

Navigating AI At Navy

The key mental model Navy employs is the AI stack. Always start with a problem first, not AI because AI is not going to be a solution in every case.

My challenge is the Navy is a 245 year old organization. The Navy wasn't born digital and currently we are in the middle of shifting to become more digital. We are laying the keel, that foundation — because this is absolutely necessary if your aim is to scale technologies like AI.

When we talk about AI in the Navy, we recognize AI as a constellation of technologies across five bands that include Robotic Process Automation (RPA), Intelligent Automation (IA), cognitive analytics, narrow AI and even general AI.



Brett Vaughan
Chief Artificial Intelligence Officer
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The technology is straight forward in many cases, but changing the culture and the way we think and act to do AI right is one of the biggest challenges. Looking at a problem first is what I call the AI calculus of

determining whether or not AI is even the “right hammer for your given nail”.

When we break a problem down and if AI could be the solution, we work through the stack. That isn't just software; it's data, it's transport, it's compute, it's models, it's algorithms and several other components that have to be composed, held, kept coherent, secured, tested, evaluated and sustained along a consistent continuum.

If you crack open the Navy and look at the development of AI, it's really going to end up serving two ends. It's either going to fuel some level of autonomy in an unmanned system; or it's going to fuel or propel some type of decision aid. That decision aid could be on the bridge of a ship in the middle of the ocean or it could be back in the Pentagon.

The challenge of managing that continuum of keeping the stack solvent from the Pentagon to the middle of the Pacific Ocean is one of the unique challenges we have as a department.

AI In Action

Almost every day I work with the JAIC and recently we have developed the ability to actually do an inventory and view what's going on. Also recently our MG-25 Stingray, which is the first unmanned vehicle to operate off an aircraft carrier, just successfully refueled an E2 to a Hawkeye and an F-35 Joint Strike fighter. And on September 9, 2021 the Navy commissioned Task Force 59 which is the unmanned AI Task Force for the 5th Fleet.

Further, during the past couple of years, Navy Seals are using AI in ways that makes me very proud. AI use extends across all services and it's really a reaction to the recent final report of the National Security Commission on AI which put DOD on a very short game clock to be AI enabled by 2025.

So there is urgency and if you crack that report open it's huge — 1800 pages and hundreds of recommendations. There is a lot of work to do in your basic service responsibilities to man train and equip to be a more effective player on the AI field.

One thing the Navy is doing to meet our 2025 goal is establishing AI task forces at each of our “type” commanders. What I mean by that is our undersea warfare, surface warfare, aviation, special operations and information.



Brett Vaughan spoke at the Federal Executive Forum on Federal News Radio

We are establishing task forces that address both the technological side and the practice side. Organizations are determining whether a problem can improved with AI or not. Then if it can, to develop the stack and then work the stack through their given mission area.

AI is a general purpose technology, but in its application it has to be tailored and customized to a problem specific and context dependent situation. The algorithm I build or develop for a submariner is very different than one I would build for a jet pilot; they have different operating environments, different velocities, different data, different transport and the stack is different.

It is critical that we get each of those folks in those mission areas to understand what AI is, what its potential is and then how you craft it to answer their needs and problem. Then, the the entire service approach to tackling both technology and practice is one thing is the same.

It's come a long way over the last year. We now have task forces in each one of our type commanders and they are making terrific progress.

Future Efforts

The Navy has been involved in AI for decades since the 1950s. We established a Navy center for applied research and AI at the Navy Research Lab in 1981 and we have been very active. The Navy needs to move a lot of that R&D into the field. It's a priority because we have to start to get used to the technology. Increased exposure will help build trust and confidence, but for me in the next 2-3 year window, AI has a technological side and a cultural side.

On the technology side, a lot of that means moving from the lab to the fleet is about “edge” AI. So it is our intent not only to upgrade our technology kit but our practices to move impactful AI to the “edge” and for us that would be a ship, an aircraft, a Navy Seal.

AI is really going to end up serving two ends. It's either going to fuel some level of autonomy in an unmanned system; or it's going to fuel or propel some type of decision aid.

On the cultural side, there's a lot of talk about one of the reasons AI is hard, difficult and so expensive is because of the expertise required right now. Improving our AI knowledge among our sailors and marines is one of our highest priorities right now.

I am looking to see progress at the whole Naval education enterprise — The Navy Community College, the Naval Academy, Post Grad School and the Naval War College — in conjunction and in concert with our government partners and in academia.

We also have strong relationships right now with academia including Stanford, MIT and Carnegie Mellon. We hope to grow that and knit that into a cohesive fabric that will elevate our personnel organically and better equip them to do the AI calculus — matching and working through the stack as well as adopting those digital practices that I think are so critical and important to effective AI development and application. ■