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Mission critical C4ISR systems...

ENHANCING OPERATIONAL EFFECTIVENESS OF:

- land, air and naval armed forces,
- homeland security forces

- INFORMATION DOMINANCE
- NETWORK ENABLED CAPABILITY
- FORCE PROTECTION

Towards the digitized battlespace...
secure, resilient, end-to-end solutions and services
based on key products and solutions

COMMUNICATIONS
- Ground, air, satellite and naval communications
- Strategic networks
- Information and network security

COMMAND and CONTROL
- Strategic headquarters
- Theatre deployments
- Tactical systems

INTELLIGENCE, SURVEILLANCE, RECONNAISSANCE
- Ground, air and naval optronics
- Electronic Warfare
- Ground surveillance radars
- Data fusion and analysis

- Products and solutions in service in more than 100 countries, on board 145 types of land platforms, 70 types of air platforms, serving 40 Navies.
- Industrial locations in 20 countries
Thales is the European leader in C4ISR, delivering equipment, systems and services worldwide.

Through innovation, multi-technology integration and operational proximity, Thales solutions create battlespace digitisation.
Integrated C4I

A common core for information and communication systems
Communications Intelligence and Electronic Warfare

National solutions for threat assessment

Tactical solutions for maritime communications electronic support

Tactical solutions for Army communications electronic support and attack

Communications intelligence, electronic support and attack equipments

TRC 6200 Light tactical COMINT/ESM payload
TRC 6000 COMINT/ESM Software suite
TRC 6500 Strategic COMINT payload
TRC 274 Smart Communications jammer
**IMAGE INTELLIGENCE: MINDS - Deployable multi-sensor IMINT exploitation system for Intelligence, Surveillance, Targeting and Reconnaissance**

- Airborne and spaceborne multi-sensor image exploitation and dissemination
- Airborne surveillance exploitation (UAV, MTI) and fast multi satellite imagery data processing
- Real time and offline processing of multiple image feed
- Large imagery database, archive and global workflow management
- Designed for network-centric overseas operations
- Standardised IMINT product dissemination and fully compliant with the latest NATO ISTAR STANAGs

**References**
- France (SSO, Reco-NG, CNC Targeting center, IMINT Reference Center), European Defence Agency (TIES), Middle East, Norway and Japan (MINDS)

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**ALL-SOURCE INTELLIGENCE AND SURVEILLANCE FUSION**

A solution for all-source intelligence exploitation and dissemination

- Fusion of HUMINT, IMINT, COMINT, ELINT, RADINT, OSINT and MASINT data
- Analyst and decision-maker support tools
- Timely dissemination of intelligence situations
- Suitable for Joint, Army and homeland defence users
- Standardized interfaces for sensor and C2 connectivity

**References**
- South Africa, Middle East, France
INFO\SRA\T\SOLUTIONS

RESILIENT COMMUNICATION NETWORKS

Guaranteed end to end quality of service under most severe circumstances

- Fixed and Deployable Infrastructure Networks resilient to physical and electronic attacks for Defence and any Ministry, Governmental body or Industry in serving critical state missions
- Prime contractor, architect, system integrator or service provider
- Resilience, security, interoperability, end-to-end quality of service are achieved through cutting edge solutions in Network Security, Satellite Communication and microwave transmission

References
- France (SOCRATE, MTBA), TRANSFOST, SYDEREC, UK (FALCON), NATO (ISAF Afghanistan, VCS)
- Norway (NDDN)

DEEP WATER RECEPTION SOLUTION

VLF and LF submarine communications

The guarantee of full operational performance with an optimised Life Cycle Cost

System architecture
Feasibility studies
Full turnkey capability including civil works
- Command Centre
- Dedicated communications networks
- Transmission chain from modulation to antenna
- Fall-back transmission systems
- Submarine reception chain

References
- French Oceanic Strategic Transmissions programs
- Korea (SCCS)
GLOBAL SATCOM SOLUTIONS

End-to-end secure connectivity from homeland to theatre of operations

Land Forces
- Very lightweight manpack
- Armored vehicles terminals
- On the move solutions
- Deployable land terminals

Naval Forces
- Large and small surface ship terminals
- Submarine terminals

Joint Headquarters and Operations
- Anchor stations
- Large capacity terminals
- Long distance transit network
- Network management

Military/commercial satellites compatibility; IP/data/video/voice; High level of EPM protection; X/Ku/Ka solutions
Modern IP solutions throughout the battlefield

- Multimedia high data rate Deployable Tactical Internet
- Automatic Combat Net Radio Integration
- Mobility and military Quality of Service
- Optimized voice, Blue Force Tracking, data, video, Mobile Tactical Internet
- Seamless from vehicle command post to soldier
- Transverse communications over heterogeneous radios

Easy mission preparation, fast deployment, user-friendly management
**Tactical internet solutions**

**MICROWAVE RADIOS**

**TRC 4000**
Band IV - Band IV Ethernet

- Designed for Full IP Networking
  - Band IV (4.4 to 5 GHz)
  - 2.8 and 34 Mbps full duplex microwave radio
  - Split modular architecture
    - Mast-mounted RFE (radio with integrated antenna)
    - Full range of Base Band Equipment (BBE)
    - No BBE when directly used in Ethernet
  - Flexible architecture through fibre optic
  - Robust ECCM and full MIL environment

**References**
- Over 3,000 terminals procured by French, Swiss, Austrian, Croatian and UK (Falcon) Armies

**BROADBAND RADIOS**

**TWS 5000**
Tactical WiMAX solution

- Tactical WiMAX solution for new requirements
  - Broadband mobile Point-to-Multipoint solution
  - Band 2.2-2.4 GHz
  - Compact mobile WiMAX solution based on IEEE802.16e standard
  - Scaleable data rate up to 40 Mbps
  - Base Station with MIMO or beam-steering antenna
  - Rugged and lightweight Terminal Station for fixed or vehicular installations
  - Easy-to-use operation and maintenance solution

**References**
- Selected by Middle-East and European customers for deployable command posts

**RADIO INTEGRATION**

**COMBAT NET RADIO INTEGRATION**

- Seamless and secure interoperability
  - A full set of interoperability solutions between Deployable and Mobile Tactical Internet
  - Combat Radio Interface to integrate virtually all legacy radios
  - Automatic Combat Net Radio Integration to build a mobile cellular network of PR4G F@stnet
  - Voice and data capable

**References**
- Included in all Thales DI@NE and DI@NE IP networks
- France, Spain, Switzerland and Middle-East
VPN IP SECURITY

**CRYPTEL IP - TCE 621/B AND TCE 621/C**

Secure IP VPN for Secret Data

- All security levels up to Cosmic Top Secret
- Data rates: 100 Mbps (TCE 621/B) and 1Gbps (TCE 621/C)
- Supports both IPv4 and IPv6
- Centralised Security Management

**ECHINOPS: VPN high-grade Security for military and government organizations**

- Transparent end-to-end security of classified information on IP network
- High performances up to 100 Mbps
- Suited to VoIP and satellite communications
- Tamper-proof design and Tempest approved
- Network and key management systems with remote management capabilities

**TEOREM: Secure phone System, over fixed and mobile networks**

- Security level: High Grade (up to French SD and NATO Secret)
- Mobile: Quadri-Band GSM, GPRS Class 10, EDGE, UMTS
- Fixed: PSTN, ISDN, VoIP
- High-quality audio STANAG 4591 (2.4 kbps) and G.728 (16 kbps) vocoders
- Encrypting modem function (data transfer from a PC)

References

- Thousands in operation by NATO in more than 20 countries

Approved and selected by NATO as the standard IP crypto equipment

Customisable with approved France, NATO and EU algorithms

Highest security levels combined with easy to use cellular phone
An open and flexible approach from products, mission packages, system to full capabilities
Communications

**COMBAT NET RADIOS**

*VHF PR4G F@STNET*

- Unique SDR Multi-role military radio
- 3 different ECCM waveforms
- Unique Mux mode (voice and data)
- Programmable encryption
- High voice quality - MELP vocoders
- 64 kbps ECCM waveform
- Built-in IP router
- New handheld built-in GPS and Short Message Service (SMS)

**References**
- More than 130,000 VHF radios already sold
- In operation in 40 countries

**LONG RANGE RADIOS**

*HF 3000 SKYF@ST*

- A full family of HF radios and accessories
- From 0 to 5000 km communications on the move with adapted antenna (NVIS)
- Fast 3G Automatic Link Establishment
- Programmable encryption
- Compliance with all major NATO Stanags
- High voice quality - MELP vocoders

**INTERCOM**

*SOTAS IP Vehicle Local Area System*

- In-vehicle and inter-vehicle voice and data communication
- Scaleable from voice intercom to large Command Post Networks
- Supreme audio quality in high noise environment through Dynamic Noise Reduction
- Wide spectrum of services: intercom, radiocom, telephone, Ethernet, IP serial data, and vetronics-networks

**References**
- SOTAS is installed in all major types of vehicles
- Field proven IP solution: Denmark, Norway, UK, Middle-East
A family of flexible multi-band and multi-channel radios, fast and easy to deploy
**Mobile Command and Control**

### C2 TACTICAL TERMINAL

- Vehicle station for situational awareness, reporting and orders dissemination
- Combat net radio integration
- Reconnaissance, Surveillance and Target Acquisition applications
- Mounted/dismounted combat integration

### MOBILE TACTICAL COMMAND POST

- Battalion and below command and control
- Interoperability with higher and lower echelons
- Tactical internet integration
- Fire and Intelligence support integration
- High automation and user-friendliness
- Latest civil and NATO standards for information and communications

### On-the-move Command and Control

- **References**
  - France (special forces), Malaysia, Belgium (RECCE PANDUR) and Luxemburg (RECCE LUX)

### More agile and survivable Forces

- **References**
  - France, UAE, Kuwait, Oman, Singapore, Thailand, Malaysia, South Africa, Venezuela...
**COOLED THERMAL IMAGERS**

**CATHERINE FAMILY**
A wide range of LWIR Thermal Imagers

- For gunner (CATHERINE FC), commander (CATHERINE XP) and land recce applications
- Long range surveillance and target acquisition – tank recce 3-4 km
- Very compact for easy integration
- Rugged design for military wheeled and track vehicles

**Claire**
MWIR Thermal Imagers

- MWIR full TV resolution
- For commander and land recce applications
- Long range surveillance and target acquisition – tank recce 3-4 km
- Very compact for easy integration
- Rugged design for military wheeled and track vehicles

**TIM FAMILY**
Uncooled Thermal Imagers for RCWS

- LWIR ½ TV and TV resolution
- For Remote Controlled Weapon Station (RCWS) and area surveillance
- Tactical range surveillance and target acquisition – tank recce 2 km
- Uncooled for high reliability and low whole-life cost
- Non-ITAR technology - Exportable

**References**
- Catherine FC: The standard Thermal Imager for Russian tanks
- Catherine XP: Unique 3rd generation LWIR in mass production

**References**
- Netherlands: IGV programme/CV9035 (BAe)

**References**
- Combat proven on Kongsberg’s Remote Weapon Station
- More than 1200 units for various customers, including USA
LASER RANGEFINDERS

CELT/CELT-HR
- For fire control or reconnaissance system.
  Anti-aircraft application with high repetition rate (CELT HR, 10Hz)
- True class eye-safe capability
- Compact, stand-alone, low maintenance
- Full MIL specifications. Compatible with land and naval applications
- BMS compatible

ESLVDE
- Laser day elbow for use on LAV periscopic sighting systems
- Integrated x8 day optical channel
- 1Hz burst rate capability
- True class eye-safe capability
- Day TV channel option
- Full MIL specifications
- BMS compatible

DNGS FAMILY
Periscopic Gunnery Sights
- Fully integrated – High Repetition Rate
- Gunner and commander applications
- Options to incorporate day channel, image intensifier, IR camera (LW or MW), Laser Range Finder
- Long range tank identification up to 3 km
- Mechanical linkage or dual axis stabilized camera
- Fire control and navigation options for complete integrated system

GUNNERS SIGHTS

References
- UK, France (VCI), Sweden (Lemur), Egypt (M113)
- Standard equipment on US and UK armoured fighting vehicles
- UK: BGTI (Warrior fleet, France: VBCI (Nexter), Netherlands: CV9035 (BAe)}
MOBILITY AND DEFENSIVE AIDS

TDS/ROTDS
Thermal Driver’s Sights

Wide field of view night driving system
- Fixed and steerable sight options
- High reliability (uncooled thermal imager)
- Compact and versatile
- "Chassis Mount" design
- Suitable for all military vehicles

References
- Canada: LAV (GD), UK: Panther (BAe), Bushmaster (Thales), Saudi Arabia: Kastor (FNSS)

LAND RECCE AND SURVEILLANCE SYSTEM

LWS/GLS: Laser Warning System / Grenade Launcher System

Modular laser detector system
- Detects Laser Range Finder and designator
- Covers a wide range of single continuous and multiple pulse users
- Configured for any arc of fire
- Able to be configured on a single base casting
- Suitable for 66 mm and 76 mm grenades options

References
- LWS: Luxembourg: Dingo 2 (Thales), Malaysia: Adnan (FNSS)
- GLS: UK: Spercat (DML), Kongsberg (RWS), Saudi Arabia: Tactical (BAe)

MARGOT 5000
Recce and Surveillance solution

Baseline sight for recce and surveillance
- Non stabilised recce and surveillance P and T platform
- Automatic pre-programmed search path
- Detect, recognize and identify (IR, TV)
- Target 3D localisation
- Cartography
- Recording

References
- MARGOT 5000 - MANON sensor head: Luxembourg (Dingo), Belgium: Pandur, France: VBL source
An innovative system approach: the open electronic architecture, OICS, designed to optimise integration, to give the crew members up-to-date mission applications and to enable information exchange both within vehicles and externally.

- Belgium (MPPV, Recce Pandur, AIV) – Luxemburg (PRV Lux) – Finland (AMV - Patria)
An ability to master complexity and deliver today Land System solutions in close cooperation with the customer for any mission and any type of platform.
Tailored solutions built upon a core system called Miltrak which can be modularly enhanced to increase capabilities according to role and mission. Solutions are optimised with the customer for national priorities, legacy, user equipment preferences.

- More than 2,000 Miltrak systems delivered
- Other soldier references: UK (FIST), USA (JTRS), Germany (IdZ/IdZ - ES), Netherlands (CIM C4I), Norway (Normans)
**Communications**

**SOLDIER RADIOS**

**ST@R MILLE**
UHF Handheld Soldier Radio

- Low UHF band (325-470 MHz)
- Simultaneous voice and data services
- High data throughput capacity (1 Mbps over the air)
- Dual-net services
- 0.4 W (intra-squad) and 2 W (intra-platoon) RF output power
- Automatic splitting and merging
- Dual Push To Talk
- Built-in AES-256 encryption vehicular version

**References**
- A key enabler for soldier modernization programs and soldier C4I urgent operational requirements

**HANDHELD SDR**

**AN/PRC-148 JEM**
JTRS Enhanced MBITR

- Combat proven
- Powerful SCA-certified platform allows inclusion of new JTRS waveforms
- Successfully completed US government testing, evaluation, and certification
- Programmable INFOSEC
- New MIL-SATCOM capability

**References**
- The world’s first production JTRS radio
- More than 100,000 fielded MBITR combat proven in Afghanistan and Iraq

**TACTICAL SATCOMS**

**TALISMAN II**
Manpack

- Bands: X, Ka
- Bandwidth optimisation (DAMA mode)
- Secure communications
- Set-up call in less than 10 s
- Rapid deployment
- Manpack: 5mm, HQT: 10 mm
- Manpack weight: 10 kg

**References**
- Combat proven and in operation in: France, UK, Turkey and Italy

**Satcom for Special Forces**

- Set-up call in less than 10 s
- Rapid deployment
- Manpack: 5mm, HQT: 10 mm
- Manpack weight: 10 kg
**HEAD AND WEAPONS SIGHTS**

**LUCIE**  
Light and Compact Intensifier Goggle  
- Night Vision Goggle for walking, driving and observation  
- Lightweight (445g), small and low profile  
- Compatible with all types of tubes  
- Full range of accessories  
- Built-in IR illuminator  
- High light cut-off feature protecting image intensifier

**MONIE**  
MONocular Intensifier Equipment  
- New generation of night vision bi-ocular  
- Ultra compact and lightweight: 300g  
- Compatible with 4X and 5X magnifiers  
- Lightweight: 30% less than Lucie  
- High optical quality: optical performance 15% higher than Lucie  
- Binocular version by combining two MONIE

**MUNOS**  
Multiple Use Night Weapon Sight  
- Observation and aiming device for universal variation of weapons  
- High boresighting stability and sacrificial window  
- Mounting brackets for all small and medium-size weapons

**References**  
- More than 45,000 units already ordered by 23 countries  
- In service within UK, Germany and Singapore  
- In service within Netherlands, Algeria and Egypt
TARGET LOCATORS FOR SHORT, MEDIUM AND LONG RANGE OPERATIONS

**ELVIR FAMILY: Short range hand-held uncooled IR imagers**

- Short range observation and surveillance
- Removable display module for remote viewing

And more with ELVIR MF
- Precise 3D target location
- Range finder
- Digital compass and GPS

**References**
- ELVIR: More than 300 units in use within Special Forces and Borders Guards in France and various countries
- ELVIR MF: In use within the French Army

**J-TAS Joint Target Acquisition System**

- Tactical range surveillance and target acquisition
- Visual sight daylight
- Zoom TV camera (option)
- Eye-safe laser range finder
- GPS (SAASM option)
- Digital magnetic compass
- Target location data output
- Image capture and mapping capability

**SOPHIE FAMILY: Long range cooled hand-held thermal imagers**

- Long range surveillance and target acquisition
- Tank recce: 3.1 km
- Mission reporting (image storage)

And more with SOPHIE MF
- Precise 3D target location
- Target designation to NVG and colour TV camera (options)
- Integrated high performance LRF

**Optronics**
Onboard 70 types of aircraft: Fighters, helicopters, transport/tankers, AEW, special aircraft, ...

- A comprehensive joint battlespace capability for all types of platforms – aircraft, helicopters, UAVs
- The means to detect, observe, identify, communicate, navigate and enhance survivability
- Full range of air operation requirements, from equipment to tailored C4ISR solutions (Airborne CNI suite, Ground to Air Network, Tactical Data Links, Sensor to Shooter, IRST, FLIR, Self-protection...)

C4ISR for air platforms
NEXTW@VE: A MULTI-PURPOSE TERMINAL

Software Defined Radio architecture
V/UHF Frequency Band extension 30-600 MHz
Programmable COMSEC (Export/NATO)

Radio services

Voice fixed frequency
(VHF tactical band, VHF ATC band,
VHF maritime band,
UHF AM/FM clear/secure)

Waveforms:
• Have Quick I&II,
Saturn/National Secure
Modes (FFH)
• PR4G Fastnet
• UHF DAMA satcom

Form Fit with previous generation

High Data Rate 250 Kbps secure mode
Single platform for both NATO & Export version
Mono/multi band versions

NextW@ve = unmatched capabilities covering Joint applications
RADIO COMMUNICATIONS

TR 2000 FAMILY
Fixed frequency airborne radio

- Civil Air Traffic Control VHF band
- Fixed Frequency military UHF communications
- Compliant with new ICAO regulation
  - 25 kHz and 8.33 kHz channel spacing
  - FM immunity

TR 4000 FAMILY
Ground Fixed Frequency UHF radio

- Military UHF range
- Voice and Data services
- UHF SATCOM
- Several configuration:
  - Receiver (1U)
  - Transceiver (3U)
  - Tx/Rx (4U)
- AM & FM modulations
- 50 W AM / 100 W FM

TR 6000 FAMILY
EPM V/UHF radio

- Tri-service V/UHF family
- Joint/combined operations
- Military UHF, tactical VHF, Air Traffic Control, maritime band
- Voice and Data
- 3 airborne equipments, one manpack/vehicle, one ground/boat
- Fixed Frequency, Have Quick, SATURN/National EPM

VHF and V/UHF radios for military and civilian aircraft

- On board a large range of commercial and military aircraft

New generation of Fixed Frequency UHF transceivers

- New product specifically designed for low cost applications

New generation of V/UHF EPM radios

- More than 4000 radios in service, combat proven
**Navigation**

**Radio-Altimeters**
- Low altitude penetration
- Jamming resistance
- High integrity
- Low Probability of Interception
- Qualified and flight proven on fighters, transport aircraft, helicopters, UAVs and missiles

**Airborne TACAN**
- Air-air and air-ground modes
- MLS compatibility
- Design Assurance Level C
- Qualified and flight proven onboard aircraft and helicopters

**MMR Multi-Mode Receiver**
- VOR / ILS / MKR / MLS / GPS / DGPS
- Dual technology enabling civil qualification (TSO)
- 3 formats available: 3 MCU, 2 MCU and ARINC-108
- Fully compliant to ICAO, European and US standards

**References**
- More than 40,000 radioaltimeters in service
- Mirage, Rafale, UH 60, CH 47, NH90
- On board more than 20 aircraft types
Identification

IFF TRANSPONDERS

- MkXII or national secure modes
- Mode S level 2/3
- Mode 5 ready
- COMSEC appliqué or external
- STANAG 4193 and ICAO annex 10 compliant
- Remote or panel mounted
- 1553B, DIGIBUS, discretes, ARINC 485, ARINC429 interfaces

References
- Qualified on NH90, M2000, TIGRE, AWACS, selected for Watchkeeper and JP129

IFF INTERROGATORS AND CIT

- MkXII or national secure modes
- Mode S level 2/3
- Mode 5 ready
- COMSEC appliqué or external
- Interrogator or Combined Interrogator-Transponder version
- STANAG 4193 and ICAO annex 10 compliant
- 1553B, DIGIBUS interfaces
- Antenna diversity

References
- Qualified on Rafale, Erieye, NH90, JAS 39, M2000, SU30

GROUND IFF INTERROGATORS AND CIT

- MkXII or national secure modes
- Mode S level 2/3
- Mode 5 ready
- COMSEC appliqué or external
- Interrogator or Combined Interrogator-Transponder version
- STANAG 4193 and ICAO annex 10 compliant
- RS422, 1553B, Ethernet interfaces

References
- Starstreak, RBS70, Stinger, Mistral, Giraffe, Atlas, and radars (TRS22xx, GM400, …)

For any type of platforms: fighter, helo, UAV, transports/mission aircraft

Electronic or Mechanical-scan antenna

- STANAG 4193 and ICAO annex 10 compliant
- 1553B, DIGIBUS interfaces

SHORADS, MERADS, LORADS interrogators and CIT

- Design for Manpads, V/Sharads configuration
- Design for medium and longe range radars with low speed and high speed antenna
- STANAG 4193 and ICAO annex 10 compliant
- RS422, 1553B, Ethernet interfaces
### NAVIGATION

**EVS**

**Enhanced Vision System**

- High-definition InfraRed imagery

- Provide the pilot with a cristal clear picture of the environment whatever the time (day/night) and the condition of visibility
- Available for military transport aircraft, commercial airliners, regional transport aircraft, business jets

**References**

- In production for A400M

### TARGETING

**DAMOCLES**

**Targeting pod**

- Multi-function:
  - Targeting
  - Tactical reconnaissance mode
  - Battle Damage Assessment
  - Navigation FLIR
  - Compatible with all types of ammunition

- In production and operated by Air Forces around the world

**References**

- Already selected on Mirage 2000, Rafale, Super Etendard Modernisé, Sukhoi 30 and Mirage F-1

### RECONNAISSANCE

**AREOS**

**Airborne REcce Observation System**

- Fully qualified on combat aircraft

- Day and night real-time recce capability
- For both strategic and tactical Recce missions
- Real-time transmission without rendez-vous
- High rate imagery downlink
- High digital recording rate and capacity

**References**

- Qualified on Mirage 2000
- Will integrate Rafale F3 in 2009
### RECONNAISSANCE

**DJRP**
**Digital Joint Reconnaissance Pod**

- Recce Pod for air platform and mission flexibility
- Day/Night, low to medium level and real-time recce capability
- Modular design
- World leading stand-off tactical EO/IR reconnaissance system
- Qualified for worldwide operation

**References**
- Fully integrated on Jaguar, Harrier, Tornado
- In series production and in service with many Air Forces

### SELF-PROTECTION

**ELIX-IR**
**Hostile Fire Indicator (HFI)**

- Unique HFI and MWS capability
- Detects hostile fire (small calibre) RPGs and MANPADS
- Full azimuth coverage with 4 sensors
- Applicable to helicopters and Land vehicles

**References**
- Ongoing development funded by UK MoD

**MIRAS**
**Multicolor InfraRed Alerting Sensor System**

- New generation Multicolor IR Missile Warning System
- Detects all missile threats, including manpads and air-to-air
- Fast jet aircraft
- Designed to operate with CMDS and/or DIRCM

**References**
- Selected for A400M by 9 countries: UK, France, Spain, Belgium, Luxemburg, Turkey, Germany, Malaysia, South Africa
Serving more than 40 Navies: Aircraft Carriers, Destroyers, Frigates, Corvettes, Submarines, ...

- An effective response to navies’ increased needs for cooperation in the joint theatre of operations, building on its multi-milieu experience
- Broadest product portfolio (Optronics, Communications, Navigation, Identification, Electronic Warfare equipments)
- Complete and customizable systems and solutions (Fully Integrated Communication System, Naval IRST, Naval Force Intranet, VLF/LF systems, masts and periscopes...
NAVAL HF
6000 and 8000 SDR families

- Outstanding radio performance
- Supports cross service interoperability
- Voice and Data (L11, L22, LY + Intranet applications)
- 6000 series: Transmitters, receivers and transceivers configuration
- 8000 SDR series: Multi-channel (up to 4) transceivers

References
- Belgium, Denmark, France, Greece, Netherlands, UK, South Africa, OMAN, Venezuela, Malaysia, India, Indonesia

NAVAL UHF 6000 FAMILY
4000 families

- 406 MHz reception capability
- Voice and Data services
- Tactical Data Links (L11, L22 FF)
- UHF Satcom
- Easy Host/Network integration
- RS422 and LAN Ethernet/IP

References
- New product specifically designed for low cost naval applications

NAVAL EPM V/UHF
6000 and 8000 SDR families

- EPM latest generation fast frequency hopping
- Clear and secure voice and data
- Data links: L11/LY (FF), L22 (FF and NATO EPM SATURN), LX (TDMA in National EPM FFH)
- 8000 SDR series: Multi-band, multi-mode, multi-channel (up to 3)
- Flexible and open radio architecture

References
- More than 600 equipment already in operation
**Communication, Navigation, Identification**

### COMMUNICATIONS

**SURFSAT AND DIVESAT:** Satcom terminal for surface ships and submarines

- Easy onboard integration
- C, X, Ku, Ka, EHF frequency bands capability
- High data rate secure communications accommodate any kind of modems
- ESM and EPM modes
- Low PIMS antenna

**References**
- French and Belgium Navy

### NAVIGATION

**NAVAL TACAN**

Beacons and Antennas

- Compatible with all existing Airborne TACAN
- Transponder equipment AN453/N
- Electronically scanned antenna AN454/N
- Remote control and status indication RCSI 446 (option)
- Pulse blanking unit function

**References**
- Korean, French, Italian, UK Navies

### IDENTIFICATION

**TSX 2500/3500 FAMILY:** MERADS and LORADS interrogator and CIT

- Interrogator only or CIT configuration
- MKII, mode 5, mode S
- Include a tracker for automatic IFF interrogation management
- Designed for low speed and high speed antenna
- Appliqué or external crypto

**References**
- Onboard more than 400 ships

New generations of Satcom stations, on board Horizon frigates and submarines

**High bearing and distance accuracy**

Qualified with a large range of naval radars
**ARTEMIS**

Advanced 3rd generation naval IRST

- Day and night omnidirectional passive surveillance
- Automatic detection & tracking
- Air and surface targets simultaneously
- Manoeuvring and stealthy new threats
- Surface asymmetric threats
- 360° full stare, 25° in elevation and 10Hz data update rate

**ALBATROSS**

Medium wave Thermal Imager

- Day/night situational awareness capability
- Long-range camera
- Multiple operational roles
- Border and coastal surveillance
- Search and rescue
- Navigational aids
- Detect, track and engage threats

**OPTRONIC MASTS AND PERISCOPES**

- Optronic masts
  - 3-axis stabilised, high resolution imaging for enhanced submarine ISTAR
  - Unique image capture and stealth functions reduce counter detection risk
- Periscopes
  - Combined optical and electronic imaging complements Optronic Mast

**References**

- Contracted for the European FREMM frigate programme
- Selected for the Type 23 Defensive System Anti-FIAC/FAC programme for the UK MoD
- Optronic masts in production for the Royal Navy’s latest ASTUTE class and for the Japanese Navy. Periscopes in service in UK, Australia, Canada and Sweden
Networking solutions adapted to naval operations

- Optimum use of existing communication equipment
- Prepared for new capabilities (HRDL, SWR, ...)
- Multi-level secure architecture
  Scalable and customizable
- Federated network
  HF, UHF, Satcom,
  High Rate Data links
- Quality of service, bandwidth allocation, security
- Light version
  (Stand alone cabinet)

Multi-media network
E-mail, data bases, images, videoconference, Voice over-IP

NFI = full IP network for Naval Force coordination
Tailored solutions to protect sites and dismounted forces, with fewer personnel engaged in surveillance through a network of sensors (Optronics, radars, acoustics, etc.) and effectors (lethal and non-lethal) with C2 management.

- France/SPECTRE, assessment study and demonstrator, dedicated to the mobile units protection
- Netherlands/DISCUS, Compound Security System to support the Forces deployed in Afghanistan
- Germany/MobIDS, in service within the German forces for out-of-area operations
Border surveillance systems

From full mission capability to best-in-class electronic systems for land, maritime, and littoral surveillance

- References: Morocco, Latvia

User Centric Command and Control
- Shared Common Operational Picture
- Fast accurate decisions through efficient tools
- Full Control over surveillance mission
- Optimal employment of human and equipment resources

Efficient Intelligence Surveillance and Reconnaissance
- Radar, ElectroOptics/Infra Red sensors
- Radio direction finding
- Target tracking
- Identification

State-of-the art communication networks
- Robust and secured backbones
- Optical cable, microwaves, satcoms
- Mobile communications Tetra, VHF
- Long range HF
**USER AND MANAGED SERVICES**

**SCOPE**
Solution for Command Post Exercises

- An innovative service offering that enables customers to carry out operational rehearsals on-demand for Command Posts
- SCOPE provides fully tailor-made exercises on a pay-per-use basis without any initial investment. Exercises can be operated and supported by Thales staff
- Exercises are carried out in a realistic operational environment

**SATCOM and INFORMATION SERVICES**
End-to-End Communication Services

- Global Communication capability, operated by Thales, including ground and space segments, for:
  - Information retrieval from theatre
  - Interconnection to homeland or Command Post
- Secured and configured according to technical and operational requirements
- Reachable on-demand (Pay per Use), anywhere, 24/7

**WHOLE FLEET MANAGEMENT**

- Optimisation of through-life costs of fleets (vehicles, soldiers or systems) equipped with mission critical systems and armaments from a range of manufacturers
- Deploys an effective information management system to track and trace events which occur throughout the assets life optimising fleet availability
- Whole Fleet Management provides a preventive based maintenance system including on board Health and Usage Monitoring Systems (HUMS)
SERVICES

USER AND MANAGED SERVICES

SUPPORT OUTSOURCING

Outsourcing is a way to retain the highly skilled personnel required to support complex systems and equipment in support centres.

It leads to a long term partnership enabling the implementation of cost effective life cycle support solutions.

Key Performance Indicators ensure that the required level of service will be provided, thus improving the Forces capabilities.

REMOTE SUPPORT SERVICES

REMAIN
REmote MAintenance and INvestigation

Tele-support solutions that enable optimising scarce resources to support maintenance and logistics commanders in theatre to deliver high availability with a reduced logistics footprint.

Based on REMAIN (Satellite, ADSL and WiFi) and Thales Satcom services to connect you everywhere, anytime.

Optimises the total maintenance cost while improving availability.

WEB PORTAL AND CONTACT CENTRE

Contact Centre

24/7 single point of contact for registering all technical, contractual and operational queries relating to Thales Land & Joint products.

Customer OnLine

A web portal providing services for increased efficiency: www.thalesgroup.com/customeronline.

24/7 access via a secure Internet connection, with smart card if required.
Points of contact

To contact us: Supportline@fr.thalesgroup.com, or:

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