Key use cases for ROS 2: embedded systems, DoD products, and multi-robot systems.

In collaboration with the Open Source Robotics Foundation (OSRF), we propose to design, build and evaluate an update of the Robotics Operating System (ROS) that addresses two DoD/DoN specific issues:

- Cyber security for robotics
- Robustness to intermittent communications (e.g., mesh networks and acoustic communications)

NPS and OSRF will collaborate on the development of ROS 2 through combined design efforts, development of DoD-specific use-cases, guest lectures and seminars by OSRF developers and dedicated technical support from OSRF software engineers to support NPS thesis students.

Evidence suggests that ROS 1 is the de facto standard in the academic and development communities, including government research labs and warfare centers (http://wiki.ros.org/Metrics).

A barrier for rapid transition of many of these emerging capabilities is the distinct software needs for DoD programs, including verifiable cyber security and robustness to intermittent communications.

By participating directly in the development or ROS 2, NPS can help ensure that these capabilities are part of the foundational design to speed future transitions of DoN robotics capabilities.