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DMO Tactical Grid Edge Processing, Mission Analytics, Officer Qualification

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Monterey, California: Naval Postgraduate School

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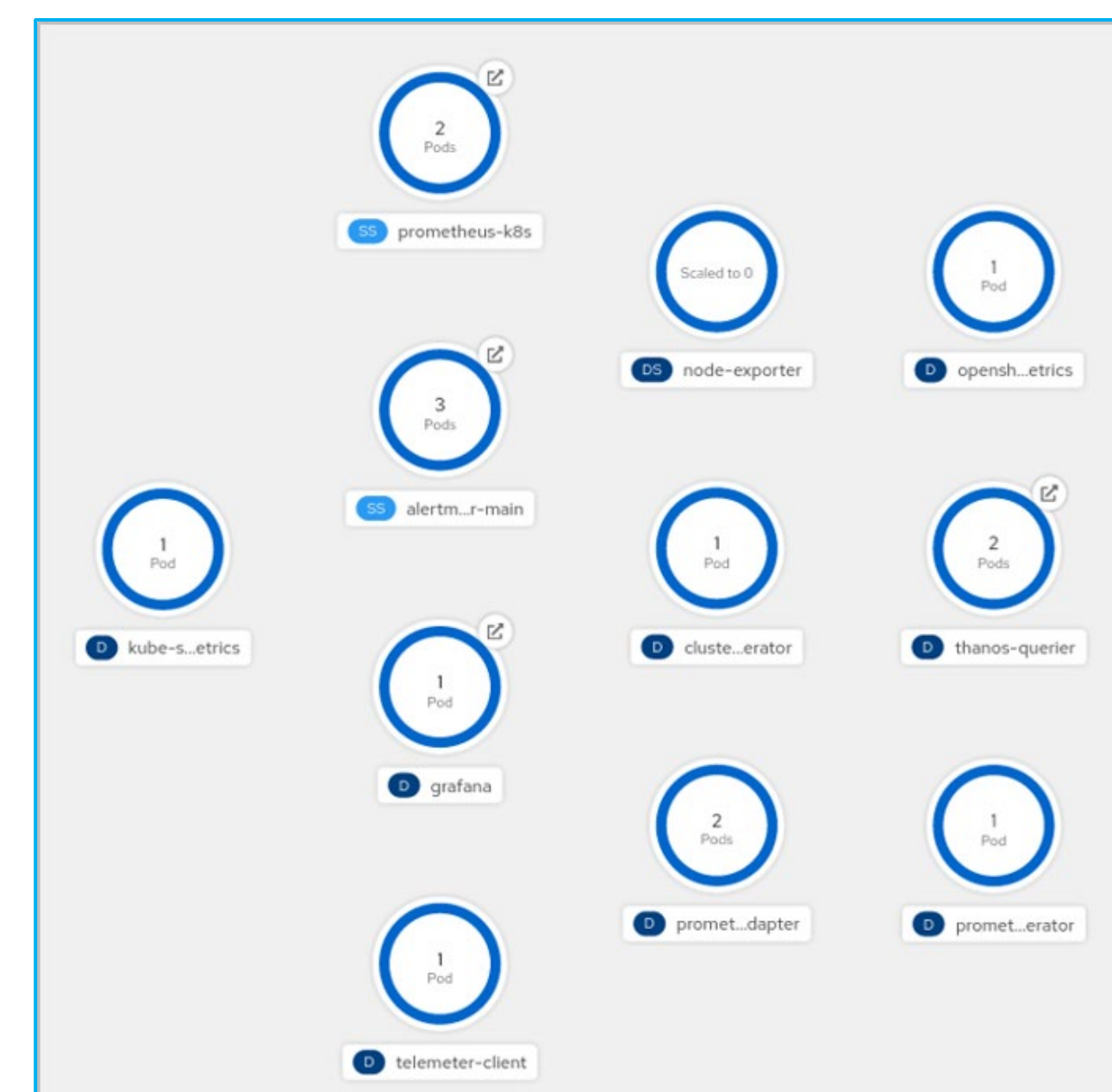
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Project Summary

The Chief of Naval Operations (CNO) has called for the design of a comprehensive operational architecture for Distributed Maritime Operations (DMO) with support for Expeditionary Advanced Base Operations (EABO):

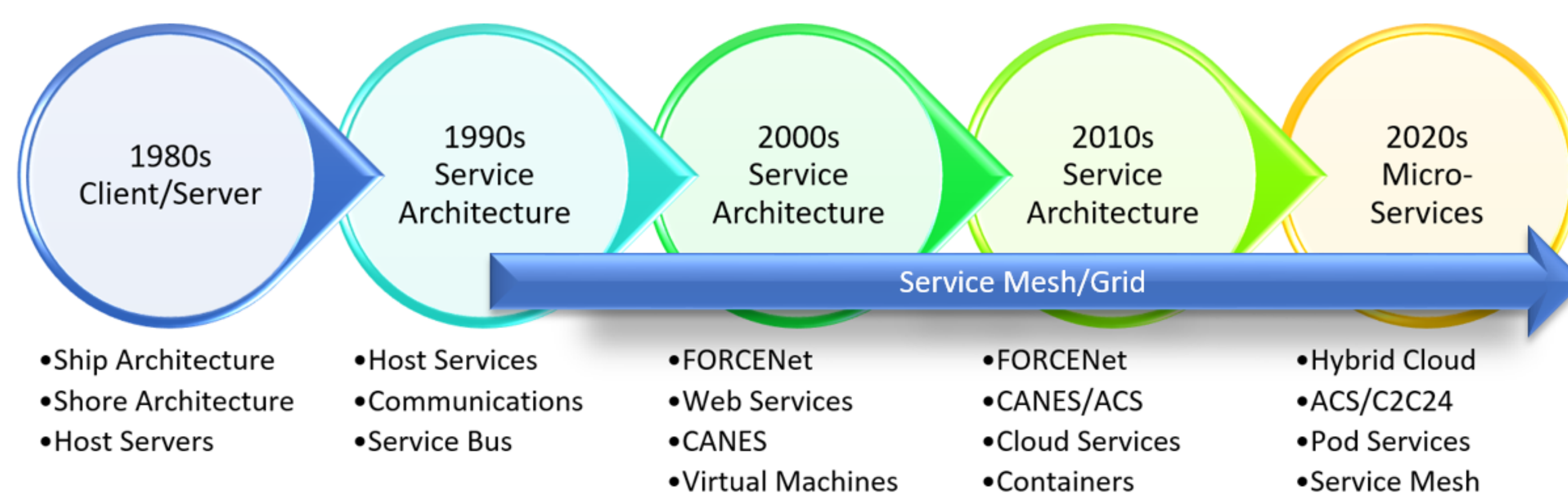
- A tactical grid to connect distributed nodes
- Data storage, processing, and technology at the nodes
- An overarching data strategy
- Analytic tools at the edge including AI/ML

This research informs DMO and EABO objectives with technical analysis of hardware, software, and processing for tactical cloud forward deployed edge nodes and supporting mesh/grid services.



Tactical edge pod service mesh

Research Objectives



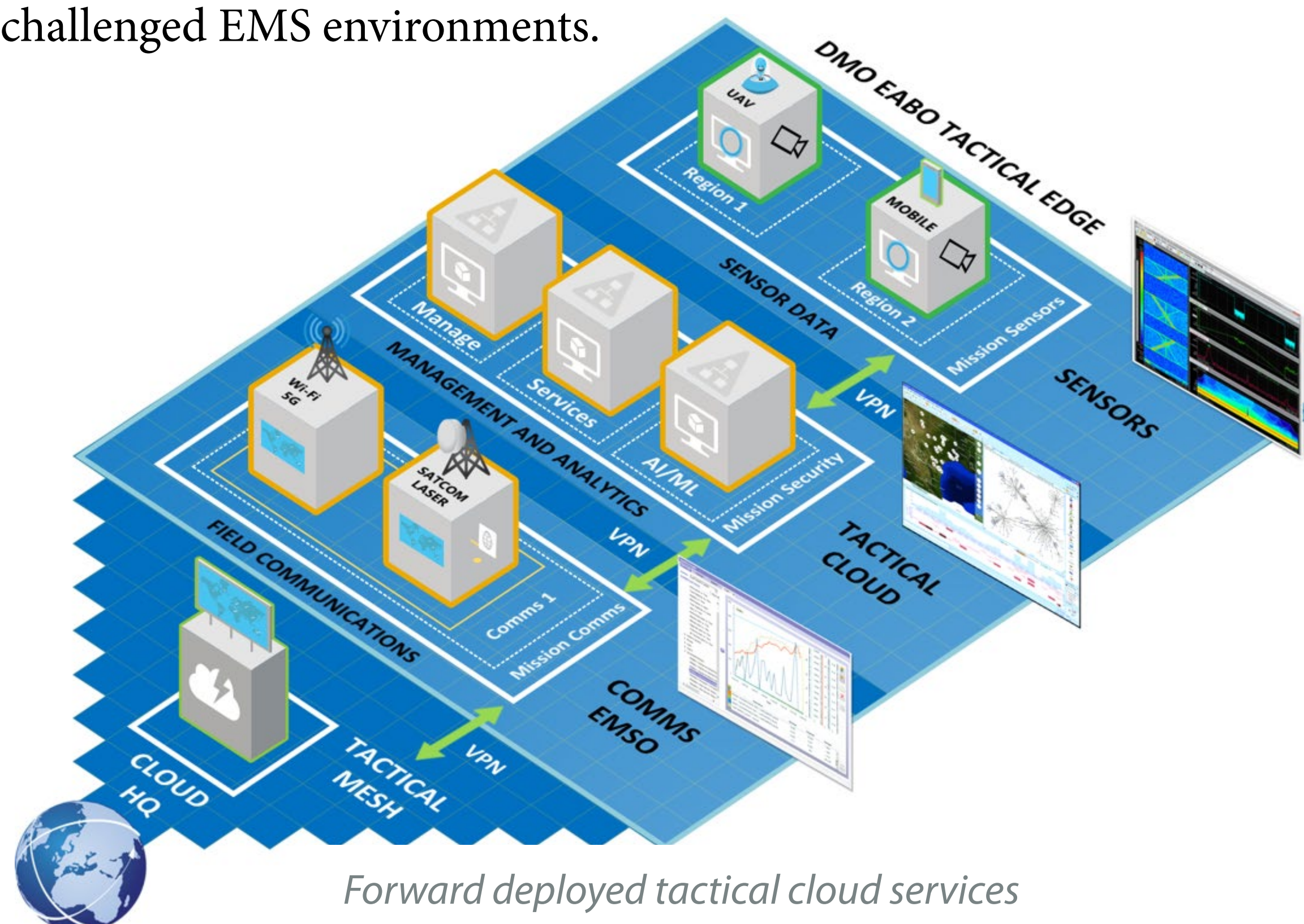
Evolution to micro-service mesh for DMO, EABO, LOCE, and the NTG

Evaluate tactical edge architecture to support:

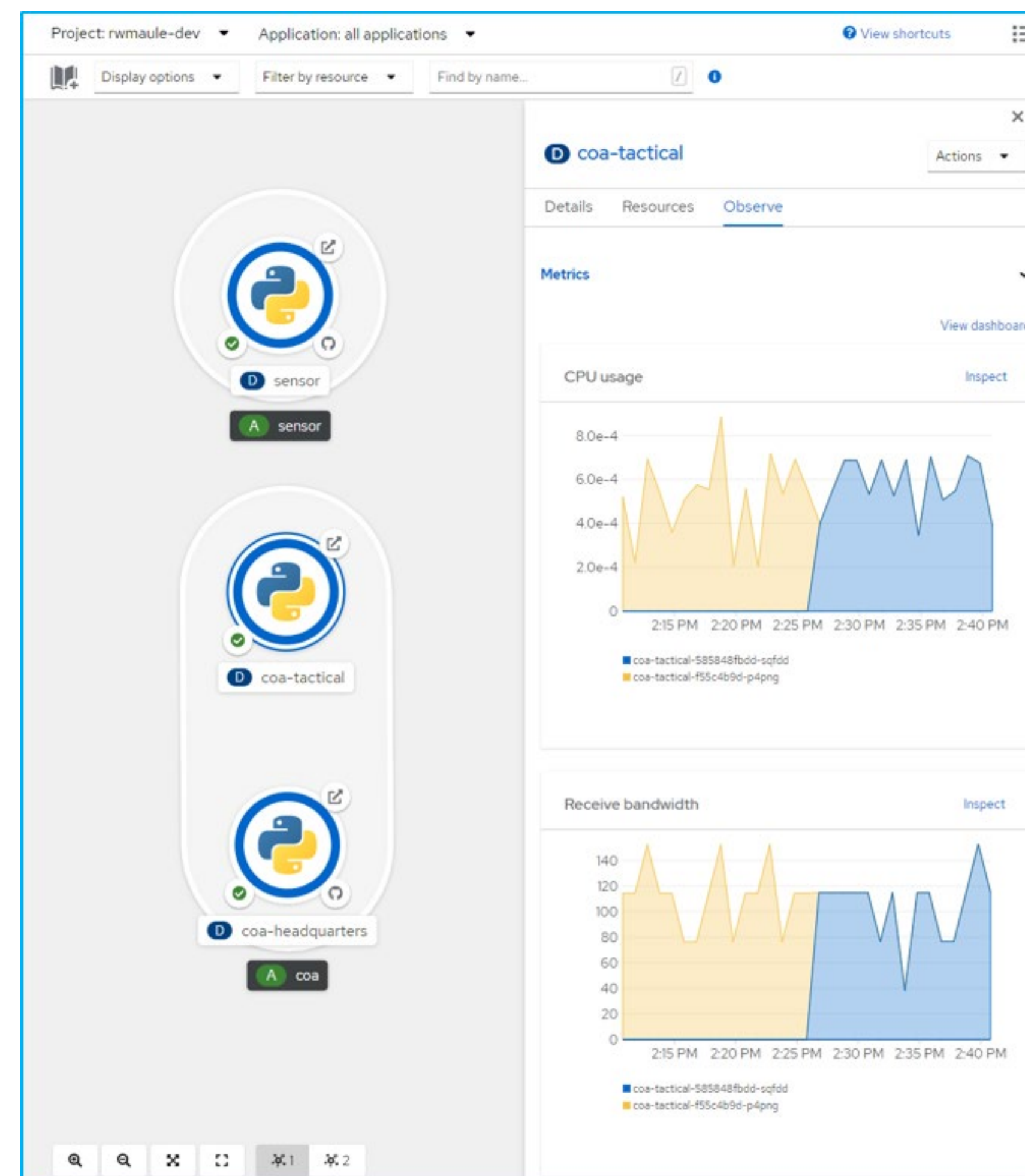
- Littoral Operations in a Contested Environment (LOCE)
- Naval Operational Architecture (NOA)
- Naval Tactical Grid (NTG)
- C2 in communication and EMS denied or degraded environments
- AI/ML at the tactical edge for forward deployed decision support

Findings and Conclusions

Hardware was evaluated to support tactical cloud edge nodes, and software to support distributed tactical cloud computing, with high security architecture suitable for forward deployed edge nodes in challenged EMS environments.



Forward deployed tactical cloud services



AI/ML tactical pods for decision support

Future Work

Future research may continue to refine AI algorithms, integrate C5ISRT technologies and sensors, and refine tactical grid operations for distributed computing and global node synchronization.



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