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
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E-Mail: sigma@sigmaconsulting.it

Sede Operativa: Roma Tecnopolo via Ardito Desio 60 – 00131
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

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

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

Turn - Key Supply
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
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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

- **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

Loading/Unloading:
- Scenario databases
- Library databases

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

SCENARIO & LIBRARY DATABASE

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

USB

MIDS Link
Mission Computer
Cockpit

VME chassis
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
GROUND SUPPORT CENTERS: Mirage 2000, C27 J

**EW Subsystem of Mirage 2000**

EW Reference Data & Libraries for EW, Chaff & Flares

EW Database Management

EW Mission Libraries Preparation and Validation

**Electronic Warfare Center**

- Mission Vulnerability Assessment
- EW Mission Replay Debriefing
- EW ELINT Recording Analysis
- EW Mission Recordings analysis
- RADAR & THREATS DATABASE
GROUND SUPPORT CENTERS: EH 101, C27 J

CHAFF & FLARE Launcher of C 27J, EH101, SIAP
COMPUTER AIRED LIBRARY DEVELOPER –TESTER (CALDT)

Mission Libraries
Preparation and Validation

Library & Payload

Payload status/
Environmental Conditions

PLATFORM Data

THREATS Simulation

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
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
• “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

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
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

- 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.
- 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 highlights

- 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
SYSTEMS: Surface ships countermeasures

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 evasive countermanoeuvres

Sigma Design of electronic (hardware and software) subsystem and A.T.E.
SYSTEAMS: NATO Broadcast Control Station

VLF MSK Broadcast Control Station for Submarines transmission

Sigma Design of Hardware and Software for dual redundant BCS
SOFTWARE DEVELOPMENT STANDARDS

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)
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

- 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.
- Mission Support, Command & Control Systems.
- Industrial & process monitoring and control
- Microwaves & RF Systems/Subsystems
- Simulation & Training Systems.
- Anti torpedo countermeasure systems
SIGMA Skills: Methods, Case Tools & Languages

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. Enviir.
- **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

**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