





# SECOMSAT Spanish approach

### present and future satcom for defense purposes



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### Contenidos

- ESP milsatcom overview and service provision model
- Next generation. Milsatcom System and requirements
- GOVSATCOM. Leading the initiative



### ESP Milsatcom. Service provision

- HISPASAT
  - was incorporated in 1989 to design, develop, manage and deliver commercial network capability in Ku band and Governmental services in X band Satellite Communications System (SATCOM) for the Spanish Government,
    - 1992. HISPASAT 1A (30° W) dual-use satcom launched.
    - 1993. HISPASAT 1B (30° W) dual-use satcom launched.
    - 2003. Nominal Operational End of operational life

#### HISDESAT 2001

- Incorporated in 2001 Public Private Partnership (PPP) model of acquisition. Agreement SPMoD, HISDESAT and HISPASAT to define, develop and operate the new SATCOM system (42 % Public participation in HISDESAT).
  - 2005. XTAR-EUR (29°E) governmental satcom launched
  - 2006. SPAINSAT (30°W) governmental satcom launched



### SECOMSAT service area





Defensa

<u>a</u>

Estado Mayor de



### satcom ground/control segment





### SECOMSAT capability. Procurement model

#### CORE Long-term, large multi-year frame contract (15+ years)

- pre-contracted
- Permanent and immediate availability to MoD
- guaranteed and secured access
  - UHF, Hardened SHF, mil-Ka

#### EXTENDED CORE Medium-term, max. 2-year contract

- virtual capability (Crises Urgent Requirements)
- not permanently available to MoD
- called upon when needed to support defined duration missions
- Military or non-military programs
  - Non hardened SHF / mil-Ka

#### AUGMENTATION Short term

- ad-hoc procured, or on demand
- Support for emerging urgent requirement
- commercial
  - SHF / commercial Ka
  - Commercial Ku



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### Space segment schedule

- The renewal of the Spanish MILSATCOM fleet, coherently with EDA GOVSATCOM initiative, is planned as follows:
  - Concept phase:
    - starting 1Q 2015, will continue the evolution and works previously performed for other collaboration programmes. During this phase, the reference architecture will be concluded and some key concepts will be decided (number of new satellites, orbital locations, refining of IER's, etc).
  - Development Phase
    - starting at 3Q2016, comprises all the processes for construction of platforms and payload.
      Satellites are expected to be launched at the end of 2018/beginning 2019.
  - Service Phase:
    - starting 1Q2019, with nominal life of 15 years (2034). During 2019, IOT and some other test will be performed before service delivery.
  - Transition phase
    - estimated a timeframe of 1.5 years between the actual MILSATCOM fleet and the future MILSATCOM constellation, will include migration of services and other operations.

	2004	2005	2006	2007	 2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
SPAINSAT															
XTAR-EUR															
RENOV. SPAINSAT															
RENOV. XTAR															
NSP2K															
CP9A0130															



- SECOMSAT system architecture to fly 3 spacecrafts for improved coverage and flexibility
- Orbital locations will be selected from the Spanish filings, including S, X, Mil-Ka, UHF and EHF
  - Bands will include UHF, SHF X-Band (processed and transponded), mil-Ka band (processed and transponded), and EHF non-processed.
- The spacecraft nuclear hardening level is determined by national requirements and NATO NCIA Technical study for CP9A0130
- IRMA2 State-of-the art Phased Array Anti-Jamming Antenna TX/RX banda X for nulling and jammers mitigation (beam forming / beam hoping)
- Full cross strapping between mil-Ka and SHF X-Band will be implemented to support Satellite Broadcast System (ESP SDS).
- ON-board-processed (OBP) CARES:
  - X + mil-Ka bands
  - 8x8 IN-OUT channels.
  - ETSI DVB-S2/RCS2 National development,
  - in-flight reconfigurable



### Freq bands and beams requirements

- X-band
  - dual pol RHCP / LHCP 500Mhz band
  - Wideband Channel transponders 72 & 40 & 20 Mhz
  - 1 Shaped European, 4 steerable spot, 2 global beams
  - Phased Array Anti Jamming multibeam "IRMAevo" Antenna
- mil-Ka band
  - dual pol RHCP / LHCP 1000 Mhz band
  - Wideband Channel transponders 100, 72 & 40 Mhz
  - 3 steerable spot beams
  - Parabolic antenna (phase array TBD)
- UHF NATO harmonized band (225-400 Mhz)
  - 15 x 25 KHz tuneable UHF channels
  - On-board processed

### On-going operations



# ESP space programme. Future plans





NATO CP 09A0130

- The operational lifecycle of the current system ends in 2021
- Currently Working on the elaboration of the Defence Space systems Master Plan.
- Next years are important, a new SP MILSATCOM system is to be defined taking into account that there are three main international scenarios to improve the current capabilities:
  - Bilateral GtG SATCOM Project.
  - NATO Capability Package CP 09A0130
  - EDA GOVSATCOM Project. (SPAIN is the leading nation).
    - o1-July-2015 → kick off meeting Feasibility Study
    - Spain proposed to create an Ad-hoc working group (RAWG) to define the GOVSATCOM requirements
    - Spain cooperated with EDA and Euroconsult to define an unified questionnaire sent to MS
    - two planned meetings to define CSR
      - 22nd september 2015
      - 20th october 2015



### GOVSATCOM- EDA Management plan Roadmap ESP



la Defensa Estado Mayor de



## Key topics for GOVSATCOM initiative

- Dual use platforms MILSATCOM GOVSATCOM ??
  - Dedicated payloads/platforms
  - Hosted payloads
  - Pooling and sharing spare capacities
- Governance
- assets
- GOVSATCOM capabilities
  - antijamming nulling capabilities
  - No Nuclear hardening platforms against HANE
  - Freq bands X + mil-Ka / comm Ka
    - Other bands to be defined (C,S, Ku)
  - Secured TT&C

### conclusions

- ESP MoD is fully satisfied with milsatcom delivery service, satellite performance and implementation model.
- Current Spanish SATCOM capabilities are a dual use solution between Military and GOVSATCOM.
- Growing operational deployments demand increased satcom capabilities multiple orbital locations provides resilience and flexibility of coverages. (space redundancy)
- Strategic importance of the space dimension
- International scenarios initiatives drive aditional space requirements
  - EDA GOVSATCOM Project
  - NATO SATCOM CP