

# Crane Regional Defense Group

Featuring NSWC Crane: Special Warfare &  
Expeditionary Systems Department

Connect to Mission | August 1, 2023

CRANE REGIONAL  
DEFENSE GROUP



# Crane Regional Defense Group

**Our Mission:** To elevate the strategic value of Crane and expand southern Indiana's defense innovation ecosystem through defense-related outreach and legislative initiatives that enhance military missions in the region.

## Our Objectives:

**Educate & Inform** - Educate and inform the business, citizens, and governments of the region about the economic and cultural benefits of a strong military presence in the region and the importance of the related regional infrastructure.

**Promote Defense** - Serve as a catalyst to promote defense ecosystem assets within NSA Crane and throughout the Indiana Uplands region.

**Stimulate Relationships** - Through the diversity of the membership, coordinate with various entities who have similar interests in maintaining a healthy and stable community, economy, and DOD installations in our region.



# Crane Regional Defense Group

## Congressional Reception



## Connect to Crane



## 2022 State of the Installation



## Key Leader Series



## Visit to Pentagon

# AGENDA

- Opening Comments : *Dr. Kyle Werner, Deputy Technical Director, (SSTM)*
- Special Warfare & Expeditionary Systems : *Gregory Reece, Deputy Department Director & Shannon Kasinger-Clark, Chief Strategist*
- Specialized Topics : *Gregory Reece, Unmanned/Counter Unmanned Systems*
- Networking Break
- Division Manager Panel : *John Kleihege, Division Manager (Facilitator)*
- Division Manager Panel : *Larry Fink, Division Manager (Facilitator)*
- Networking Break
- Acquisition Approach Panel : *Ms. Nancy Maloy, Technical Acquisition Deputy*
- Specialized Topics : *Adam Parsley, Rapid Prototyping & Experimentation*
- Closing Comments
- Networking: *Join PRF for their First Tuesday Event!*



# Dr. Kyle Werner (SSTM)

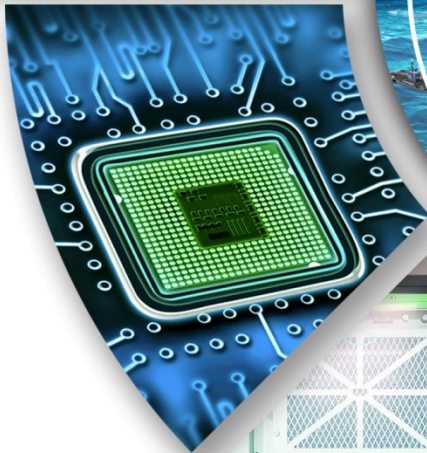
*Deputy Technical Director, NSWC Crane*



# Special Warfare & Expeditionary Systems

*Gregory Reece, Deputy Department Director*  
*Shannon Kasinger-Clark, Chief Strategist*





**CAPT Duncan McKay**  
COMMANDING OFFICER

**Dr. Angela Lewis, SES**  
TECHNICAL DIRECTOR

# **SPECIAL WARFARE AND EXPEDITIONARY SYSTEMS**

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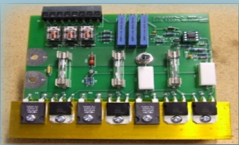
# Expeditionary Warfare Department

Our **mission** is to **provide intelligent systems solutions** for all domains that enhance detection, decision-making, maneuver, and kinetic and non-kinetic engagement capabilities **for the Expeditionary Warfighter.**

We utilize open architecture designs to integrate multi-platform advanced sensors and specialized weapons systems.

## CORE CAPABILITIES

Power &  
Energy  
Systems



Weapon  
Systems



Electro Optics  
Technologies



Specialized  
Munitions



Maneuver,  
Surveillance &  
Engagement



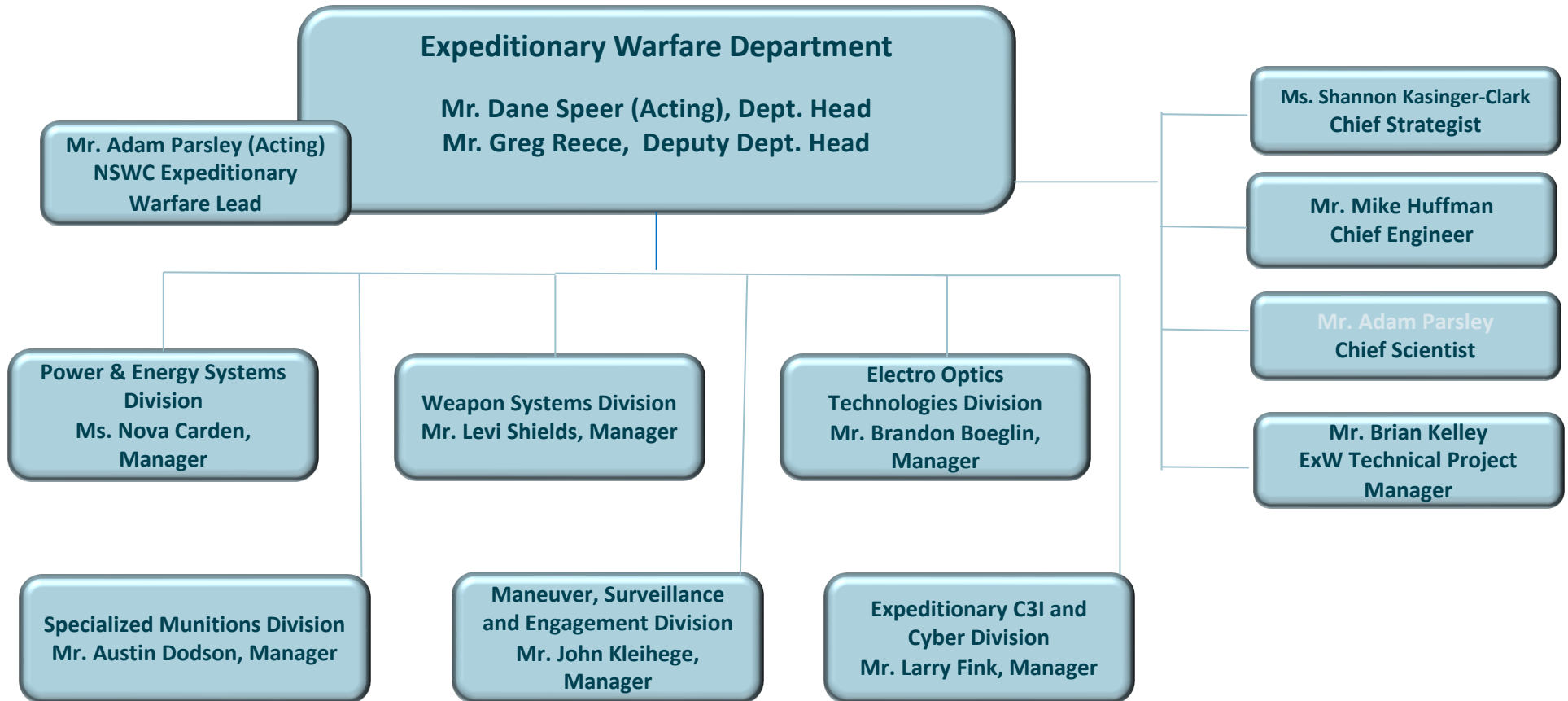
Expeditionary  
C3I & Cyber



***RAPID RESPONSE PROVEN SOLUTIONS***



# Expeditionary Warfare Organizational Structure



***RAPID RESPONSE PROVEN SOLUTIONS***

# Expeditionary Warfare Department

***Vision: National Leaders providing Intelligent Expeditionary Warfighting Capability***

Intelligent  
Autonomous  
Systems:  
UxS and C-UxS

Naval  
Integration: Joint  
C2

Integrated BSM  
For  
Expeditionary  
Missions

***RAPID RESPONSE PROVEN SOLUTIONS***

## Our DNA...

- **RAPID RESPONSE**  
*...culture*
- **CRITICAL INFRASTRUCTURE**  
*...capability*
- **NATIONAL LEADERSHIP**  
*...credentials*



## Brings Solutions...

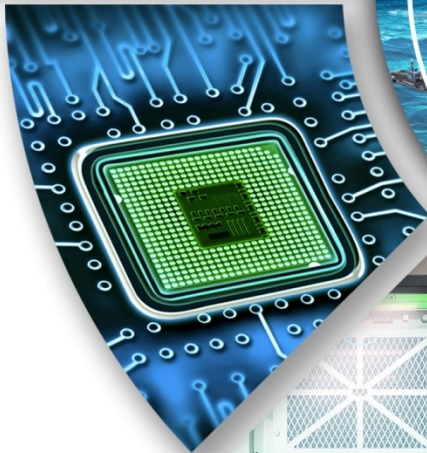
- **INTEGRATED AUTONOMOUS SYSTEMS**  
*...UXS/CUXS*
- **NAVAL INTEGRATION**  
*...Joint C2*
- **BATTLESPACE MANAGEMENT**  
*...Maneuverability*

***To the Fight***

# Unmanned Systems / Counter-Unmanned Systems

*Gregory Reece, Deputy Department Director*





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# INTELLIGENT AUTONOMOUS SYSTEMS UXS AND C-UXS

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## Intelligent Autonomous Systems: UXS

**Goal: Have premier organic capability for rapid development and integration of unmanned solutions and strike capability**

Rapid  
Development and  
Integration

Sensor and  
Effector System  
Integration

Autonomy and  
Automatic Target  
Recognition

## Intelligent Autonomous Systems: C-UXS

Goal: Evaluate, identify gaps and develop solutions

Experimentation  
and Assessments

Sensor and  
Effector System  
Integration

Counter  
Autonomy

# UXS/CUXS T&E CORRIDOR

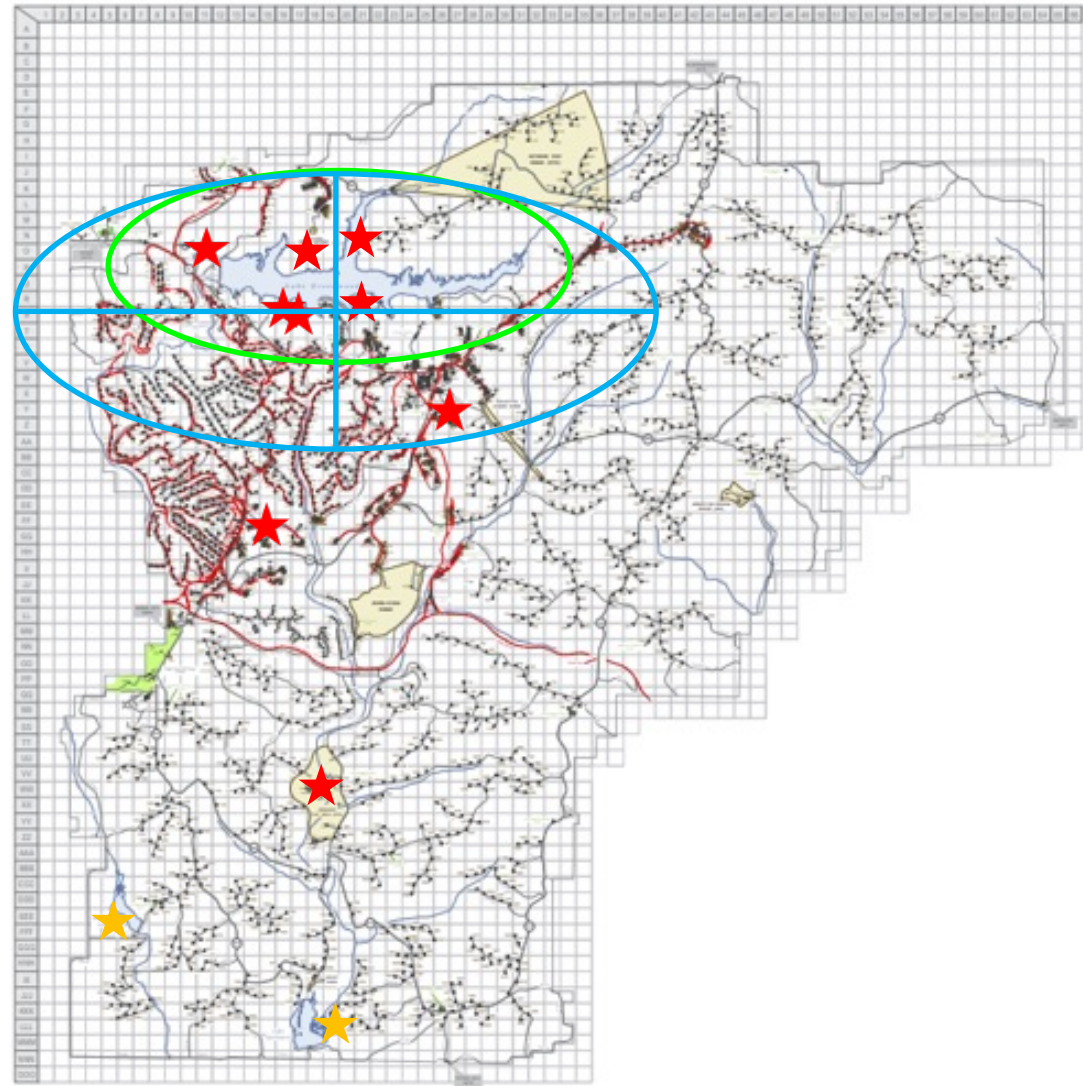
TEST RANGES

EW CAPABILITIES

EO OBSERVATION

SENSOR  
INTEGRATION LABS

ENERGETICS T&E





# CONNECT TO MISSION

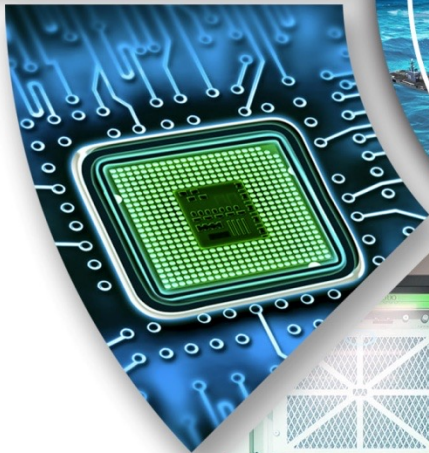
## NETWORKING BREAK



# Division Manager Panel

*Facilitator: John Kleihege, Division Manager,  
Maneuver, Surveillance & Engagement Division*





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# **SPECIAL WARFARE AND EXPEDITIONARY SYSTEMS**

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## MANEUVER, SURVEILLANCE & ENGAGEMENT DIVISION-JXW

- **Product Areas**

- Multi-sensor ISR Systems(Airborne and Ground)
- Ground Mobility Systems
- Counter Unmanned Systems (Expeditionary, Fixed, and Maritime)
- Software Systems (E-CORE, Minotaur)

- **Services Provided**

- Technology & Software Development
- Prototyping, Scanning & Modeling
- Systems & Acquisition Engineering
- Requirements Analysis
- Platform Integration
- Full Life Cycle Engineering, Fielding, Logistics, and Sustainment

- **Key Technical Areas Core to Future**

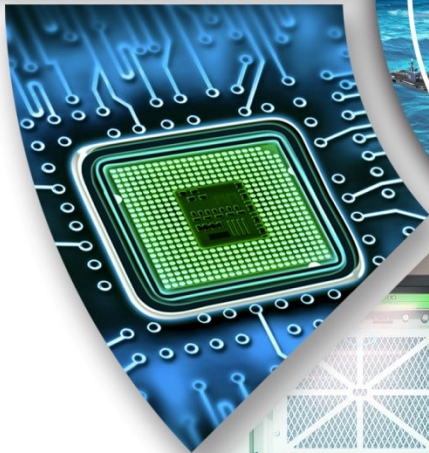
- Electric, Hybrid and Optionally Piloted and Unmanned Vehicles
- Digital Engineering/3D Scanning and Modeling
- System of Systems Integration
- Software Development and Integration
- System of Systems ISR Design, Development & Integration (multi sensor networking & data fusion)
- Data Analytics/Transforming Data to Information
- Counter Unmanned Systems

### Contracts Expected Within Next 24 Months:

- N0016419F3008 – ISR Systems
  - End Date 12/12/2027
  - Planned Follow-on award date: 3/24/2025
- N0016419F3015 – Design, Integration and Sustainment of mobility platforms
  - End Date 12/15/2025
  - Planned Follow-on award date: 05/07/2025
- N0016419F3022 – Software & Cyber Security in support of MS&E Division
  - End Date 05/06/2026
  - Planned Follow-on award date: 03/29/2024
- FEDSIM GSA
  - Integration of new and existing technologies resulting in improved ISR and EW capabilities
  - Planned Award: FY 2025
- DTIC
  - Quick reaction and engineering analyses to support total lifecycle management of advanced surveillance systems of the ISR and EW mission systems
  - Planned Award: FY 2025

Transforming Data into Decisions

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# **SPECIAL WARFARE AND EXPEDITIONARY SYSTEMS**

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# UNCLASSIFIED

## SPECIALIZED MUNITIONS DIVISION - JXR

- Product Areas
  - Special Purpose Munitions
  - Pyrotechnic & Demolition Items
  - Unmanned Systems Development & Integration
  - Strategic Systems Programs
- Services Provided
  - Full Spectrum of Life Cycle Engineering, Acquisition, Sustainment, Fielding, and Product Support Services
  - System Safety - Independent Evaluations for Safety, Reliability, and Performance
  - Non-Destructive T&E – Environmental, Mechanical
  - Specialized Test & Evaluation
- Key Technical Areas Core to Future
  - Kinetic/Non-Kinetic UxS Integration
  - Special Purpose Munitions RDT&E
  - System of Systems Integration & T&E
  - Integrated Ranges & Live, Virtual, Constructive T&E Environment
  - C-UxS Experimentation Coordination & Support Worldwide
  - Reverse Engineering - Post Processing and Analysis of Computed Tomography

### Contracts Expected Within Next 24 Months:

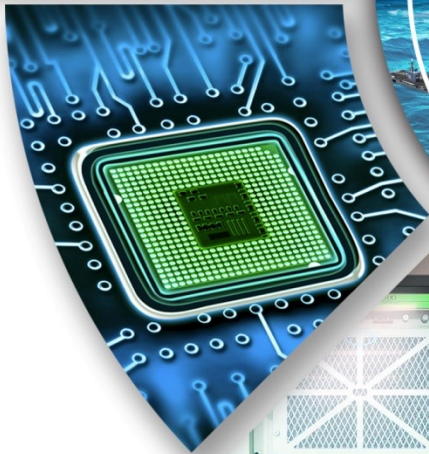
- IAC MAC (DTIC) for Unmanned Systems Research & Development
- In-Service Engineering & Testing Support Seaport
  - Planned follow-on award date: 7/12/2027

### DTIC Task Orders:

- FA8075-18-D-0013
  - Planned Follow-on Award: Q4FY25



**“When it absolutely, positively, has to be blown up overnight”**



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- Product Areas
  - Multi-Sensor EO/IR Situational Awareness and Targeting Systems
  - Visual Augmentation Systems
  - Lasers
  - Weapon Sights Displays and Peripherals
- Services Provided
  - Full Spectrum of Life Cycle Engineering, Acquisition, Fielding and Sustainment, and Product Support Services
  - Specialized Test & Evaluation and Maintenance and Repair Services
  - Robust S&T ecosystem and collaboration with R&D Organizations in Government, industry, and academia
- Key Technical Areas Core to Future
  - Automated Detection Algorithms
  - Real-Time Target Tracker Algorithms
  - Passive Ranging
  - Boresight Alignment for Distributed Sensors
  - All-Weather Imaging Performance
  - System of Systems Integration
  - Integrated AI / Autonomy Support
  - Counter EO/IR Technologies

### Contracts Expected Within Next 24 Months:

- EOTD Engineering & Program Management Support Services Seaport
  - Planned follow-on award date: 3/7/2025
- EOTD Logistics Support Seaport
  - Planned follow-on award date: 1/7/2025

### DTIC Task Orders:

- FA8075-19-F-A043
- FA8075-21-F-0002
- Planned EOTD DTIC Follow-on Award: Q4FY24



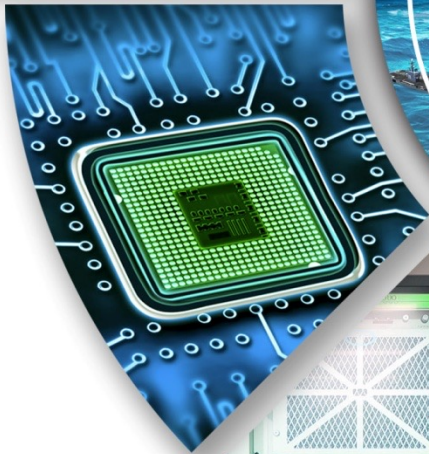
“Eyes on the Target”



# Division Manager Panel

*Facilitator: Larry Fink, Division Manager,  
C3I & Cyber Division*





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# EXPEDITIONARY C3I & CYBER DIVISION

## Services Provided

- Command, Control, and Communications Design & Integration
- Software Engineering
- Cybersecurity
- Software Integration
- Software V&V
- Systems Engineering
- Intelligence Systems Design and Testing
- Technology Development
- Acquisition Engineering
- Logistics & Sustainment
- Technology Transition
- Requirements Analysis
- Field Support

## Value Provided

- System design, integration, and sustainment
- Software development and oversight
- Cybersecurity program support and analysis
- Hardware systems delivered enable battlefield commanders and decision makers with relevant, accurate, and timely intelligence data to improve their decision-making capabilities.

## Key Technical Areas

- Software Development - Integration/ Risk Mitigation /Development
- JADC2
- Cybersecurity Engineering / Mitigation / Increased S&T and Technology Transition (HW & SW Accelerator to the Warfighter)

## SeaPort Task Orders :

N0016420F3016 – SAIC

- End Date 9/24/2025
- Planned Follow-on award date: 08/2025

N0016422F3001 – TriStar Engineering

- End Date 11/29/2026
- Planned Follow-on date: 10/2026

N001641990001 –SCOS OTA (Phase 2 & 3)

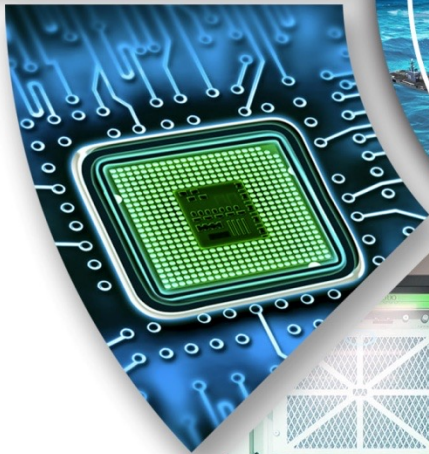
- End date 4/23/24
- 4/23/26 (Award + 36 months)

DTIC: New Award Expected in FY24

- JXY – Expeditionary C3I & Cyber Support

JX- New Award Expected FY24/25

Technical leadership for Command and Control (C2) Systems, Tactical Communications, Intelligence Systems, Software Design, and Cybersecurity.



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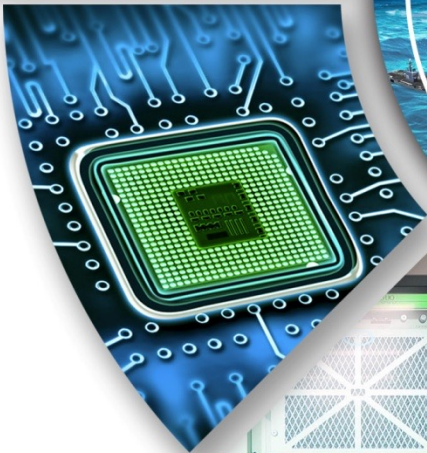


- **Product Areas**
  - Small Arms Weapons and Ammunition
  - Air Platform Integration
  - Autonomous Systems with Kinetic Payload
  - Signature Management
- **Services Provided**
  - Full Spectrum of Life Cycle Engineering, Acquisition, Fielding and Sustainment, and Product Support Services
  - Specialized Test & Evaluation and Maintenance and Repair Services
  - Robust S&T ecosystem and collaboration with R&D Organizations in Government, industry, and academia
- **Key Technical Areas Core to Future**
  - Weaponized Uncrewed Systems (UxS)
  - Special Purpose Weapons and Ammunition to Counter UxS (c-UxS) Threat
  - Advanced Fire Control with Active Stabilization, Integrated Detection and Fire-On-Coincidence
  - Weapon Suppression Modeling and Simulation, Test and Evaluation and Detection

### Contracts Expected Within Next 24 Months:

- N0017804D4119/FC54 – Professional Engineering, Technical and Management Support Services - Seaport
  - End date: 7/5/2025
  - Planned follow-on award date: 11/2024
- N0017814D7679/N0016418F3011 – Weapon Systems Training Branch, Training and Documentation Support - Seaport
  - End date: 8/25/2025
  - Planned follow-on award date: 5/2025

**“Delivering Advanced Kinetic Effects on Target”**



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## POWER AND ENERGY SYSTEMS DIVISION

- Services
  - Engineering Investigation and Evaluation
  - Development of Specs and Standards
  - Failure Root Cause Analysis
  - Industrial Base Stewardship
  - Lithium Battery Safety Certification
  - Modeling and Simulation
  - Platform Integration
  - PrCB Design, Fabrication, and Assembly
  - PrCB Reverse Engineering
  - Safety and Abuse Testing
  - Specialized T&E of Large Format Systems
  - Systems Engineering
- Value Provided to DoD
  - Critical Enabler of Warfighting Technology
  - Critical Role in Navy LBSP
  - Key Leadership Roles across all domains
  - Integral in development of future solutions
- Product Areas
  - Energy Storage Systems
  - Power Management Systems
  - Printed Circuit Boards
- Key Focus Areas for the Future
  - Battery Management Systems
  - Battery Manufacturing
  - Big Data Analytics
  - Quality Engineering
  - Systems Engineering
  - Design and Prototyping
- Future Available Contracts
  - Expeditionary OTA to be Awarded July 2023
  - Seaport Partners
    - SAIC – Engineering Support
    - Bowhead – Technician Support
    - B3H, TCS – Admin/Analyst Support

*An Enabling Force for Integration of Advanced Power and Energy Solutions into DOD Systems!*

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# CONNECT TO MISSION

## NETWORKING BREAK

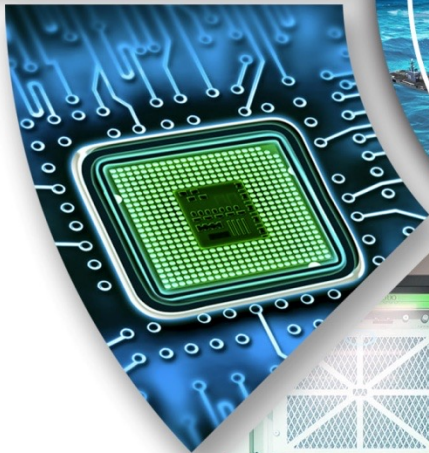




# Acquisition Approach Panel

*Facilitator: Nancy Maloy, Technical Acquisition Deputy*



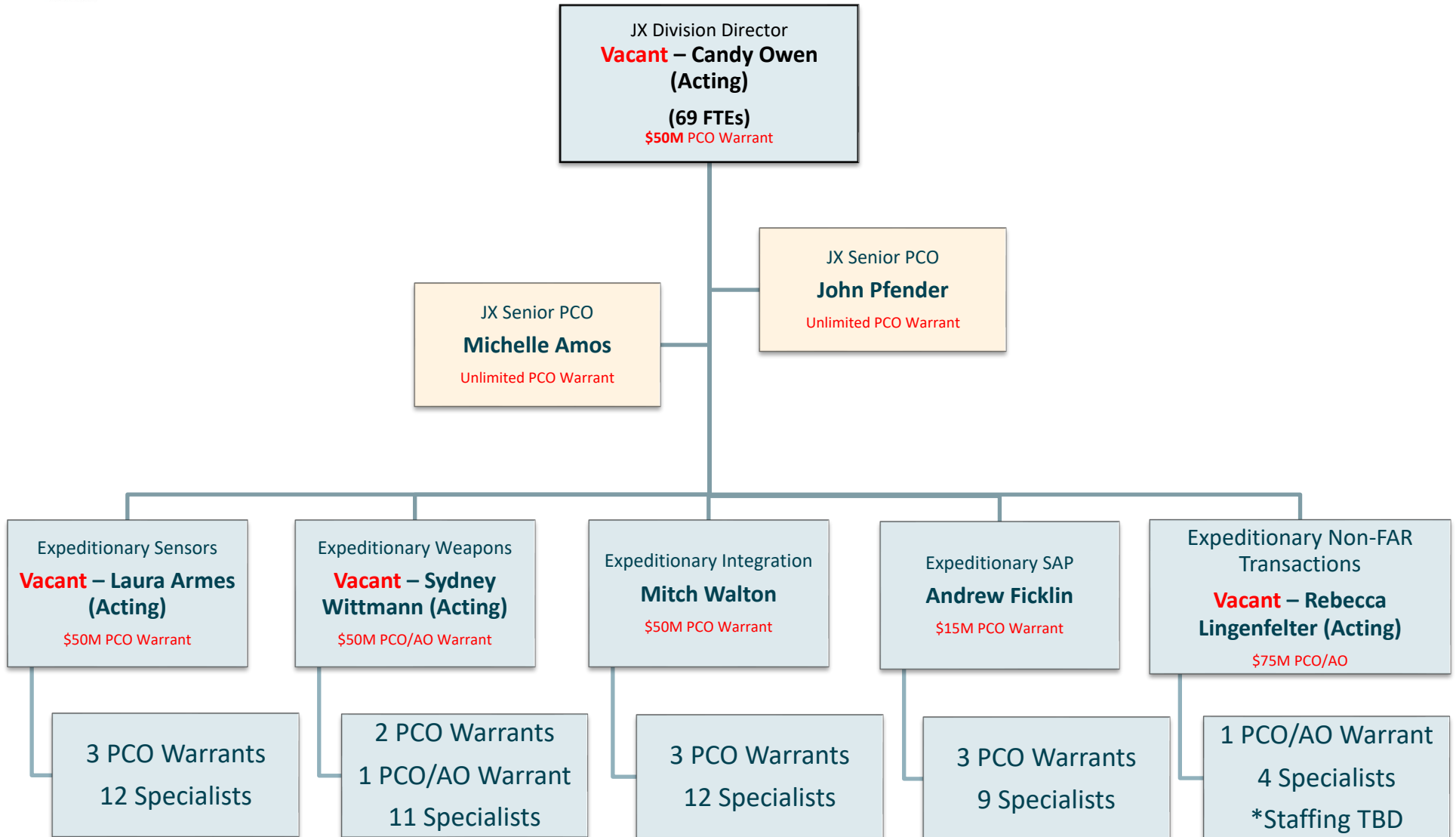


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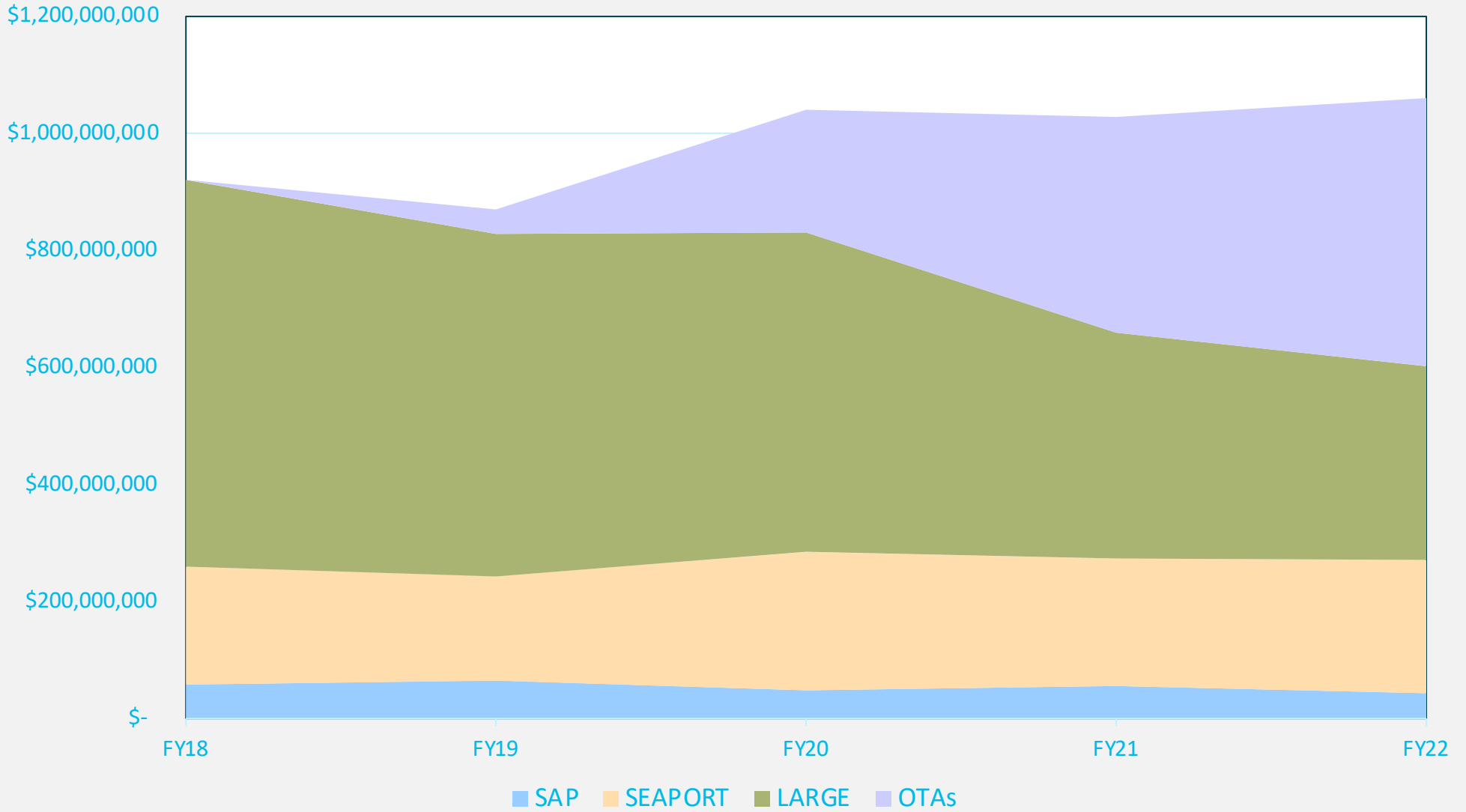
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# EXPEDITIONARY DEPARTMENT CONTRACTS OVERVIEW

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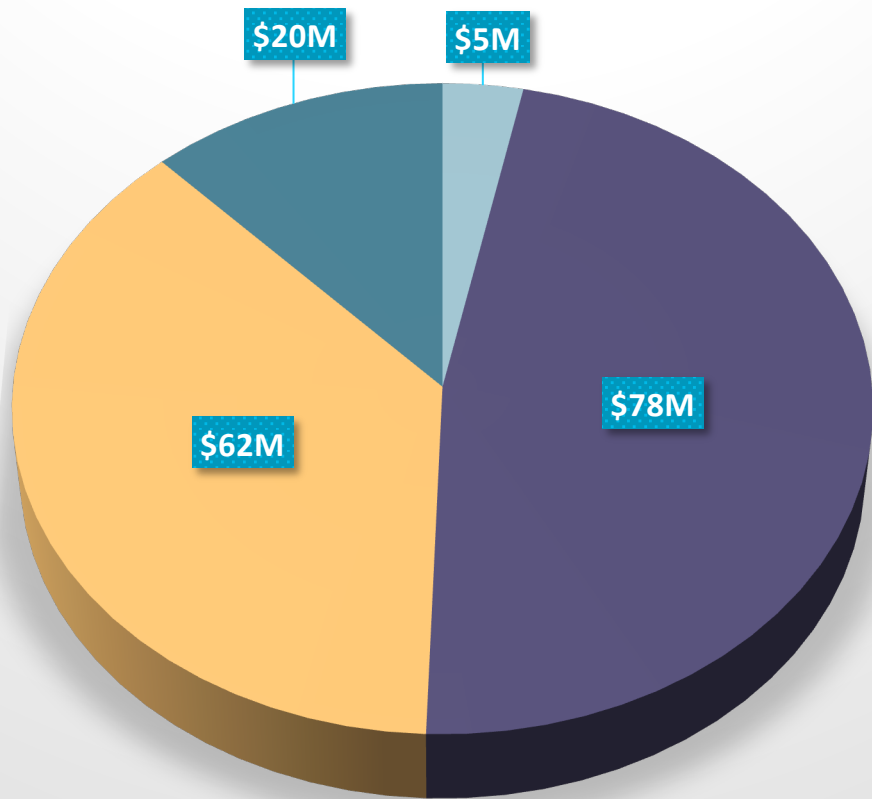


02 OBLIGATIONS (FY18-FY22)



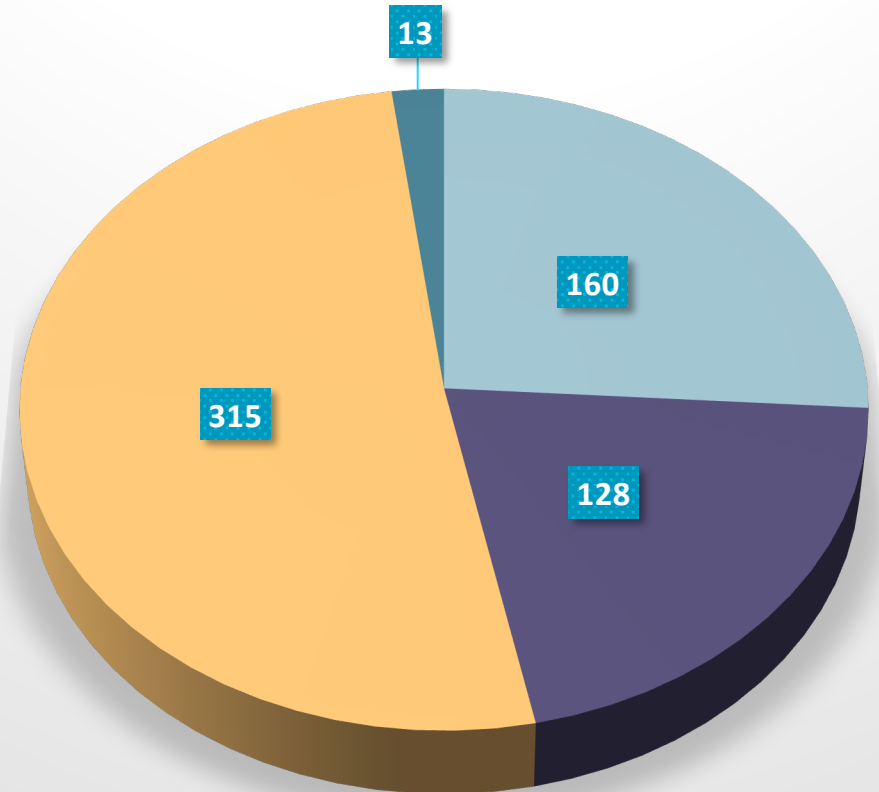
# JX CONTRACT FY23 OVERVIEW (THRU APRIL)

## FY23 Obligations



■ SAP   ■ SEAPORT   ■ LARGE   ■ OTAs

## FY23 Actions

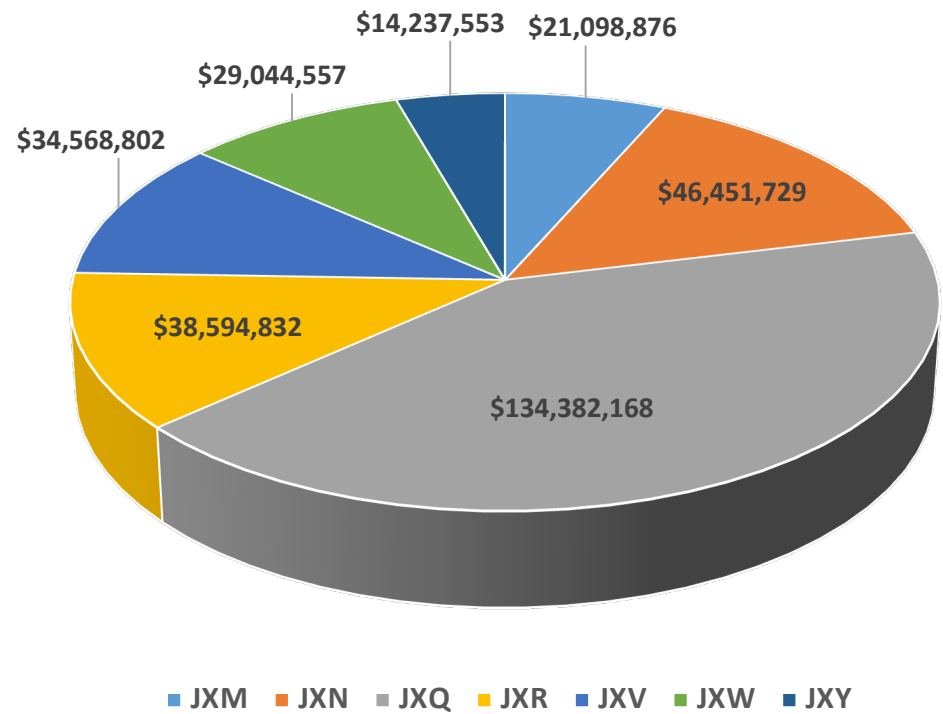


■ SAP   ■ SEAPORT   ■ LARGE   ■ OTAs

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- Multi-Sensor EO/IR Situational Awareness and Targeting System
- Artificial Intelligence / Machine Learning
- Visual Augmentation Systems
- Autonomous Systems with Kinetic Payload
- Small Arms Weapons and Ammunition
- Power and Energy Systems
- Special Purpose Munitions
- Unmanned Systems Development & Integration
- Intelligence Surveillance and Reconnaissance
- Software Systems (E-CORE, Minotaur)
- Counter Unmanned Systems
- Ground Mobility Systems
- Command, Control and Communication (C3) Systems
- Cyber Security Engineering

**FY22 JX Portfolio Obligations**



**Total Obligation \$318,378,516**

## ■ FAR

- IDIQ / “C” Type
- Basic Ordering Agreement (BOA) / Basic Purchase Agreement (BPA)
- Multiple Award Contracts (Seaport / Machine Shop / Circuit Card / Cable)
- Commercial Solutions Openings (CSO)

## ■ Non-FAR

- OT’s (Other Transactions)
- Prizes for Advanced Technology Achievements “Prize Challenge”
- Procurement for Experiments

## ■ Tradewind AI

- Test and Evaluation Services - BPA
- Data Readiness for Artificial Intelligence Development (DRAID) - BOA
- Try AI CSO

## LARGE / OTAs:

- <https://sam.gov/>

## Simplified Acquisition Procedures (SAP):

- <https://sam.gov/>
- <https://GSAadvantage.gov>

## SEAPORT:

- <https://seaport.navy.mil>

## Other Transactions Authority (OTAs):

- **TBD**

## Tradewind AI:

- <https://www.tradewindai.com>



## **Nancy Maloy, Technical Acquisition Deputy**

- [nancy.j.maloy2.civ@us.navy.mil](mailto:nancy.j.maloy2.civ@us.navy.mil)

## **Matthew Burkett, Deputy for Small Business**

- [matthew.j.burkett2.civ@us.navy.mil](mailto:matthew.j.burkett2.civ@us.navy.mil)

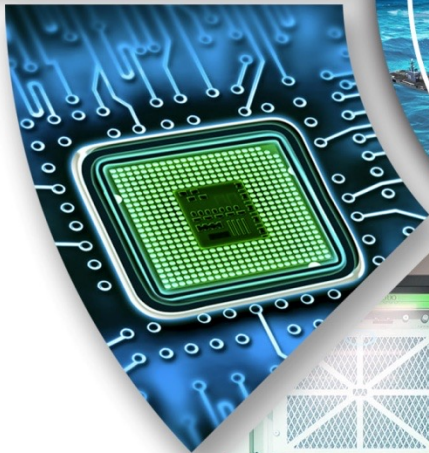
## **Candy Owen, Acting 023 Division Manager, Expeditionary Contracts Division**

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# Rapid Prototyping & Experimentation

*Adam Parsley, Chief Scientist*





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**RAPID PROTOTYPING,  
EXPERIMENTATION, & DEMONSTRATION**

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# Rapid Prototyping, Experimentation, and Demonstration (RPED) MISSION

- ❑ **Lead NR&DE efforts for ExW advancement and transformation**
  - Focus on end-to-end ExW capabilities;
  - Build strategic alliances with Navy Enterprises, Warfare Centers, coalition partners, university laboratories, academia, and industry
  - Develop and promulgate strategic direction and objectives for ExW analyses and experimentation; oversee execution
  - Lead and catalyze Warfare Center efforts to co-evolve technologies and operational concepts and the transition to warfighting capability
  - Seek superior technical solutions internally and externally
  
- ❑ **Responsible to ensure NR&DE provides the best technical solutions for ExW to the warfighter**
  - In the context of the National Defense Strategy and USMC, SOCOM and USN strategies
  - Advise Investment and resource allocation strategies
  - Integrate efforts across NR&DE to ensure coherent and timely deliveries of the best end-to-end solutions
  - Advise on internal processes to ensure that credible and technically sound solutions and proposals are generated
  - Arbitrate internal technical issues; ensure decisions are implemented
  
- ❑ **Develop and lead NR&DE/NAVSEA actions to establish and sustain effective and valued stakeholder relations**
  - Enhance NR&DE as the nation's technical arm for resolution of warfighting and ExW issues
  - Encompass traditional and non-traditional communities
  - Elevate NR&DE participation in key external leadership roles



# Rapid Prototyping, Experimentation and Demonstration (RPED) APPROACH

## □ Stakeholder Engagement

- **WFCs do not need help with engaging PEO's, but for others...**
  - **Operational community – SciAds, MWG, etc**
  - **Requirements/S&T community – ONR, MCWL, MCCDC, OPNAV N9, OSD, etc**
- **Maintain and share situational awareness of Warfighter and stakeholder requirements, concerns, and operational readiness**

## □ Provide mission-level oversight to ensure an end-to-end mission focus for NR&DE programs and initiatives

- **Understand and evaluate real-world, exercise, and experimentation events and their impacts on ExW systems and processes**
- **Lead NR&DE involvement in Wargames**
- **Lead a ExW Community of Practice (CoP) to ensure that relevant mission-focused ExW solutions are provided to the warfighter**

## □ Initiatives

- **Focus on high impact/high priority prototyping/experimentation efforts to champion/support**
- **Support/champion efforts to build new/needed capabilities – LVC, MBSE, Mission Level Modeling**

# Rapid Prototyping, Experimentation and Demonstration (RPED) ACTIVITIES

## ❑ Fleet Engagement

- Attend various forums
  - Maritime Working Group
  - Expeditionary Warfare Conference
  - NISE Technical Exchange
  - Fleet Engagement Community of Practice
- Fleet Exercise
  - Insert new tech
  - Assist with analyses and assessment

## ❑ Prototyping, Experimentation, and Development

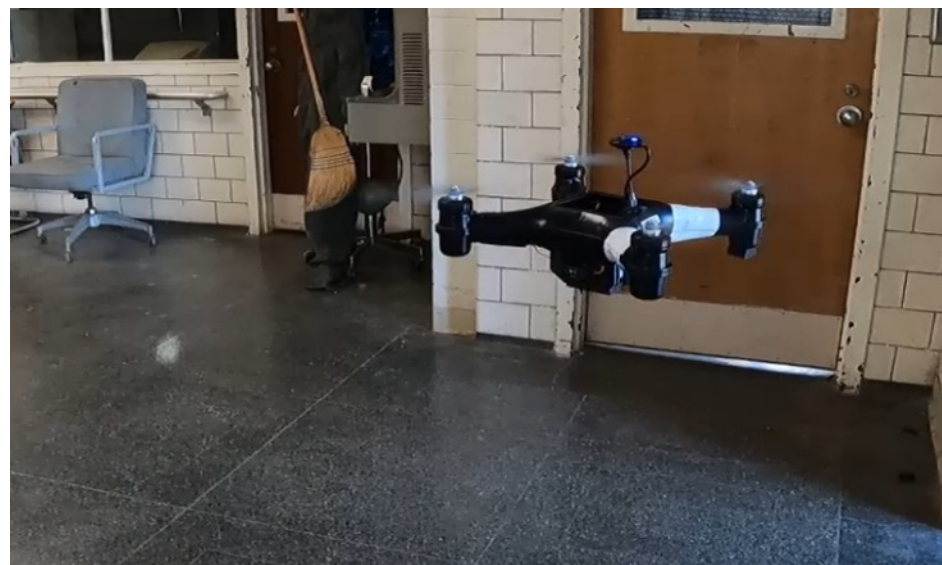
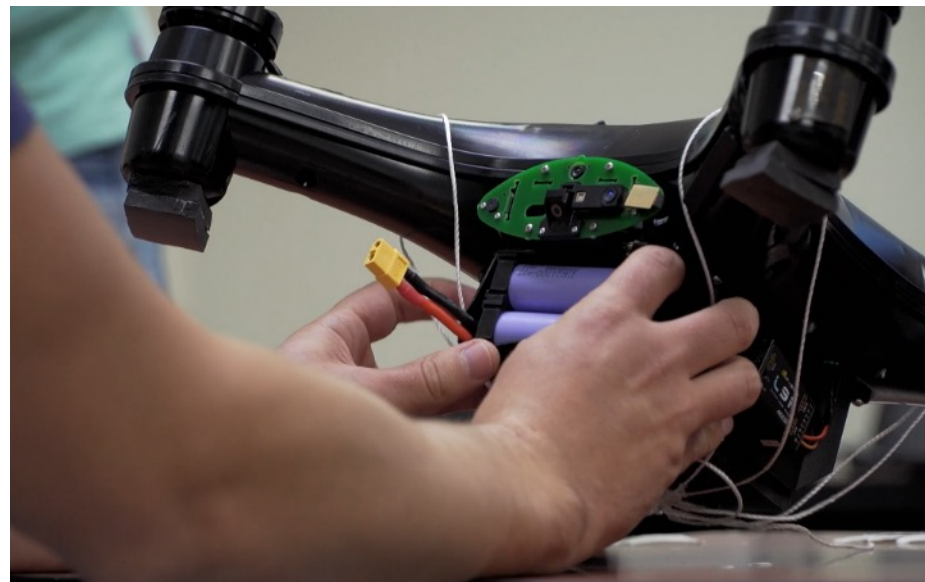
- Experimentation (TREX, JIFX, SOF AT&L T&E, SCOUT, RDER, ANTX, PACFLT IBP, etc) – support planning, execution, analysis
- Wargames – provide technical support
- Warfighter Driven Challenge – 1 week intensive rapid prototyping event – 15+ events ran, 19+ prototypes developed

## ❑ Coordination across NR&DE (Navy Labs)

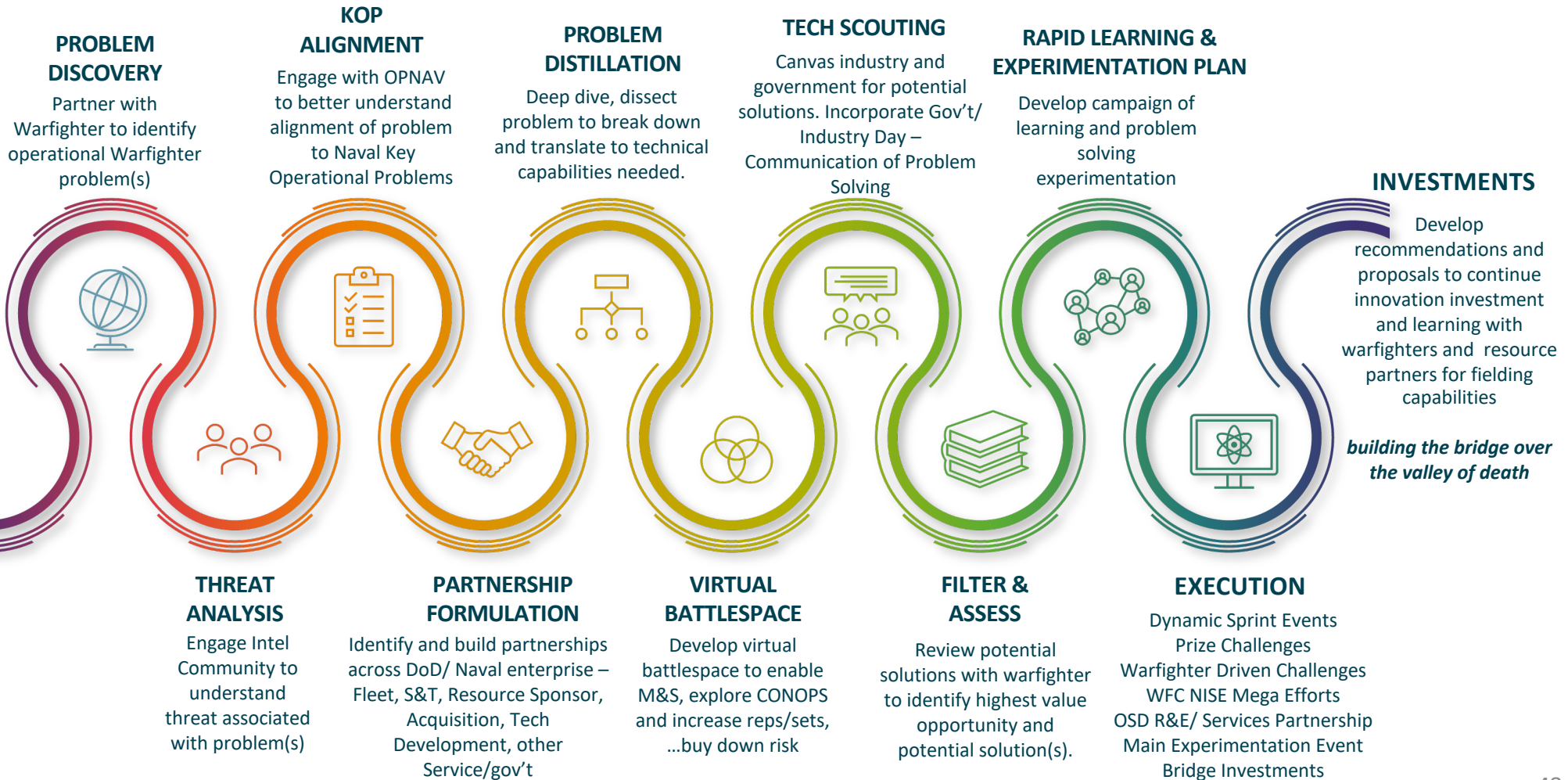
- DASN RDA
- NSWC/NUWC, NAWC, NIWC
- ExWar COP
- USMC CT

# Prize Challenge: Artificial Intelligence Small Unit Maneuver (AISUM)

- **Artificial Intelligence for Small Unit Maneuvers**
- **AISUM is a concept to integrate robotic autonomous systems into small unit maneuver tactics.**
- **Prize Challenge Purpose**
  - **AISUM Prize Challenge is focused on cultivating academic and non-traditional companies' participation. The goal is to break the concept down to smaller, more attainable levels of capability aligned to a competition format to provide for incentive and interest.**
- **Key Technical Challenge**
  - **separation of autonomy software development from hardware**
- **Phased Approach**
  - **Concept Development**
  - **Virtual Development and Evaluation**
  - **Real Evaluation**



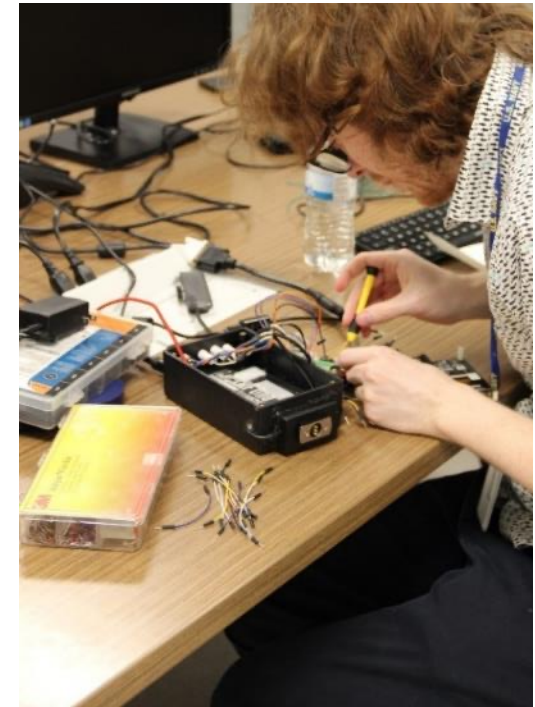
# Warfighter Problem Solving & Experimentation Process



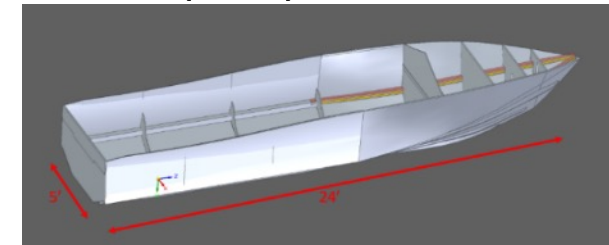


# NSWC Crane Warfighter Driven Challenge (WDC)

PMP WDC



Low Profile Vessel  
(LPV) WDC



- **NSWC Crane has developed an intensive, one-week Rapid Prototyping Process**

- NR&DE scientists & engineers working with warfighters to co-evolve prototype solutions
- Process has been utilized for 11 events (2 virtual)
  - \* Over 18 prototypes developed
  - \* 7 patent applications or invention disclosures
  - \* Over 100 NR&DE SME's involved (from 5 different Warfare Centers)
  - \* Over 45 warfighters representing ~18 various warfighting commands participated
  - \* 7 projects funded for follow on efforts

- **Multiple benefits & outcomes**

- High velocity learning – NR&DE gains operational insight, warfighter gains technical insight, both learn more about the problem and potential solutions – translates to more knowledgeable/capable workforce
- Refined operational need – warfighter and engineer better understand the operational need – translates to better requirements
- Intellectual Property – captured and disclosed protecting government data & rights – translates to better agility for future contracting
- Building a better network – relationships between warfighter and NR&DE and within NR&DE are built and strengthened allowing for continued future collaboration

## HOW CAN INDUSTRY/ACADEMIA HELP?

- **How can we engage your Subject Matter Experts (SME) in our processes? (not just buy your widgets)**
- **How can you help in scalability of prototype solutions?**
- **What “black boxes” do you have that can be readily inserted and adapted to prototype capabilities?**
- **How do we get with you quickly?**
  - **CRADA, bailment, OTA, CSO, BAA, DTIC, DLA, GSA... start the conversation with this!**



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THANK YOU

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