

Naval Surface Warfare Center Port Hueneme Division



Opportunities and Collaboration



PORT HUENEME

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Context

- NSWC Port Hueneme is part of an extensive Enterprise throughout NSWC and NAVSEA – the ultimate team sport
- Our key imperative is to support the Fleet!!!
 - We are inextricably linked with key partners at NSWC Dahlgren, NSWC Corona, White Sands Missile Range, ONR, PEO IWS and Industry
 - Growing more agile
 - Our adversaries are key contributors to the sense of urgency
- Our teams plan to visit AFRL, HELSTF, and Dahlgren laser labs; other opportunities would be welcomed
- Looking forward to identify even more opportunities to collaborate and actually DELIVER capability.



What Are We Doing Of Interest?

- ANTX and Coastal Trident – Building a culture of experimentation!
- Directed Energy Systems Integration Lab (Abridged)
- Exploiting opportunities
- Collaboration and Enterprise Behavior with a sense of urgency



Approach

To align and leverage a next generation technology innovation, field experimentation and exercise event (ANTX 2.0) with an established, multi-agency training, field experimentation and exercise program (Coastal Trident) in a unique Port and Maritime based venue



How?

- A **low risk** and **low cost** approach to provide the NR&DE with access to a unique West Coast based ANTX venue by **leveraging** an established multi-agency, multi-jurisdictional program in a representative “real-world” environment our fleet might operate in.
- Access to a **unique strategic port, range and littoral environment** within a region consisting of significant DOD and Navy presence
- Integration into a mature program which traditionally has over **160 participating** agencies representing **Dept of Defense, Federal, State, Local, Private Sector and NGO’s** in order to support technology innovation, collaboration, development, sharing, transition and education

NSWC PHD signed a Partnership Intermediary Agreement with Global Trade & Technology (501(c)(3)) in order expand and leverage a regional program for the benefit of the warfighter and industry partners

Coastal Trident

- Since 2006, Coastal Trident is an annual education, field experimentation, and exercise program
 - Intended to advance the state of the art in addressing threats to maritime commerce, port and maritime operations, and critical maritime infrastructure
 - Coastal Trident is conducted to support evaluation of regional capabilities during scenario-based activities
 - Provides an operational venue to evaluate current capabilities, response plans, TTPs
 - Provides a relevant test and experimentation venue for developing and transitional technologies
 - Emphasizes a regional focus to address complex interagency response issues





ANTX / Coastal Trident

Coastal Trident 2018 will consist of scenario-based training, field experiment, and exercise activities conducted throughout Southern California and will be conducted to examine the capabilities of Navy and Joint-DOD; federal, state, and local government; and private sector organizations to address the operational and technical challenges presented by asymmetric threats in the port and maritime domain.

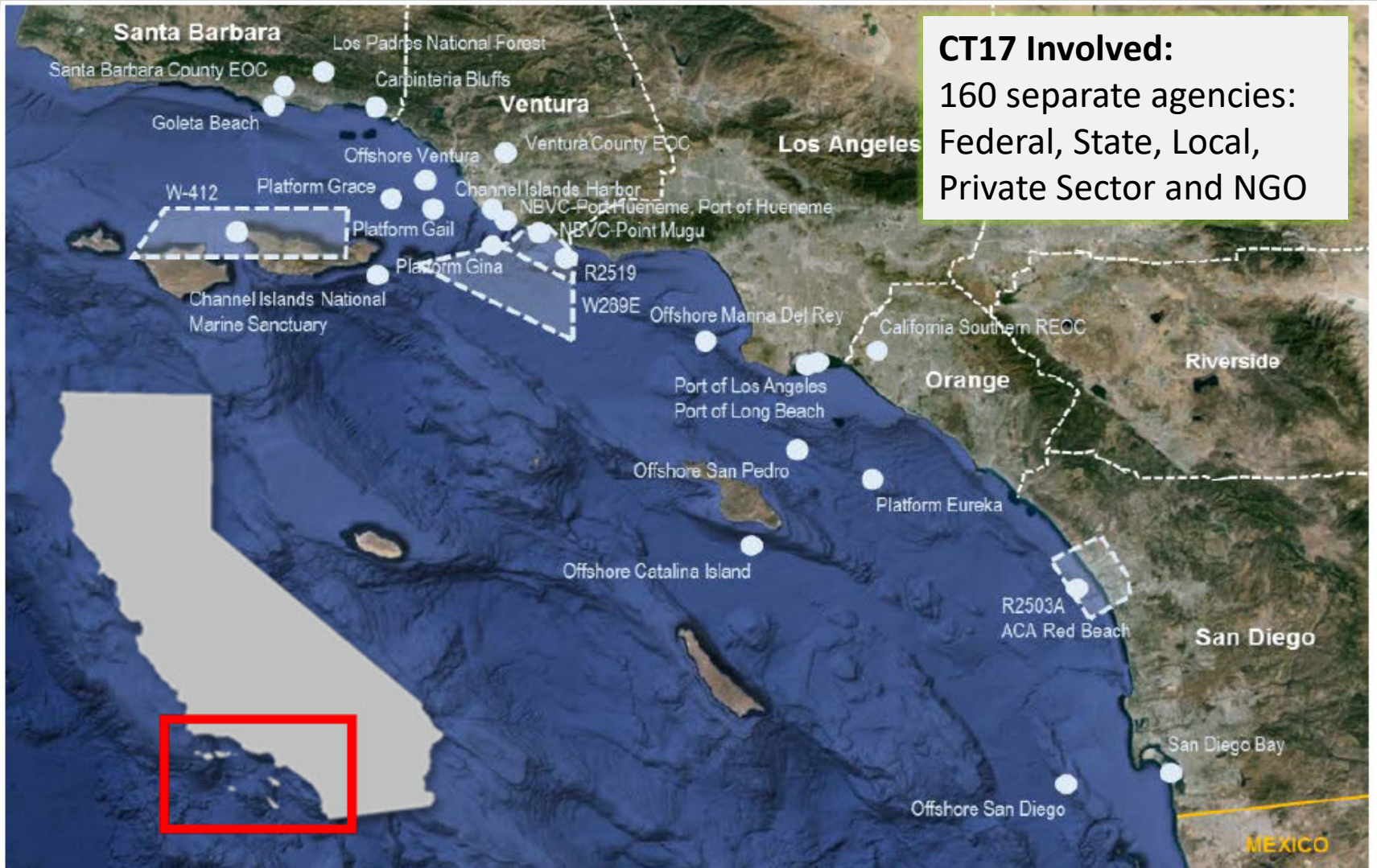
ANTX Goal: Rapidly provide and transition capabilities to the fleet and warfighter



Coastal Trident 2018
Regional Port and Maritime Security Program



Experimentation Venue



CT17 Involved:
160 separate agencies:
Federal, State, Local,
Private Sector and NGO



Concept Development Meeting

The Concept Development meeting was conducted on 11 Oct in which the Priority Area's of interest were defined based on initial technology experiment proposals:

Domain awareness and information superiority

Unattended, distributed, and networked sensors

Maritime communications and data links

Data fusion, visualization, and decision support tools

Passive surveillance, reconnaissance, and threat detection

Remotely-operated, unmanned, and autonomous systems

- Standoff threat detection, identification and hazard monitoring
- Persistent and beyond line-of-sight surveillance and reconnaissance
- Support to close quarters combat and confined space operations
- Unmanned systems threat detection and countermeasures



Experimental Activities

Module 1 (T): Port Security and Critical Infrastructure Protection

- 1.1 (T): Assessment of Port Security Infrastructure and Capabilities
- *1.2 (T): Panoramic Detection System for Countering Unmanned Aircraft
- 1.3 (T): Marine Mammal Interdiction of Unmanned Underwater Vehicles
- 1.4 (T): Impulsive Acoustics for Perimeter Security and Diver Deterrence

Module 2 (T): Unmanned and Unattended Intelligence, Surveillance, and Reconnaissance

- 2.1 (T): Unmanned Aircraft for Management of Natural Resources
- *2.2 (T): Unmanned Systems Teaming for Multi-domain Situational Awareness
- 2.3 (T): Continuous Active Multistatic Sonar for Undersea Remote Sensing
- 2.4 (T): Concept of Operations for Unmanned Aircraft Support to Emergency Response Operations

Module 3 (T): Data Fusion, Visualization, and Decision Support

- 3.1 (T): Integrated Command and Control of Shipboard Sensors
- 3.2 (T): Mobile Applications for Dynamic Situational Assessment
- 3.3 (T): Low-cost Common Operational Picture for Domain Awareness
- 3.4 (T): Airborne Synthetic Aperture Radar for Coastal Surveillance
- 3.5 (T): Wearable Sensors for Early Warning of Hazards to Personnel
- *3.6 (T): Virtual and Augmented Reality for Shipboard Maintenance
- 3.7 (T): Job Performance Aids for First Responder Training

*NSWC PHD Sponsored ANTX Experiments

Module 4 (T): Maritime Communications and Data Links

- *4.1 (T): Long-range, Low-power Data Links for Maritime Applications
- *4.2 (T): Characterization of Electromagnetic Propagation in the Maritime Domain

Module 5 (T): Cyber and Electromagnetic Threat Detection and Resilience

- *5.1 (T): Bandwidth Efficient Cyber Reconnaissance and Network Protection Operations
- *5.2 (T): Characterization and Exploitation of Embedded Software Systems
- 5.3 (T): Dynamic Virtual Display of the Electromagnetic Battlespace

Module 6 (T): Support to Forward and Expeditionary Operations

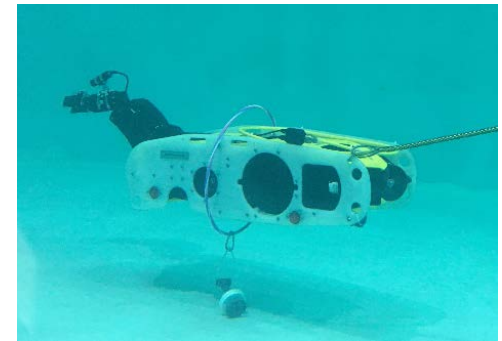
- *6.1 (T): Additive Manufacturing in Dynamic Stability Applications
- 6.2 (T): Micro Wind Turbine for Expeditionary Power Generation

Module 7 (T): Maritime Incident Response Operations

- 7.1 (T): Short-notice Maritime Response to a High Interest Vessel
- *7.2 (T): Concept of Operations for a NAVSEA Ship Incident Response Center
- 7.3 (T): Vessel Interdiction and Maritime Tactical Operations
- 7.4 (T): Vessel-borne Hazard Assessment and Incident Response Operations

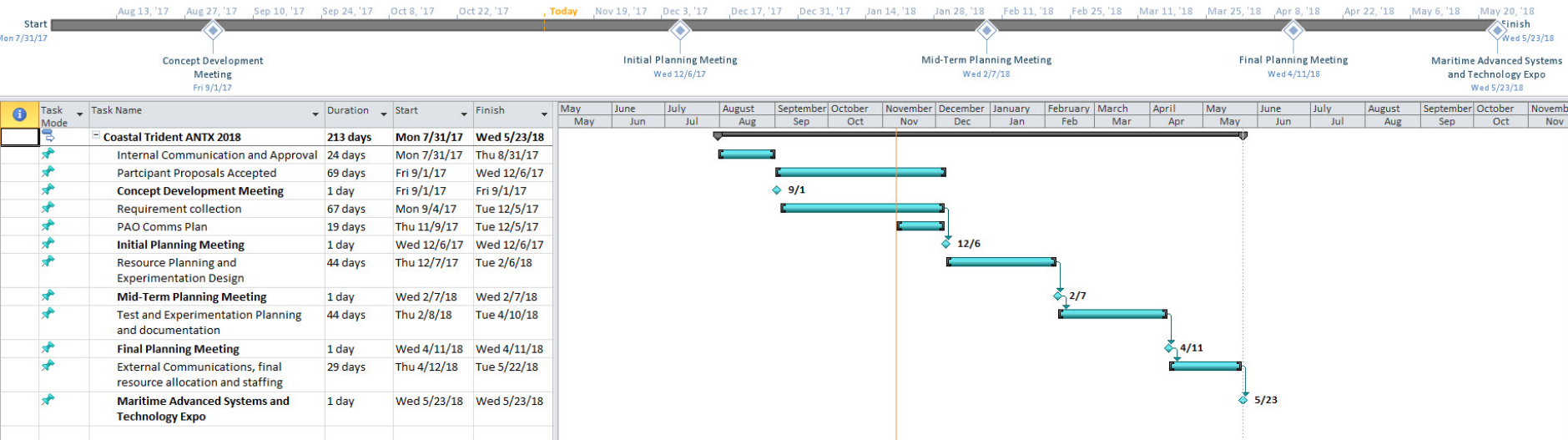
Enabling Tech Transition

- Coastal Trident represent opportunities to synchronize regional technology development, transition, and implementation across the NR&DE
 - Support development of technology through relevant experimentation and evaluation activities
 - Accelerate feedback to technologists through employment by representative end users in relevant scenarios
 - Facilitate communication of local, state, federal operational requirements and access to developing and transitional technologies





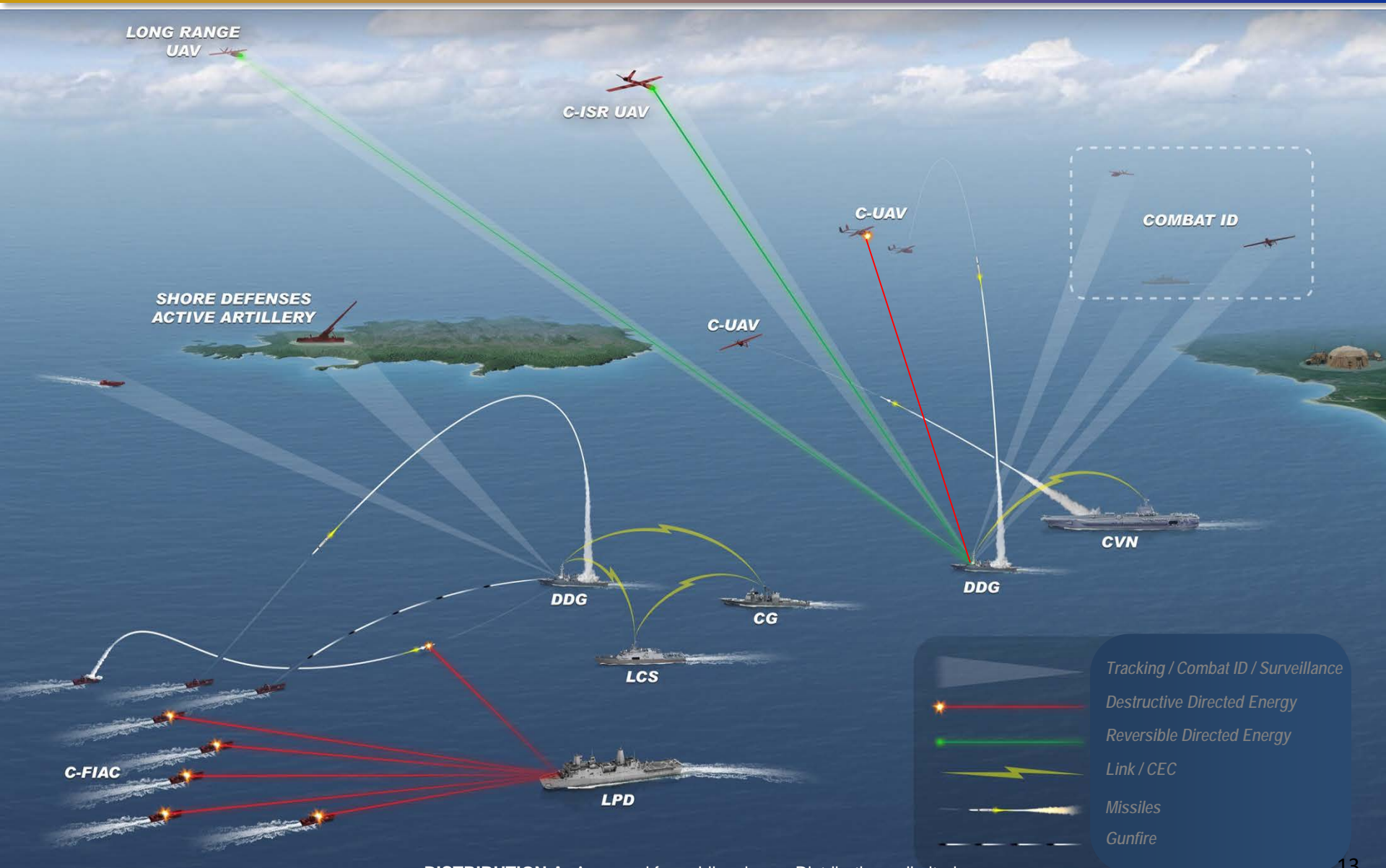
CT/ANTX 2018 Schedule



- ✓ 11 Oct 2017: Concept Development Meeting
- ❑ 10 Jan 2018: Initial Planning Meeting
- ❑ 7 Feb 2018: Mid-Term Planning Meeting
- ❑ 11 April 2018: Final Planning Meeting
- ❑ 23 May 2018: Maritime Advanced Systems and Tech (MAST) Expo and VIP Day
- ❑ May-June 2018: Program Execution (concentration)



Laser Weapon OV-1

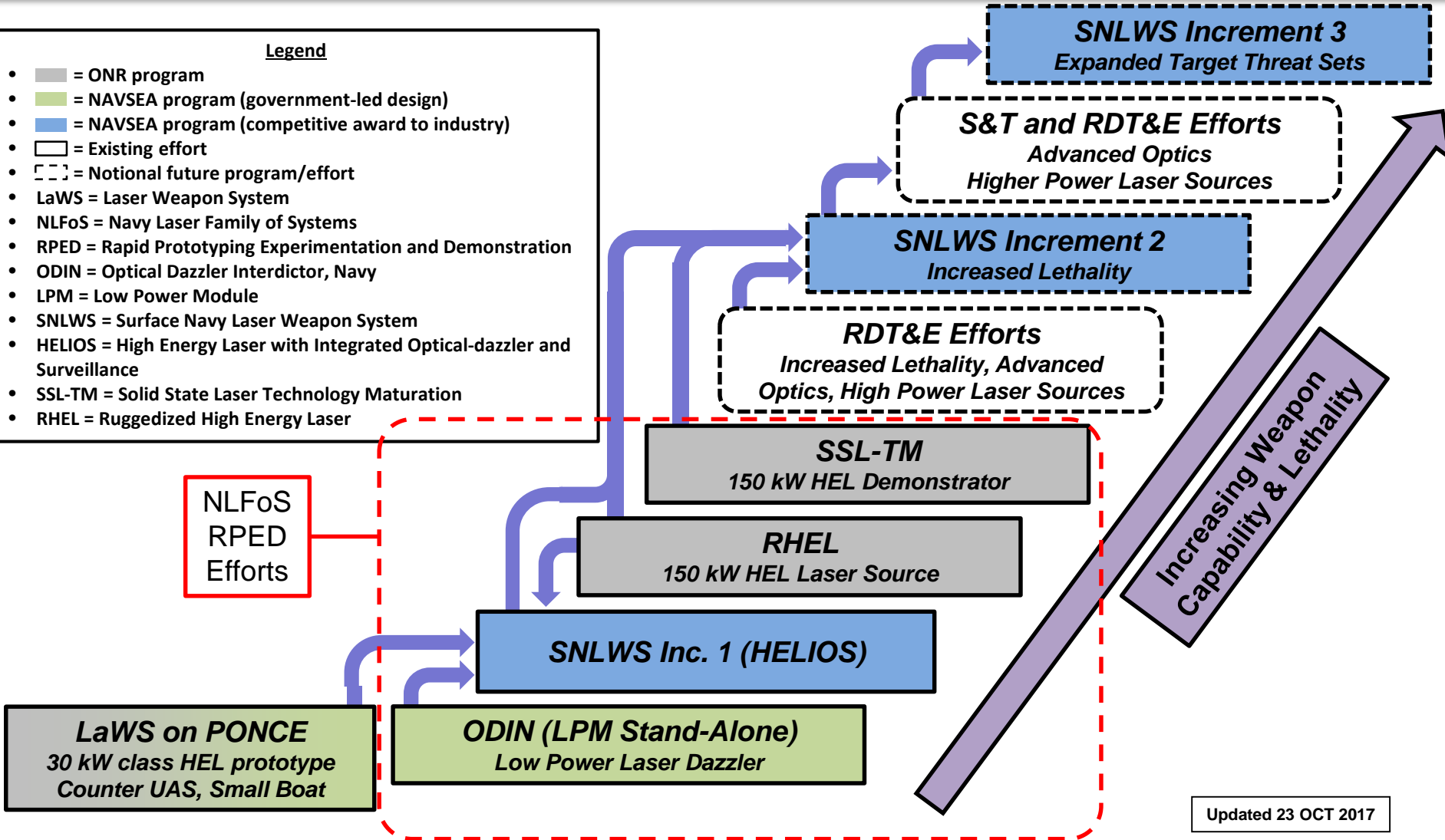




Laser Weapon Incremental Approach

Legend

- = ONR program
- = NAVSEA program (government-led design)
- = NAVSEA program (competitive award to industry)
- = Existing effort
- = Notional future program/effort
- LaWS = Laser Weapon System
- NLFoS = Navy Laser Family of Systems
- RPED = Rapid Prototyping Experimentation and Demonstration
- ODIN = Optical Dazzler Interdictor, Navy
- LPM = Low Power Module
- SNLWS = Surface Navy Laser Weapon System
- HELIOS = High Energy Laser with Integrated Optical-dazzler and Surveillance
- SSL-TM = Solid State Laser Technology Maturation
- RHEL = Ruggedized High Energy Laser



NLFoS
RPED
Efforts

LaWS on PONCE
30 kW class HEL prototype
Counter UAS, Small Boat

ODIN (LPM Stand-Alone)
Low Power Laser Dazzler

SNLWS Inc. 1 (HELIOS)

RHEL
150 kW HEL Laser Source

SSL-TM
150 kW HEL Demonstrator

RDT&E Efforts
Increased Lethality, Advanced
Optics, High Power Laser Sources

SNLWS Increment 2
Increased Lethality

S&T and RDT&E Efforts
Advanced Optics
Higher Power Laser Sources

SNLWS Increment 3
Expanded Target Threat Sets

Increasing Weapon
Capability & Lethality

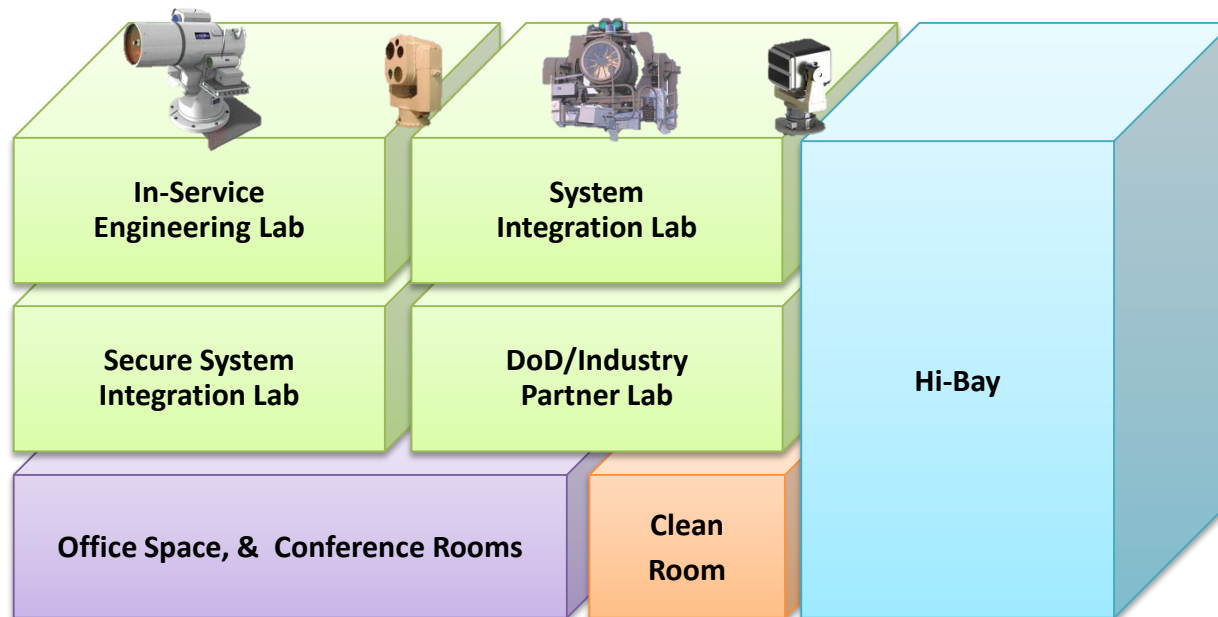
Updated 23 OCT 2017

Incremental strategy for increased capability as technology is matured

Directed Energy Systems Integration Lab Concept

MILCON P777 Approved as a result of CNO Planning Effort

- Original idea was to refurbish tower section of BLDG761 at an estimated \$15.6M
- NAVFAC recommended new construction for P777 based upon challenges with BLDG 761 refurbishment for the Air Force
- Requirements document drove design of \$24M MILCON project (fully funded)
- DESIL Top Level Requirements approved by N96



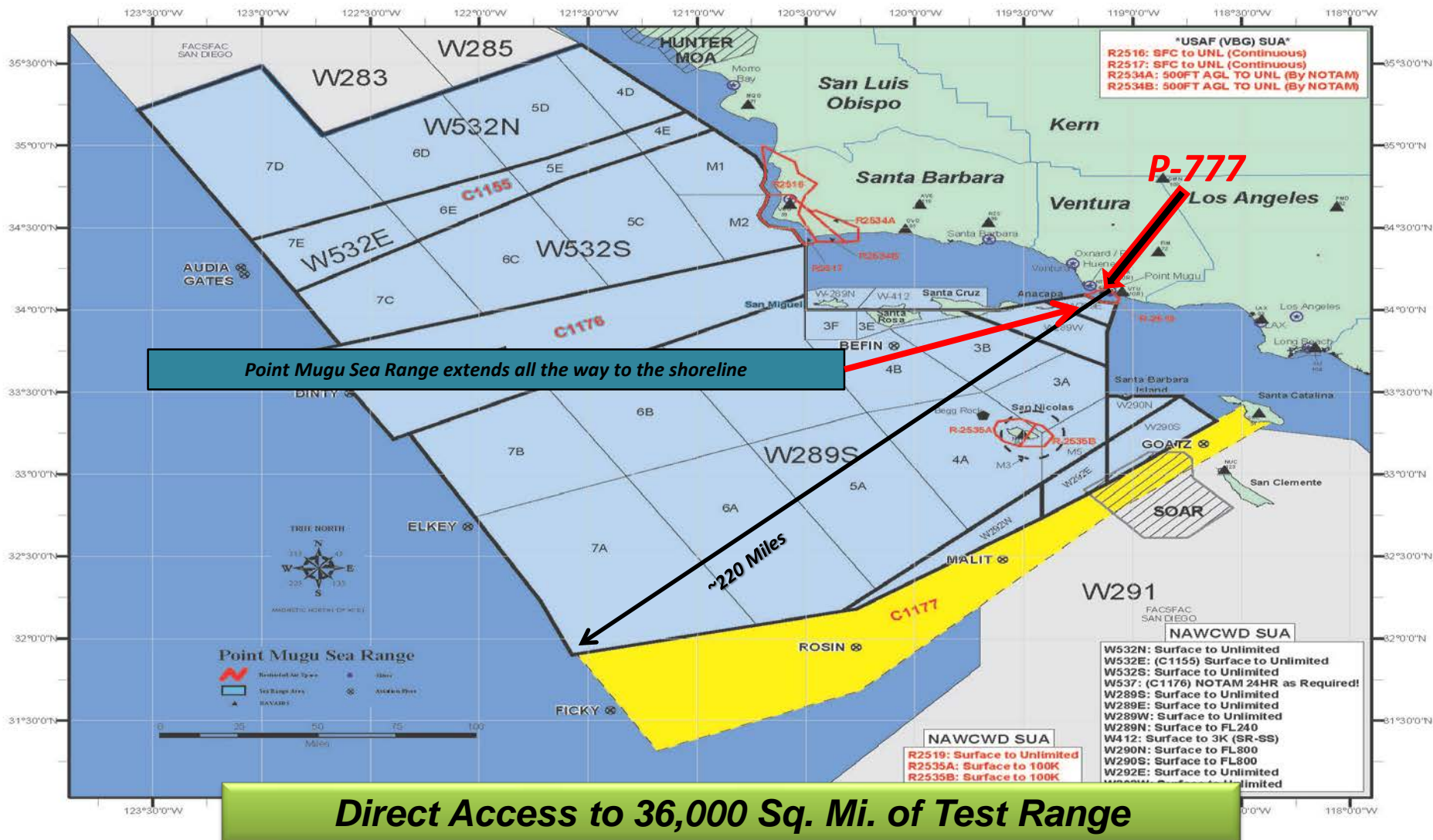
\$22.15M Included in POM-19 Budget



P-777, Directed Energy Systems Integration Laboratory

- **The 18,137 SF laboratory facility will include four functional areas:**
 - **SNLWS Prototype development, integration, and test facility**
 - **Laser Weapon In-Service Engineering Facility**
 - **Classified Development/Integration/Test Facility**
 - **Constructed to ICD-705 standards**
 - **Industry/DoD Partner Transient Lab & Test Facility**
- **Separate engineered pad for alignment and instrumented firing (includes backstop)**

DESIL Location on Point Mugu Sea Range



Direct Access to 36,000 Sq. Mi. of Test Range

One More Thing !





Summary

- **Coastal Trident and ANTX is an incredible opportunity to excel. It is NOT too late to engage.**
- **The US Navy is investing in a coastal directed energy laboratory and test facility – FY19 funded MILCON**
- **RFP under development, release planned Oct 2018**
- **Our teams plan to visit AFRL, HELSTF, and Dahlgren laser labs; other opportunities welcomed!**
- **Ready to enable your participation and remove barriers for collaboration. Effort is interesting. Warfighting capability delivered is germane!**

Thank You and Questions

