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

PMW 160
Tactical Afloat Networks

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

Agenda

- Information Warfare
- PMW 160 Portfolio
- PMW 160 Priorities
- PMW 160 Focused Initiatives
- PMW 160 Technical Drivers
- CANES
- ADNS
- Enterprise Pier Connectivity Architecture (EPCA) / Piers
- Summary

Information Warfare

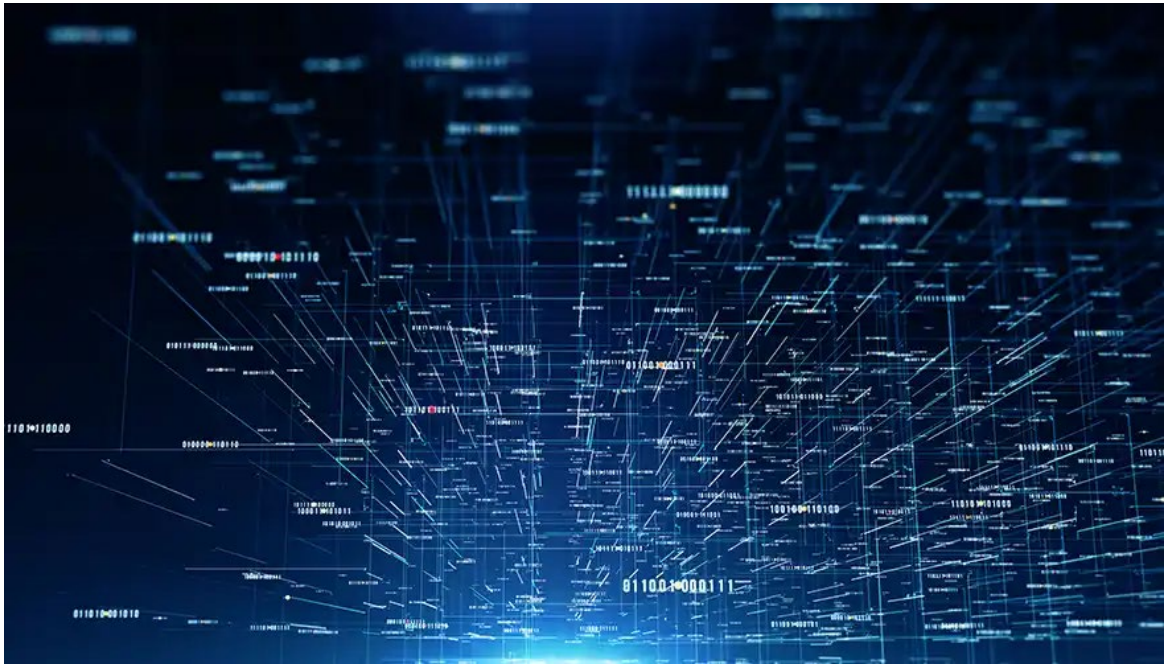
The war is being fought **digitally**, whether you look at cyber ransoms, or speed of deploying tactically relevant software to get ahead of threats.

Image: iStock

Bottom line:

Information technology no longer just “supports” warfighting!

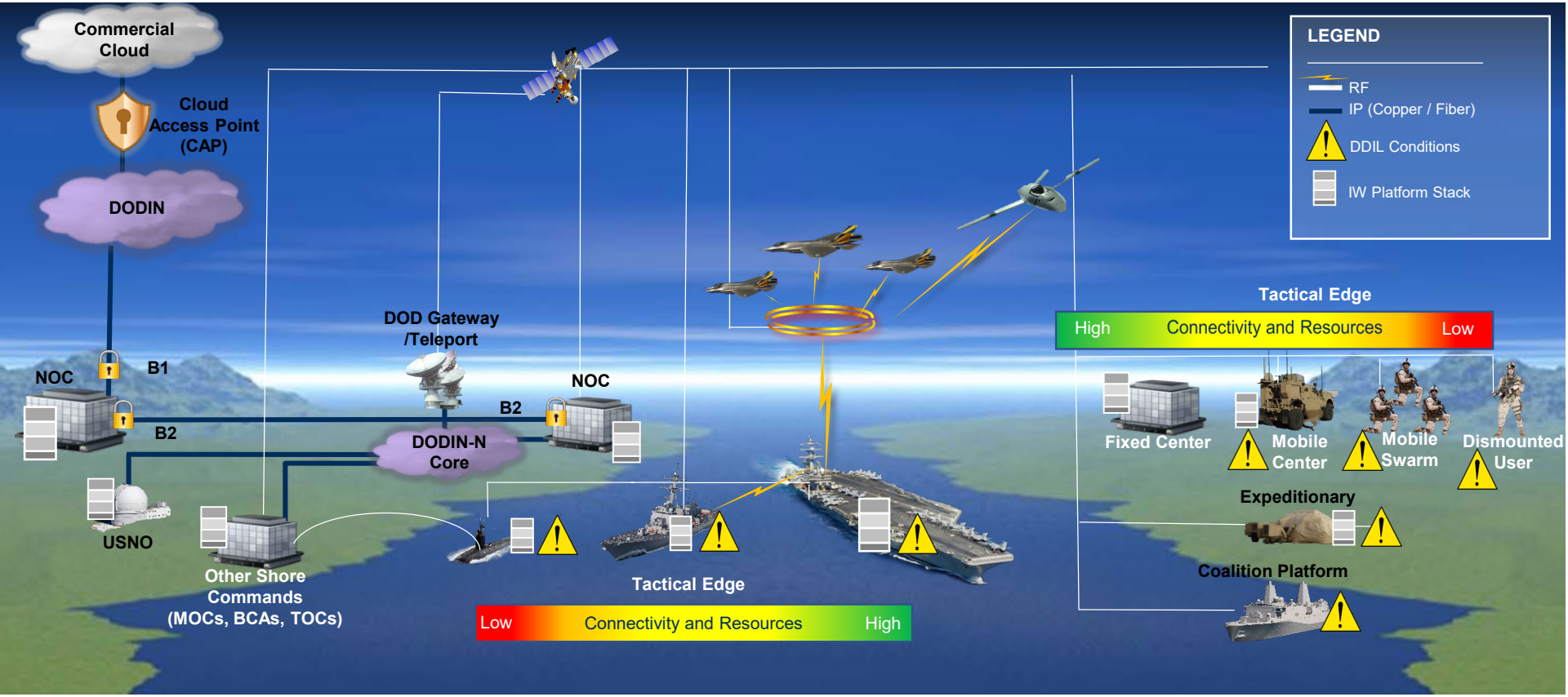
It is **core** to naval ability to provide deterrence and project power.



The Tactical Edge

Tactical Edge: Platforms, sites, and personnel (U. S. military, allied, coalition partners, first responders) operating at lethal risk in a battle space or crisis environment characterized by

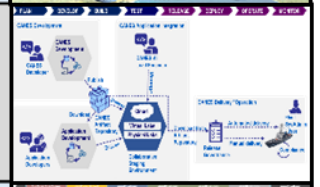
1) a dependence on information systems and connectivity for survival and mission success,
2) high threats to the operational readiness of both information systems and connectivity, and
3) users are fully engaged, highly stressed, and dependent on the availability, integrity, and transparency of their information systems



(Source(s): CNSSI 4009-2015)

PMW 160's Portfolio- Operating at the Tactical Edge

Deliver and support innovative, agile and secure networks and IT services to enable warfighter mission success

CANES	Consolidated Afloat Networks and Enterprise Services (CANES) delivers common afloat networks to drive cyber resilience, improve operational availability and reduce total ownership costs	
ADNS	Automated Digital Network System (ADNS) provides assured tactical wide area networking between ships, submarine and shore to support full spectrum battlespace connectivity	
ACS	Agile Core Services (ACS) provides a set of commercial IT services to accelerate delivery of software, streamline integration, and improve enterprise sharing	
AI	Application Integration provides the platform governance and certification to ensure the cyber posture and interoperability of afloat networks and applications	
Piers	Pier IP communications, transitioned to PEO C4I in FY19, delivers connectivity to ships and submarines when connected to the terrestrial network	

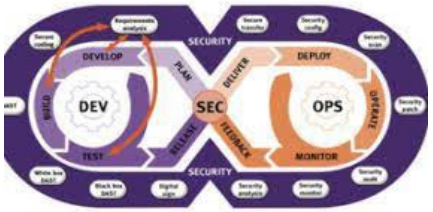
PMW 160 Priorities

- **Mission Driven**
  - Speed to Capability
  - Cyber Resilient and Reliable
  - Enabling the Naval Operational Architecture – the Navy's JADC2 implementation
- **Fleet Focused**
  - Support and secure systems in the Fleet today
  - Deliver the systems that we committed to install
  - Procure systems to support future installations
  - Design, Develop, Integrate, and Test future systems

Focused Initiatives

- ***Enhancing Sailor Self-Sufficiency:***
  - Improving Sailor's ability to fight and defend their network through game-changing training delivery (CANES Training Virtual Environment), increased automation and improved network insight through Remote Access / Remote Monitoring distance support capabilities

- ***Delivering Speed to Capability - DevSecOps:***
  - Delivering Development Security Operations (DevSecOps) pipeline including cloud-based CANES development & integration environment to enable rapid fielding of stable, cyber-secure software-based warfighting capability



- ***Increasing System Resiliency & Agility:***
  - Implementing increased agility in system upgrades to provide more frequent, incremental delivery of network capability; goal to rapidly address cyber vulnerabilities, maintain operational availability and pace warfighting threats
  - Fielding first Cyber Threat Upgrades in FY23

Delivering processes and technology to increase network warfighting resiliency, supportability, and installation efficiencies.

Combat Ready, Combat Resilient - Networks & Sailors

Tactical Networks Technical Drivers

Leveraging Cloud & Cloud Native

Image: VMware.com

Pacing Cybersecurity & Expanding Zero trust

Image: Caplinked.com

Expanding Automation, AI & ML

Image: warontherocks.com

Enabling Distributed Maritime Operations

Evolving Agile & DevSecOps Driving Speed-to-Capability

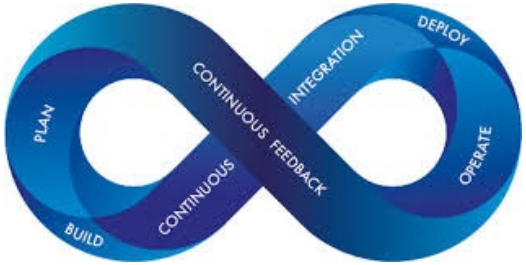


Image: automationConsultants.com

Increasing Network Resiliency

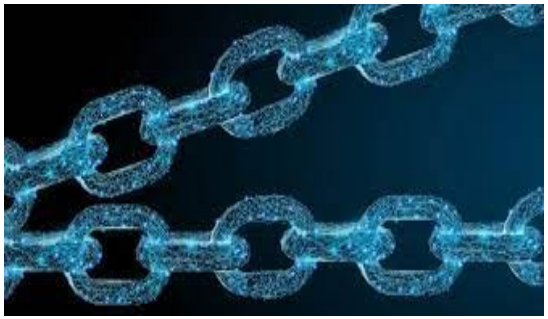
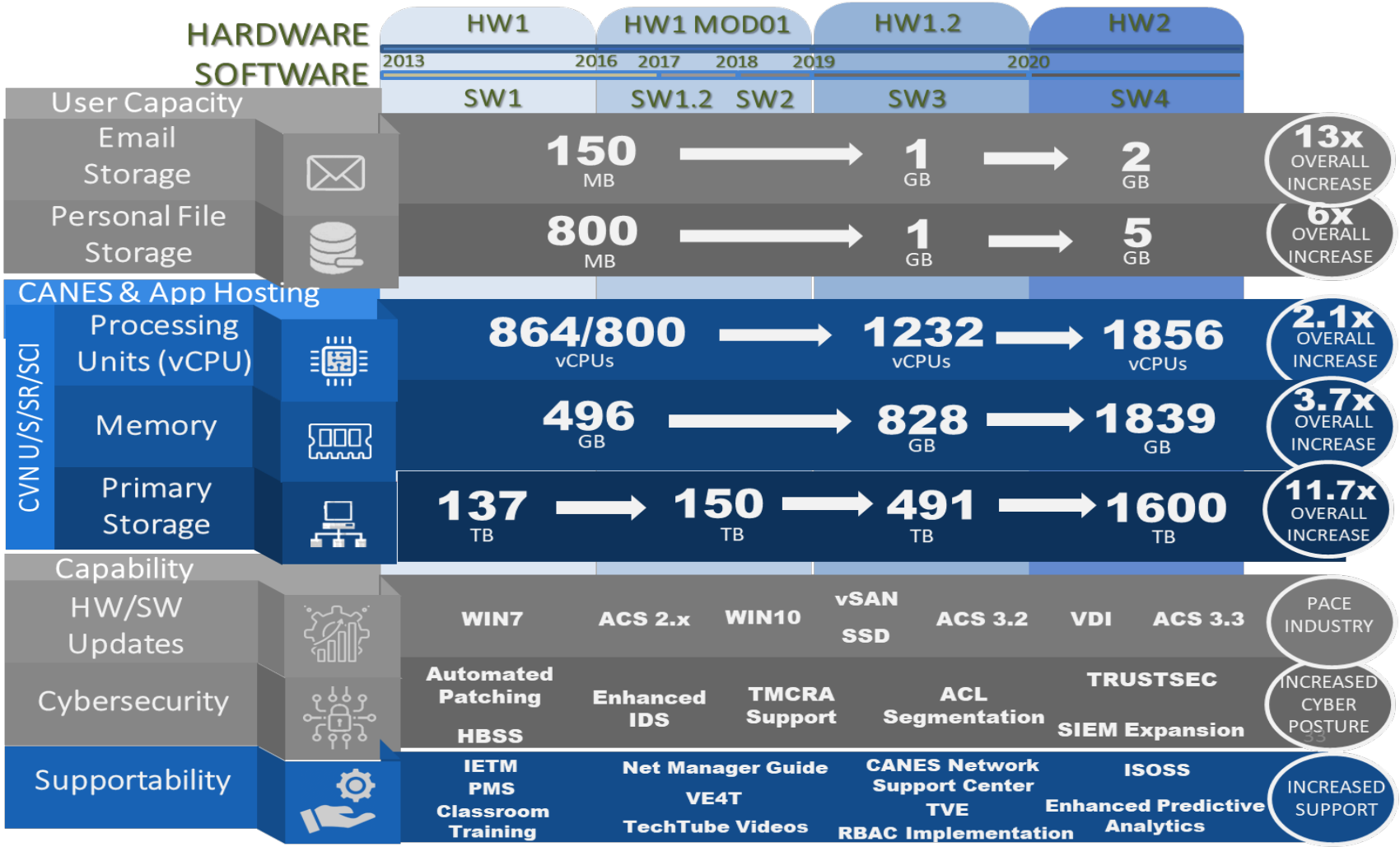


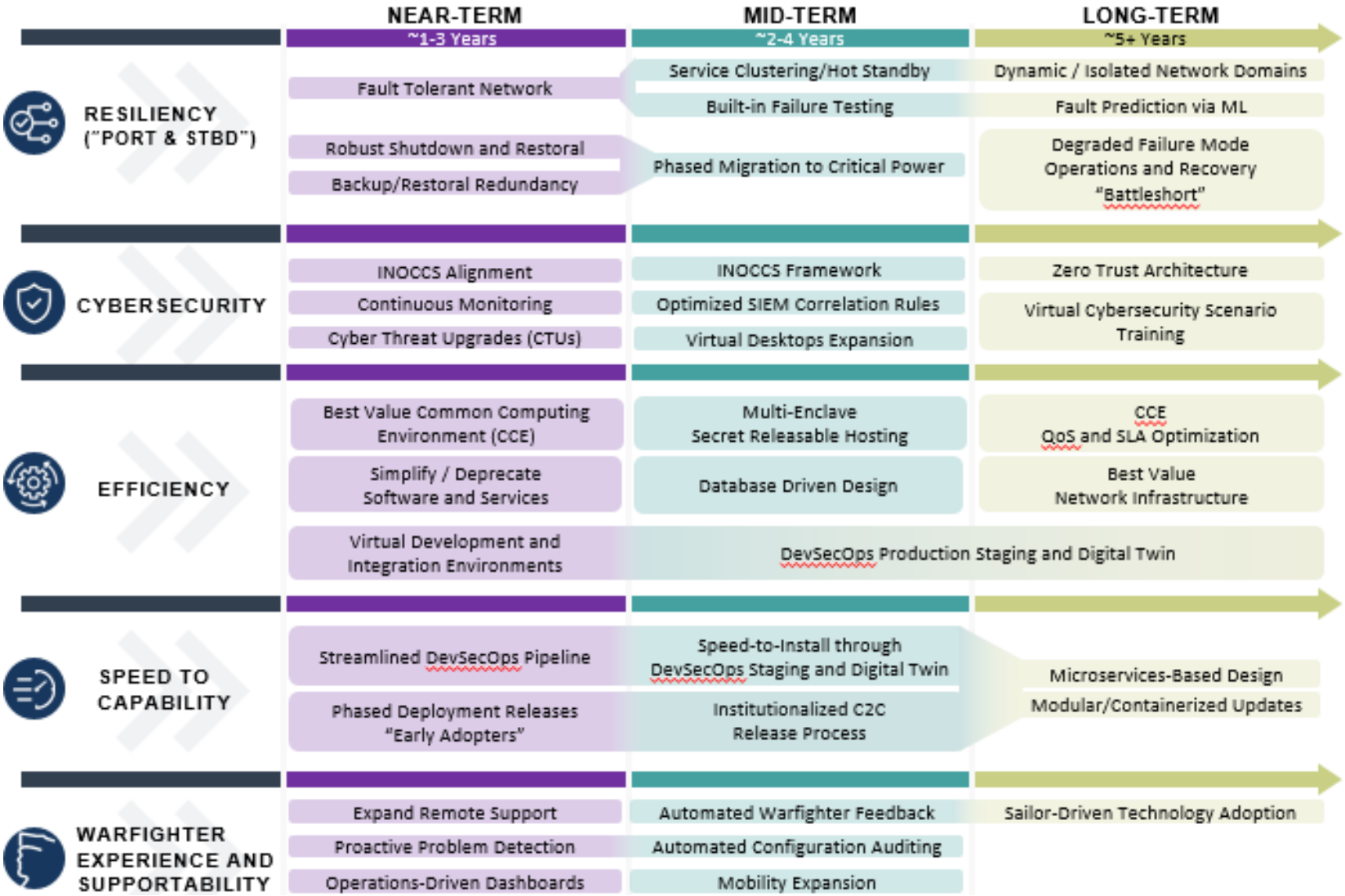
Image: datafoundry.com

CANES Baseline Evolution

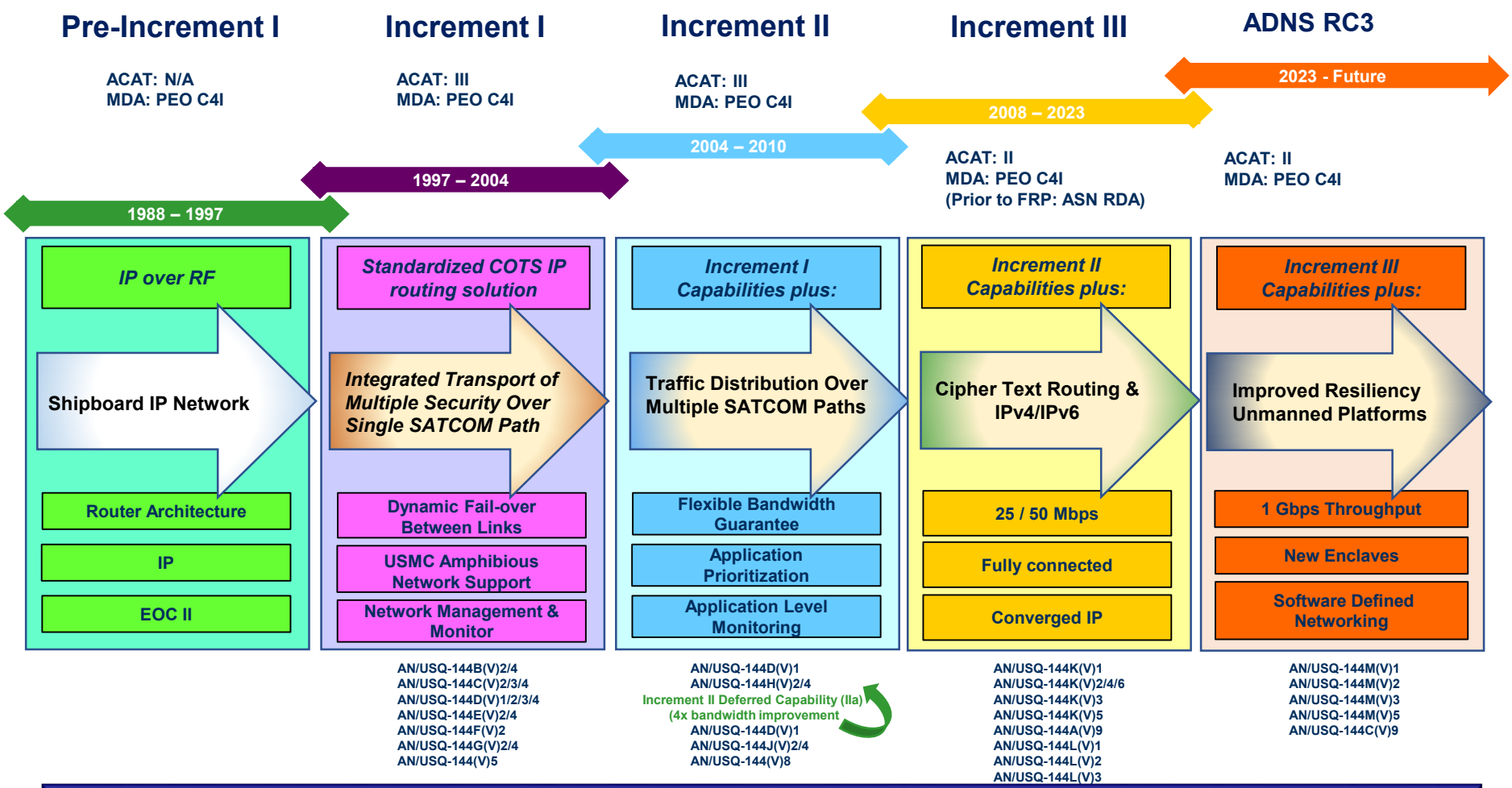


122 CANES Systems Fielded today
Deploying 5th Generation CANES (HW2/SW4); Developing 6th Generation (HW3/SW5)

CANES Technical Roadmap

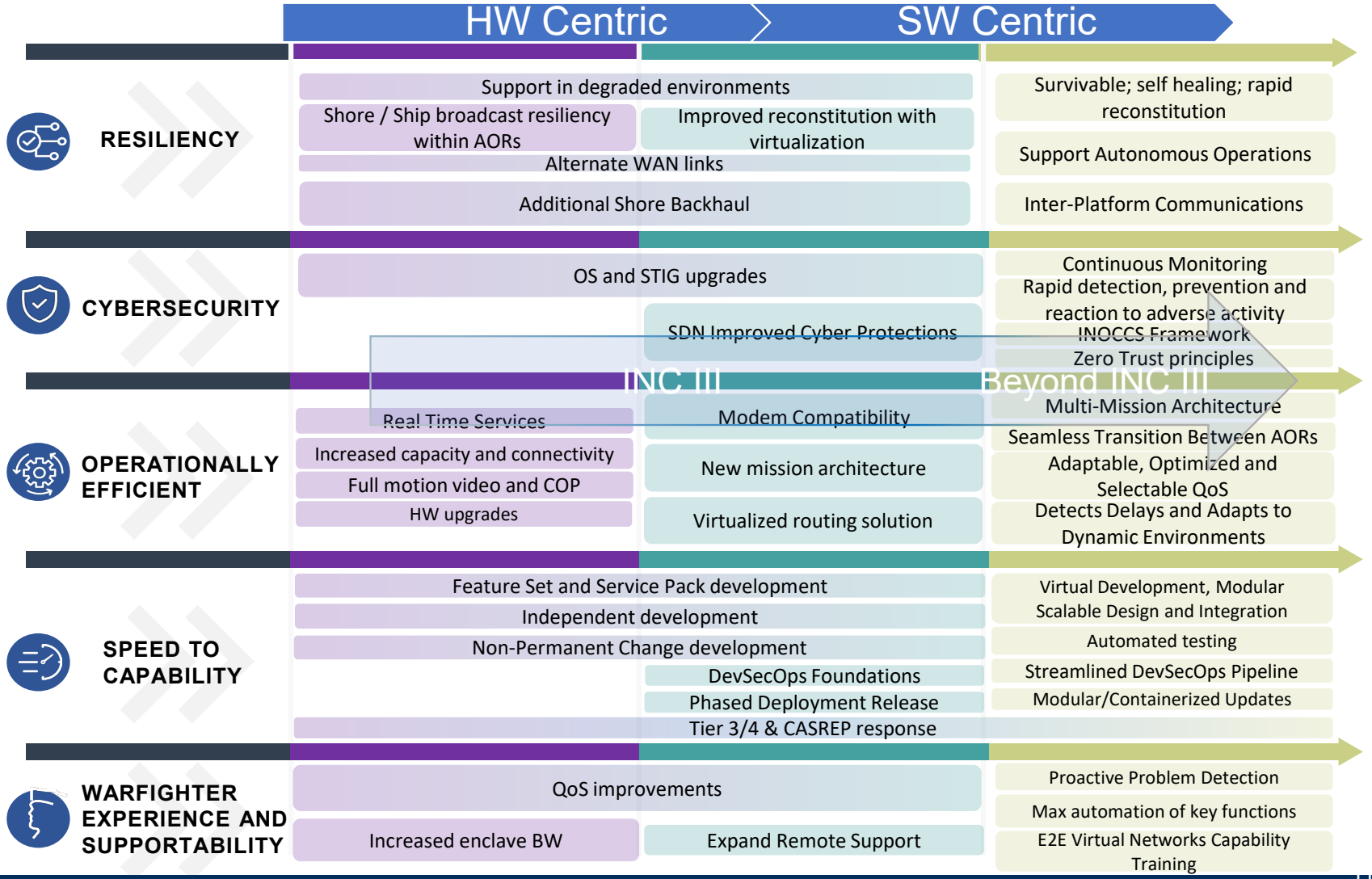


ADNS Baseline Evolution



Transitioning to Software Defined Network architecture; leveraging DevSecOps for future modernization and sustainment of ADNS capabilities

ADNS Technical Roadmap

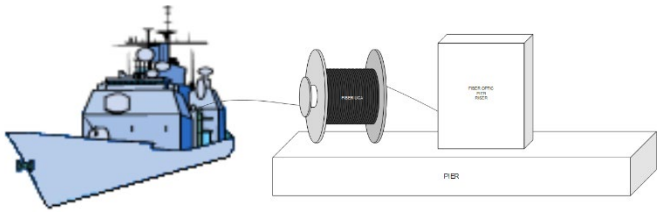


Piers - EPCA

- Enterprise Piers Connectivity Architecture (EPCA) is the shore transport network for ADNS from pier side ships & submarines to connect to servicing NOCs
- Program delivers multiple products providing high speed pier connectivity. Delivery methods vary and are site appropriate

Today's Delivery Model

- Government Designed and Integrated
- Operational support migrating to NGEN-R
- Up to 1 Gbps via EPCA 2.0



Future Technology Adoption:

- Wireless Pier Connectivity System (WPCS) 3.0 roll-out in FY23
- Wireless Connectivity Bridge (WCB) for adjacent sites leveraging WPCS
- Possible 4G/5G technology incorporation
- Enhancements to ADNS to increase bandwidth routing
- Integration with commercial SATCOM solutions for increased bandwidth to support QoW/QoL

Summary

- PMW 160's Imperatives:
  - *Delivering the Tactical Edge*
  - *Enabling the Kill Chain through Information Warfare*
  - *Operating continuously from Competition to Conflict*

- Industry's Challenge is to develop solutions that:
  - *Operate in austere, tactical environment*
  - *Contribute to Fleet self-sufficiency*
  - *Simplify complexity, increase automation*
  - *Increase hardening and resiliency*
  - *Enable speed to capability*

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