



Virtual Test & Engineering Simulation in Aerospace & Defence: Review

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The global aerospace industry is in a period of major growth, both in the commercial and defence sectors. New opportunities are abundant for companies involved in the industry, but with these opportunities come significant challenges. Among the many business challenges facing aerospace manufacturers are strict environmental rules, time to market pressures, and demand for improvements to total cost of ownership and operation. There are also many new technical challenges to address, including new fuels and engine technologies, use of advanced materials, and the necessity to adopt new engineering approaches such as “system-of-system” design. To be successful, companies will need to carefully consider how design and engineering functions can evolve to address these new business and technology challenges, while minimizing risk and production costs.

Digital and Virtual Product Models have played significant roles in addressing the challenges facing the Aerospace Industry, introducing a new era of Virtual Design and Engineering collaboration and helping to establish a simulation as a unique cornerstone of the “PLM” (Product Lifecycle Management) environment. Highly functional, effectively implemented, and commercially viable Virtual Simulation is now well established as a critical path component in the development process of all aircraft manufacturers. Leading manufacturers in the Aerospace Industry understand the potential benefits and value in virtual product validation and are now taking steps to assure their future business success by further embedding it as a core part of their engineering and business processes.

However, whilst the Aerospace industry continues to drive the technology requirements for larger, more physically complex, and faster design simulations, the most compelling challenges now centre around issues such as the rational integration of multiple systems, the capture and automation of consistent knowledge-based processes, and the creation of managed simulation environments serving distributed manufacturers and suppliers. The latest technologies therefore focus on allowing engineers to **simulate more reliably, accurately, efficiently, and productively than ever before.**

Two years ago, leaders from the Aerospace industry gathered in Rome at the first “Virtual Test and Simulation in Aerospace & Defence Conference” to share their experiences, ideas, and plans

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on these topics. The Conference, hosted by MSC.Software, was widely acclaimed as a major success by the participants.

October 2008 saw the much anticipated follow-up event. Again held in Rome at the prestigious Palazzo Barberini and the M. De Bernardi Airport, the second Virtual Test and Simulation in Aerospace and Defence Conference, was jointly organised by Alenia Aeronautica and MSC. Software, in collaboration with the Italian Airforce (Aeronautica Militare), The Italian Civil Aviation Authority (ENAC), and Solution Partners IBM, ESTECO, REDAM, Sogeti HiTech, and Ernst & Young.

The 2008 Conference was extended to two working days, allowing presentation of many more case study scenarios, and allowing delegates more time to meet and exchange experiences with their industry peers. With a focus on military Aerospace applications the Conference opened with keynote presentations from the Chief Executive and Chief Technical Officers of Alenia Aeronautica and MSC.Software, and included presentations, round-table discussion and workshop contributions from EADS, Thales Alenia Space, Agusta Westland, REDAM, IBM, Sogeti HiTech, Ernst & Young, MBDA and CNES.

For further information please contact MSC.Software at info.europe@mscsoftware.com



Virtual Test & Engineering Simulation in Aerospace & Defence : Introductions

G.Bertolone, CEO *Alenia Aeronautica*
B.Weyand, CEO *MSC.Software*
A.De Castro, VP *Industries IBM*
A.Cantarutti, Director Aerospace Italy, *MSC.Software*
General D.F.Draghi, Flt.Lt.R.Ambra, *Italian Air Force*

Virtualization and Simulation as key assets for the New Business Challenge

N.Cauceglia, CTO *Alenia Aeronautica*

EASA Vision and Activities for Virtual Testing

P.Medal, Head Experts Department, *EASA*

Virtual Testing Challenges

C.Cifaldi, Director Product Certification, *ENAC*

Leveraging Information Technology in the Aerospace & Defence Industry

G.Zuliani, VP Global Aerospace and Defense Industry, *IBM*

Engineering Simulation Technology Business Impact in Aerospace Industry

IBM, MSC.Software, Alenia Aeronautica, AgustaWestland, MBDA, MSC Software, Sogeti HiTech

Enterprise Simulation and PLM

- New Paradigm in PLM Simulation process, *MSC.Software*
- Advanced CAD-CAE methodologies, *AgustaWestland*
- Find, Control and Optimize your Engineering Simulation Information, *IBM*
- Enterprise Simulation Management in Aerospace Industry, *Sogeti HiTech*

Multi-Discipline simulation Perspective

- Multi-disciplinary & Robust Design Process for Airframe Virtual Certification, *Alenia Aeronautica*
- Multidisciplinary Design Optimization for Aerospace, *ESTECO*
- TAS-I experiences on Integrated Engineering Environment, *Thales Alenia Space*
- Advanced Solution for Discipline and Tools integration in Aircraft Simulation, *REDAM*

Enterprise Simulation and PLM

- Remote Visualization & Collaborative Design for CAE Applications, *IBM*
- Aerospace Industry Simulation Business Impact, *Ernst&Young*

MultiDiscipline simulation Perspective

- On Demand: HPC Simulation Process, *Alenia Improvement*
- Mechanical System Engineering Empowering through Simulation, *MBDA Italy*