# Global Electromagnetic design and Avionics systems

Radar and Infrared Signatures

- Modern military aircraft rely on staying undetected and to detect the foes aircraft at the earliest.
- If detected also it is important to stay as small as possible so as to improve the counter measures
- This can be done by reducing the aircraft Radar and infrared signatures where RCS and IR came to picture
  - **VIRAF-RCS** for the prediction of the RCS
  - **VIRAF-IR** for the prediction of the IR signature

VIRAF-RCS - *Virtual Aircraft Framework for RCS analysis and mitigation*

- RCS analysis of complex platforms, including aircraft, helicopter, missile, UCAV, UAV, drone
- Antennas and Arrays RCS analysis
- Frequency Selective Surface (FSS) design and analysis
- Operational performance (Detection Range, Detection Probability, Range Advance Factor, Self-Screening Range) and Scenario Simulation
- Jet Engine Modulation (JEM) analysis
- Diagnostics capability, by means of radar imaging, hot spot calculation, 2D fast loop analyses
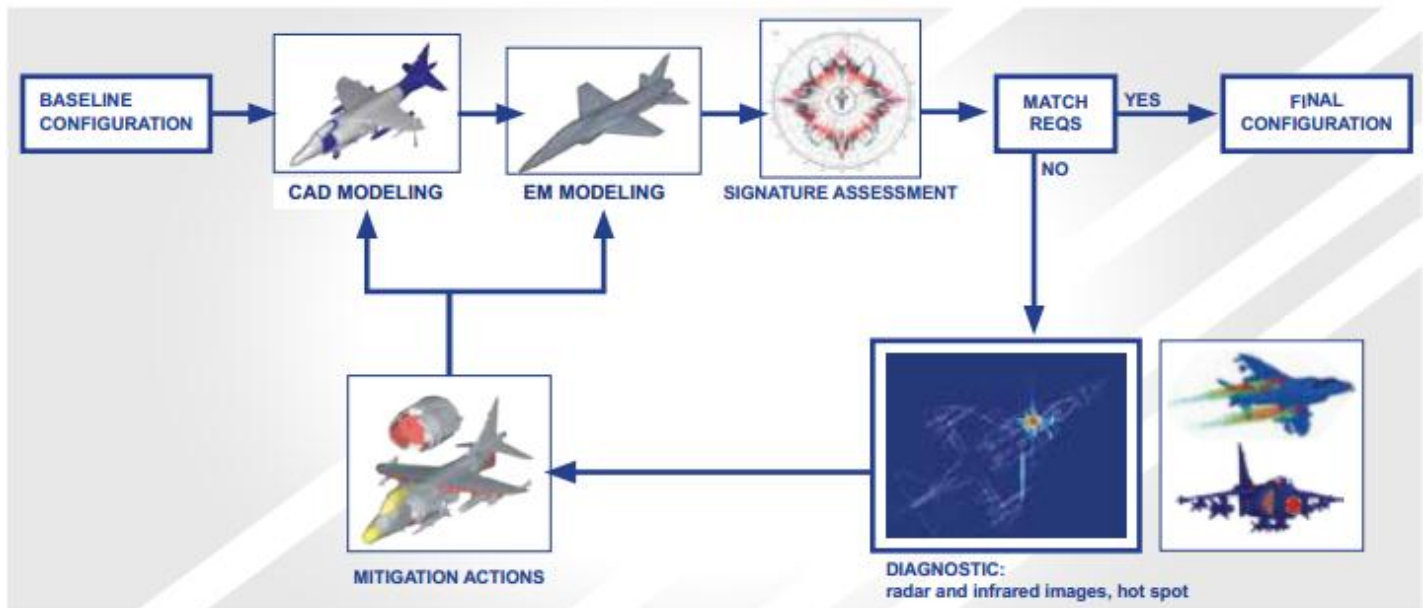
VIRAF- IR - *Virtual Aircraft Framework for IR analysis and mitigation*

- Interface with CFD software for an accurate thermal solution analysis (surface temperature distribution and engine exhaust plume temperature and gas composition)
- Polar and spectral radiant intensity analysis
- IR imaging & Radio signal analysis

RCS MS - *Radar Cross Section Measurement System*

- RCSMS is a cost effective, flexible and transportable measurement system which provides accurate Radar Cross Section (RCS) assessments of full scale targets
- Measurements can be performed indoors in anechoic, partial anechoic or non-anechoic environments or outdoors in suitable test areas free of large obstacles
- **IDS-RCSMS** is a near field measurement system positioned using a planar scanner which acquires 2D/3D synthetic aperture radar (SAR) diagnostic radar images of the target and converts them to undistorted far field like radar images.

FARAD - *Flying Aircraft Radar Signature Acquisition and Determination*

- FARAD is a flexible radar system which is designed to perform dynamic Radar Cross Section (RCS) measurements of stealth like flying targets.
- The system is customizable and expandable and only requires a short time to acquire accurate measurements.
- The radar, tracking equipment and the cabin for its operators and control and monitoring equipment is all designed for outdoor use, is self-powered, easy to deploy and fully transportable.

Operation

- Embedded target tracking capability optimized for short range RCS dynamic measurement of flying targets. When being measured, the aircraft flies planned trajectories and is automatically tracked by FARAD
- Allows very fast operation and provides highly accurate data.
- Includes powerful post processing capabilities integrated in a unique software tool and database capability.
- High sensitivity as a result of extremely fast waveform generation (Direct Digital Synthesizer chirp) and the use of coherent and non-coherent integration.
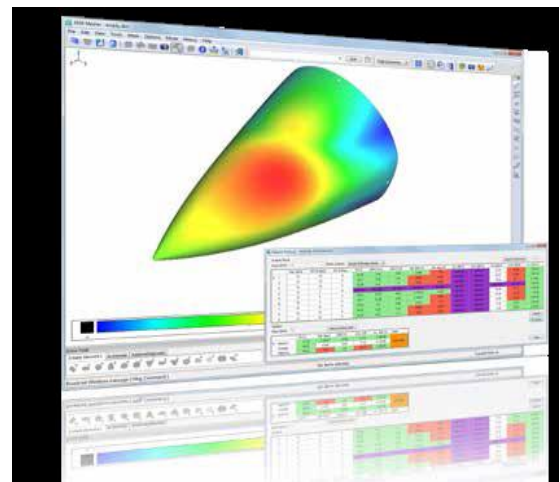- FARAD is highly transportable and fast
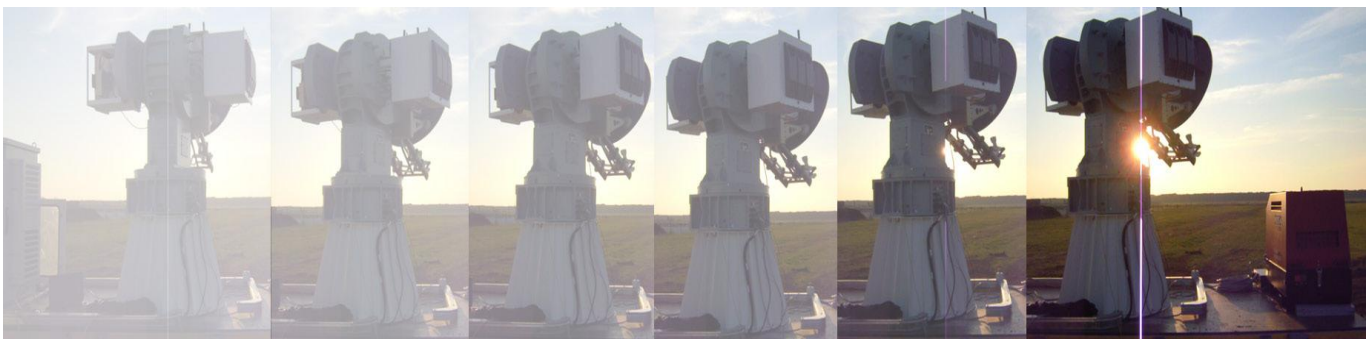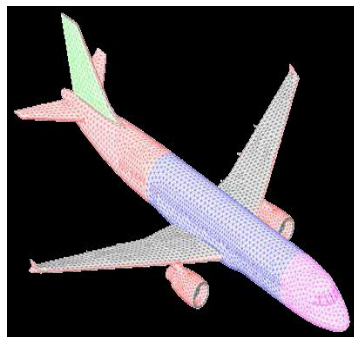
Electromagnetic Compatibility / Interference

Electromagnetic Compatibility (EMC) and Electromagnetic Interference (EMI) can be measured and assessed during the prototype stage of development and different electronic systems can be tested and repositioned until the optimal configuration is found

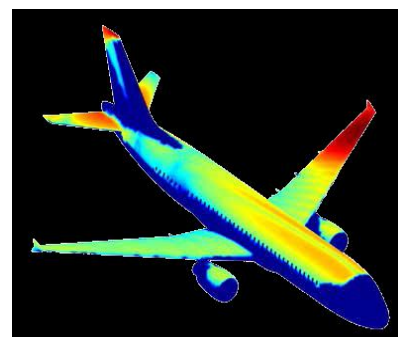## *E-MIND* - *Electromagnetic Multi code Integrated Design Framework*

- E-MIND provides an integrated environment for aeronautical EMC/EMI risk assessment and mitigation. It allows aircraft manufacturers to create electromagnetic (EM) models of aircraft designs, to assess the performance of different antennas and arrays, and to optimize the design of an aircraft through testing alternative antenna locations.
- E-MIND includes a range of prediction tools covering the full operational spectrum of modern aircraft. These tools can be used to perform system level antenna performance evaluations, EMI assessment and reduction, and communication link quality verification.

| CAD model | Mesh Model | Structural components |

Nfotec Digital Engineering Pvt. ltd! 34. Surya Tech Park, Krishna Reddy Layout, Domlur, Bangalore, 560071, India. Tel: +91-80-41605685/41669115, Fax: +91-80-41605782