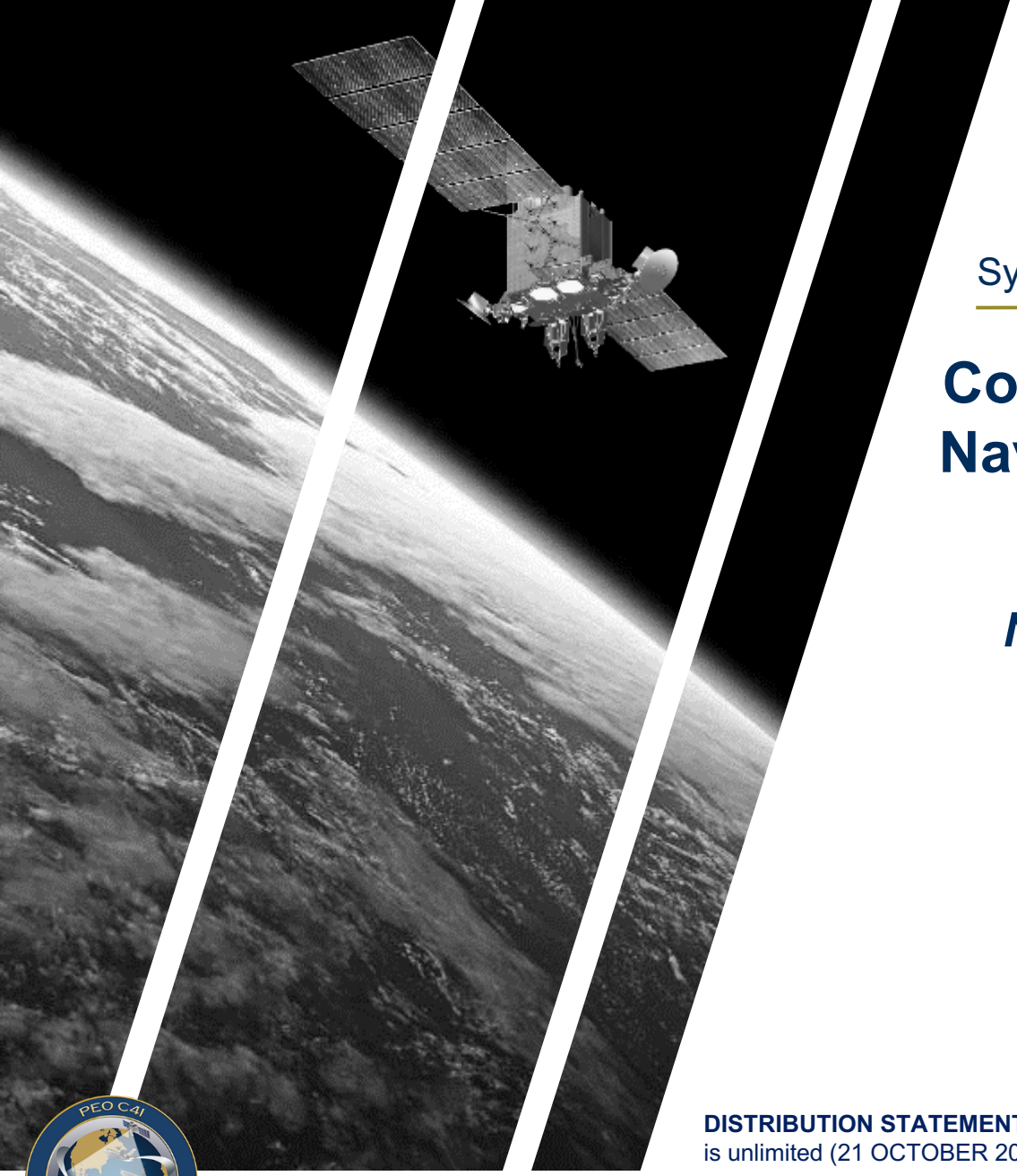


Program Executive Office
Command, Control, Communications, Computers, Intelligence and Space Systems (PEO C4I and Space Systems)

Communications and GPS Navigation Program Office (PMW/A 170)

NDIA San Diego Fall Industry Event

27 October 2020
CAPT Andrew Gibbons
Program Manager (PMW/A 170)

Deliver threat-based C4I and space capabilities to enable the fleet to compete, deter and win – tonight

Agenda

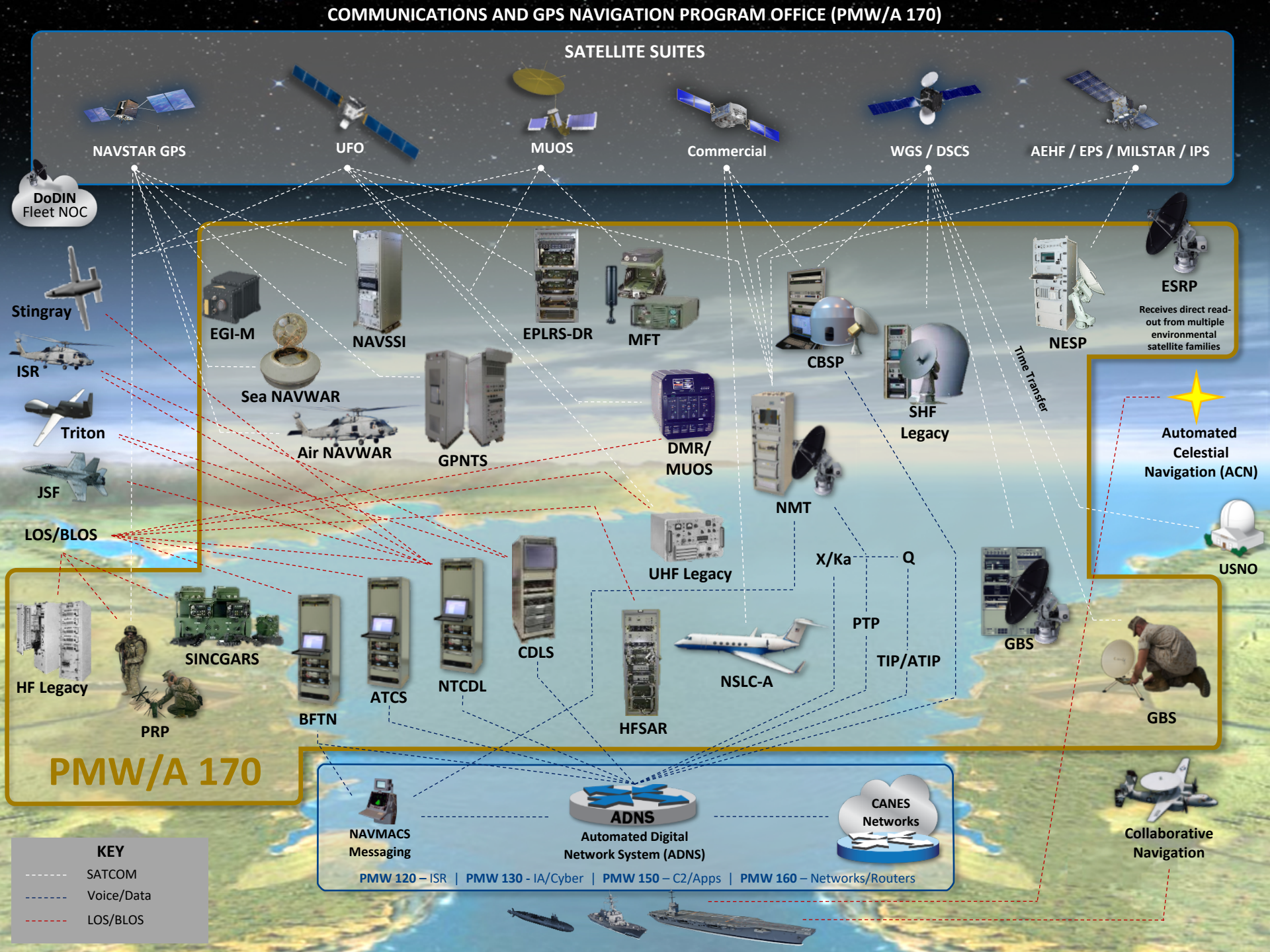
- PMW/A 170 Mission/Vision/Overview
- OV-1
- Organizational Chart
- Portfolio Overview
- Science and Technology Initiatives
- Contracts, Market Surveys, and Future Opportunities
- Where Industry Can Help

PMW/A 170
Communications and GPS Navigation

Mission: ***Provide and support interoperable, cost-effective communications and position, navigation, and timing services, enabling information warfare for maritime forces***

Vision: ***Assured, Resilient Communications and GPS Navigation: Anytime, Anywhere***

SATCOM	Satellite communications programs enable voice, video, and data transmission/receipt for naval platforms to meet the Fleet's strategic, tactical, and quality of life objectives. Using both commercial and military satellite constellations, they provide transport capability for bandwidth and reach-back to the DoD Information Network. In response to evolving threats to the warfighter, SATCOM programs leverage existing architectures to field capability enhancements, improving Navy's Resilient Command and Control (RC2) posture.
TACCOM	Tactical Communication systems enable command and control between all naval, joint, and coalition platforms. They provide secure voice, video and data connectivity for Surface Force, Ashore, Expeditionary, Special Warfare, and Submarine platforms using Line-of-Sight, Beyond-Line-of-Sight, and satellite communication waveforms operating between 2MHz and 15GHz.
PNT	GPS Navigation technology delivers Assured Positioning, Navigation and Timing (APNT) services to Naval air, surface, subsurface, and weapons platforms; providing access to GPS signals in electronic warfare challenged environments through improved cryptography, anti-jam performance, anti-spoofing algorithms, robust PNT accuracy and distribution. A growing reliance on GPS has made the need for GPS protection efforts and APNT even more vital, allowing the Warfighter to perform critical combat, navigation and communication missions in contested environments.
RC2 LCI	Established as the Lead Capability Integrator (LCI) to provide single point of contact to identify improvements to the worldwide end to end (E2E) C4I architecture to enable Command and Control in a Degraded Denied Environment (C2D2E). Improved RC2 is required for every mission area, to include Nuclear Command, Control, and Communications (NC3); Integrated Fires; and Ballistic Missile Defense (BMD).
APNT LCI	Established as the LCI to provide a collection of partially coordinated DoD efforts aimed at defining requirements and examining potential technologies that can provide PNT to the warfighter in a GPS challenged or denied environment.


COMMUNICATIONS AND GPS NAVIGATION PROGRAM OFFICE (PMW/A 170)
SATELLITE SUITES
NAVSTAR GPS
UFO
MUOS
Commercial
WGS / DSCS
AEHF / EPS / MILSTAR / IPS
DoDIN Fleet NOC
Stingray
ISR
Triton
JSF
LOS/BLOS
EGI-M
NAVSSI
EPLRS-DR
MFT
Sea NAVWAR
Air NAVWAR
GPNTS
DMR/ MUOS
CBSP
SHF Legacy
NESP
ESRP
Receives direct read-out from multiple environmental satellite families
Time Transfer
Automated Celestial Navigation (ACN)
USNO
NMT
UHF Legacy
X/Ka
Q
PTP
TIP/ATIP
GBS
GBS
HF Legacy
SINCGARS
PRP
BFTN
ATCS
NTCDL
CDLS
HFSAR
NSLC-A
PMW/A 170
NAVMACS Messaging
ADNS
Automated Digital Network System (ADNS)
CANES Networks
PMW 120 – ISR | PMW 130 - IA/Cyber | PMW 150 – C2/Apps | PMW 160 – Networks/Routers
Collaborative Navigation
KEY
SATCOM
Voice/Data
LOS/BLOS

PMW/A 170
Organizational Chart

PROGRAM MANAGER
CAPT Andrew Gibbons

DEPUTY PROGRAM MANAGER (ACTING)
Marlena Mayer

Tactical Communications 1 Division

- BFTN
- NTCDL
- CDLS
- CDLS TR
- BFEM
- PRP
- CSEL
- HF Legacy
- HFRG
- JCSE Mod

Tactical Communications 2 Principal APM

- DMR
- ATCS
- DWTS
- HF SAR
- SINCGARS
- EPLRS-DR
- EMUT
- TVS
- SA-2112
- Mini-DAMA
- 5/25 kHz
- MUOS on DMR

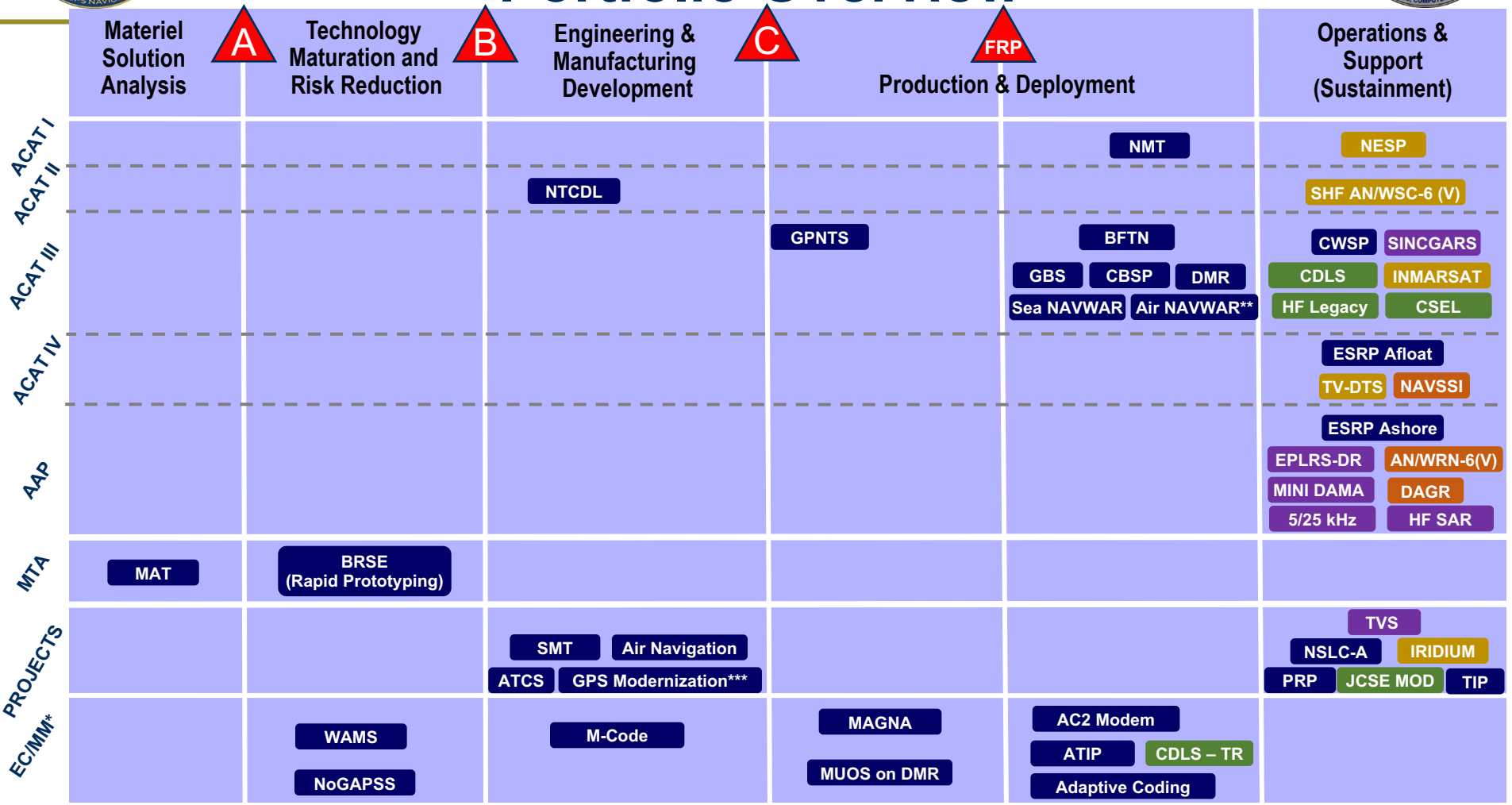
Satellite Communications Principal APM

- NMT
- ATIP
- GBS
- ESRP Afloat
- ESRP Ashore
- CBSP
- NSLC-A
- SMT
- MAT
- NESP
- TV-DTS
- INMARSAT
- IRIDIUM
- SHF AN/WSC-6(V)
- TIP
- AC2 Modem
- WAMS
- Adaptive Coding

Positioning, Navigation, and Timing Principal APM

- GPNTS
- Air NAVWAR
- Sea NAVWAR
- GPS Modernization
- Air Navigation
- NAVSSI
- DAGR
- AN/WRN-6(V)
- NoGAPSS
- M-Code
- MAGNA

PMW/A 170 Portfolio Overview



*Engineering Changes/Major Modifications (not projects) being developed and fielded as part of Post Milestone C Programs of Record
**PEO CS NAVAIR
***PMW/A 170 is the Navy's Lead GPS Program Office

SATCOM Div Sustainment Project
TACCOMS 2 Div Sustainment Project
TACCOMS 1 Div Sustainment Project
NAV Div Sustainment Project

48 Total Efforts!

Communications Limiters

TRAINING

CASREPS
PMS
Restoral

RADHAZ

RCS, SIZE, WEIGHT

SHOCK & VIBE

WAVEGUIDE & CABLEWAYS

MAINTENANCE ACCESSIBILITY & RELATED STRUCTURES

Allocation
Legacy Systems
Green Water Loading
Weight and Moment Impact
Atmospheric Conditions
Stack Gas Effects

EMC/EMI

SATELLITE FAILURES

Bandwidth Appetite
Blockage
Antenna Handover
Coverage

UPDATING ORDs & Ao

MISSILE/GUN BLAST

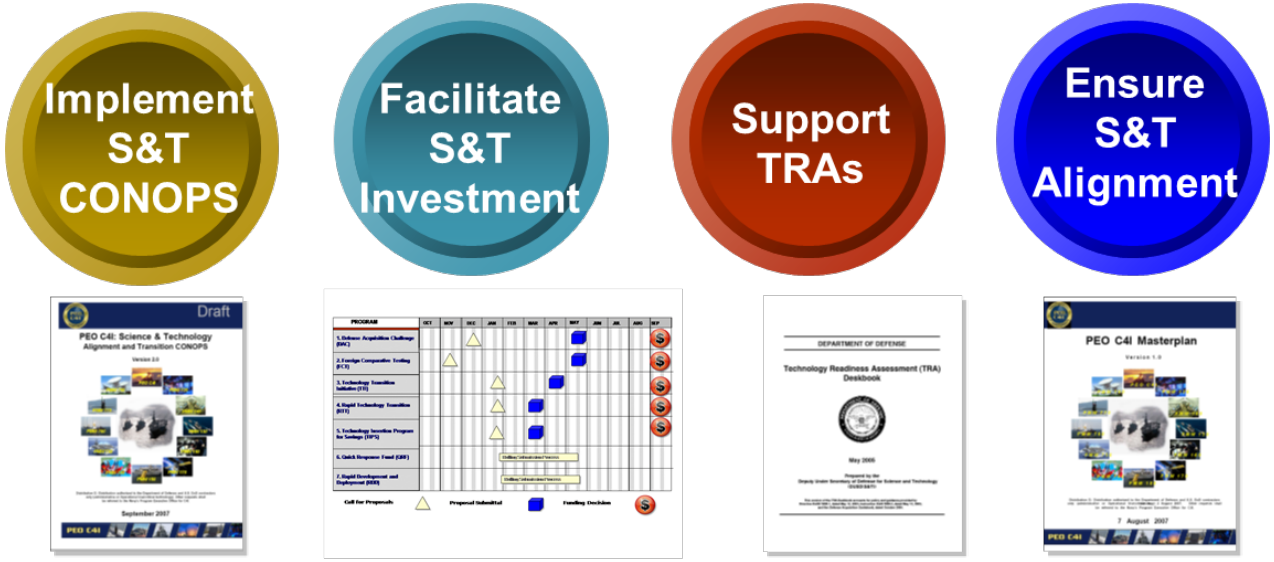
PMW/A 170
Current Contracts

Program	Contractor	Contract #	End Date	Ceiling
NMT FOFD	Raytheon	N00039-16-C-0050	12/28/2020	$466.6M
DMR	Cubic	N00039-15-C-0224	2/11/2021	$6.3M
SHF	Serco	N00039-16-D-0007	2/15/2021	$4.2M
BFTN	Sealevel	N66001-19-P-7005	6/4/2021	$223.8K
ESRP	Raytheon	N00039-17-D-0004	1/31/2022	$49.9M
CBSP ULV	Harris	N00039-14-C-0041	2/25/2022	$132.6M
CBSP FLV	Harris	N00039-13-C-0001	2/26/2022	$70.0M
CBSP	Comtech	N00039-18-D-0007	4/5/2022	$59.89M
PRP	Harris	N00039-18-D-0070	9/30/2022	$765M
NTCDL	BAE	N00039-16-C-0087	11/28/2022	$101.1M
DMR	GDMS	N00039-18-D-0002	12/12/2022	$186M
UHF	Trivec	N00039-18-D-0004	12/17/2022	$239.3M
GPNTS HW	Sechan	N00039-18-D-0008	3/28/2023	$52.1M
GPNTS HW	Micro USA	N00039-18-D-0009	3/28/2023	$56.5M
DMR	Thales	N00039-19-D-0001	1/23/2024	$31M
BFTN	L3	N00039-19-D-0035	6/24/2024	$41.5M
CDLS TR*	**Cubic**	**N00039-20-C-0015**	**4/16/2025**	**$8.8M**
CDLS Refurbishment*	**Cubic**	**N00039-20-D-0025**	**9/28/2025**	**$37.7**
DMR	Mnemonics	N00039-16-D-0077	9/7/2026	$5.4M
DMR	Milpower	N00039-16-D-0078	9/7/2026	$32.5M
WAMS*	**L3**	**N00039-20-D-0065**	**7/29/2027**	**$83M**
ATIP	Comtech	N00039-18-D-0003	1/10/2028	$19.1M
GPNTS SW*	**Raytheon**	**N00039-20-D-0021**	**11/14/2029**	**$100.3M**
ATCS*	**Ultra**	**N00039-20-D-0056**	**7/29/2030**	**$145.3M**

***Major contracts awarded since Oct 2019.**

S&T Initiatives

- Vision: Utilize S&T investments early and often to proactively address technology gaps at the right time in the acquisition cycle



- S&T's Acquisition Role
  - Facilitate identification and mitigation of technology gaps
  - Coordinate S&T activities across PEO/NAVWAR to align projects with PEO C4I technical vision and guidance
  - Provide MDA with technology readiness risk assessments

PMW/A 170 is making sizeable investments into S&T efforts and recommend industry look for opportunities to engage

PMW/A 170
Current SBIR/RIF/8a Contracts

Program	Contract #	Type/ Performer	SB/LB	End Date	Contract Value
Vapor with Pulsed Optical Readout (VaPOR) Clock	RIF -17 N00039-18-C-0011	RIF / AOSense	SB	12/20/2020	$2.697M
SATCOM Pre-Planned Product Improvement for NMT (SPIN)	N00039-19-C-0020	SBIR Phase III / Bascom Hunter	SB	3/31/2021	$4.3M
APNT Using Small Satellites in GPS-Denied (Trident)	N00039-19-C-0021	RIF / TMC Design	SB	6/20/2021	$1.5M
Satellite Communications Antenna Pointing for Positioning (SCAPP)	N68335-20-C-0304	SBIR Phase I / Caliola Engineering	SB	01/29/2021	$140K
Satellite Communications Antenna Pointing for Positioning (SCAPP)	N68335-20-C-0305	SBIR Phase I / Toyon Research	SB	01/29/2021	$140K
Hybrid Open Transceiver new Advanced Integrated Line-of-Sight Equipment System (HOT nAILES)	N68335-20-C-0106	SBIR Phase II / MaXentric Technologies, LLC	SB	2/16/2021	$1.5M
Wideband communication Enabled through Shipboard Troposcatter (WEST)	N68335-18-C-0275	SBIR Phase II Opt 2 / Physical Optics Corp.	SB	06/04/2021	$1.5M
Transponded-SATCOM Ad-hoc Network (T-SCAN)	N68335-19-C-0134	SBIR Phase II Option 1 / Architecture Technology Corp.	SB	8/20/2021	$1.738M
Luneburg Lens Antenna Project	N68335-20-C-0620	SBIR Phase II Reach Back/ Envistacom, LLC	SB	01/24/2022	$739K

PMW/A 170
Current SeaPort & OTA Contracts

SeaPort Contracts

SeaPort Support Services	Performer	Contract #	End Date
Logistics	CSA	N00178-14-D-7663 NS03	04/03/2021
Systems Engineering	Systems Technology Forum	N00178-14-D-7955 NS02	10/31/2021
Financial Management/Admin	Artemis	N00178-14-D-8006 NS02	08/31/2021
Program Management	Booz Allen Hamilton	N00039-17-F-3010	08/30/2022
Program Management	Highbury Defense Group	N00178-14-D-7309 N0003919F3000	11/18/2023

OTA Contracts

OT Vehicle	Program	Description	Performer	Contract #	End Date
IWRP	GPNTS	Developing Small Form Factor Prototype	Raytheon	N652261890001	12/29/20
DMEA ATSP4 IDIQ	GPNTS	Develop USCG Variant	Raytheon	HQ0727-20-F-1606	2/28/21

PMW/A 170
Market Surveys

Program	Description	Anticipated RFI	Anticipated RFP
Commercial Broadband Satellite Program (CBSP)	Unit Level Variant (ULV) Follow-On	Released Q2 FY20	TBD
Digital Modular Radio (DMR)	500 WATT High Frequency Power Amplifier (HFPA)	Released Q3 FY20	TBD
Mobile AEHF Terminal (MAT)	Mobile Advanced Extremely High Frequency (AEHF) Terminal Prototype	Released Q3 FY19	Q1 FY21
Digital Modular Radio* (DMR)	2-Channel SDR (MUOS to HF)	TBD	TBD

*Future effort

Updates will be captured in NAVWAR Small Business Forecast and posted on the NAVWAR E-Commerce website

PMW/A 170
Future Opportunities

Program	Description	Anticipated RFP	Anticipated Award	Contract Value	SB Set Aside
GPS Based Positioning, Navigation, Timing Service (GPNTS)	Follow-On Production MAC	Q4 FY20 (Closed)	Q4 FY21	$338M	SB
Navy Multiband Terminal (NMT)	Follow-On Full Deployment (FOFD) Contract Extension	Q4 FY20	Q4 FY21	$246.9M	Sole Source
Mobile AEHF Terminal (MAT)	Mobile Advanced Extremely High Frequency (AEHF) Terminal Prototype	Q1 FY21	Q2 FY21	TBD	MTA*
PMW/A 170	Logistics Support	Q1 FY21	Q3 FY21	TBD	SB
PMW/A 170	Systems Engineering	Q1 FY21	Q1 FY22	TBD	TBD
Portable Radios Program (PRP)	Follow-On	Q2 FY21	Q1 FY22	TBD	Sole Source
PMW/A 170	Program Management	Q4 FY21	Q4 FY22	TBD	TBD

Updates will be captured in NAVWAR Small Business Forecast and posted on the NAVWAR E-Commerce website

Here's Where Industry/Academia Can Help

- SATCOM Modem Solutions
- Increased Solid State Power Amplifiers (SSPAs) efficiency
- Cost effective ways to modernize fleet HF capabilities and ensure reliability in congested and contested environments
- GPS - independent high accuracy timing sources
- GPS - independent navigation solutions
- Metamaterial-based antenna solutions with lower sidelobes and increase G/T
- NIST SP800-53 Compliant Products

Affordability and Speed to Capability is a Key Driver

Questions?

Accelerated delivery of required capability that is affordable, integrated and interoperable