

EADS-UC3M
JOINT CENTER
FOR AEROSPACE
AND SECURITY
SYSTEMS

UC3M

R E S E A R C H G R O U P S

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Universidad
Carlos III de Madrid
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Joint Center Facilities within the Science Parc University Carlos III of Madrid (LEGANÉS TECNOLÓGICO)

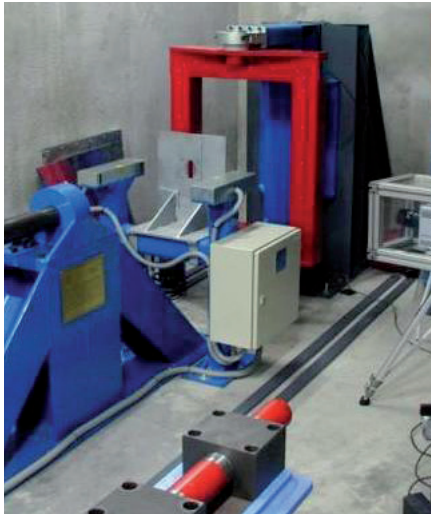
The Joint Center for Aerospace Systems Integration is a common platform encompassing university, industry and other stakeholders to facilitate innovation processes, knowledge and technology transfer to industrial sector. The aim of this Center is to improve competitiveness of the aerospace industry to social and economic development.

The Joint Center activities' are related to generation, development, transfer and technology dissemination. Foreseen services to fulfill its mission are:

- Technology Research and Development
- Technology services: Audit attention, watch and forecast
- Technology plans and maps
- Analysis, certification, tests and technological advice
- Technology dissemination and Technology Transfer
- Customized industrial training
- Spin-offs maturing

• RESEARCH LINES •

- Refueling systems.
- Mission planning.
- Networks security evaluation.
- More electric airplane.
- Tempest-EMC.



Impact Lab

- Microelectronics.
- Real time and embedded S/W.
- Flight physics.
- Manufacturing technologies.
- Integrated vehicle health monitoring (IVHM).
- Structural dynamics.
- Advanced materials.
- Signal processing, communications, antennae and radiofrequency.

• OUTSTANDING COLLABORATIONS AND R&D&I PROJECTS •

The Center keeps collaborations with EADS, AIRBUS MILITARY, INDRA, CESA, AERNOVA.

Some of the R&D&I projects of the Center are:

- PROSAVE 2- New Technological improvements of Air Advanced Refueling System

(advanced displays, TOF devices, new algorithms for tracking, training simulators).

Funding Entity: Technology Centre for Industrial Development (CDTI) Date: 2010-2013.

- DEIMOS - Modeling to evaluate Fuel Cells integration in electrical High Voltage 270 DC aircraft architectures (Power Electronics).

Funding Entity: Technology Centre for Industrial Development (CDTI) Date: 2010-2011.

- Spectral methods for non-destructive testing of composite materials under fire conditions.

Funding Entity: Airbus Military Date: 2010-2011.

- Light Air Platform Command & Control System.

Funding Entity: EADS-CASSIDIAN. Date: 2011.

- ICARO.

Funding Entity: Science and Innovation Ministry. Date: 2008-2010.

- Thermal and electrical characterization of advanced materials (composite with carbon nanotubes) for Lightning Strike and EMC Protection.

Funding Entity: Science and Innovation Ministry

Date: 2008-2010.

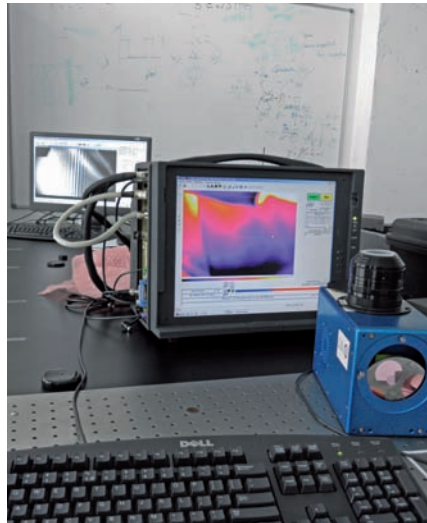
- TARGET - Nanotechnology for multi-functional aero structures of composite material.

Funding Entity: Technology Centre for Industrial

Development (CDTI) Date: 2010-2013.

• INNOVATIVE TECHNOLOGICAL SOLUTIONS •

- Evaluation and interoperability of protocols and security architectures
- Users identity Authentication system by means of an ID-NSCards for critical environments
- Biometric identification technologies
- Wireless communication algorithms (MIMO-OFDM)



Infrared sensor Lab

- Gas Teledetection by Infrared sensors (IR)
- Multi and Hiperspectral Pasive Infrared Sensors (IR) applied to safe menace detection
- Infrared Sensors (IR) applied to Fire Detection and human security

• FACILITIES/LABORATORIES •

Besides the facilities and common equipment of the University Carlos III of Madrid, the Center owns the following laboratories located within the Science Park:



Climate chamber

Identification and Biometric Systems Laboratory

- Functional evaluation of Identification Systems
- Biometrics
- Smart cards
- Security Evaluation through common criteria
- Protection Profiles elaboration



Iris Biometry

- Evaluation methodologies creation
- Consulting and Systems identification R&D
- National and International Standardization

Networks Security Laboratory

Design and Implementation of Security Solutions

- Based on establishment of Virtual Privates networks
- Authentication of users (mobile devices and smartcards)
- Flexibilization of protocols and security architectures for mobile devices (AdaptCrypt)
- Elaboration of security criteria for network system configuration

Protocols and Architecture Evaluation

- Approval and Performance analysis for Security protocols (IPSEC and SSL)



Sensors

- Controlled Analysis about the effects of service refusal attacks
- Interoperativity studies for network systems

Signal Processing and Communications Laboratory

Communications

- Cooperative transmission en Sensors' network
- Design and Prototyping of solid and wire-

less Communication Systems

- High efficiency spectral techniques

Multimedia Processing

- Video Codification
- Image and Video analysis
- Voice Treatment

IR and Spectral Sensors Laboratory

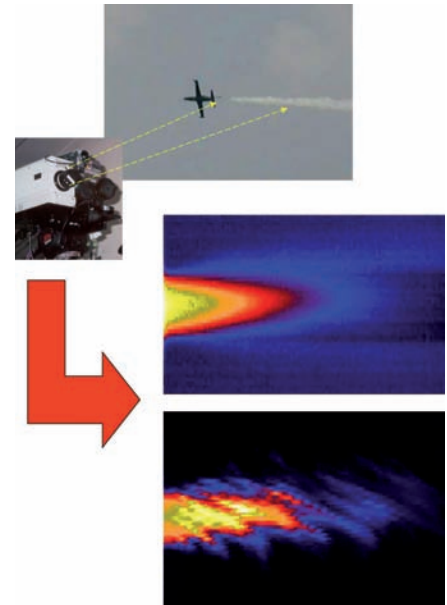
Infrared Spectral Imaging for Remote Detection

- Toxic and hazardous gases of environmental interest
- Civil Protection (forest's fire, humans rescue,...). Defence and Security (safe threaten identification, border protection, IR firms, sea watching, night vision...).
- Natural resources seeking

Spectral IR Thermography applied to non destructive analysis

- Turbines combustion Analysis and leaks. Feathers analysis.
- Hidden defects detection (pores, delaminations,...)
- Fire effect in materials and structures analysis
- Failure Thermographic IR analysis+
- Spectral IR analysis applied to metrology

Structural Dynamics Laboratory Center for Rapid Prototyping



Aeronautical applications. Diagnosis and study of turbines through IR analysis of feathers and scapes

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