Program Executive Office
Command, Control, Communications,
Computers and Intelligence (PEO C4I)

Communication Program Office (PMW/A 170)

ISCe Conference

12 June 2008
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Overview

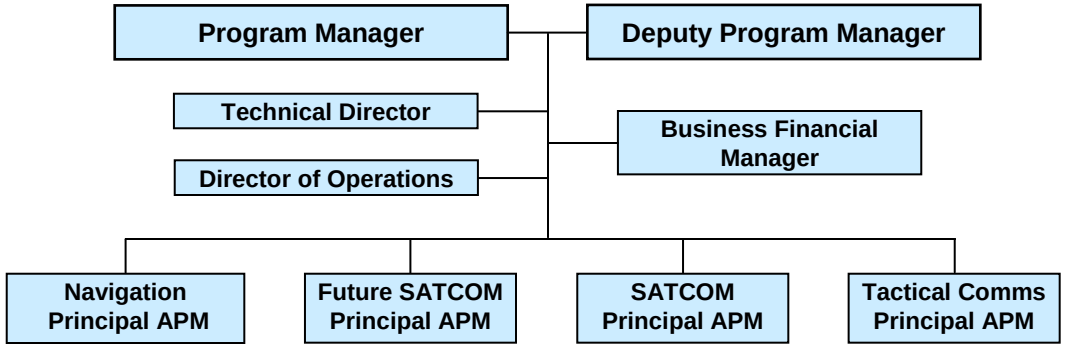
- Mission/Vision/Organization
- Major Programs & Focus Areas
- Future Projects/Industry Opportunities
- Science & Technology Interests
- Summary

Mission/Vision Statements

PMW/A 170 MISSION:
To acquire, integrate, deliver and support interoperable communications, enabling seamless operations for Fleet, Joint and Coalition Warfighters

PMW/A 170 VISION:
To remove communications as a constraint to the Warfighter

PMW/A 170 ORGANIZATIONAL CHART



Major Programs & Focus Areas

Major Programs
PMW/A 170

SATELLITE COMMUNICATIONS (SATCOM)
- Commercial Wideband Satellite Program (CWSP)
- International Maritime Satellite (INMARSAT)
- Commercial Broadband Satellite Program (CBSP)
- TV Direct to Sailors (TV-DTS)
- Enhanced Mobile Satellite Service (EMSS) Iridium
- Super High Frequency (SHF)
- Global Broadcast Service (GBS)
- Navy Extremely High Frequency SATCOM Program (NESP)
- UHF SATCOM (Legacy)
- Navy Multiband Terminal (NMT)
- Navy Transformational Communications (NTC)
- Joint Integrated System Technology (JIST Net)

COMMON DATA LINK – NAVY (CDL-N)
- Common High Bandwidth Data Link (CHBDL)
- Communications Data Link System (CDLS)

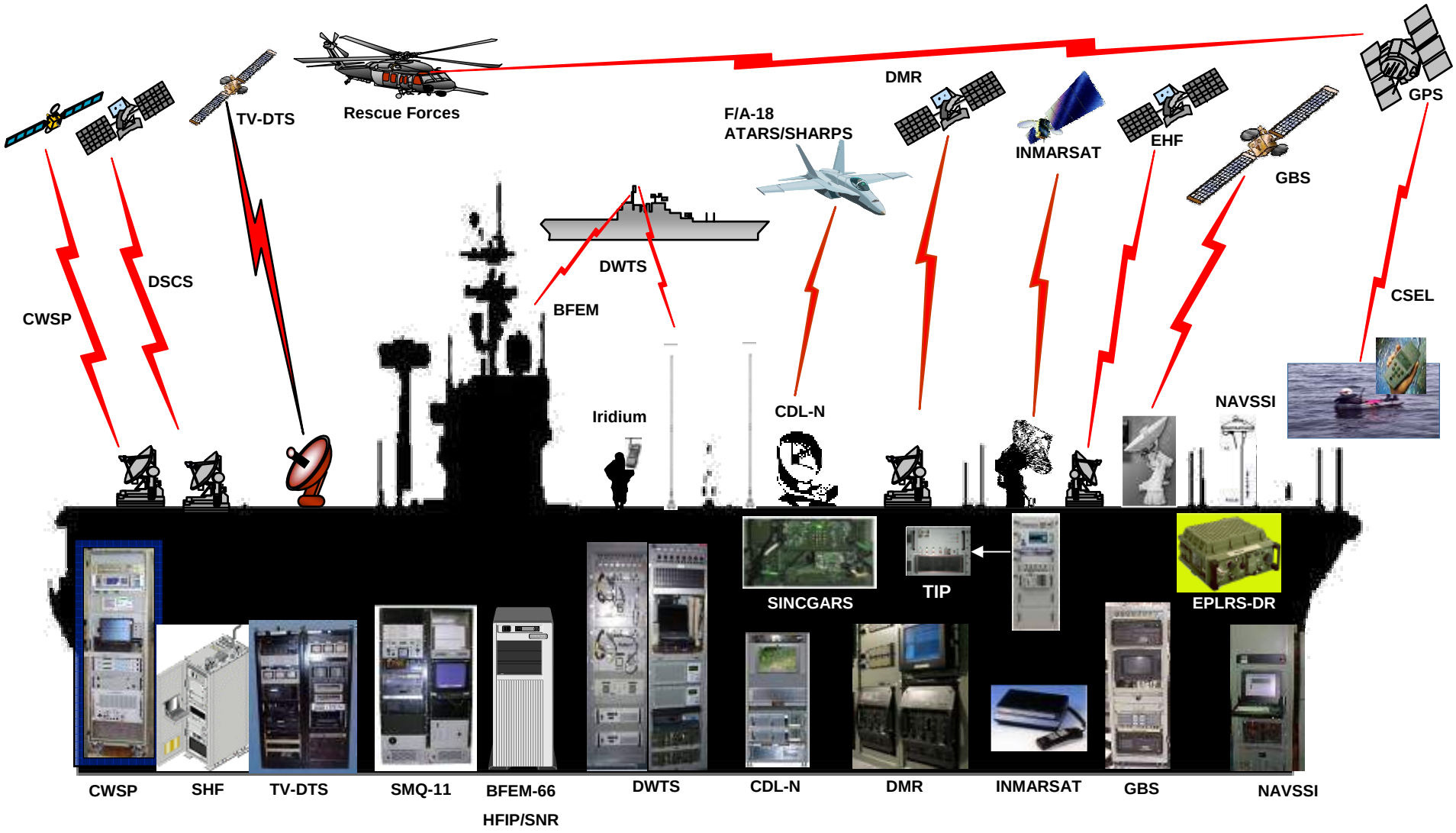
GPS: Global Positioning System
DAGR: Defense Advanced GPS Receiver
PLGR: Precision Lightweight GPS Receiver
TSS: Tactical Switch System
TVS: Tactical Variant Switch

TACTICAL COMMUNICATIONS
- Battle Force Email (BFEM 66)
- SubNet Relay (SNR)
- High Frequency Internet Protocol (HFIP)
- Digital Wideband Transmission System (DWTS)
- Enhanced Position Location Reporting (EPLRS)
- Shipboard Single Channel Ground and Airborne Radio System (SINCGARS)
- Digital Modular Radio (DMR)
- Switching (TSS, TVS)
- UHF Communications (LOS)
- High Frequency Radio Group (HFRG)
- HF Systems
- Portable Radios

NAVIGATION SYSTEMS (NAVSYS)
- GPS Positioning, Navigation, & Timing Service (G-PNTS)
- GPS Handheld (DAGR & PLGR)
- Navigation Sensor System Interface (NAVSSI)
- Navigation Warfare (NAVWAR)
- Combat Survivor Evader Locator (CSEL)
- AN/WRN-6

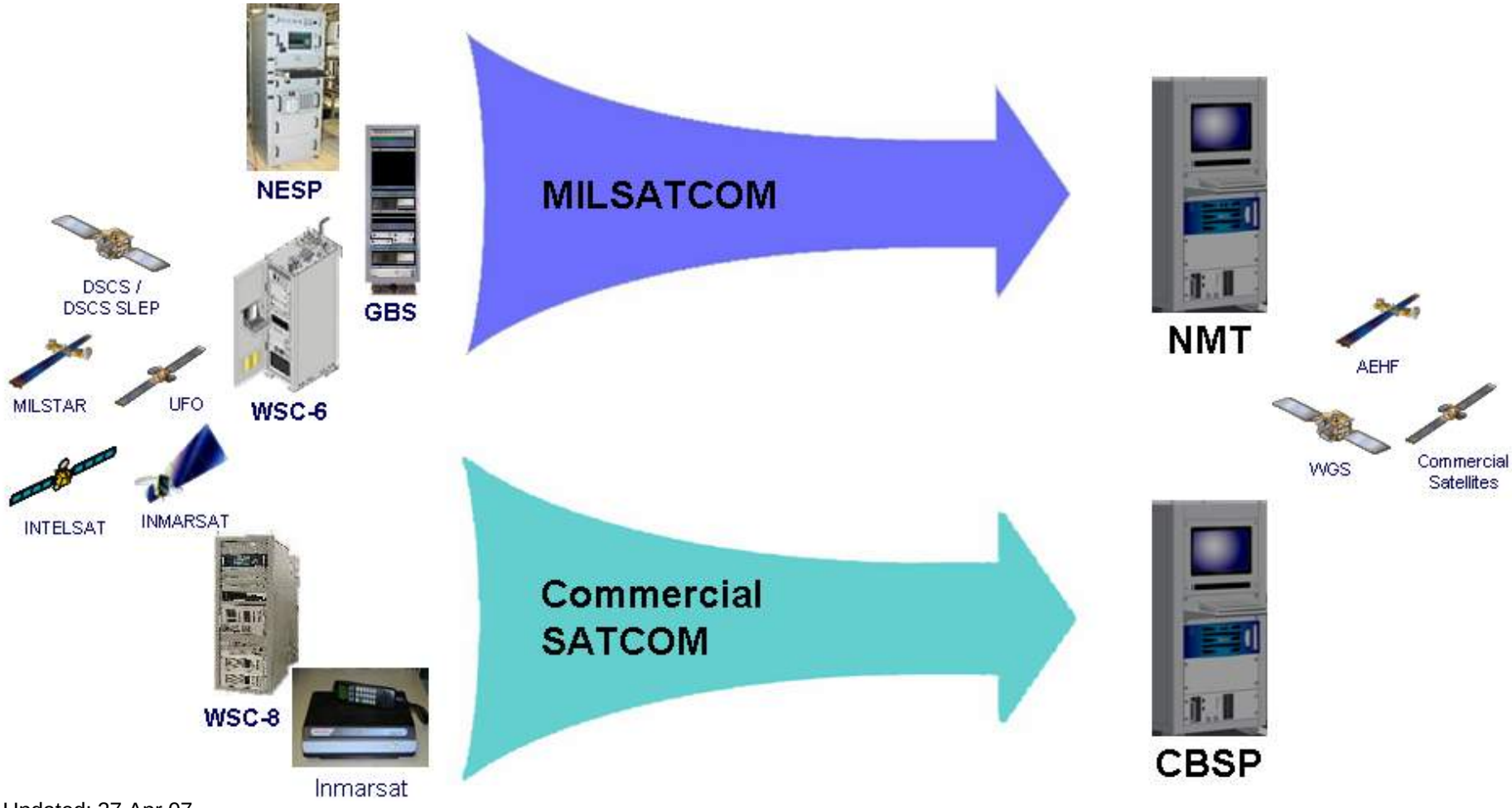
METEOROLOGICAL/OCEANOGRAPHIC (METOC)
- SMQ-11 (Shipboard)
- FMQ-17 (Shore)

PMW/A 170 Delivers



Note: Not a representation of all PMW/A 170 programs/products.

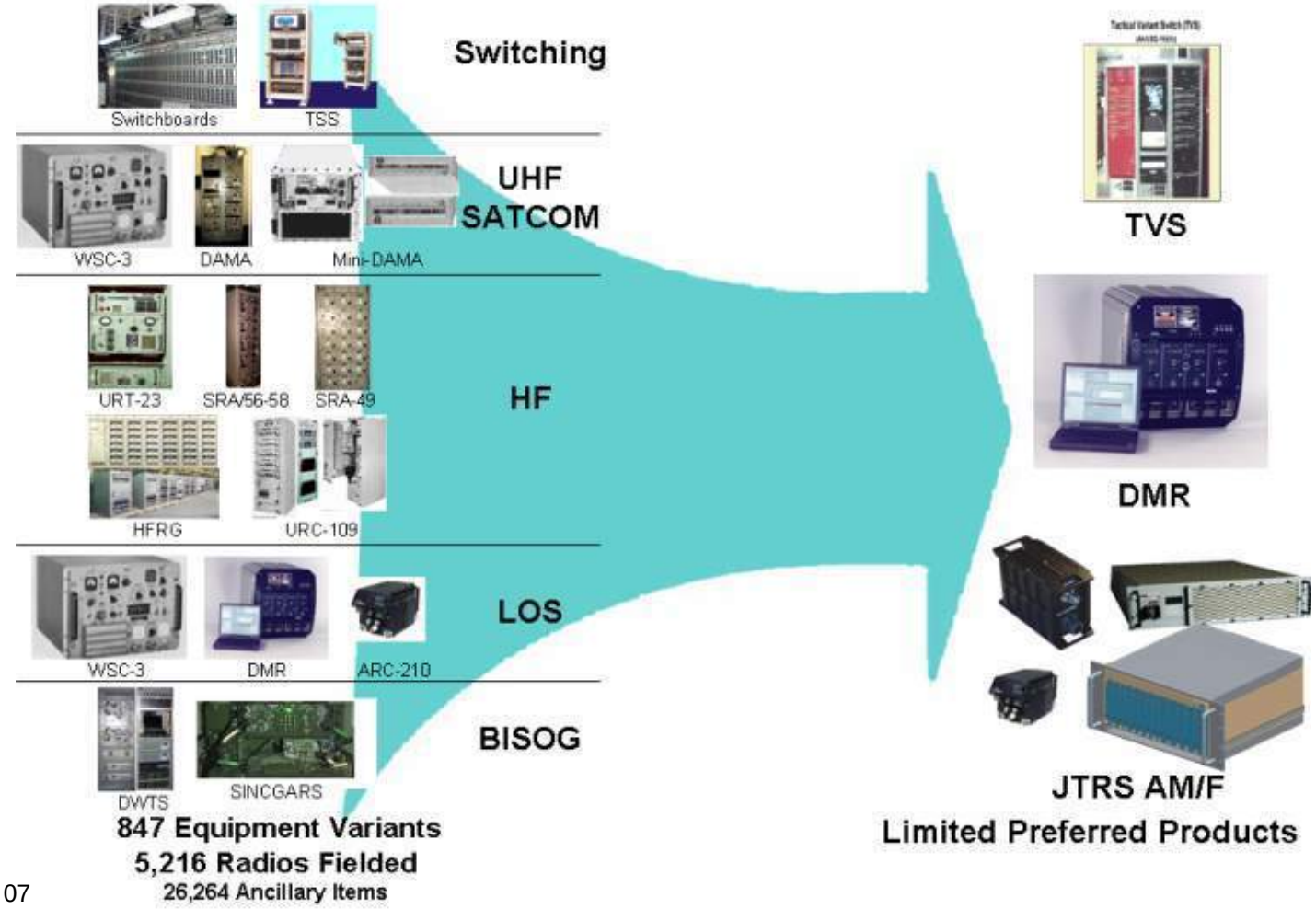
Navy SATCOM Migration



Updated: 27 Apr 07

Navy Strategy is to Pursue Integrated MILSATCOM & Commercial Solutions to Meet Global Communication Needs

Tactical Communications Migration



Updated: 7 Nov 07

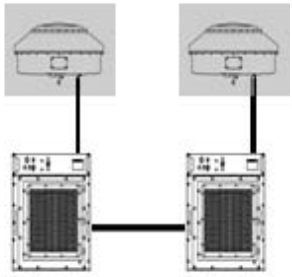
Navy Strategy is to Reduce Radio Variants and Footprint To Meet Tactical Communication Needs

Navigation Migration

GPS Anti-Jam Antennas

GPS Receivers

NAVSSI

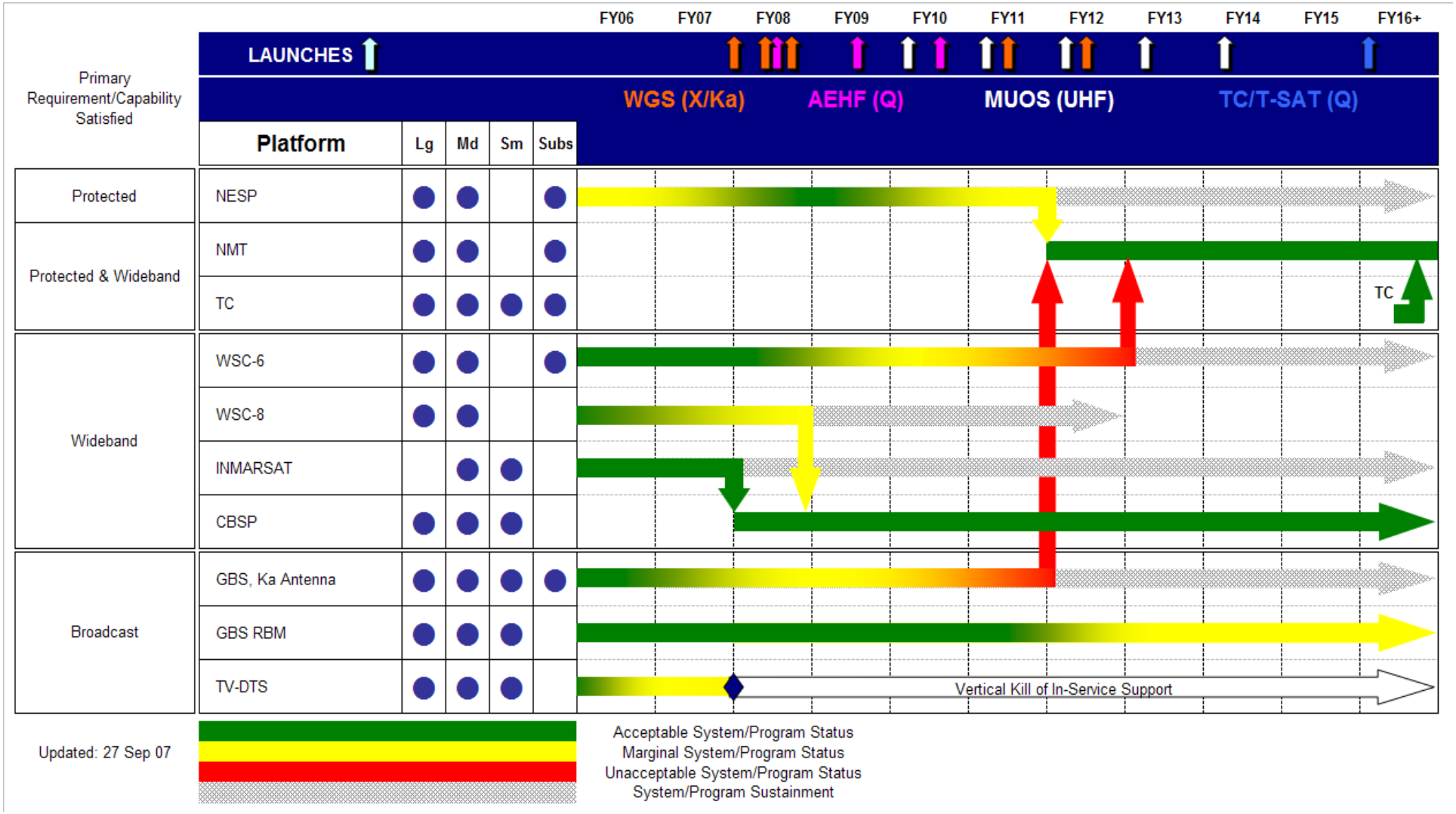


G-PNTS

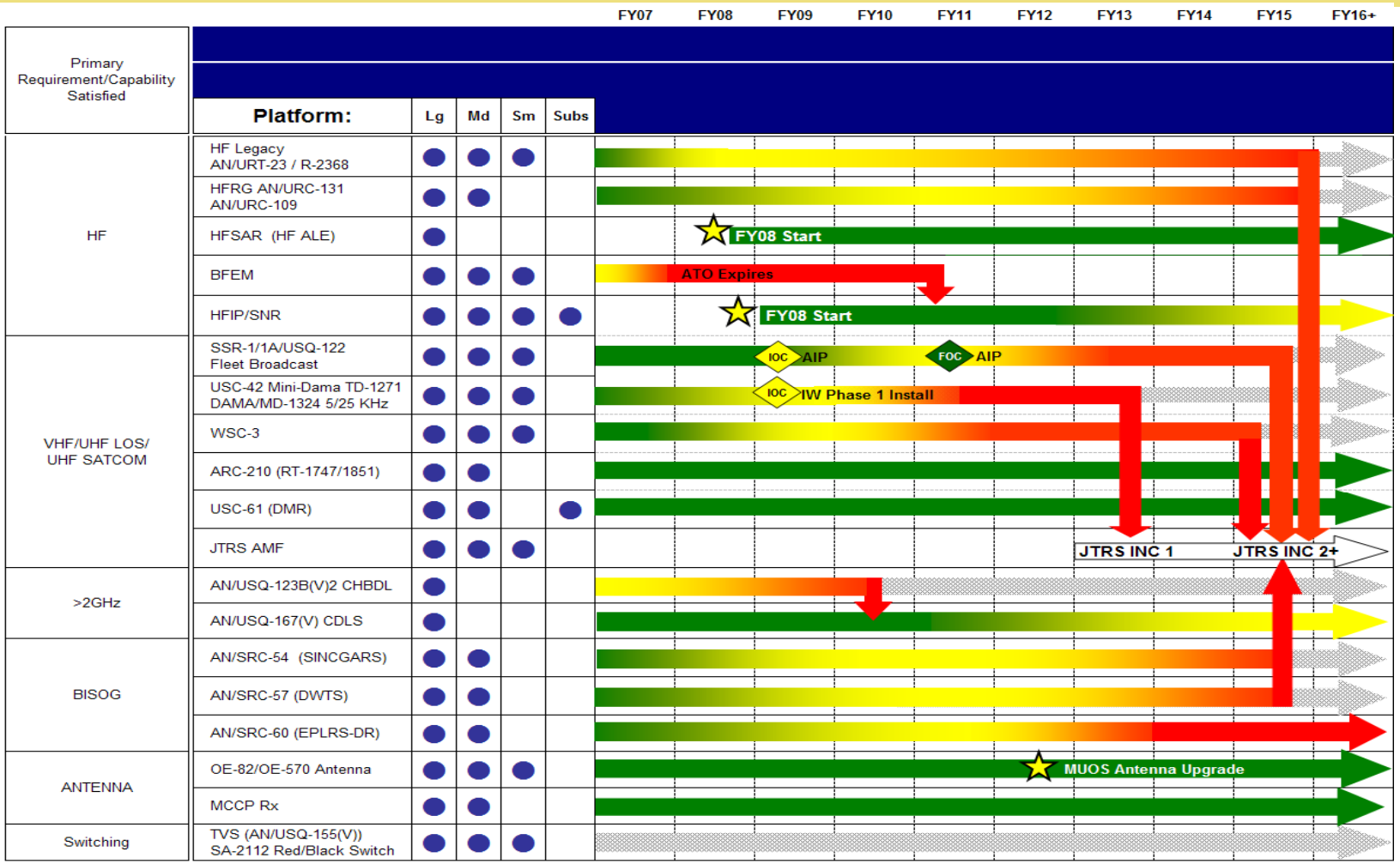
Updated: 12 Sep 07

Navy Strategy is to Provide Open, Extensible G-PNTS to All Platforms

Navy SATCOM Roadmap



Tactical Communications Roadmap



Updated: 12 September 2007

Legend

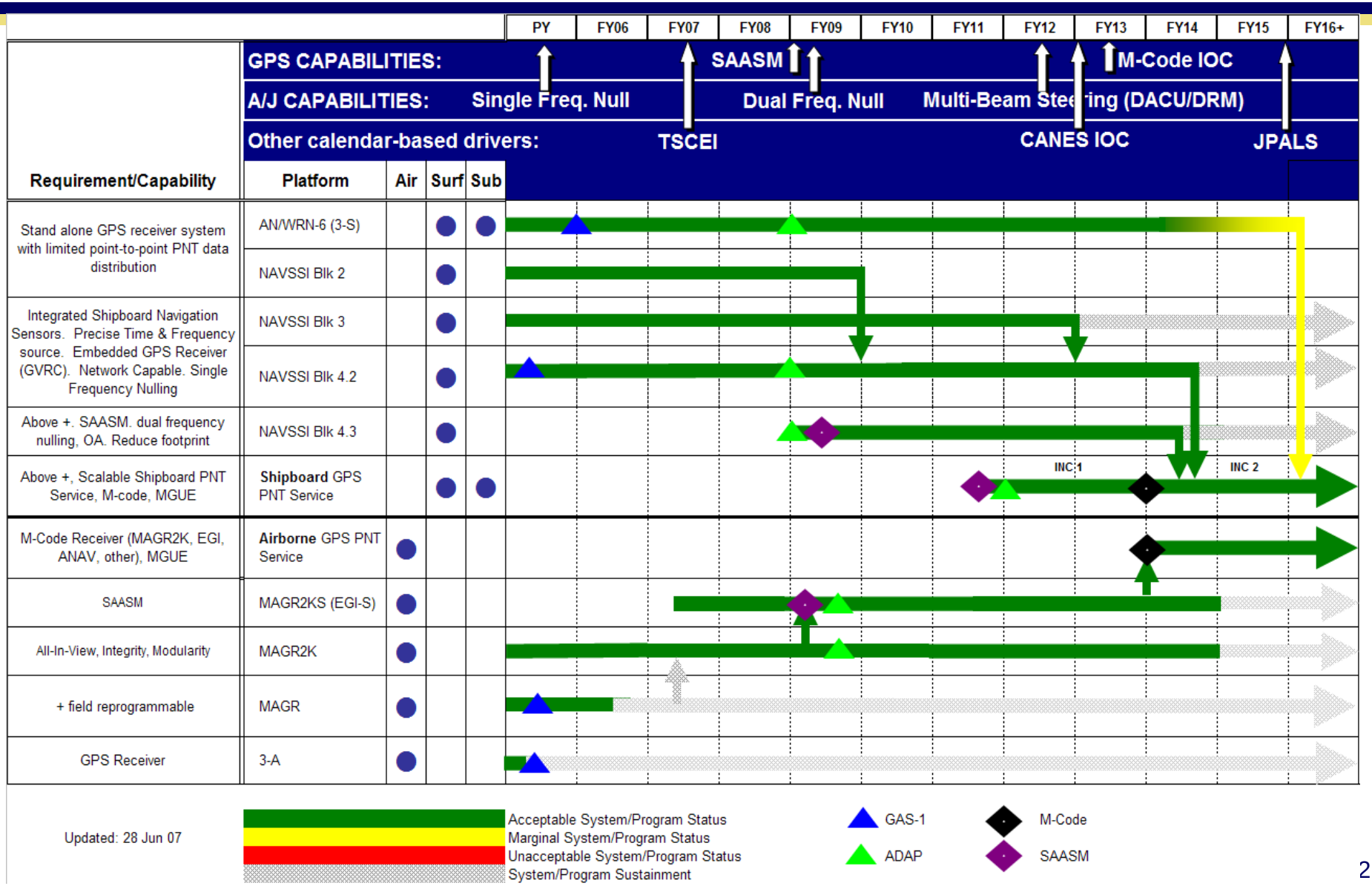
IOC Initial Operational Capability

FOC Full Operational Capability

Acceptable System/Program Status
Marginal System/Program Status
Unaccepable System/Program Status
System/Program Sustainment

[1]JTRS Inc 1: UHF SATCOM & MUOS WCDMA
JTRS Inc 2+: Requirements & Funding Are Unknown

Navy NAVSTAR GPS PNT Roadmap

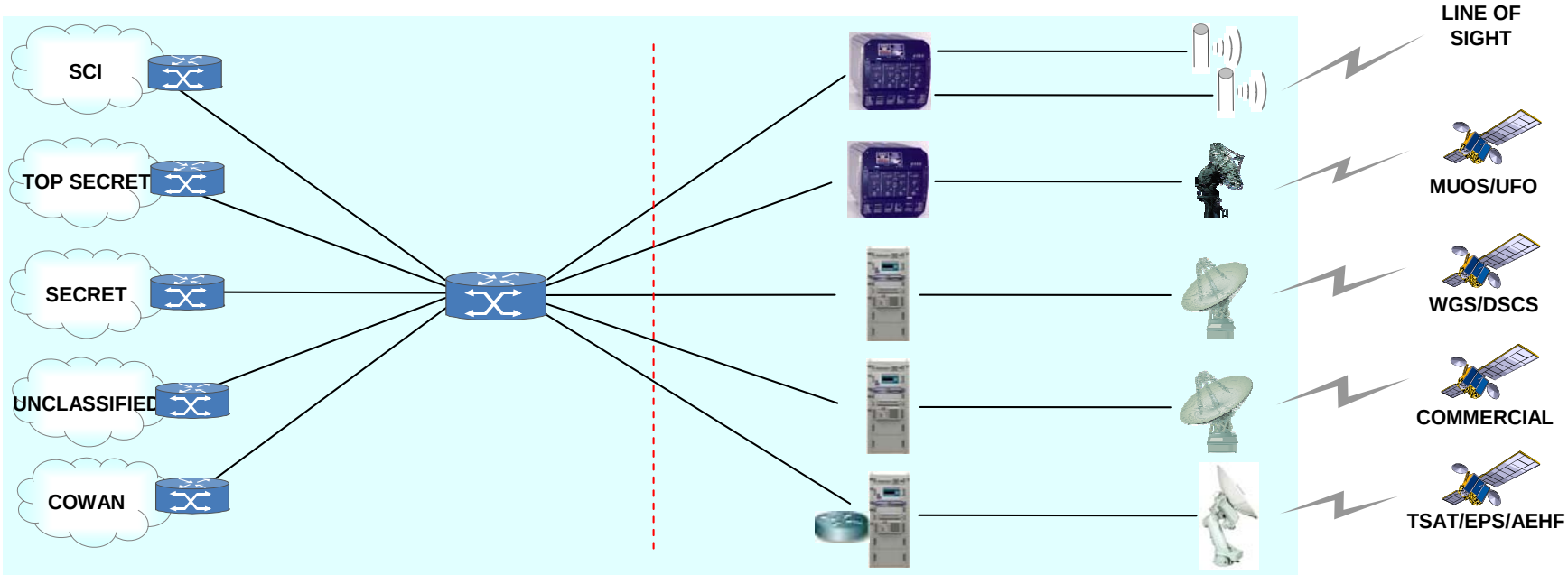


Future Projects & Industry Opportunities

NTC Future Industry Opportunities

- **Navy Transformational Communications (NTC)**
  - Follow-on to NMT
  - Leverage NMT hardware/software investments to the maximum extent possible
  - Anticipate ACAT IC, M/S B 1QFY13 (tentative)
- **NTC will Implement new capabilities**
  - Single ship downlink rates up to 440 Mbps
  - Terminal/Space based packet communications (IPv6)
  - DBRA, as well as Anti Jam, Anti Scintillation, LPI/LPD
  - Dynamic Network Management
  - XDR+ and XDR waveforms for TSAT, while maintaining: XDR waveforms for AEHF, Enhanced Polar, and wideband WGS
- **Planned Contracts**
  - Conduct a full and open competition with downselect to two vendors for competitive prototype development
  - Downselect to single vendor for development of 20 EDMs
    - Develop new TSAT-capable NMT Communications Group (CG) (below decks equipment)

NTC Impact on Navy Terminal Suite



Baseband

- Network Access Functions
- Policy Control Functions
- Encryption
- Routing (ADNS)
- Quality of Service (QoS)
- Multiplexing (TIMEPLEX)
- TDMA Interface Processor (TIP)

Communications Group (CG)

DIGITAL PROCESSING SUBSYSTEM

- Data Interface Processor
- Terminal Control Processor
- Radio Frequency (RF) Controller
- TRANSEC
- Antenna Control Processor
- MODEM

RF SUBSYSTEM

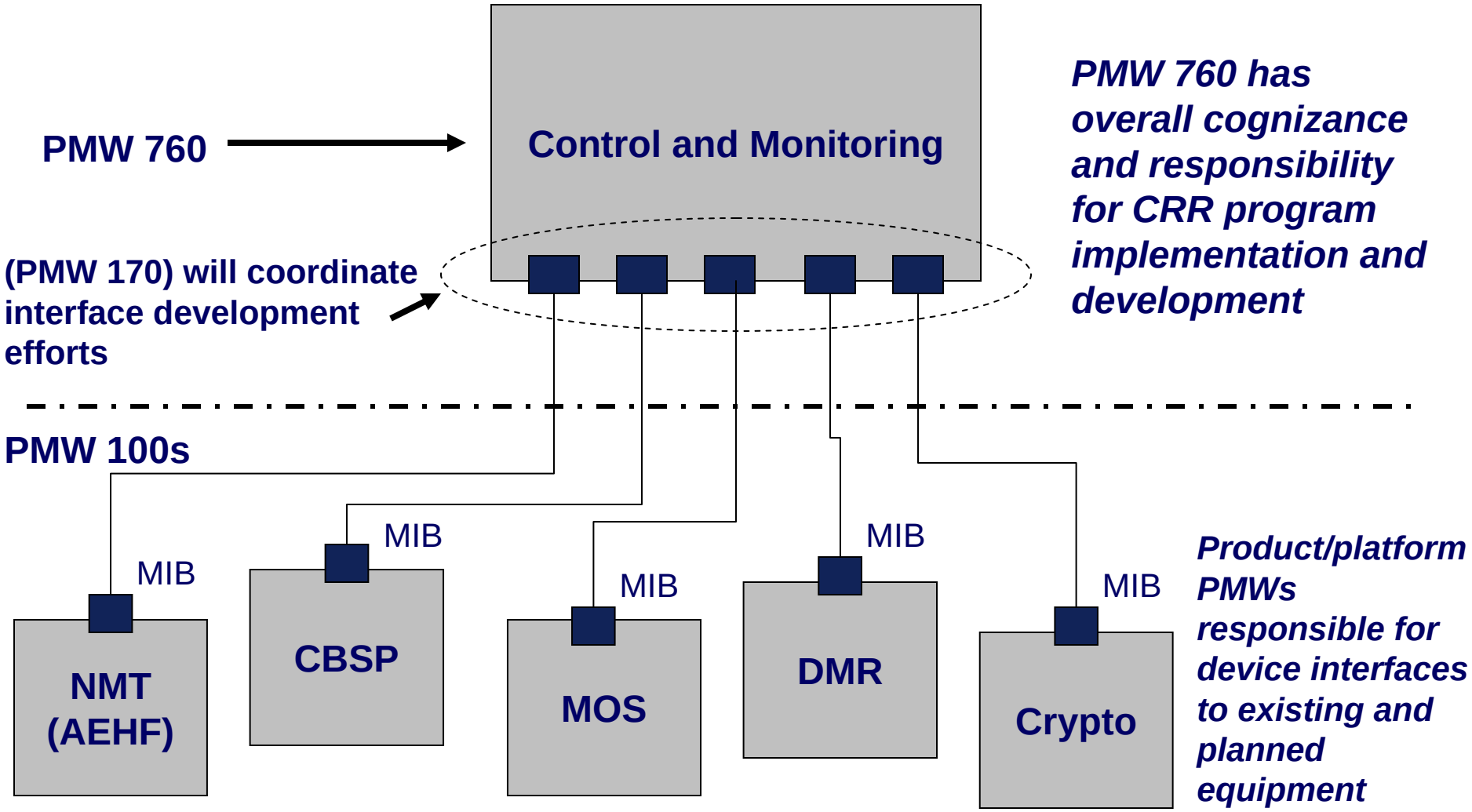
- Synthesizer
- Amplifier
- Low Noise Amplifier (LNA)

Antenna Group (AG)

- Radome
- Reflector
- Feed
- Pedestal

Absolutely Affected by TSAT — **Less Impact by TSAT**

Common Radio Room (CRR)
Future Industry Opportunities



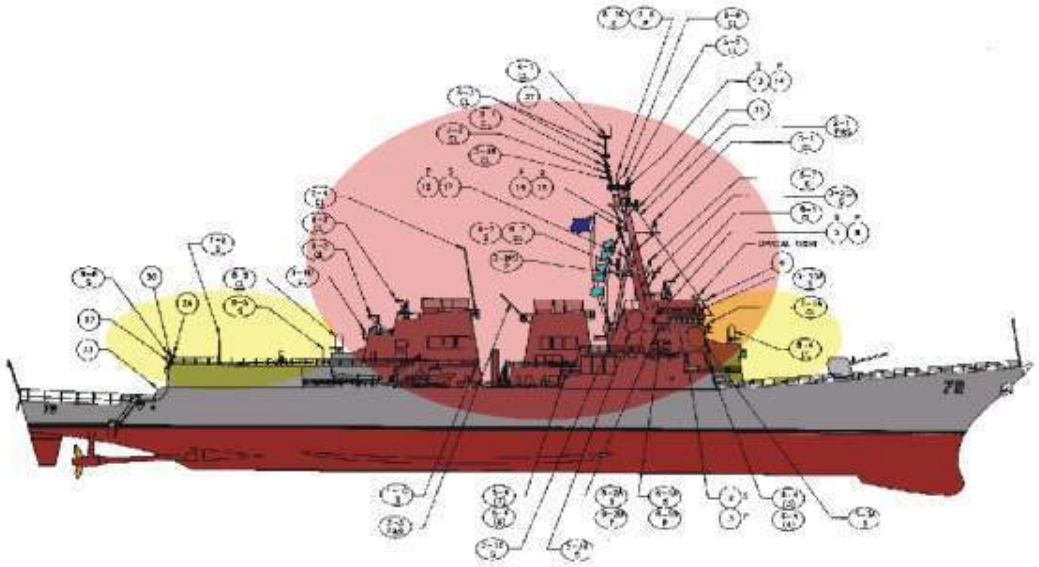
PMW 760 has overall cognizance and responsibility for CRR program implementation and development

Product/platform PMWs responsible for device interfaces to existing and planned equipment

Note: These systems and interfaces are not all inclusive. They are a representative list of systems that can be automated through C&M solution set.

Science & Technology Interests

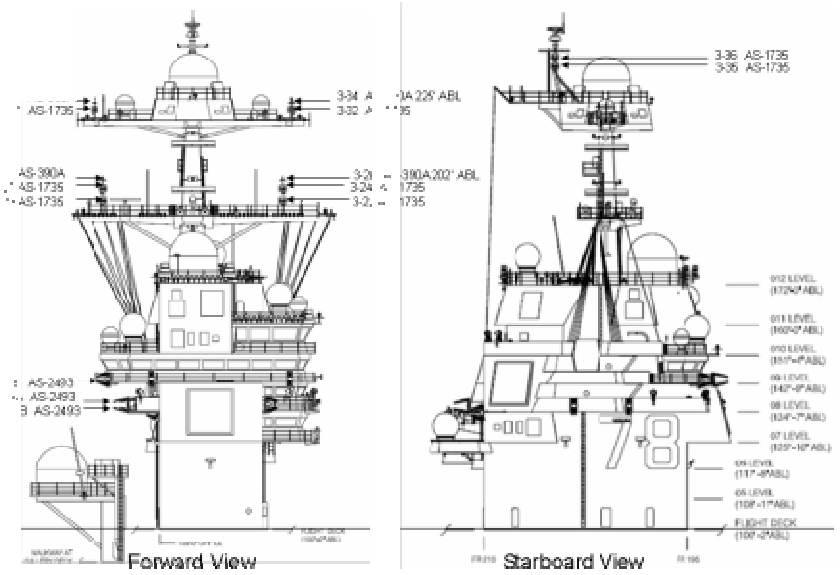
Topside Challenges



Reduce antenna size, numbers, and footprint

Reduce EMI/cosite interference

Link speed and reliability directly tied to signal to noise ratio



Commercial SATCOM lives in a very tough environment shipboard

PMW 170 S&T Interests

Improved Multi-function, Multi-band, High Bandwidth Apertures

–Electrically short, high efficiency, HF broadband transmit antenna

MCCP Program

TRL 6

DDG-1000 Deck Antenna

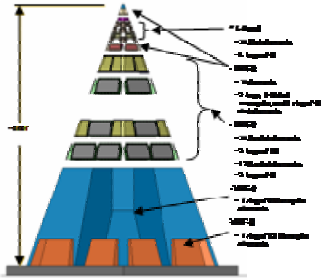
TRL 5

–Multi-band T/R apertures for simultaneous waveforms (2MHz-50GHz)

RF TAP (Trans. Ant. Panels)

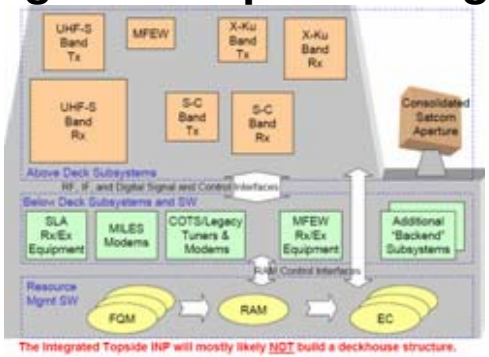
TRL 2

MFM



TRL 5

Integrated Topside Program



TRL 2

TRL – Technology Readiness Level

PMW 170 S&T Interests

SATCOM Throughput Improvements

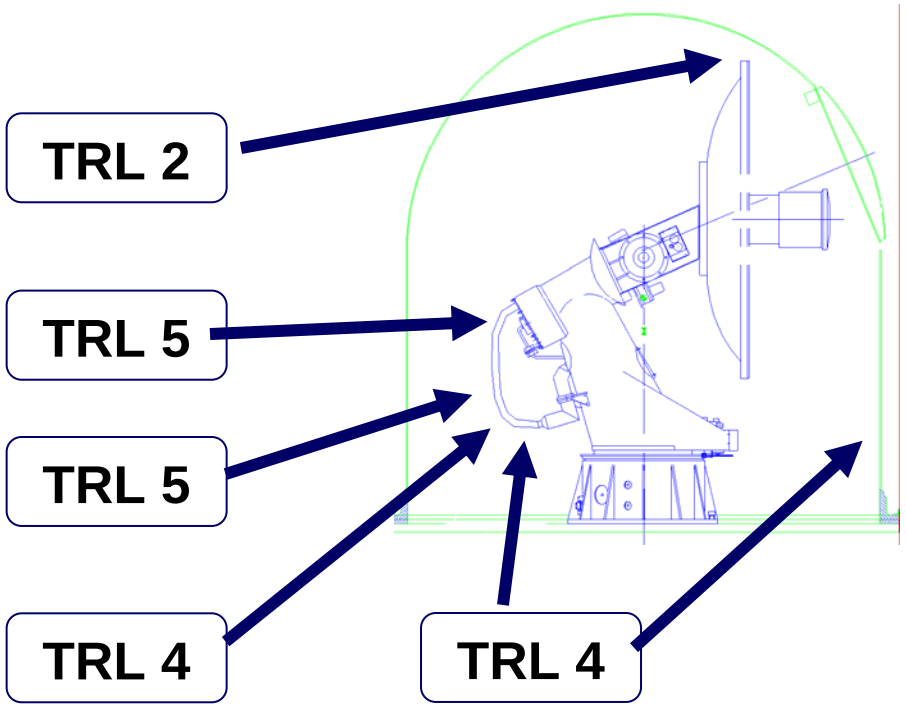
Metamaterials for antenna reflectors to increase gain/reduce sidelobes

Very linear power amps for phase and amplitude modulation

LNA noise figure improvement

- ***Cryogenic cooled***
- ***Digital RF front-end***

Improve output control of EHF power amps to meet TSAT specs



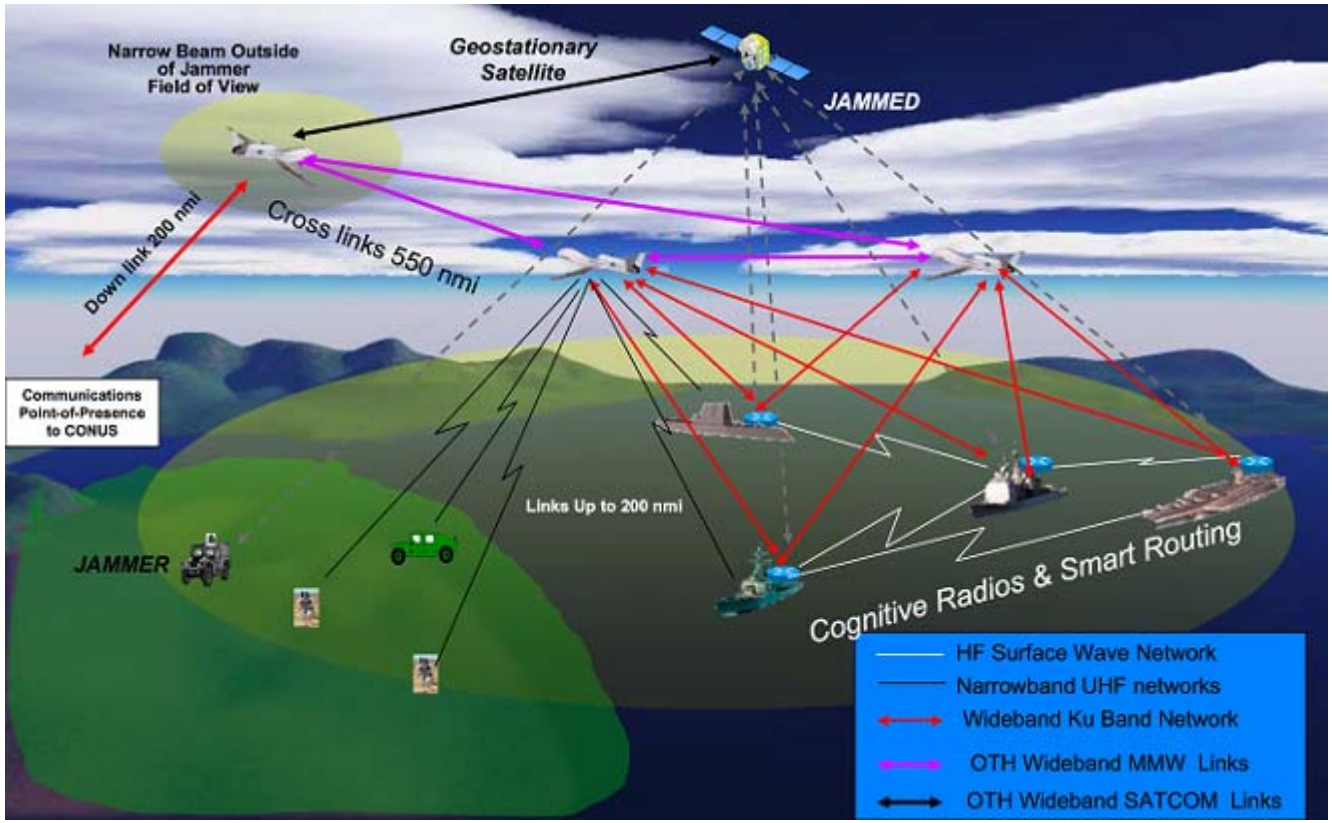
Improve (SATCOM) transmit power amp efficiency

- ***Reduced radome heating***
- **Higher MTBF**

TRL – Technology Readiness Level

PMW 170 S&T Interests

Communication Alternatives to Space-Based Satellites



Navy is in process of establishing throughput requirements in a jammed SATCOM environment.

Summary

- **Continue framework to pursue opportunities for PMW/A-170 and Industry to accelerate development and insert technologies**
  - **Alignment with PEO-C4I roadmaps**
  - **xxx**
- **Continue to pursue and identify specific opportunities for technological improvement in areas of need for PMW/A-170**
  - **Integrated Topside, RF-TAP, Adv. RF Distribution System…**
- **Continue to team with Industry on on-going Commercial SATCOM efforts**

Program Office Point of Contact

- POC for Industry Opportunities
  - Director of Operations (PMW/A170)
  - Phone: (619) 524-7760

- Next PMW/A 170 Interchange Meeting:
  - SPAWAR Industry Executive Network (SIEN)
  - San Diego, 23 June

PEOC4I.NAVY.MIL

Questions?