

Applying a DEvelopment OPerationS (DevOps) reference architecture to accelerate delivery of emerging technologies in Data Analytics, Deep Learning and Artificial Intelligence to the Afloat U.S. Navy

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Afloat Networking Capabilities

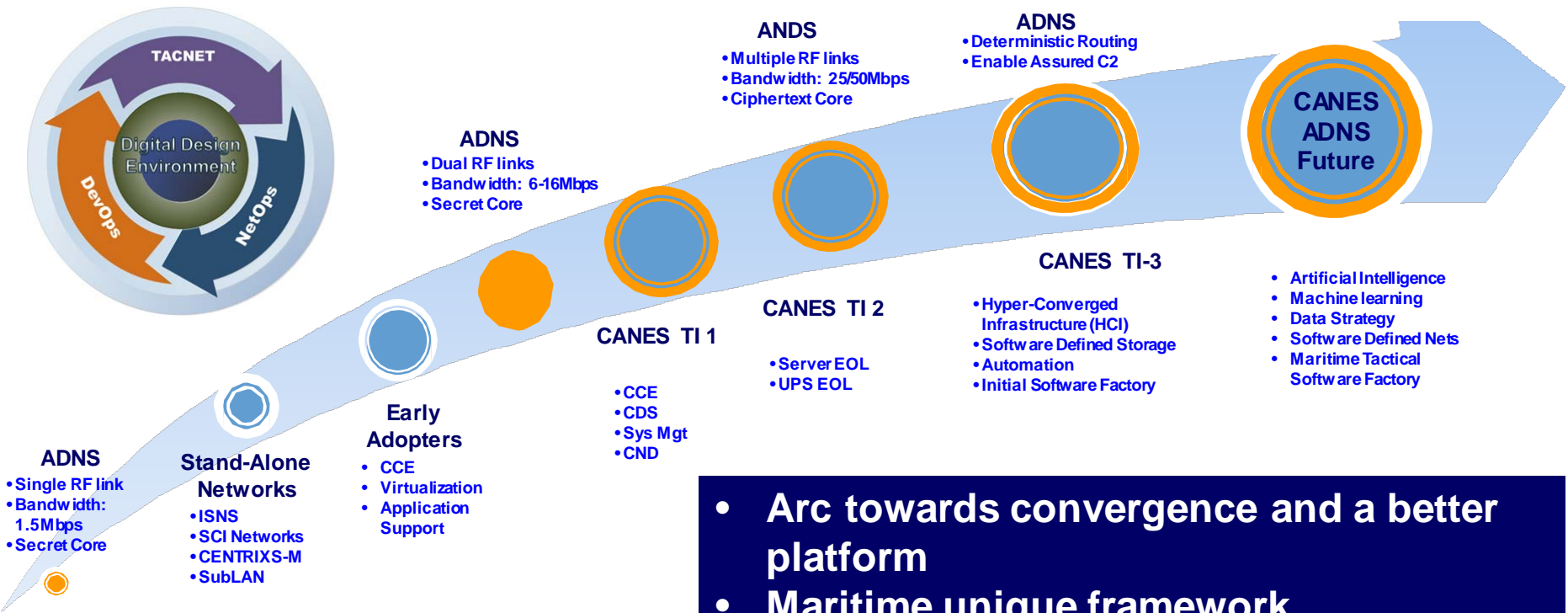
-  **Assured Network Transport:** WAN/LAN capabilities that allow data flows in a range of contested bandwidth environments across multiple off platform and link types
-  **Composable Accelerated Software:** Common software governance, testing, processes, tools and platform for provisioning across a wide service catalog from connected, hosted and Information Warfare Platform enabled
-  **Cyber Resilience@Machine Speed:** Provide capabilities, technical guidance and NETOPS procedures to defend the network from wide range of threats in a holistic framework in an accelerated threat battlespace
-  **Information Warfare Platform:** Provide common data analytics and expanded enterprise services to drive application interoperability, affordability and meet demand for improved data sharing.

“a bigger Navy, a better Navy, a networked Navy, a more talented Navy, a more agile Navy and a more ready Navy.”
Adm. Richardson CNO

Afloat Networks Past, Present, and Future

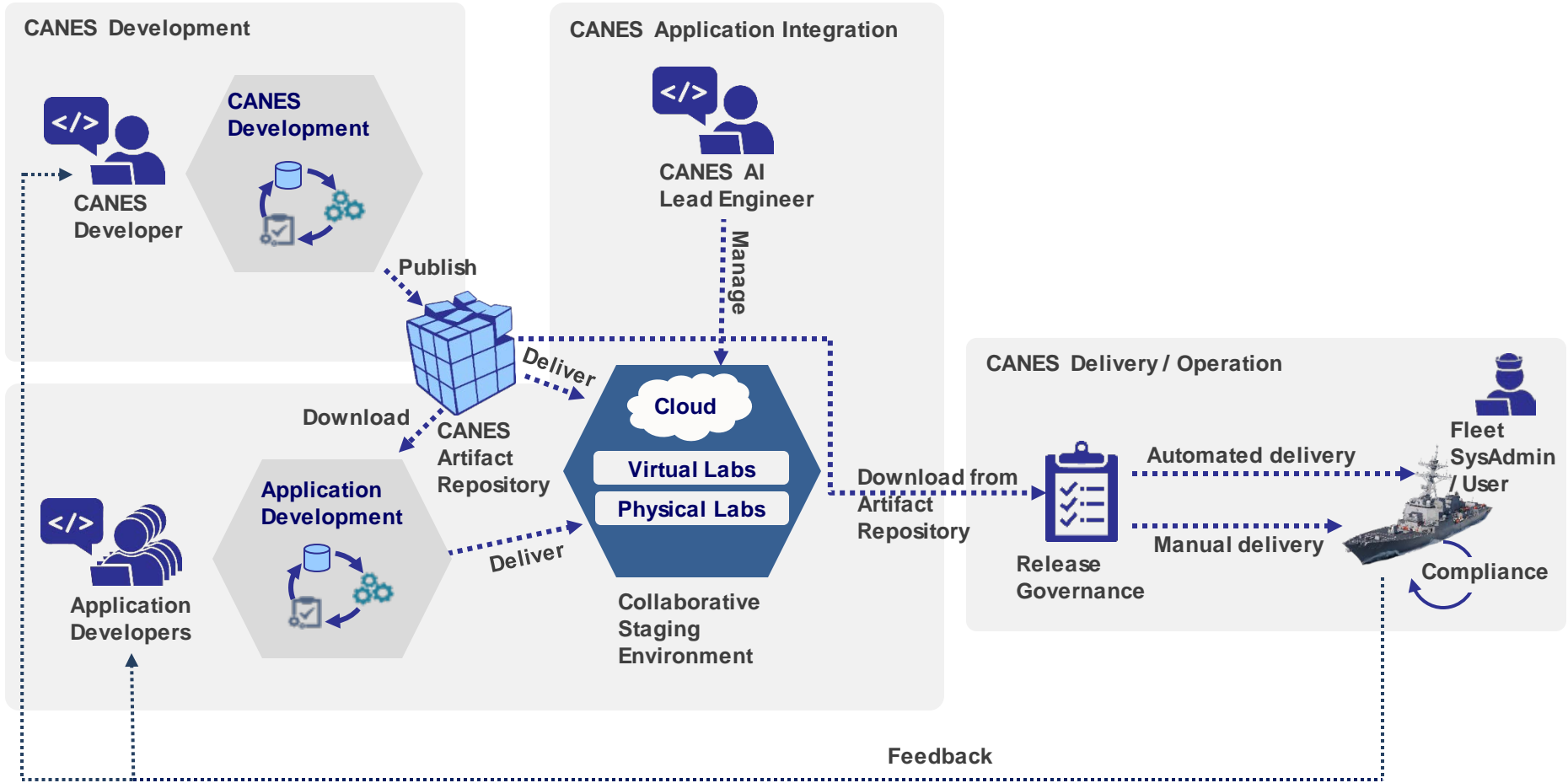


Building an Information Warfare Platform....

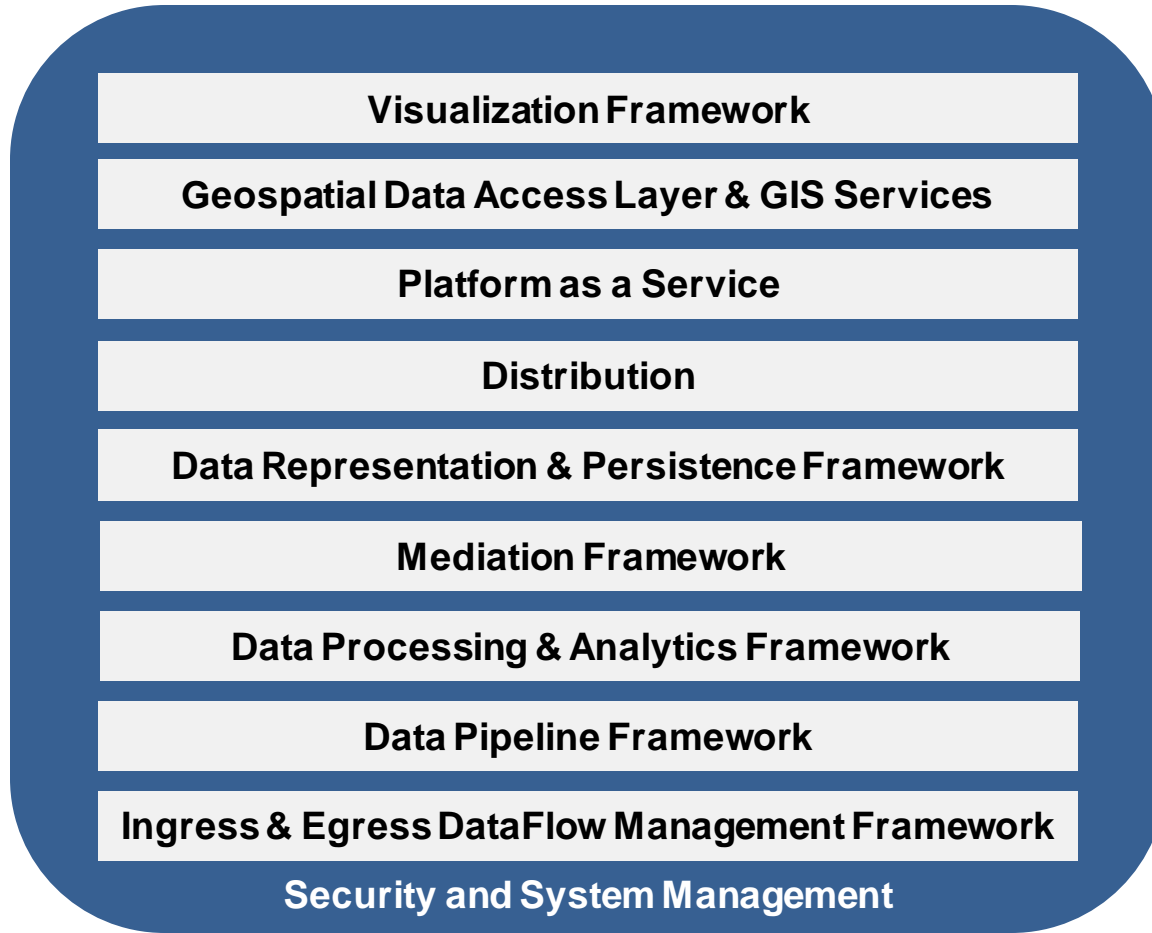


- Arc towards convergence and a better platform
- Maritime unique framework
- DevOps
- AI/ML/DL enablers across wide mission sets – not new but will drive changes to acquisition

Afloat Network Engineering Process



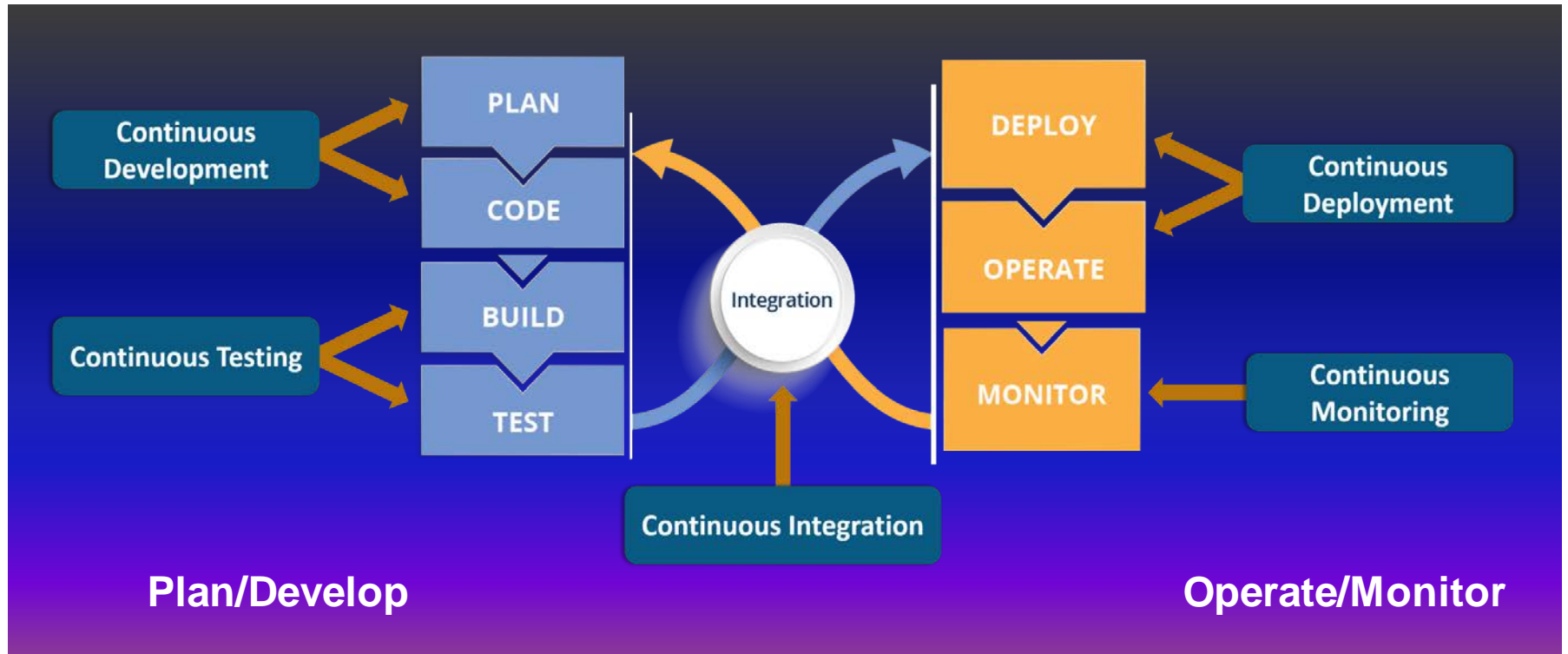
Agile Core Services Today



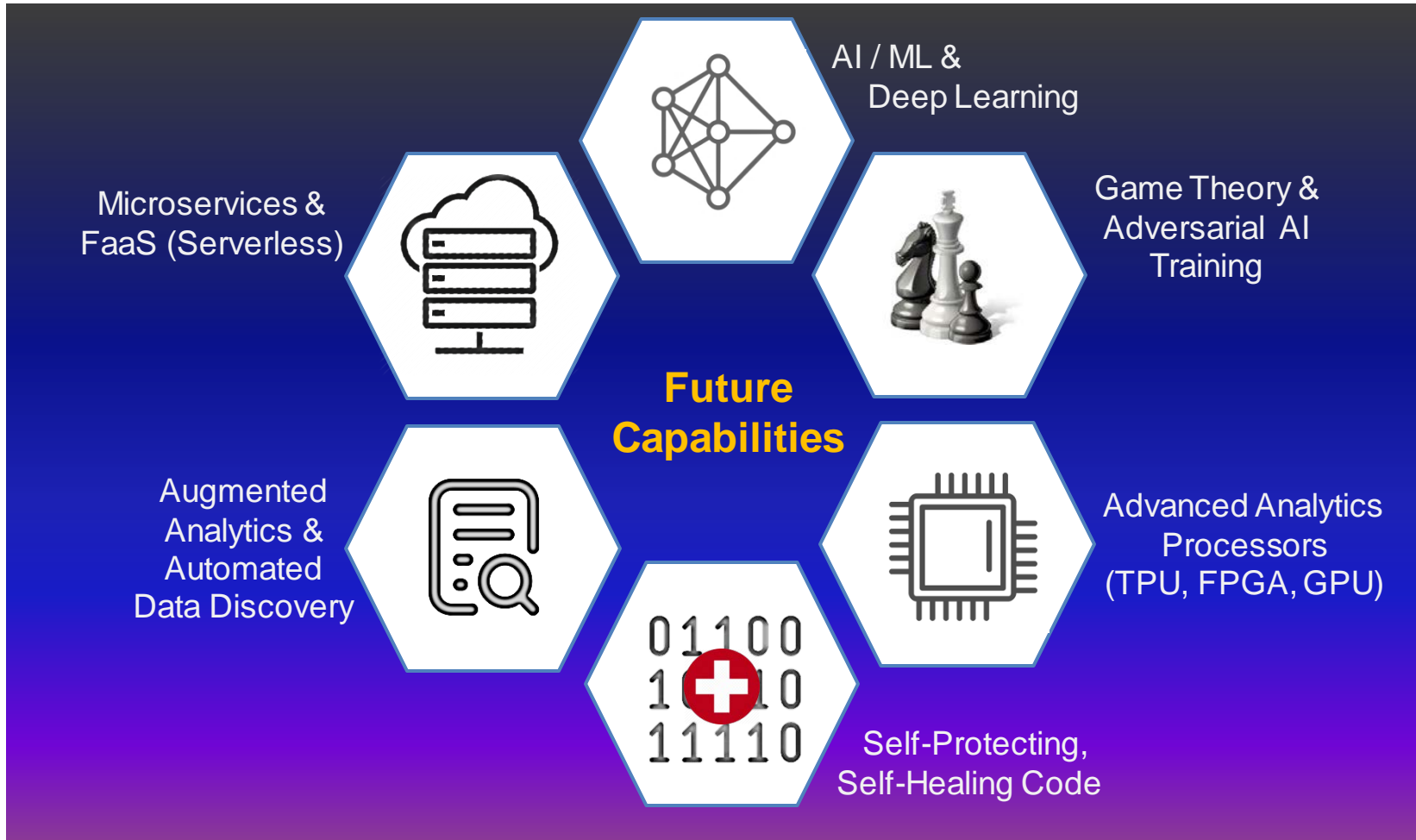
Mission Applications

DevOps Vision

- ↓ Barrier of Entry
- ↑ Speed to Capability
- ➡ Move from monolithic mission applications to mission capabilities



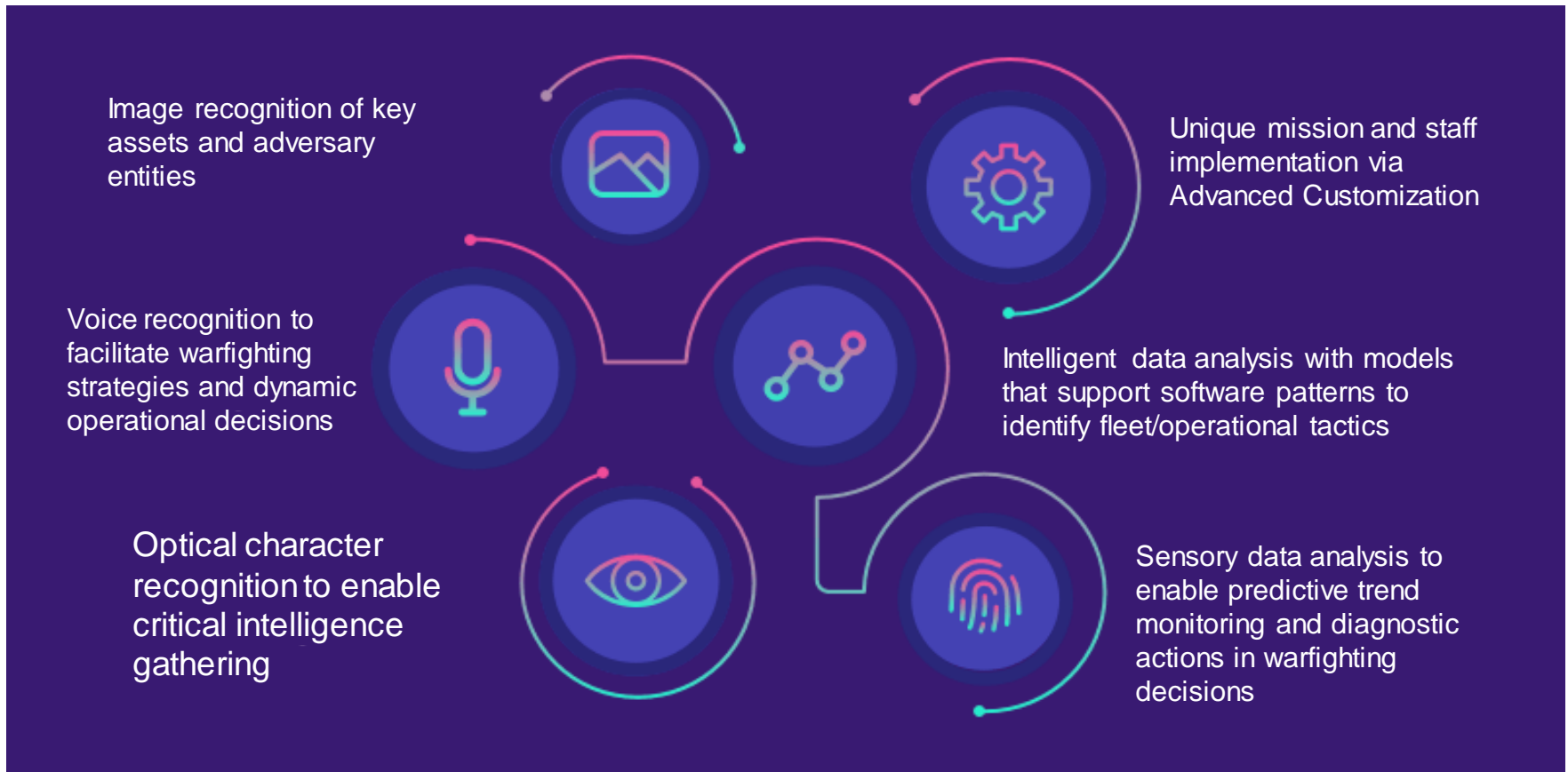
Future Data Analytics Capabilities



Fleet Employment of Technology and Challenges

Operational Challenges

- Improved Battlespace Awareness
- Faster decision cycles



Future Research

Fleet adoption of AI/DL/ML presents opportunities for multi-disciplinary research in computer science, system of system engineering and acquisition

- New AI/DL/ML approaches enabled by increased computing, storage and data management techniques
- Data characterization and volume
- Mapping commercial offerings to Ships/Submarine connectivity and compute framework

Conclusion

- Exciting times – we are fortunate to have a great team!
- Naval warfare increasingly depends on advanced software capabilities, deployed across numerous platforms and systems
- As the amount of information grows with the increase in quality and quantity of sensors and new autonomous platforms, we need to explore new technologies to maintain a warfighting edge
- Leveraging AI requires a ready compute platform
- As we integrate these types of technologies into an already complex system of systems afloat, it is critical to manage the complexity to ensure our Sailors can maneuver, maintain and master the system