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DON CIO | Chief Data and AI Officer (CDAO)

# Surface Navy Artificial Intelligence

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### One of these is *not* a Chinese warship...







### The Future Naval Operating Environment



#### Ukraine 2022

- The first "digital war"
- Most observers have focused on the effectiveness of UxS
- But the software that glues them together is more important than the UxS themselves...



#### **Red Sea 2024**

- Houthi OODA loop is sometimes faster
  than U.S. Navy (software cycle times faster than hardware)\*
- AEGIS capability updates are a glimpse at the future
- CENTCOM adapted quickly by establishing Chief Technology Officer



#### Taiwan 2027 (?)

- PLA "civil-military fusion" = rapid integration of commercial tech
- Estimated \$70B spending on AI
- 7M software devs vs 4.4M U.S.
- PLA Support Force (SSF) 200k strong and charged with rapidly integrating emerging digital tech



# **China' Authoritarian Al Future**

+ Global Authoritarian Agenda

+ Spending **7** 

+ Civ-Mil Cohesion

+ "Intelligentization" (智能化) of Warfare Number of AI Equipment Contracts Awarded by PLA Service Branches, April-November 2020



NUMBER OF AI EQUIPMENT CONTRACTS Source: CSET corpus of PLA procurement activity (188 contracts awarded by service branches).

### = Eroding US Navy Advantage at Sea!



### Lethality

How might AI enable us to *outthink* our adversaries' kill chain?

### Maintenance

Where can AI help deliver an 80% combat surge ready fleet?

### **Administration**

What AI tools will enhance our Sailors' on the deck plates?

The Surface Navy should not expect new warships, sensors, or hardware to arrive at scale before a potential high-end fight in 2027. Accordingly, we will prioritize digital capabilities such as software, networks, compute, and artificial intelligence to maintain a competitive edge against our adversaries.

- Laying the Digital Keel 2027 (Draft Strategy Document)

\$11.3B

FY25 DoN IT Budget Request **\$1.8B** 

FY25 DoD Al Budget Request





#### Our primary AI use case is targeted at the impact the kill chain.



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# Warfighting Data and AI Ecosystem







Al is being applied for maintenance and administrative tasks onboard warships.



#### Afloat Digital Quality of Service



A new generation of Sailors want a new digital work experience.

Sailors enter port and rush to their phones



But, there is a disconnect between the software. networks, and computers our Sailors use afloat and ashore, and what they use at home / on their phones.

#### NAVFIT98 (from 1998...)



SURFOR taking a surveybased data-driven approach to collect Sailors' feedback on afloat digital systems and providing divestment recommendations to DoN CIO's Cattle Drive.

DoN CTO Divestment Memo (back) TF HOPPER Afloat Digital QoS Info Paper

#### **Project OpenShip: AI for Watchstanders and USVs**



DDG operating with unmanned Sailordrone



Uniformed Navy software developers in action

Encoder Block	Nod Color predictor
Encoder Block	Decoder Block
:	Decoder Block
Encoder Block	: :
Encoder Block	Decoder lifeck
Co-	Decoder Block
2x Conv/D + GELU	PusiforeilFacedrig
	SOT DV 2000 00 The gass

OpenAI "Whisper" Architecture

Human watchstanders and future unmanned platforms need to communicate via bridgeto-bridge (and other) communications circuits. AI can help.

**OpenShip is government** owned code developed by a team of uniformed TF HOPPER and civilian NSWC Corona data scientists.

#### OpenShip is based on OpenAI's "Whisper" model: a best-in-class commercial automatic speech to text (ASR) transcription / translation software

\*Images are AI generated

#### Gen Al for Maintenance



"SPY GPT" is a generative Al large language modelbased chat software "trained" on AEGIS tech pubs in partnership with industry and PEO IWS for <\$1M

If a Sailor encounters an **AEGIS** maintenance challenge, they can "ask" SPY GPT how to correct the casualty, thereby increasing readiness and self sufficiency.

The Sailor is provided with step-by-step instructions, with each step citing an authoritative maintenance publication.

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29 January 2025



# **Surface Navy Software Factory**



FY2023 NATIONAL DEFENSE AUTHORIZATION ACT

"Given the competitive labor market, particularly for those possessing technical skills, the military services must leverage the existing Active Force by re-training service members who are interested in transitioning to these specialties."



Y2022 NATIONAL DEFENSE AUTHORIZATION ACT

"DoD shall... develop software competence in [servicemembers with] significant technical skill sets and experience but who lack formal education, training, or a tech-focused MOS.'



DEPUTY SECRETARY OF DEFENSE KATHLEEN HICKS REMARKS AT SXSW, MARCH 2022

"The DoD Software Modernization Strategy [enables us] to deliver software at the speed of relevance... That includes establishing a department-wide software factory ecosystem"



"DoD Components must be able to deploy joint applications and systems to the tactical edge...to enable the warfighter with faster decisionmaking capabilities"

DEFENSE INNOVATION BOARD Software acquisition and Practices study
MAY 2019

"Create new paths for digital talent (especially internal talent) by establishing software development as a high-visibility, high-priority career track..."



"The military services should create career fields in software development... [and] integrate forward-deployed development teams with operational units ... "





Army:



**IOC 2021** 

\*Air Force Software Factory Ecosystem: **IOC 2018** 

#### **Return on Investment: The USAF Kessel Run Story**



USMC:

**IOC 2023** 

\$745M to Northrup Grumman over 10 years





\$5M "Jigsaw" app by airmen \$170M annual budget and delivered in 5 months dozens of apps yearly



# **Navy Al Team of Teams**

The U.S. Navy has organized around AI in a cross-functional manner.

#### How has the Navy organized around AI?

# **Navy AI Task Forces**





#### USN AI Task Forces Role

Unique to Navy warfare enterprise, USN AI Task Forces are AI enablers, tasked with:

- **Setting Al priorities** to help guide investment in Al initiatives
- **Ensuring AI resources** are allocated to support priority AI investments across their respective warfare areas
- **Raising AI competency** in their respective warfare area
- **Coordinating with the warfighting community** in their respective warfare area

Al Task Forces are comprised of Fleet, Resource Sponsor, Acquisitions, and Science & Technology representatives.



# **Task Force Hopper Evolution**



#### Fleet + Acquisitions + **Resource Sponsor MOA**

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he team will not lose sight of the need for speed and agili et Office's initial focus will be on accustic applications and as such will er in the USE Acoustic Controlled Data Ec ions that are warfighter and operations centric to increase lethality. The sibilities of the Project Office are as foll This construct uniquely brings together Fleet and acquisition personnel into a single team focused on delivering AI/ML capability....



### How?

In 2015, then-Secretary of Defense Ash Carter established Defense Innovation Unit (DIU) to address a changing technology landscape. Today, DIU has awarded over \$5.5B in contracts to "new defense" firms.



The "change" Carter responded to is the post-Cold War shift away from government-funded R&D driving tech innovation, to a new generation of software firms.



The Navy spends less on tech produced by new entrants in the defense industrial base than other DoD components.

- SVDG NATSEC100 Report



# Thank You

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OPTIMIZE I SECURE I DECIDE