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**CONSORTIUM FOR ROBOTICS AND UNMANNED SYSTEMS
EDUCATION AND RESEARCH (CRUSER):
FY17 Annual Report SUMMARY**



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Weaving the threads



Consortium for Robotics and Unmanned Systems Education and Research

Figure 1. CRUSER program innovation threads as of September 2017

EXECUTIVE SUMMARY

From Technical to Ethical...

From Concept Generation to Experimentation...

Since 2011 the Naval Postgraduate School (NPS) Consortium for Robotics and Unmanned Systems Education and Research (CRUSER) has sought to create and nourish a collaborative environment and community of interest for the advancement of unmanned systems education and research endeavors across the Navy (USN), Marine Corps (USMC) and Department of Defense (DoD). Originally authorized by an Under Secretary of the Navy (USECNAV) memorandum dated 1 February 2011, CRUSER is an initiative designed to build an inclusive community of interest around the application of unmanned systems in naval operations. CRUSER seeks to catalyze these efforts, both internal and external to NPS, by facilitating active means of collaboration, providing a mechanism for information exchange among researchers and educators with collaborative interests, fostering innovation through directed programs of operational experimentation, and supporting the development of an array of educational ventures. These activities are considered to be in direct support of the Secretary of the Navy's (SECNAV) priorities regarding unmanned systems. On 16 March 2017, the Acting SECNAV issued a follow-on memorandum establishing the Deputy Assistant Secretary of the Navy – Unmanned Systems as the lead office for coordination and directed the Office of Naval Research to support CRUSER efforts through FY23.

CRUSER captures a broad array of issues related to emerging robotic and autonomy related technologies, and encompassing the successful research, education, and experimentation efforts in unmanned systems currently ongoing at NPS and across the naval enterprise. Controls, sensors, design, architectures, human capital resource requirements, concept generation, risk analysis, cybersecurity, and field experimentation are just a few interest points. In February 2013 the CRUSER community of interest reached the 1,000-member mark, and continued to grow. As a demonstration of CRUSER's relevance and reputation, as of September 2017 the CRUSER community of interest included nearly 3,200 members from government, academia and industry.

The new focus for CRUSER in FY-17 was to increase the interaction with, and impact on, other members of the naval communities associated with robotics and autonomous systems. This

included direct interactions with the Deputy Undersecretary of the Navy – Management and the Deputy Assistant Secretary of the Navy – Unmanned Systems offices. As part of this focus on senior leadership interaction CRUSER leadership has advised both DUSN and DASN on matters relating to robotic and autonomous systems and actively engaged with the DASN Unmanned Community of Interest to increase the knowledge sharing and collaboration potential with members of the CRUSER COI. This enhanced engagement included broader participation by both government and industry in CRUSER activities to include both the TECHCON and Warfare Innovation Continuum Workshop. Additionally, CRUSER worked more closely with other OSD communities of interest by interacting in the field experimentation environment to include aligning field experimentation efforts with OSD sponsored activities to enable multiple collaboration activities and enhanced information sharing. Finally, CRUSER hosted the first of three planned panel sessions focused on providing novel and focused input on issues related to the increasing integration of robotic and autonomous systems across the navel enterprise. To the extent practicable, each of these activities included industry and academic participants as well as NPS and other government participants.

This Annual Report provides a summary of the many activities executed during CRUSER’s seventh year of operation and serves as a consolidated archival record for the sponsors, the CRUSER team and the entire Community of Interest.

The full FY17 CRUSER Annual Report includes:

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