SIGMA CONSULTING

Sistemi Integrati & Management

Defence & Aerospace electronic systems

Advanced Logistic Support

Training and customer service

Homeland Security

Sede Legale: Via Cavareno 13 – 00124 Roma
Tel.: 06-50938965 **Tel./Fax**: 06-50915386
Sito: www. sigmaconsulting.it
E Mail: sigma@sigmaconsulting.it

Sede Operativa: Roma Tecnopolo via Ardito Desio 60 – 00131

SIGMA HIGHLIGHTS

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Mission: Systems Integration company

Experience: Design and Integration of ***Electronic*** and ***ICT* systems** (HW and SW) for avionic, naval and ground platforms. Logistic support, Training and Customer service.

Turnkey supply - Full Life-Cycle Support to Client: From Feasibility study up to system integration, Maintenance and Training services.

High level skill - Capability to work with limited specifications:. Project/System/Quality management interface level to Client.

Internal Program / Configuration management

Personnel: Systems engineering level personnel. Electronic and IT engineers with University degree.

Security: NOS/NOSC Clearance level to “NATO Secret”.

Quality organisation and culture: *ISO 9001:2000 (EA33, EA37) AQAP-110, AQAP-150, MIL STD:2167, 498, 1388, 2110, etc.*

SIGMA EXPERIENCE

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SERVICES

DESIGN & DEVELOPMENT

- Real-Time on board software, Signal Processing, Data Base, Digital, RF, MW subsystems design
- Automatic Test and Validation design

LOGISTIC SUPPORT

- Integrated Logistic Support
- Decision support tools, TOC/TLC analysis
- Technical manuals

TRAINING/CUSTOMER SERVICE

- Training to Clients and Air Force
- Customer service support

Turn - Key Supply

SYSTEMS

DEFENCE & AEROSPACE

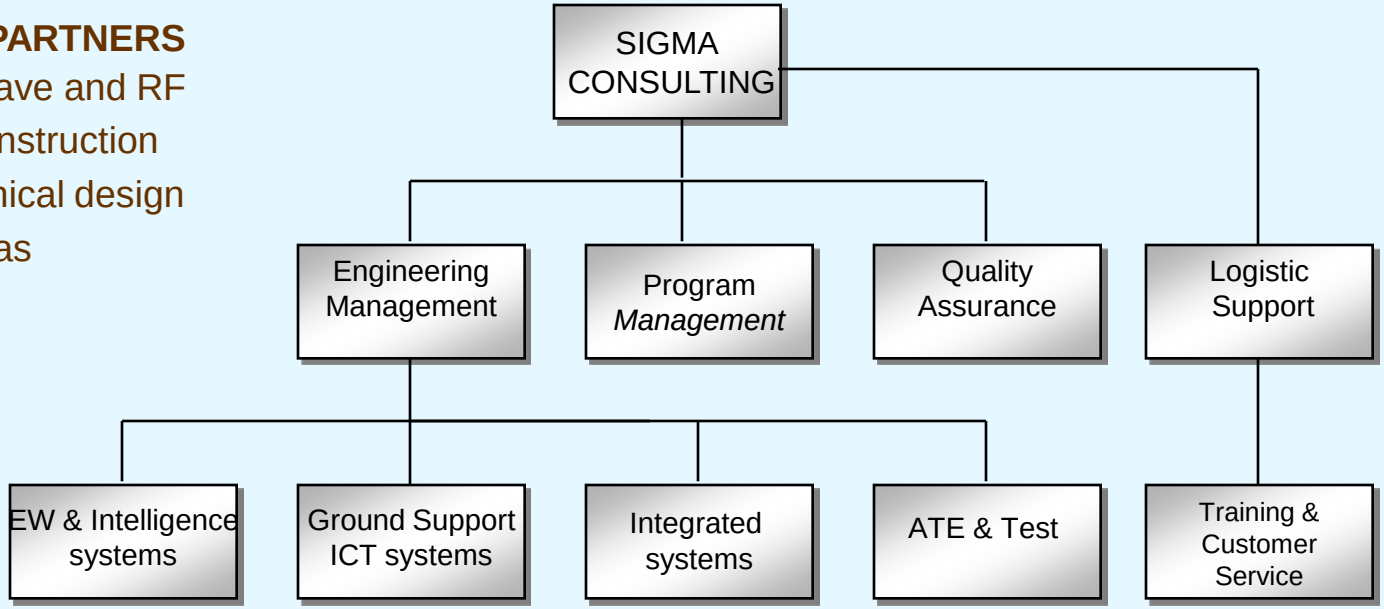
- Flight & Radar Simulators, EW systems, Operation Support Centers, Mission Planning, C&F dispensers, Anti torpedo CM

HOMELAND SECURITY SYSTEMS

- Elint, Comint, Intelligence and Command & Control centers

SIGMA ORGANIZATION

SIGMA PARTNERS
- Microwave and RF
- HW Construction
- Mechanical design
- Antennas



SIGMA HEADQUARTERS

Legal office and restricted area: Via Cavareno 13 - 00124 Roma

Operating office: Via Ardito Desio 60 – 00131 Roma

Commercial office: Via Petrarca 62 – 10023 Torino

EXPERIENCE on Platforms and Main Clients

S

AVIONIC/NAVAL PLATFORMS

- *EFA*
- *Tornado*
- *Nimrod, GdF*
- *EH 101, SIAP*
- *NH 90*
- *AWACS*
- *C 130J*
- *C27J*
- *Horizon ships*
- *Mirage 2000*
- *Civil avionics*
- *Class 45 ships*
- *Baynunah ships*
- *FREMM ships*
- *MMA Boeing*
- *UAV*
- *Singapore ships*
- *AMX*

MAIN CLIENTS

ALENIA Aeronautica	AGUSTA
GALILEO Avionics	AGILENT
SELEX Communications	ELETTRONICA
NORTHROP GRUMMAN	DATAMAT
M.E.S.	ESG GmbH
EADS GmbH	ELT GmbH
MBDA	VITROCISET
AERMACCHI	ALITALIA
MILITARY AIR FORCE	METEOR

AVIONIC “ON BOARD” SOFTWARE

VHF / UHF Transceivers software for:
Tornado, Nimrod, GdF, EH 101, NH 90, AWACS, C 130J

Chaff & Flare Dispensers for:
C27J, EH 101,SIAP (SH3D AB205, AB412, CH47, A129, M346)

ECCM Software for:
Tornado, Nimrod, GdF, EH 101, NH 90, AWACS

ESM / ECM software for: *Tornado, Mirage 2000*

On board Simulator / Trainer for: *C 130J*

Signal processing for:
Tornado, EH 101

SIMULATORS AND TRAINERS: EFA, C130J, C27J,Tornado

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- EFA: ASTA Simulator/Trainer of the DASS (Defensive Aids SubSystem) System, with ESM, ECM, LW, AIF, SIF, MAW, IR models.
- EFA: Test Environment generator and Real-Time Scheduling system for the System simulator (MaTE platform)
- TORNADO: Simulator/Trainer of the EW Subsystem
- C130J: Simulator/Trainer of the EW Subsystem
- C130J: On board Simulator/Trainer
- C27J: Simulator/Trainer of the EW Subsystem (Chaff dispenser)
- RF Radar multi-emitter simulators

On board simulator system for C 130J

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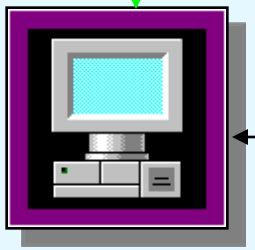
Loading/Unloading:
•Scenario databases
•Library databases

USB

MIDS Link

Mission Computer

Cockpit



SCENARIO
& LIBRARY
DATABASE

ON BOARD FUNCTIONS

- DASS Models RWR, TACDS, MWS, LWR
- Tactical Environment & Scenario
- Audio Generator
- Mission Recorder
- DATA FUSION Situation Awareness

GROUND STATION

- Scenario generation
- Debriefing
- Threats database
- Platforms database
- Equipment database
- Emitter database

MISSION PLANNING SYSTEMS: EFA, Tornado

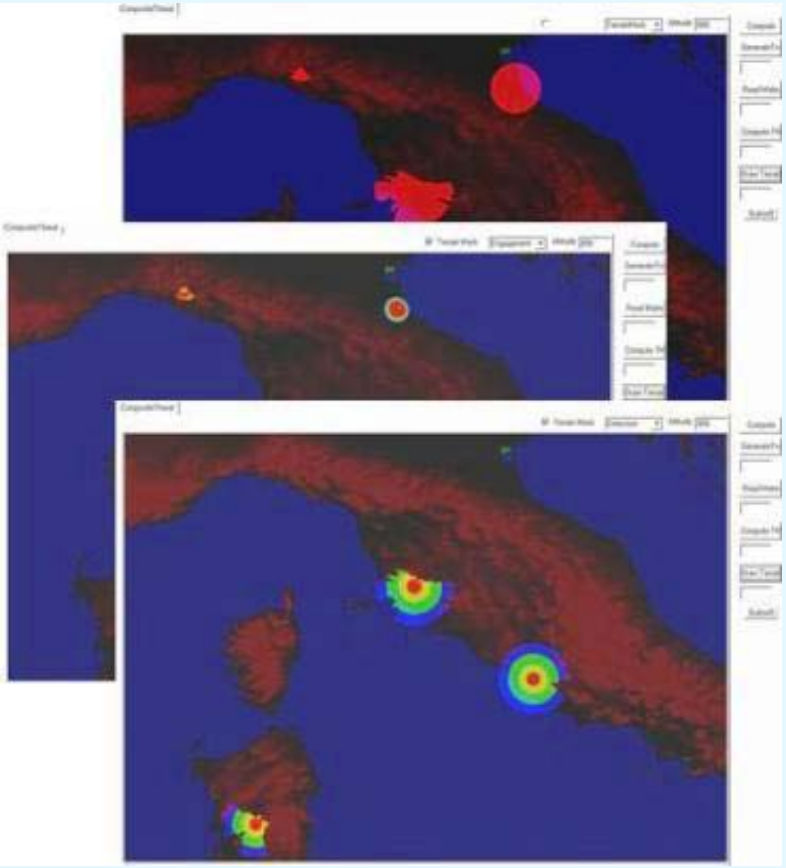
- **Ground support system** for the **Planning & Briefing** activities of the current mission

- TMG Terrain Masking and Generation

- THA Threat Analysis

- Threat Engagement

- IRV Infrared analysis algorithms

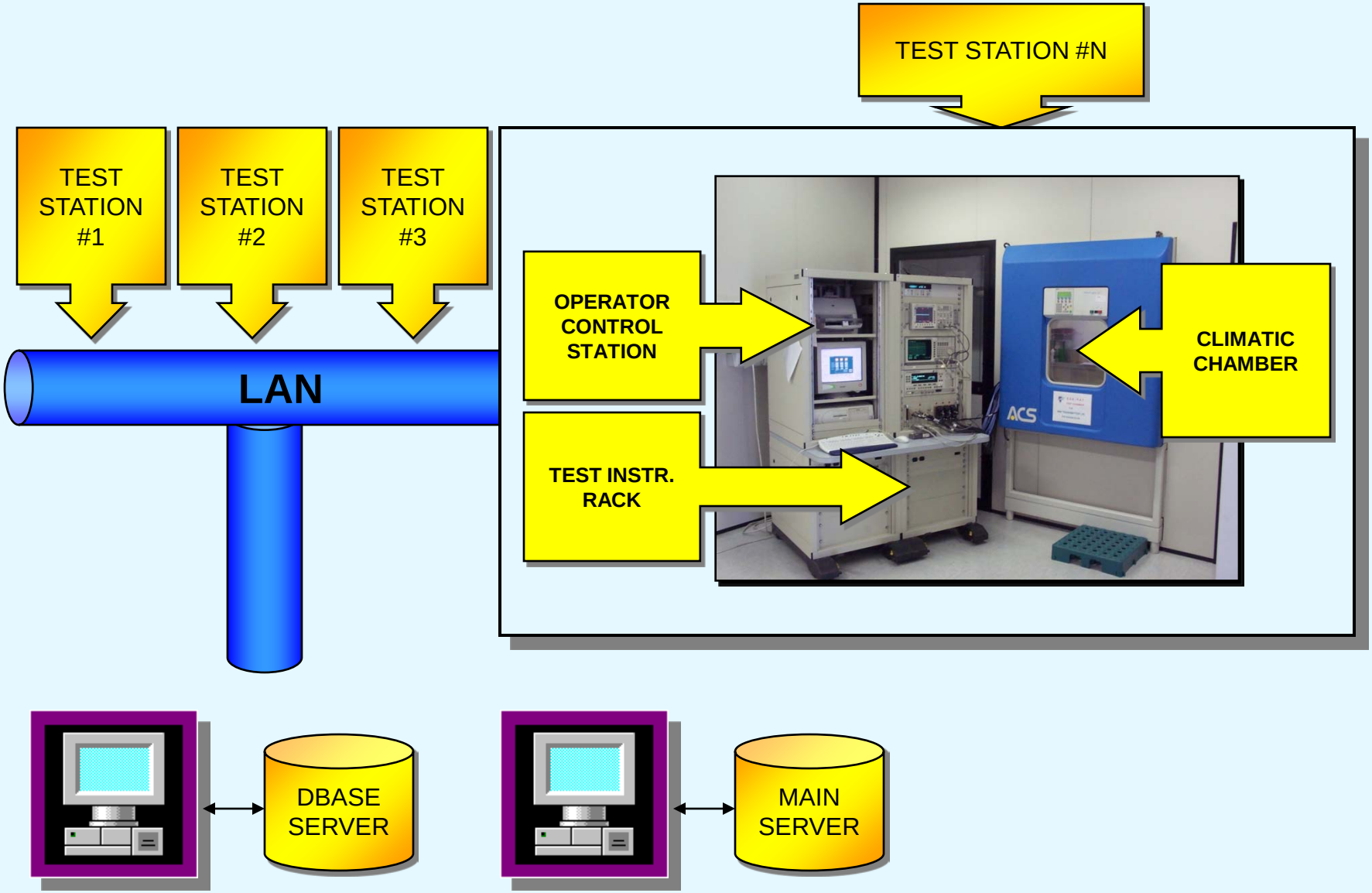


AUTOMATIC TEST STATIONS

TEST STATIONS: Hardware and Software Design for avionic subsystems:

- HEAPU and HEAI/FU units (EFA)
- DISTRIBUTION UNIT (EFA)
- SCAC-NSCAC-ESCAC (EFA)
- M 425/426 TRANSPONDERS (EFA)
- M 423 TRANSPONDER (EFA)
- CSGE unit (EFA)
- GPS & LINS units (EFA)
- ESM & ECM units (EFA, Horizon, NH 90)
- IFM/SYNT/TU/AM/DUC (Mirage 2000)
- Low-Band Jammers (Mir. 2000, NH 90)
- JSU unit (Horizon, Tornado, Mir. 2000)
- PSAD unit (Mirage 2000)
- BRICK & JAU units (Horizon)
- Microwave Units and antennas (NH 90)
- Environmental Test networks (EFA)
- Avionic buses emulators
- IRIS-T Missile
- RF Radar emitter generators

Environmental Test Systems Network



GROUND SUPPORT CENTERS: Mirage 2000, C27 J

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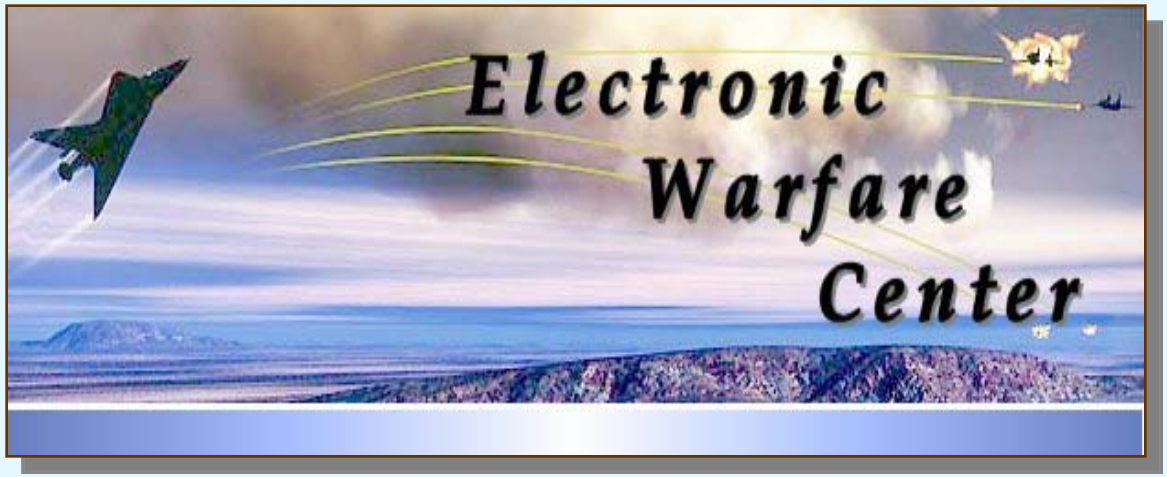
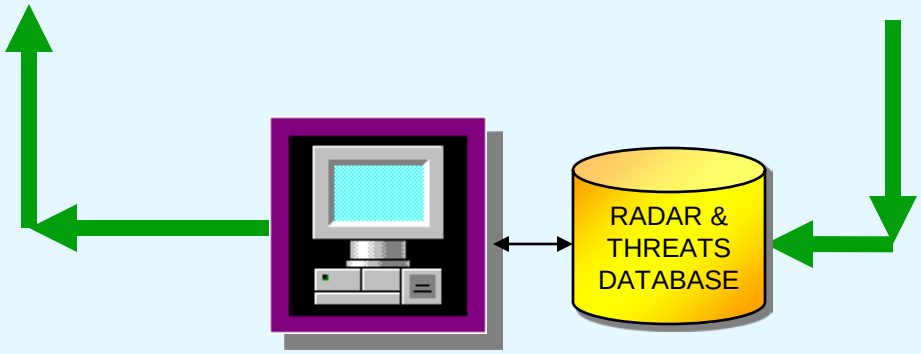
EW Subsystem of Mirage 2000



EW Reference Data & Libraries for EW, Chaff & Flares

EW Database Management

EW Mission Libraries Preparation and Validation



Mission Vulnerability Assessment

EW Mission Recordings analysis

EW ELINT Recording Analysis

EW Mission Replay Debriefing

GROUND SUPPORT CENTERS: EH 101, C27 J

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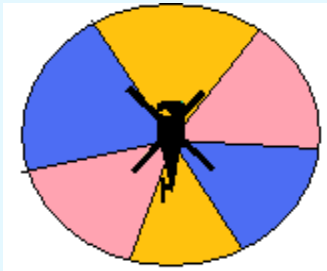
CHAFF & FLARE Launcher of C 27J, EH101, SIAP

COMPUTER AIDED LIBRARY DEVELOPER –TESTER (CALDT)

Mission Libraries
Preparation
and Validation



PLATFORM
Data

THREATS
Simulation

Library & Payload

Payload status/
Environmental Conditions

THREAT
DATABASE

LAUNCH SEQUENCES
For Validation

TECNOLOGY TRANSFERS & TRAINING:

UAV, AWACS & MMA:

Total Life Cost Analysis

Tools for Decision support to Client and Air Force

- Life Cycle Cost analysis/management
- Logistic support

TECNOLOGY TRANSFERS & TRAINING

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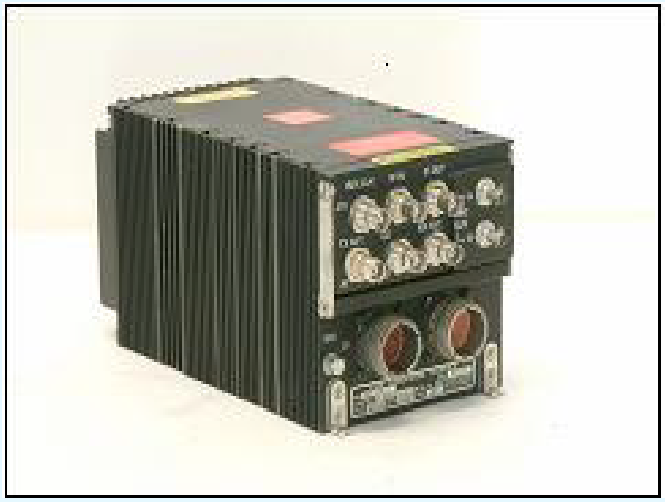
AVIONIC U/VHF TRANSMITTERS
RADIO BRIDGES, SWITCHING CENTERS

- Technology transfers to foreign countries (Abu Dhabi, Algeria, Turkey, Egypt, Denmark, Finland, Holland)

- Training courses up to 3rd level.
- Technical Manuals

- Logistic support

- Maintenance & Troubleshooting documentation



CIVIL AVIONICS

- **“Test Procedures”** of electromechanical avionic subsystems.

- **Technical Specifications** of ”Special Tools” with digital images processing.

- **CAD Design** of aircraft interiors (e.g. seats, carpets, lightning).

- **Technical Manuals** of electromechanical avionic subsystems.

- **T.E.M.S. Database** management.

- **E.M.P.C. Plus Database** management.

HORIZON/FREMM/Baynunah EW – MISSILE LAUNCHERS

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HORIZON / FREMM / Baynunah EW SYSTEM

Automatic test stations

- BRICK & RF Receiver
- JSU, RX-TX
- JAU

Logistic analyses

- Functional, Safety, Reliability,
- Testability, FRACAS
- FMECA

NAVAL & GROUND MISSILE AND LAUNCHERS: IRIS-T, PAAMS, FSAF, ASTER

Automatic test stations

- Missile system & modules

Logistic analyses

- FMECA, LSA/LSAR
- Testability, Reliability Analyses
- CLS Study

SYSTEMS: HOMELAND SECURITY AIR, GROUND, AVIO

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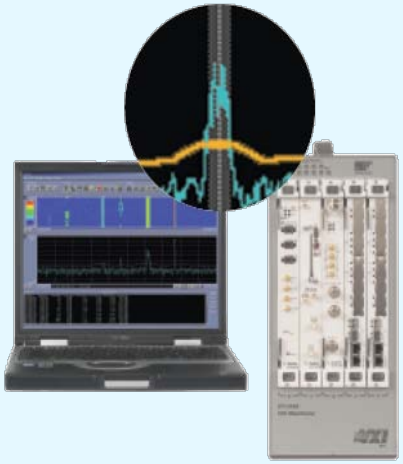
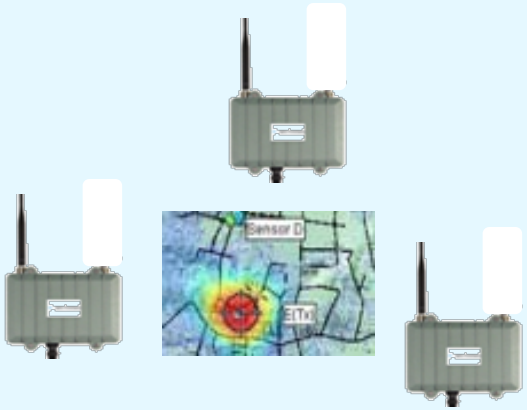


Communication processing

- Signal Analysis
- Tracking
- Identification
- Localization
- Data base management (COMINT, ELINT)

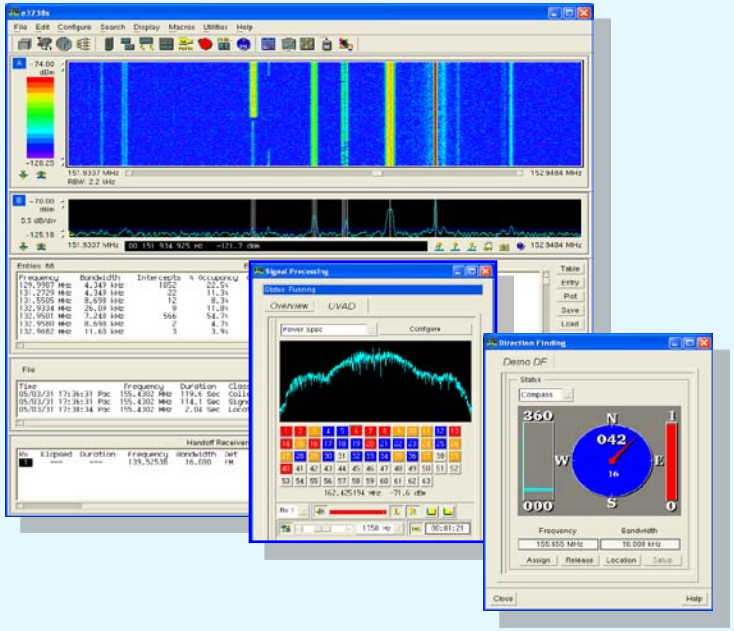


Communication Intelligence

- Multisensor (IR/Optic) data fusion
- Complex Data base based analysis
- Decision support
- Countermeasures activation

Security applications systems

- Air communications
- Ground areas: Airports/Buildings
- Voice, data, Email communications
- Avionics & UAV



SYSTEMS: ESM/ELINT

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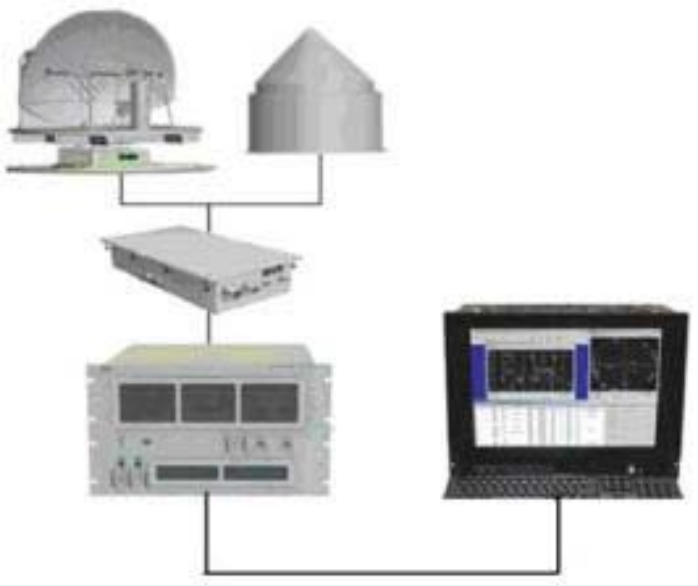
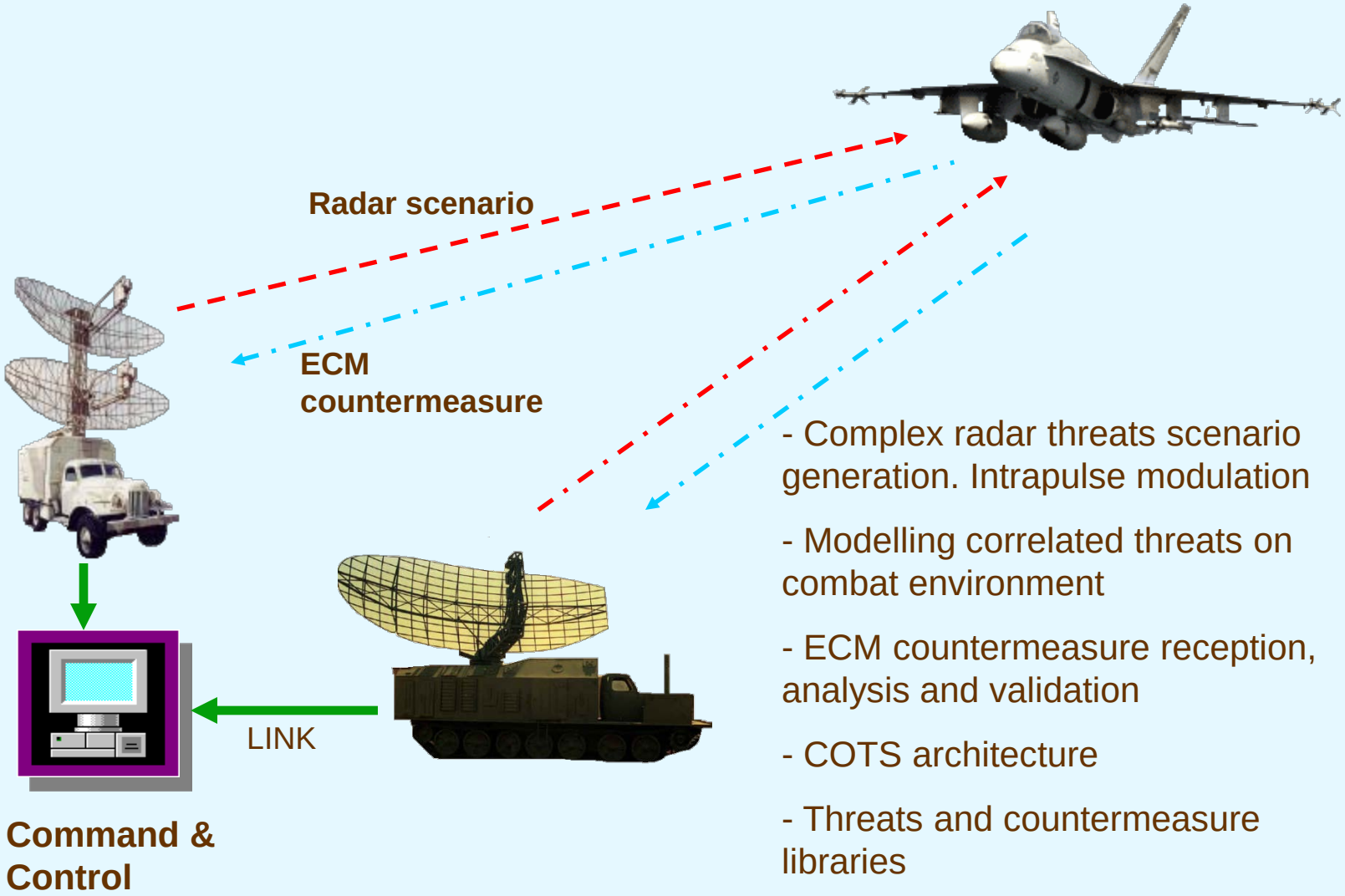
- ANTENNA OMNI and DIRECTIVE
- Direction Finder
- RF PREAMPLIFIER
- Band Filters
- SIGNAL PROCESSOR UNIT
- Wideband digitizer



- High performance Deinterleaver and Tracker
- Scan measurement, Modulation on pulse detection
- Library for identification of emitter, radar, platform, ECM mode
- Signature identification, Recording.

SYSTEMS: MOBILE RADAR SIMULATION

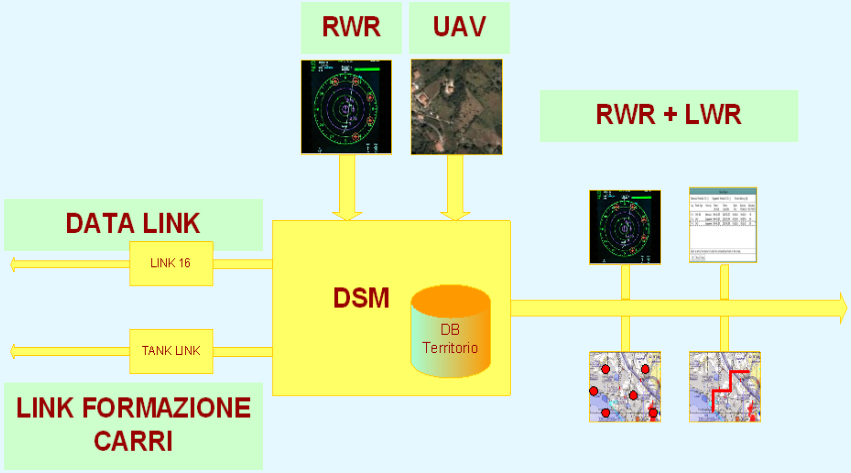


- Complex radar threats scenario generation. Intrapulse modulation
- Modelling correlated threats on combat environment
- ECM countermeasure reception, analysis and validation
- COTS architecture
- Threats and countermeasure libraries

DSM higlights

-Decision support system based on the “situation awareness” update.
-Collection and fusion of data coming from:

- Host platform
- All different platform sensors present in the tactical environment.
- Command and control
- Database: RF/IR Threats, Territory, L/IR Images, EOB

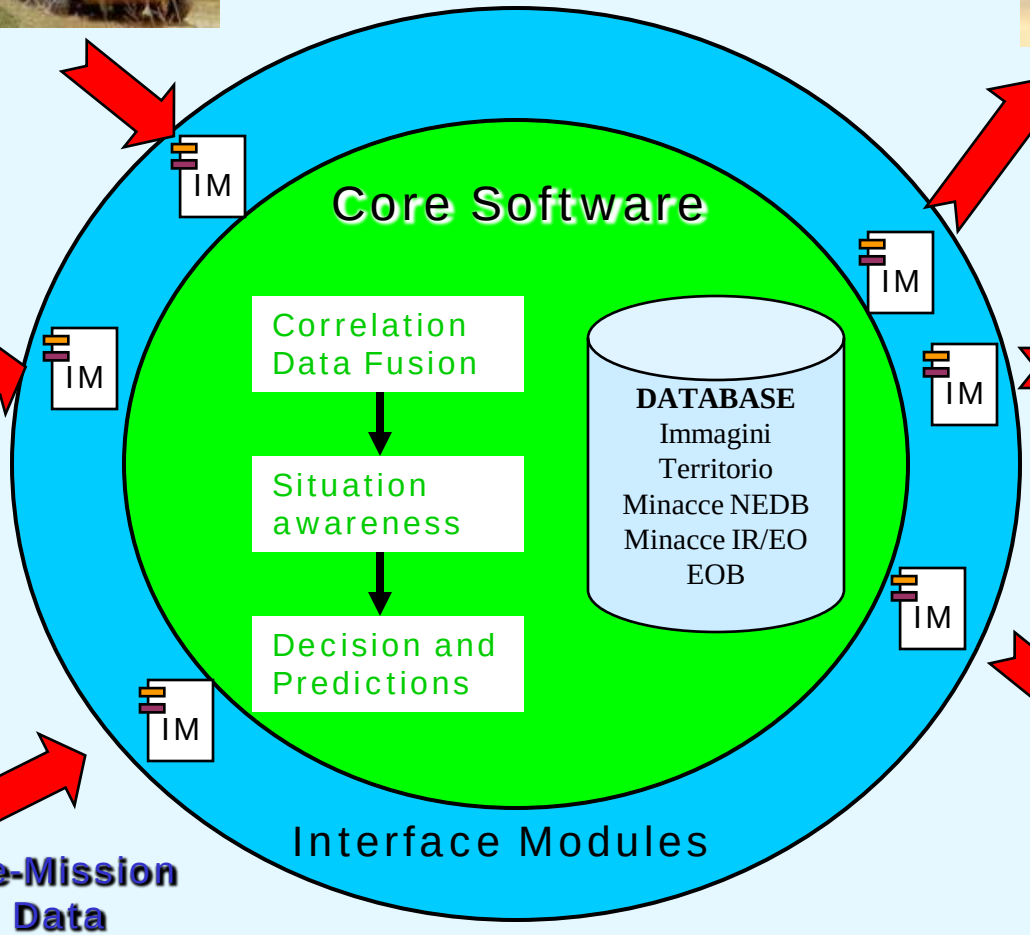


DSM Defensive System Manager

On-Board Data
TIME – ESM – LWS – MWS - INS

Resource Control
MANEUVER

Off-Board Data
DTD



Recording
DTD

Pre-Mission Data
DTD

Controls & Displays
MDF

SYSTEMS: Surface ships countermeasures

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Anti-torpedo countermeasure systems for surface ships:

FREMM and SINGAPORE ships

Protection against active and passive torpedoes, launched alone or in salvo mode. Deployment of devices during evasive counter-manoeuvres

Sigma Design of electronic (hardware and software) subsystem and A.T.E.

SYSTEMS: NATO Broadcast Control Station

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VLF MSK Boadcast Control Station for Submarines trasmission

Sigma Design of Hardware and Software for dual redundant BCS

SOFTWARE DEVELOPMENT STANDARDS

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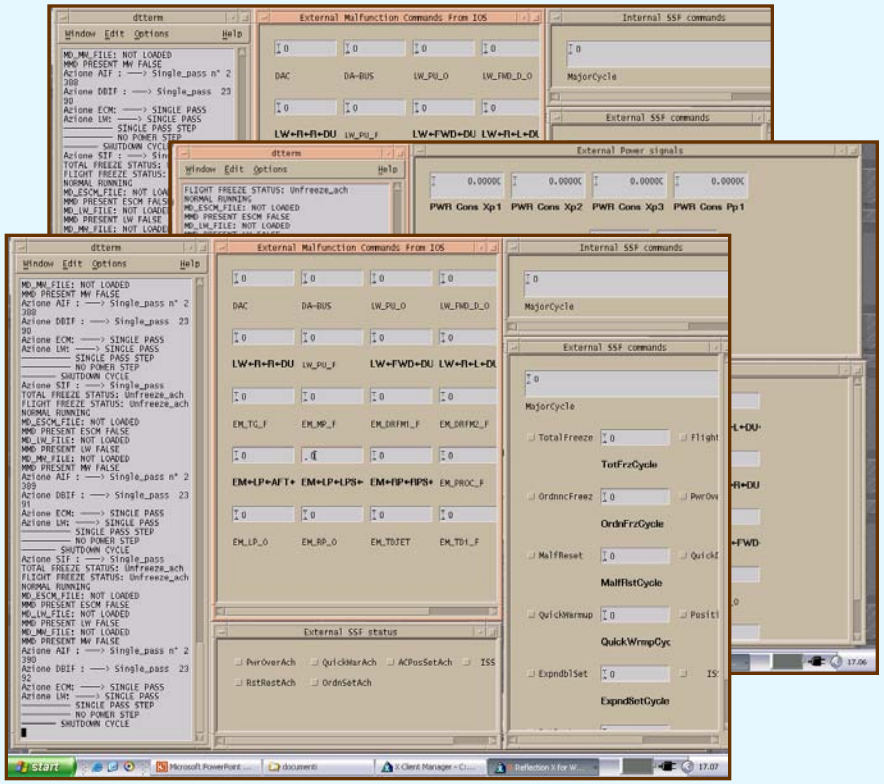
Full lifecycle Development:

Requirement Analysis, Design, Code, Integration and Validation
Quality Assurance, Configuration Management, Project Management

Use of the most advanced CASE tools (Rational Rose, Objecteering, Doors) and Methodologies (UML Object Oriented)

Compliance with international standards (AQAP-150, MIL-STD 498, ISO/IEC 12207)



LOGISTIC Division: Integrated Logistic Support

Skill and capabilities:
-Logistic Engineering Analysis
-Logistic Support Products and Services
-Decision support for Logistics
-Maintenance policies

Experience in Logistic Support:
- Testability Analysis
- Maintainability Analysis
- Reliability Analysis
- Safety Analysis
- LSA-Logistic Support Analysis
- LORA-Level Of Repair
- LCC/TOC-Life Cycle Costs
- FRACAS- Failure Reporting and Corrective Action System
- FMECA-Failure Modes Effects and Criticality Analysis
- Fault Catalogue

-Manuals & Training courses, CBT, Remote maintenance, A.T.E.

SIGMA Skills: Electronic Systems

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- Avionic Telecommunication Systems: UHF, VHF, HF ed ECCM.
- ESM/ECM Systems (avio, naval, ground platforms).
- RWR, LWR, MAW, IR Systems.
- ELINT, SIGINT, COMINT Systems.
- Chaff & Flare Dispenser Systems.
- Homeland security
- Radar simulators & generators.
- A.T.E./S.T.T.E.
- Mission Support, Command & Control Systems.
- Industrial & process monitoring and control
- Microwawes & RF Systems/Subsystems
- Simulation &Training Systems.
- Anti torpedo countermeasure systems

SIGMA Skills: Methods, Case Tools & Languages

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METHODS

-***UML*** Object Oriented, ***Hood, Yourdon***

CASE TOOLSETS

-***Rational Rose*** Develop. environment
-***Rational Soda***: Document. generation
-***Rose Link***: Requirements Trace
-***Rational Clear Case*:** Config.Mgt
-***Objecteering*:** Develop. environment
-***DOORS***
-***MATE*** Modeling/Testing enviroment
-***Rhapsody*** Develop. environment
-***Teamwork*** Develop. environment

OTHER TOOLS

-***Epos*** Develop. environment
-***Requisite Pro*:** Requir. Trace
-***Merlin*:** Mission Data generation
-***Borland C++ Builder*:**
-***CORBA*** Toolset
-***Jbuilder*:** Java Develop. Envir.
-***COM, ATL***
-***DOC Express***: Docum. Gener.
-***GLIDE:*** ADA Development
-***Microsoft Visual .net*** Devel.Env.
-***OOAD, RUP***
-***Oracle 8i*:** DB and interface

PROGRAMMING LANGUAGES

C++, Visual C++, Visual Basic, ADA, ADA 95, JAVA ,HTML, XML, ASP, JSP, PHP, JavaScript, Borland C++, Mathlab, Simulink

DATA BASE

Oracle, Access, SQL Client & Server, OODBMS Object Oriented DB

SIGMA Skills: ATE & Measurement/Programming

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GPIB, VXI & PXI Instrumentation

RF/MW Generators, Spectrum Analysers, Network Analysers, Power Suppliers & Generators, Power Meters, Serial,Parallel I/O, Multimeters, Oscilloscopes, Switch matrixes, Avionic Bus Drivers (1553, 429, 3838), Optical Bus 3910 Drivers, Function/Signal generators

Other Peripherals

Environmental Chambers, Cooling Systems, Vibration Equipment, Burn In, Images Acquire/Processing, RF & Microwaves switching/scattering matrixes, LAN, SDLC, INTERNET

ATE Languages

Labwindows/CVI, Labview, HP VEE, Test Stand, Test Executive, C-ATLAS

Assemblers

Intel Pentium, Motorola Power PC, DSP's Texas/Analog Devices

Platforms

Windows, Unix, Linux, VxWorks

Quality Certifications

RINA
www.rina.org

CERTIFICATO N. 11148/04/S

CERTIFICATE No

SI CERTIFICA CHE IL SISTEMA DI GESTIONE PER LA QUALITÀ DI
IT IS HEREBY CERTIFIED THAT THE QUALITY MANAGEMENT SYSTEM OF

SIGMA CONSULTING S.R.L.

VIA CAVARENO, 13 - 00124 ROMA (RM) ITALIA

NELLE SEGUENTI UNITÀ OPERATIVE / IN THE FOLLOWING OPERATIONAL UNITS

VIA FOLGARIA, 87
00124 ROMA (RM) ITALIA
E RELATIVI CENTRI DI FORMAZIONE

È CONFORME ALLA NORMA
IS IN COMPLIANCE WITH THE STANDARD

ISO 9001:2000

PER I SEGUENTI CAMPI DI ATTIVITÀ / *FOR THE FOLLOWING FIELD(S) OF ACTIVITIES*

EA 33
EA 37

PROGETTAZIONE, SVILUPPO, INTEGRAZIONE, ANALISI E SIMULAZIONE, SUPPORTO LOGISTICO INTEGRATO D SISTEMI HARDWARE E SOFTWARE IN CAMPO AVIONICO, NAVALE E TERRESTRE, PROGETTAZIONE ED EROGAZIONE DI CORSI DI ADDESTRAMENTO E FORMAZIONE PROFESSIONALE.

DESIGN, DEVELOPMENT, INTEGRATION, ANALYSIS AND SIMULATION, INTEGRATED LOGISTIC SUPPORT OF HARDWARE AND SOFTWARE SYSTEMS IN AVIONIC, NAVAL AND GROUND SYSTEM AREAS, DESIGN AND PROVISION OF PROFESSIONAL TRAINING COURSES.

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Dott. Ing. Demetrio Arenis
(Direttore Certificazione e Servizi Industriali)

RINA SpA
Via Corsica 12 - 16128 Genova Italy

SINCERT

CISQ

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