer of ESI China, was recognized as one of the “Top 10 ladies in Chinese economy” during the 13th Chinese Economy Summit and 2015 Annual Meeting of China’s Economic Figures that took place in the Great Hall of the People, Beijing. The annual event casts some light on high-profile organizations and individuals who have made a prominent contribution to the development of China’s economy. With over 20 years of experience in the CAE industry, Ms. Cui joined ESI Group in 2009. Since then, she has significantly raised the visibility of ESI in China, most specifically within the context of the Made in China 2025 campaign that seeks to move China up the manufacturing value chain.

Under her lead as local COO, ESI China, a subsidiary created in 2004, has steadily expanded, addressing both domestic Chinese entities and ESI’s global customers. With a strong focus on delivering customer value through innovative projects, ESI China has become an increasingly important part of ESI and in 2015 was granted the certification ISO 9001, as part of the Group’s global certification.

In 2012, Ms. Cui contributed to building a strategic collaboration with BIAM, the Beijing Institute of Aeronautical Materials, one of the core scientific Research Centers of AVIC (the Aviation Industry Corporation of China). ESI and BIAM subsequently signed a framework agreement to create a Joint Venture, focused on enabling innovation in the fast growing Chinese aeronautical sector. Ms. Cui served as General Manager of the Joint Venture AVIC-ESI (Beijing) Technology Co. Ltd. when it started business in 2014, and is today on the Board of Directors of that entity, while she continues to manage ESI China directly.

Huawei and ESI Partner to Foster Innovative HPC Solutions

ESI signed a Memorandum of Understanding with Huawei, a leading global Information and Communications Technology (ICT) solutions provider, during the HUAWEI CONNECT 2016 event in Shanghai, China on September 1, 2016. ESI and Huawei will collaborate on High-Performance Computing (HPC) and cloud computing to provide innovative industrial manufacturing solutions for customers in China and worldwide. ESI customers are already benefit from Huawei HPC platform when using ESI Virtual Performance Solution and Virtual Reality solution ESI IC.IDO.

The partnership includes plans for cooperation on multiple levels. One is to build a joint innovation center in Munich, Germany to enable the two parties to validate innovative cloud computing and HPC solutions; another is to build a global experience center in Hangzhou, China that will allow customers to experience the latest products and benefit from service training sessions.

“The ongoing digital transformation of industrial manufacturing demands enterprise-level IT solutions that are more intelligent, efficient, and convenient, especially in the HPC domain. Upholding the core values of openness, cooperation, and win-win, Huawei consolidates resources and capabilities from all its industrial partners to provide more powerful industrial manufacturing solutions for customers to help them succeed.”

Zheng Yelai,
President,
Huawei IT Product Line

Zhimin Cui with her award, January 2016, Beijing, China

Huawei and ESI representatives at the ceremony
Meet ESI at the Following Events

Oct 19 2016
PAM-STAMP Workshop
Two day sheet metal forming simulation workshop at ESI UK’s head office. Receive hands on training with one of our resident experts
Cannock, UK

Oct 19 - 22 2016
Korea Metal Week 2016
International Metal Industry Technology Exhibition
Kintex, Gyeonggi, South Korea

Oct 20 - 21 2016
Human Modeling and Simulation in Automotive Engineering
Conference on computer simulations for comfort, ergonomics, occupant safety with digital human models
Heidelberg, Germany

Nov 16 - 18 2016
Fabtech 2016
North America's Largest Metal Forming, Fabricating, Welding and Finishing Event
Las Vegas, NV, United States

Nov 17 2016
11th Erlanger Workshop
Workshop for sheet metal forming
Fürth, Germany

Nov 21 - 23 2016
Aachen Acoustics Colloquium - AAC2016
Development and research in automotive acoustics
Aachen, Germany

Nov 22 - 23 2016
SIMVEC 2016
Simulation and testing in vehicle development
Baden-Baden, Germany

Nov 29 - 30 2016
Production Congress 2016
Secure competitive capability in the confusion of industry 4.0 - how does it work?
München, Germany

Save the Date!
ESI User Forums

October 2016
VPS User Forum 2016
Brasy, Czech Republic

OpenFOAM User Conference
Cologne, Germany

Vibro-Acoustic User Conference
Cologne, Germany

ESI France Forum
Versailles, France

November 2016
ESI Eastern Europe Forum
Prague, Czech Republic

ESI Japan User Forum (PUCA)
Tokyo, Japan

ESI SimulationX User Forum
Dresden, Germany

Find more information:
2015 Annual Results

2015 has marked by continued growth and significant improvement in profitability. Indeed, annual sales totaled €124.7 million, up +12.3% on 2014 at actual rates, showing substantial growth in licensing activity and engineering studies. The gross margin was 72.5% of sales, up +1.2% on the previous year and the EBITDA increased sharply (+32.2%) to €14.3 million, giving an EBITDA margin of 11.4%, up +1.7% on 2014; highlighting ESI’s good piloting of its operating costs over the year.

The realization of the strategic vision through diverse acquisitions further enhanced ESI’s growth potential. Alain de Rouvray, Chairman and Chief Executive Officer of ESI Group, comments:

“The dynamics in the adoption of ESI Group’s Virtual Prototyping solutions by industrial leaders was fully confirmed in 2015. This trend was amplified by the rise of the smart digital factory that is revolutionizing the innovation process and shortening delays in product manufacturing. The buoyant development of high value-added innovative engineering studies confirms ESI’s global role as a major player in this transformation.

Our acquisition policy, in essential technological domains, has allowed us to expand the Group’s strategic positioning in the full manufacturing and performance value chain of industrial products. In 2015, our profitability significantly increased despite the costs of acquisitions integration. Moreover, our integral Virtual Prototyping offer is now considerably enriched thanks to multi-physics inputs such as systems modeling that animates 3D components, continuous connection to the real world through the Internet of Things (IoT), and integrated machine learning leading to autonomous driving.

In the near term, combining sales growth and the deployment of these exciting and expected synergies from our newly-acquired solutions, we anticipate a further improvement in our economic performance while strengthening our strategic partnerships.”

Appointment of a New Independent Board Member

Following the recommendation of the Compensation, Nomination and Governance Committee, ESI Group’s Board of Directors, proposed the appointment of a new independent Board member, Mr. Yves de Balmann, at the Annual General Meeting on July 21, 2016. The appointment was approved.

A graduate of Stanford University in the United States and Ecole Polytechnique in France, Yves de Balmann has acquired extensive experience in capital markets, acquisition financing and international investment in private companies, starting his career at Citibank, before joining Bankers Trust in 1988. After the latter merged with Deutsche Bank in 1999, Yves de Balmann was appointed Co-Head of Deutsche Bank’s Global Investment Bank (GIB) and a member of the Board of the Bank’s Global Corporates and Institutions Division (GCI), as well as Co-Chairman and Co-CEO of Deutsche Bank Alex Brown. In 2002, Yves de Balmann founded Bregal Investments, a major global private equity player of which he was Co-Chairman until 2012.

Based in California, he is currently a director of Exelon Corporation (NYSE) and Conversant IP Management, where he is also non-executive Chairman, and a director of Sweetwater Spectrum, a non-profit organization.

Yves de Balmann is already familiar with ESI Group, having been involved with the Group as a Board member between 2001 and 2008.

“We are particularly pleased and honored to welcome Yves de Balmann as a new independent member of our Board of Directors. His experience as a member of the Boards of various prestigious companies will be particularly beneficial within the context of the Group’s numerous recent acquisitions. Furthermore, his entrepreneurial expertise and his dual citizenship (US and French) represent valuable assets that will support ESI Group’s international development,” states Alain de Rouvray, ESI Group’s Chairman and CEO.

For more information