Project Details

Project Title	**HIRF SE**
Contract Number	205294 (FP7)
Key Action Line	Aeronautics and Air Transport
Type	Collaborative Project - Large Scale Integrating Project (CP-IP)
Total Project Cost	26,5 M€
EC Funding	17,8 M€
Number of Partners	44
Total Number of Man-months	2412,17 MMs
Project Start	1st of December 2008
Project End	30th of November 2012
Project Duration	48 months
Web site	http://www.hirf-se.eu/hirf/
Project related EMC Portal	http://www.hirf-se.eu/portal/

List of Partners

1. Alenia Aeronautica, (ALA) - Project Coordinator, Italy
2. L-up SAS (L-UP), France
3. Hellenic Aerospace Industry S.A., (HAI), Greece
4. ONERA, (ONERA), France
5. AxesSim SAS, (AXS), France
6. Universita di Roma "La Sapienza", (URM), Italy
7. Dassault Aviation, (DASSAV), France
8. University of York, (UoY), United Kingdom
9. Alenia Aermacchi, (AAEM), Italy
10. Agusta Westland, (AW), Italy
11. BAE Systems Ltd, (BAeS), United Kingdom
12. Brno University of Technology, (BUT), Czech Republic
13. Centre Internacional de Métodes Numérics en Enginyeria, (CIMNE), Spain
14. Computer Simulation Technology AG, (CST), Germany
15. Eurocopter Deutschland, (ECD), Germany
16. EMCCons Dr. Rasek, (EMCC), Germany
17. EADS Construcciones Aeronauticas, (EADS - CASA), Spain
18. Evektor, spol. s.r.o. , (EVEKTOR), Czech Republic
19. Swedish Defence Research Agency, (FOI), Sweden
20. Galileo Avionica, (GA), Italy
21. Hispano-Suiza, (HISPANO-SUIZA), France
22. Institute of Communication and Computer Systems, (ICCS), Greece
23. Ingegneria dei Sistemi, (IDS-IT), Italy
24. Instituto Nacional de Tecnica Aeroespacial, (INTA), Spain
25. Istituto Superiore Mario Boella, (ISMB), Italy
26. National Aerospace Laboratory, (NLR), Netherlands
27. Oktal Synthetic Environment, (OKTAL-SE), France
28. Piaggio Aero Industries S.p.A., (PAI), Italy
29. Politecnico di Torino, (POLITO), Italy
30. Polskie Zaklady Lotnicze Sp. z o.o., (PZL), Poland
31. QWED Sp. Z.o.o., (QWED), Poland
32. Rzeszow University of Technology, (PRz), Poland
33. SPIRIT S.A., (SPIRIT), Greece
34. Thales Avionics S.A., (THAV), France
35. Thales Systemes Aeroportes, (TSA), France
36. Thales Communication S.A., (THC), France
37. Technische Universität Hamburg-Harburg, (TUHH), Germany
38. University of Twente, (TWENTE), Netherlands
39. University of Granada, (UGR), Spain
40. University of Malta, (UoM), Malta
41. Universitat Politecnica de Catalunya, (UPC), Spain
42. University of Nottingham, (UoN), United Kingdom
43. Ingegneria dei Sistemi, (IDS-UK), United Kingdom
44. Advanced Microwave Systems, (AMS), Greece

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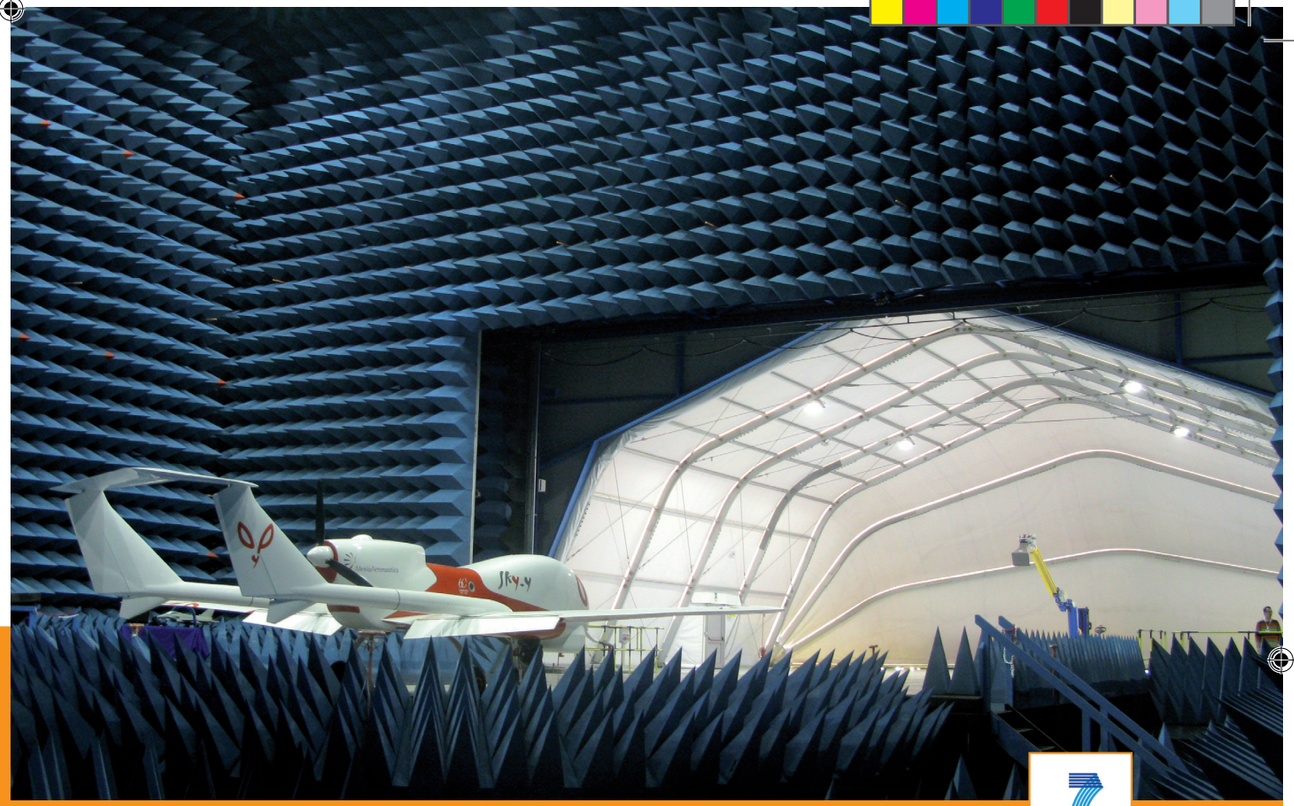

SEVENTH FRAMEWORK PROGRAMME

SYNTHETIC ENVIRONMENT RESEARCH PROGRAM

HIRF

HIRF SE

High Intensity Radiated Field Synthetic Environment

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HIRF SE

High Intensity Radiated Field Synthetic Environment

Project Scope

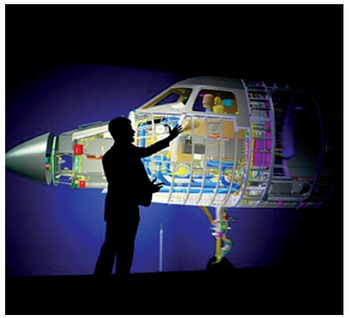
The scope of the **HIRF SE** research project is to provide the aeronautics industry with an integrated EMC (Electro-Magnetic Compatibility) simulation (SW) framework/'toolset' which can be used during aircraft development so as to accurately account for any undesirable Electro-Magnetic (EM) aspects on-board and appropriately adjust the related design so as to mitigate these, from as early on as the preliminary design phase.

As a result, it is expected that the **HIRF SE** framework will contribute to a considerable reduction in the lengthy and costly EMC related certification/ qualification testing process applicable today for any new air vehicle. In addition, cost and time penalties resulting from any re-work of the original design later down the aircraft development cycle will also be minimized as a result of the introduction of the **HIRF SE** framework.

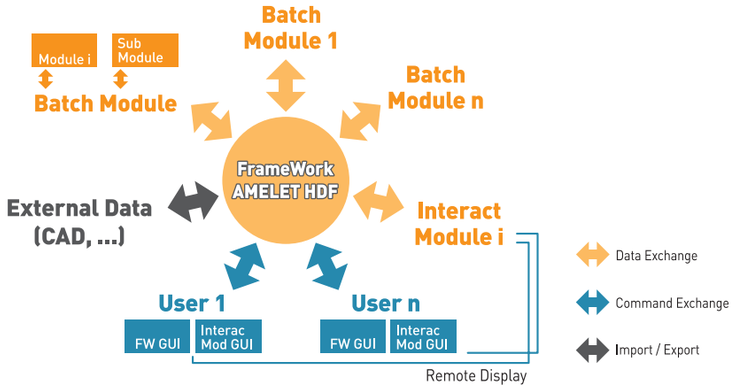
Project Objectives

The HIRF SE framework's expected benefits can be summarized by the following items:

- To develop a full validated and integrated SW framework/toolset for modeling, numerically simulating and testing air vehicles for EM aspects during the design and certification phases.
- To establish (basing on past and ongoing research and other works) an integrated and standardized approach for an 'open' and evolutionary architecture upon which the **HIRF SE** framework will be built.



Framework/Modules organisation



Expected Benefits

The **HIRF SE** framework's expected benefits can be summarized by the following items:

- ✔ **The reduction of certification/qualification testing for EMC:** the HIRF SE framework could be used for high precision simulation testing (from the preliminary even design phase) thus replacing, for the most, the lengthy and costly physical testing process typically used today.
- ✔ **The minimization of the original design, design rework and re-testing phases, at least in relation to EMC aspects:** by use of the HIRF SE framework during the preliminary design phase, simulation testing could be adopted to detect and address EMC concerns of any new aircraft designs swiftly and early on, thus saving cost and time when compared with any resulting redesign and retesting attributable to 'deficiencies' being discovered further down the aircraft development cycle.
- ✔ **The capability to account for the increased use of composite materials and structures in the airframes of modern aircraft:** the HIRF SE framework will include the most advanced computational models for the numerical simulation of the EM characteristics and performance of composite materials.
- ✔ **The capability to deal with the complete internal and external electromagnetic 'environment' (present and foreseen):** the HIRF SE 'toolset' will be able to simulate a wide variety of EM (internal and external) interference sources in terms of both typology and number.
- ✔ **The definition and development of a widely recognized methodology and corresponding tool:** through the achievement of accreditation by the appropriate certification bodies and the validation and 'seal of approval' of the civil aviation community.
- ✔ **The establishment of an 'excellence in EMC modeling' reference:** through the integration of existing tools and previous and on-going works of a large community of EMC experts, scientists, academic and industrial engineers, cooperating to build a common 'golden standard' reference toolset.

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