PEO IWS X Program Overview and ICS Development

"Sea Power to the Hands of Our Naval Force"

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DMPM, Integrated Combat System
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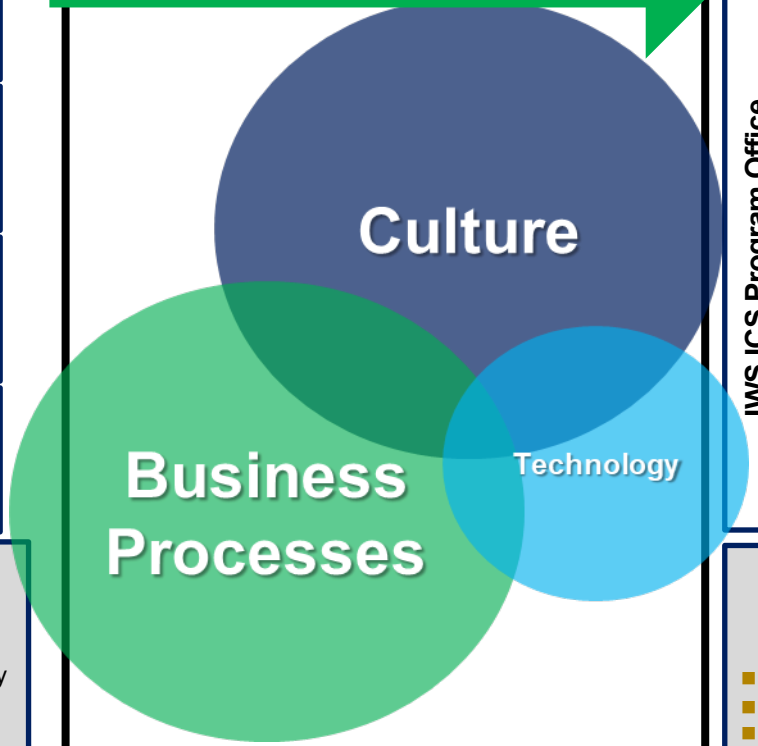
PEO IWS Evolution

Legacy (Platform) Business Model

Independent businesses creating their own custom solution
with tightly coupled HW and SW

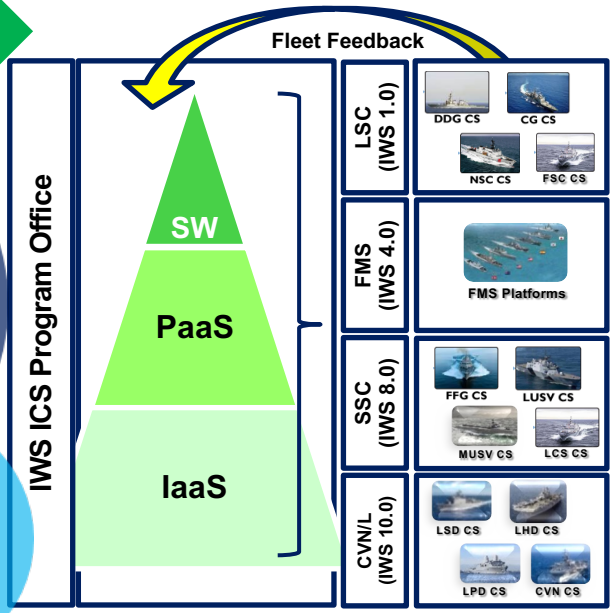
- Multiple NRE bills for Individual capability delivery
- Large, monolithic deliveries
- Custom HW solutions
- Multiple CS, not necessarily interoperable
- Different Fleet Training Pipelines
- Different Standards & Processes
- Driving different requirements onto elements

Thinking - Acting - Operating Differently to evolve



Team = OPNAV + Fleet + PEO + SHAPM + Congress + Industry

Future (Force Level) Model



ICS Program Office is Technical Governance and driving force to ensure evolution to single ICS

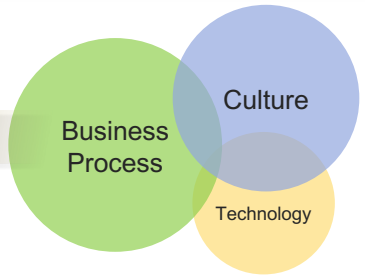
- Common Requirements
- Common HW and SW
- Reduced NRE bills
- Leverage common training
- Common Standards & Processes
- Common interfaces for Elements
- Element hosting
- Incorporate DDG 1000 efforts
- Small CS deliveries

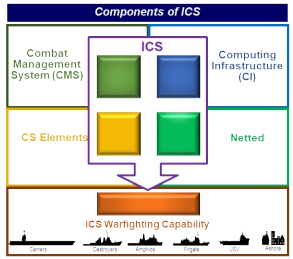
Teamwork across stakeholders will lead to faster delivery, higher quality, wider distribution - from requirements to production

PEO IWS X
the ICS Program Office

'…align the ICS organization, processes, resources and acquisition strategy to develop a common tailorable ICS with focused effort'

— ICS Project charter





Technical Director	Forge Ecosystem	SW	Compute Infrastructure (HW)	Operations (Business)
• Chief Engineer • Digital Transformation	• Development Environment • Cybersecurity • Integration • Deployment • PaaS	• Software Development, Integration, & Test	• Hardware Factory • IaaS	• Contracts • Financials

Functional PAPMs

Program Office Liaisons

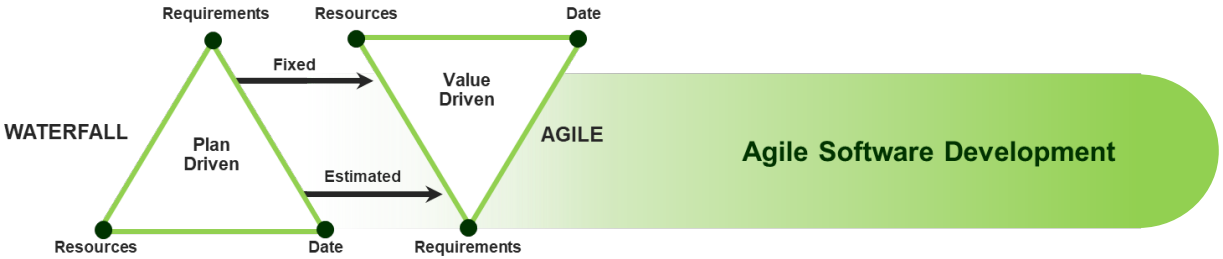
- IWS 1.0
- IWS 4.0
- IWS 8.0
- IWS 10.0
- CS Elements
- External Stakeholders

Mission: Converge to a common Integrated Combat System (HW/SW) across the Surface Fleet

Drive efficiency, increase the speed of delivery, and increase quality of the combat system

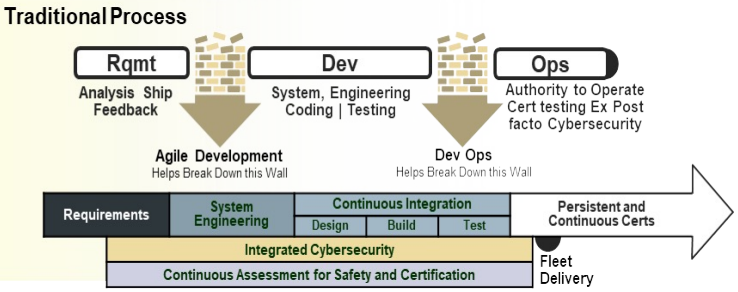
Forge Ecosystem
Cloud-Based Development Environment

A Continuous Integration / Continuous Delivery (CI/CD) pipeline requires a modern computing infrastructure, Agile software development methodology, and Development, Security, Operations (DevSecOps) engineering culture and practices



Agile Software Development

DevSecOps
Culture and Practices



The Three Ways…

- Maximize flow of work and optimize the system of continuous delivery
- Ensure fast and constant feedback
- Create a generative, high-trust culture that supports disciplined experimentation

— The DevOps Handbook
Kim, Humble, Debois, and Willis
2016

The Government owns the Development & Test Pipeline

Software

Enterprise Surface Combat System Software Factory

DARK WOLF SOLUTIONS

CATALYST CAMPUS

Booz | Allen | Hamilton

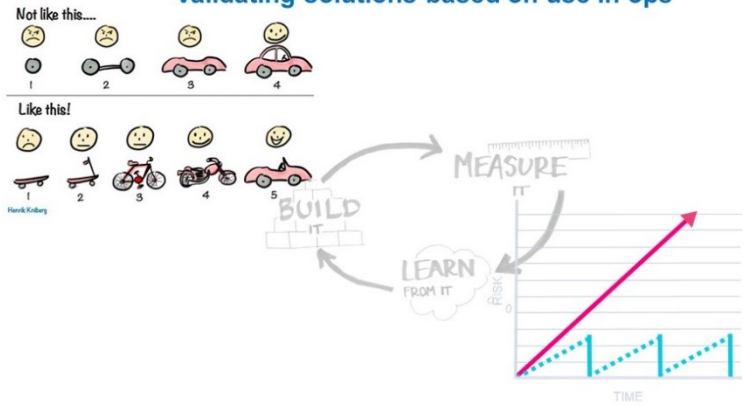
LOCKHEED MARTIN

SOLUTE

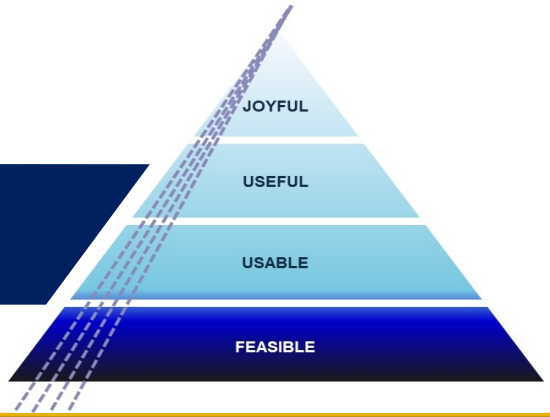
- Developers
- Users
- Systems Engineers
- System Architects
- Cybersecurity Experts
- Quality Assurance Team
- Agile Practitioners
- Industry Partners

User Focus, Technology to User, Iterate – Always Burning Down Risk

Software is NEVER Done!
Developing hypotheses based on user research
Validating solutions based on use in ops



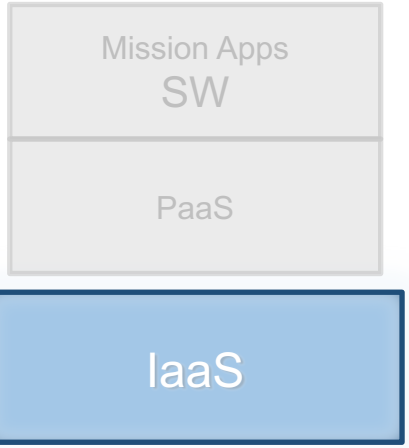
Delivering a Feature at a Time



Changing CS Software Development Paradigm to Focus on the User

Hardware
HW Factory & HW Pipeline

- **HW Factory & HW Pipeline provide continuous, scalable, modernized Compute Infrastructure (CI) with common qualified, certified, & authorized catalog of universally managed products & services - for all ship classes**
  - Components, LRUs, Assemblies, Cabinets, Tactical & Tactical Equivalent systems
  - CI SW Licenses & Support, Engineering Services
  - Data Analytics, Help Desk, Configuration Management, Sustainment, and Training
  - Obsolescence & DMS issues



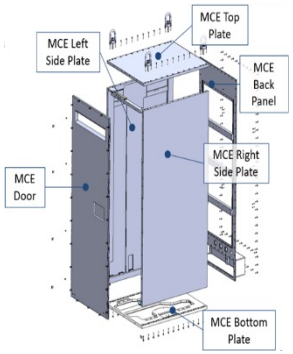
Virtualization Pilot Ship

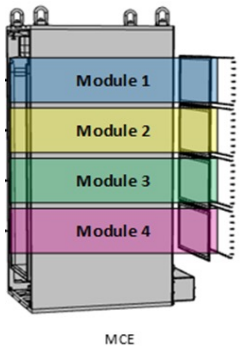
- Shipboard Installation of a modern **IaaS CI using Other Transactional Authority (OTA) acquisition process**

OTA Displays on Monterey (CG 61)

OTA used for CI on Monterey (CG 61) & Prototype Unmanned Surface Vessel (PUSV-4)

Hatchable Enclosures





Modular Components

Decoupling HW and SW enabling faster, more frequent capability delivery

"Sea Power to the Hands of Our Sailors"