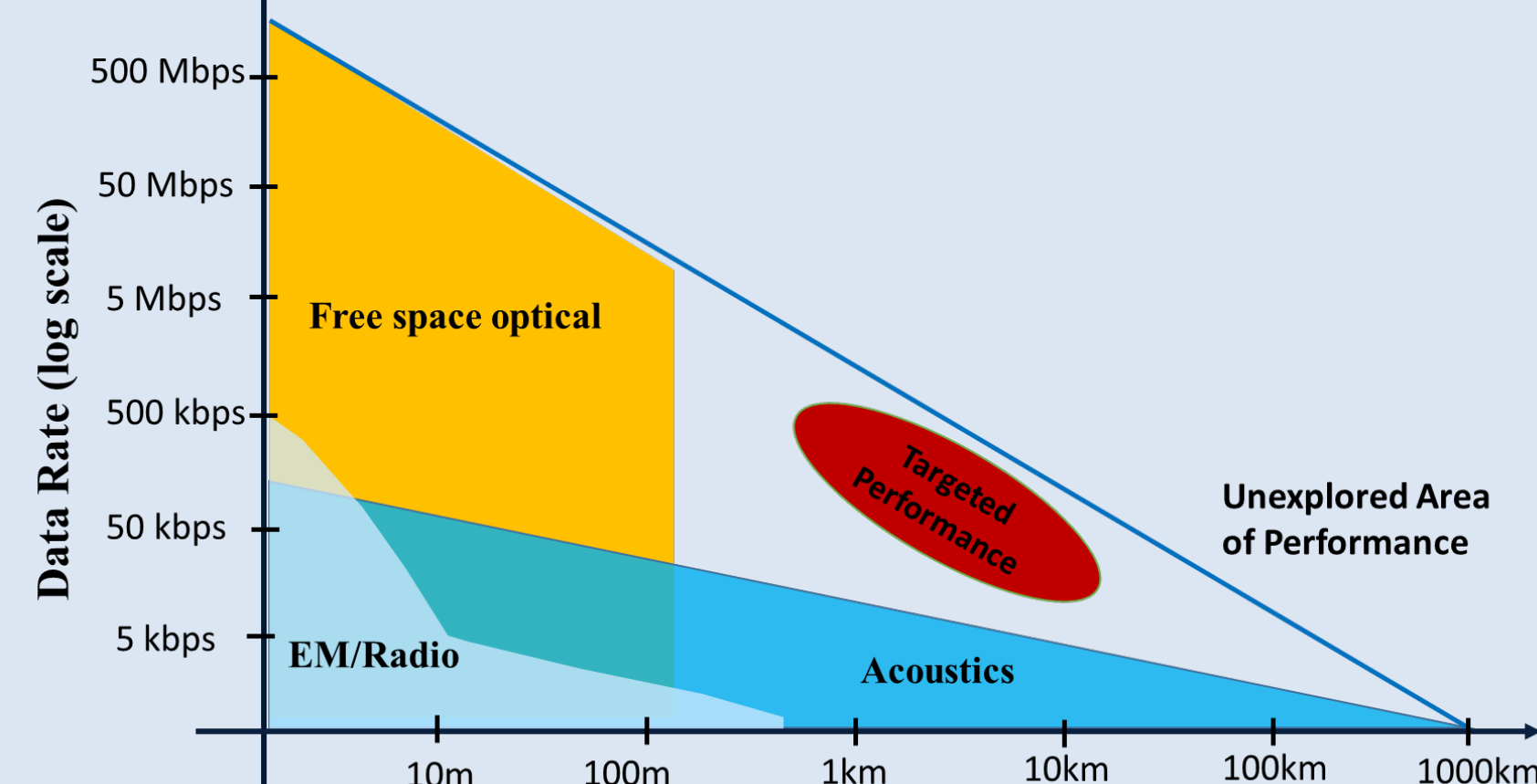


DEUS: Distributed, Efficient, Ubiquitous and Secure Data Delivery Using Autonomous Underwater Vehicles

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This is a sub-award with collaboration with Drs. Miao Pan, Aaron T. Becker, Jiefu Chen, and Zhu Han of the University of Houston. **This project aims to provide a viable cyber inter-connection scheme that enables distributed, efficient, ubiquitous, and secure (DEUS) data delivery from underwater sensors to the surface stations.**

Key Challenges: underwater wireless communication is a bottleneck for ocean sensing and mobility.



- Three means of underwater wireless communication:
1. Acoustic Comm: long and super-long distance, low data rate,
 2. Magneto-Inductive Comm: low cost, no multipath, low data rate
 3. Optical Comm: high data rate, short distance, deep water

Scientific Impact:

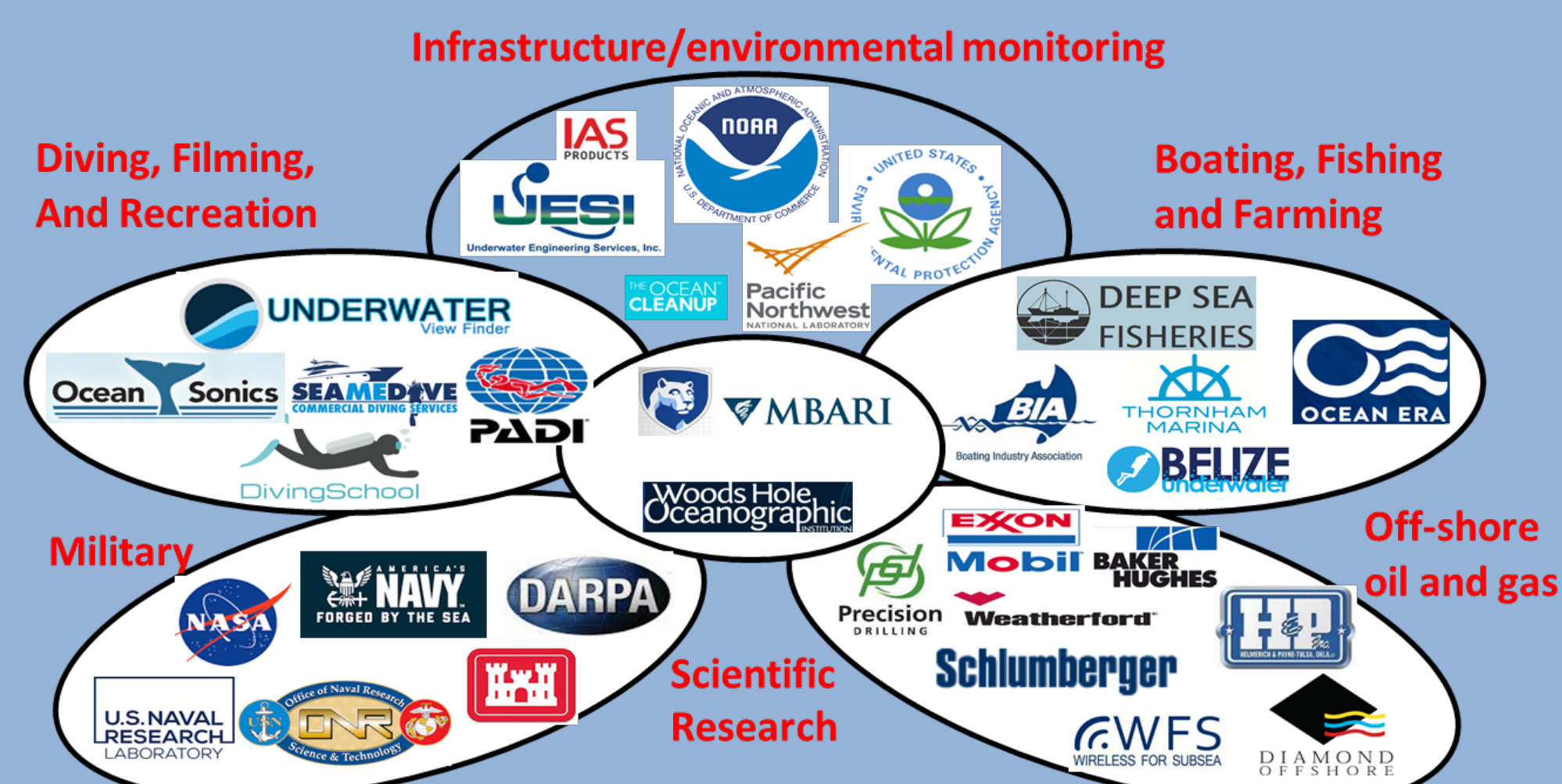
1. Improve underwater sensing and ocean big data collection
2. Enable multi-mode wireless communication in marine mobile robotics
3. Improve security in IoT communications and networks

Solutions:

Short range communications + Autonomous Underwater Vehicles
 MIMO + Turbo Equalization for Acomm



Broader Impact: 6 customer sectors



Broader Impact: three new courses:

1. Embedded Systems: w/ TI TivaWare
2. Accelerated Computing for Deep Learning: w/ Nvidia GPU
3. Introduction to Robotics: adopted F1/10 race car platform & courseware

F1/10 Robotic Race Competition @IFAC 2020: won 2nd place

