

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

Battlespace Awareness and Information
Operations Program Office (PMW 120)

2020 NDIA Monthly Event

12 February 2020

Mr. Steve Cruz

Information Operations Systems PAPM (Acting)

Spectral APM

(858) 537-0500

steven.e.cruz@navy.mil

Samuel Hanaki, PMW 120 Program Manager

DISTRIBUTION STATEMENT A: Approved for public release,
distribution is unlimited (7 February 2018).



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





Steve Cruz Bio

- Principal Assistant Program Manager (PAPM), Information Operations (IO) Systems (Acting) & Spectral, Assistant Program Manager (APM), PMW 120
- Program Manager, Alpha Omega Group, LLC.
 - Lead Program Support, IO Systems, PMW 120
 - Acquisition Support, CANES, PMW 160
- ICADS & Distributed Information Operations – Services (DIO-S) APM, PMW 120
- Technical Support Manager, Transmission Systems, Motorola Inc.
- Former Communications & Information Officer, U.S. Air Force
 - Executive Officer, 422nd Air Base Group
 - Flight Commander, Information Systems, 422nd Communications Squadron
 - Flight Commander, Network Systems, 729th Air Control Squadron
- B.S. Human Factors Engineering; U.S. Air Force Academy, 2000
- M.S. Technology Management; University of Maryland, 2006
- Masters Certificate - Program Management; George Washington University, 2009
- Personal Info:
 - Local San Diego native; son of a Navy Master Chief (HTCM)
 - Classically Trained French Chef – Diplome de Cuisine; Le Cordon Bleu (Paris)
 - Wife Jamie, sons Dylan (8), Declan (5), Donovan (1)



Battlespace Awareness and Information Operations



VISION

Provide quality Information Warfare capabilities to the Warfighter for a decisive operational advantage



Deliver assured intelligence, meteorology, oceanography, and information operations data, products, and services that provide Information Warfare capabilities to the Fleet

MISSION

IO | Information Operations

ISR | Intelligence, Surveillance, & Reconnaissance

METOC | Meteorology & Oceanography

Agile • Integrated • Vital



PMW 120 Battlespace Awareness and Information Operations



Deliver assured intelligence, meteorology, oceanography, and information operations data, products, and services that provide Information Warfare capabilities to the fleet.

<p>Information Operation (IO)</p>	<p>Provide timely, relevant, and integrated national and tactical radio frequency signals intelligence information and services enabling EMW and electronic attack to protect fleet forces <i>CCOP, Classic Reach, ICADS, RTSO, Spectral, and SSEE</i></p>	
<p>Intelligence, Surveillance, and Reconnaissance (ISR)</p>	<p>Inform EMW by supporting data sharing and connecting Naval operational sensors and platforms to naval, joint, and intelligence community enterprises <i>AIS, DCGS-N, ICOP, MDA, and MIBS/JTT</i></p>	
<p>Meteorology and Oceanography (METOC)</p>	<p>Measure, sense, assess, and exploit the current and predicted states of the physical environment to produce relevant operational information for informing EMW and the Strategic Triad's SSBNs <i>HWDDC, LBS-UUV, METMF (R) NEXGEN, NITES-Next, OIS, POPS, and RSCD</i></p>	
<p>Electromagnetic Maneuver Warfare (EMW) and Integrated Fires (IF)</p>	<p>EMW and IF capabilities integrate real-time counter C4ISR and targeting (C-C4ISR-T) and intelligence into combat and weapons systems to leverage non-kinetic force and enable more effective Over The Horizon Targeting (OTH-T) for kinetic warfare</p>	



PMW 120 Acquisition Programs

Information Operations (IO)

IO tactical cryptologic capabilities fuse and exploit Radio Frequency (RF) signals intelligence at sea, enabling Electromagnetic Maneuver Warfare (EMW) and Electronic Attack to protect the ships' force

- | | | |
|---|--|--|
| <ul style="list-style-type: none"> • CCOP (SPCD, SFE, DRT, Legacy) • Classic Reach • ICADS | <ul style="list-style-type: none"> • SSEE Increment E • SSEE Increment F • SSEE Modifications | <ul style="list-style-type: none"> • Spectral • RTSO |
|---|--|--|

Intelligence, Surveillance, & Reconnaissance (ISR)

ISR capabilities support data sharing and connect Naval operational sensors and platforms to Intelligence Community, Joint, and Naval Enterprises. Expanded surveillance enables ballistic missile defense, enhances maritime safety, and improves the Fleet's ability to understand and predict adversary actions

- | | | |
|---|--|---|
| <ul style="list-style-type: none"> • DCGS-N Increment 1 • DCGS-N Increment 2 • AIS | <ul style="list-style-type: none"> • ICOP • ICOP SRF | <ul style="list-style-type: none"> • MIBS (JTT) • MDA |
|---|--|---|

Meteorology & Oceanography (METOC)

METOC capabilities measure, sense, assess, and exploit the current and predicted states of the physical environment to produce relevant operational information for Warfighters

- | | | |
|--|--|---|
| <ul style="list-style-type: none"> • HWDDC • LBS UUV | <ul style="list-style-type: none"> • NITES-Next • METMF(R) NEXGEN • METMF SMT | <ul style="list-style-type: none"> • RSCD • POPS • OIS |
|--|--|---|



Electromagnetic Maneuver Warfare



Operational Vision - Integrated Fires, part of Electromagnetic Maneuver Warfare (EMW)

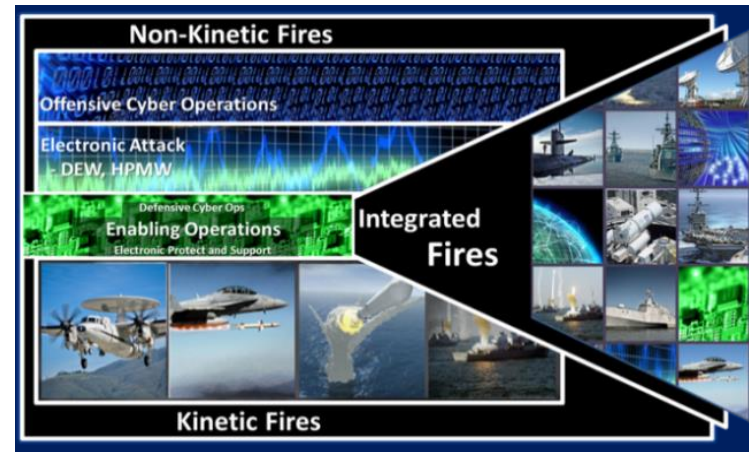
- Integrate kinetic and non-kinetic fires
- High Side Fusion (HSF)
- Combat Systems Integration (CSI)
- Battle Management Aids (BMA)
- Fully integrating National Technical Means (NTM), organic sensors and weapon systems information

Enabled By Key Technologies

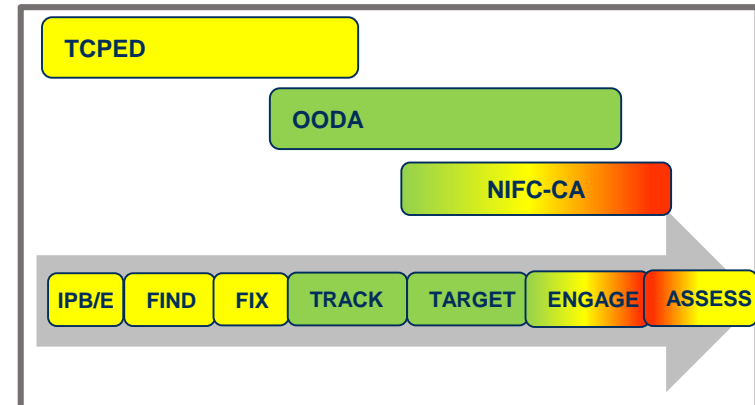
- Integrate systems across PMW 120 portfolio
- Homogenize user interfaces – “Microsoft Ribbon”
- Data framework (analytic, ingest, data tagging)
- Robust Cross Domain Solution

Direct Benefit To Fleet/Sailors

- Allow analysts to focus on analysis
- Reduce training time through improved usability
- Provide ability to tailor systems to mission
- Present data to Sailor based on role



Kill Chain



Focus on shortening the kill chain (kinetic and non-kinetic)



Future Capability Development EMW/IF Alignment

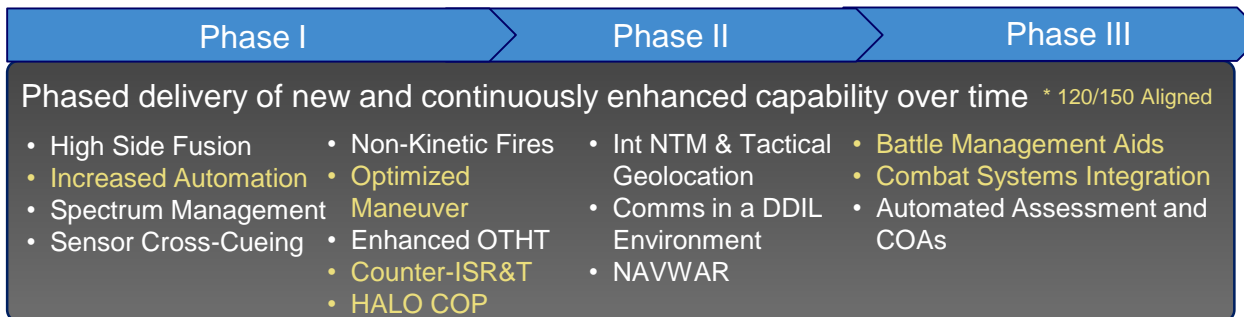
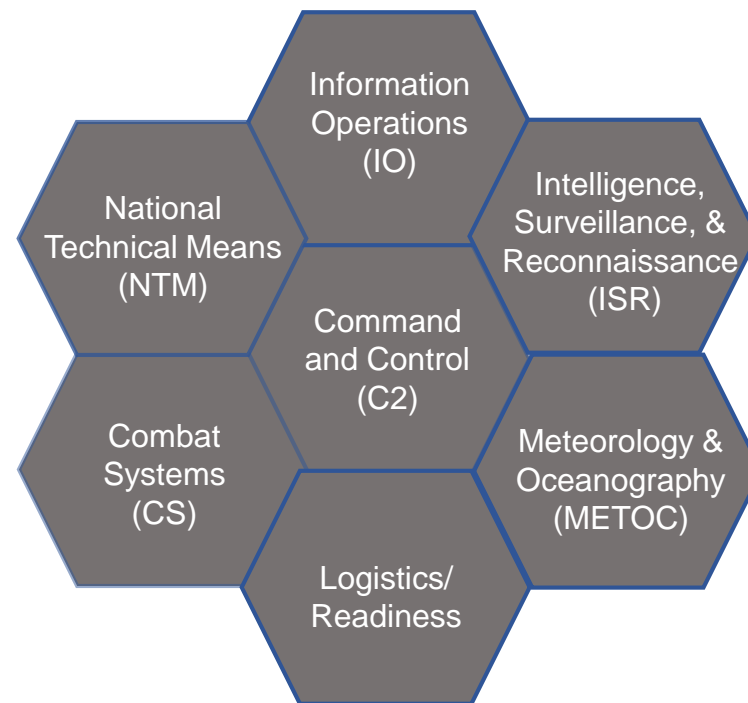


CURRENT STATE: Systems are NOT integrated and interoperable to meet emerging threats

END STATE:

System of Systems interoperability that provides

- Accurate combat ID
- Complete Blue Force mission suitability assessments
- Optimal Force synchronization
- Target quality geolocation
- Automated asset allocation recommendations
- Coordinated C2 / C-ISR tools
- Single Integrated Picture (SIP)
- Complete spectrum awareness and control
- Full spectrum cyber operations
- Full spectrum NAVWAR





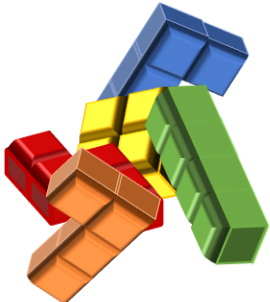
PMW 120 Responding with Agility



SSEE Increment E	ICADS MTA/USV	Spectral
DCGS-N Increment 1	DCGS- N Increment 2	DCGS- N

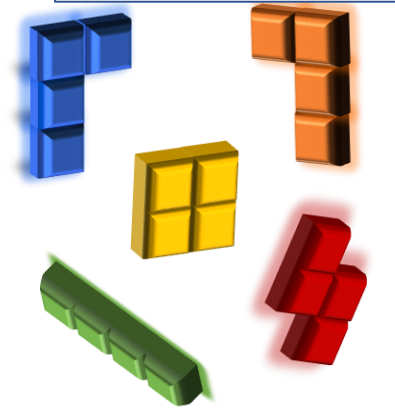
NITES IV		NITES-Next
----------	--	------------

- Developing capability that is **integrated** and **interoperable** across the PMW 120 portfolio
- Responding to fleet need for more **rapid development and deployment**
- Leveraging latest **S&T, COTS and GOTS** initiatives to enhance comprehensive capability offering
- **Loose Coupling** of capability baseline and current infrastructure to ensure modularity in deployment



Challenge

- Stove-piped components
- Vendor Owned IP
- Compartmentalized contract structure
- Ship installation process prevented rapid capability insertion
- Legacy hardware with reduced hosting capacity



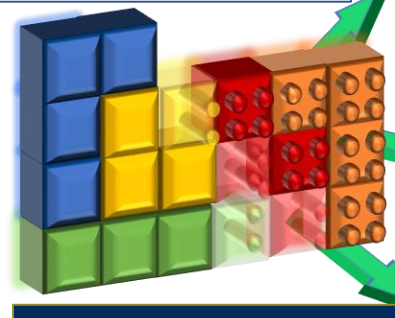
Decomposition

- Identification of interoperability need and interface requirements
- Mission module process



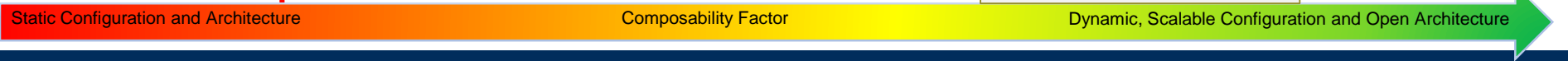
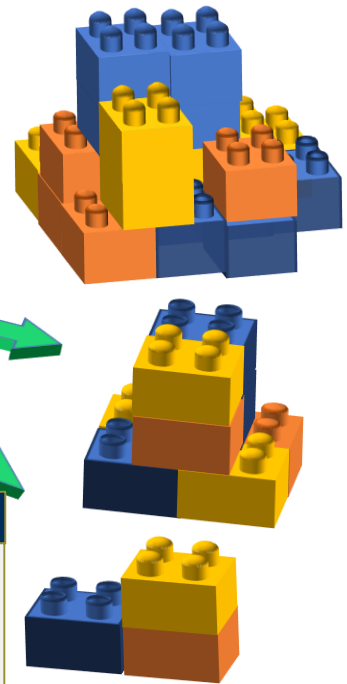
Containerize

- Common core software baseline
- Flexibility to release software to other vendors/developers
- C4ISR Host System designation
- Increased hosting capacity and open standards enabling mission module insertion



Agile Approach

- Open hardware and software architecture
- Government owned IP
- Competitive development opportunities
- Reduced integration timeline
- Interoperability between legacy and future systems
- Flexibility within budget lines



Maturing as an agile culture



Opportunities



- Vehicles
 - OTA consortia
 - Prize Challenges (as needed)
 - SBIR
 - CRADA
 - RIF
- Areas of Focus
 - AI/ML
 - Data transport
 - Microservices
 - Automated testing/metrics
 - Virtual Training
 - DevSecOps / SAFe application



Questions

