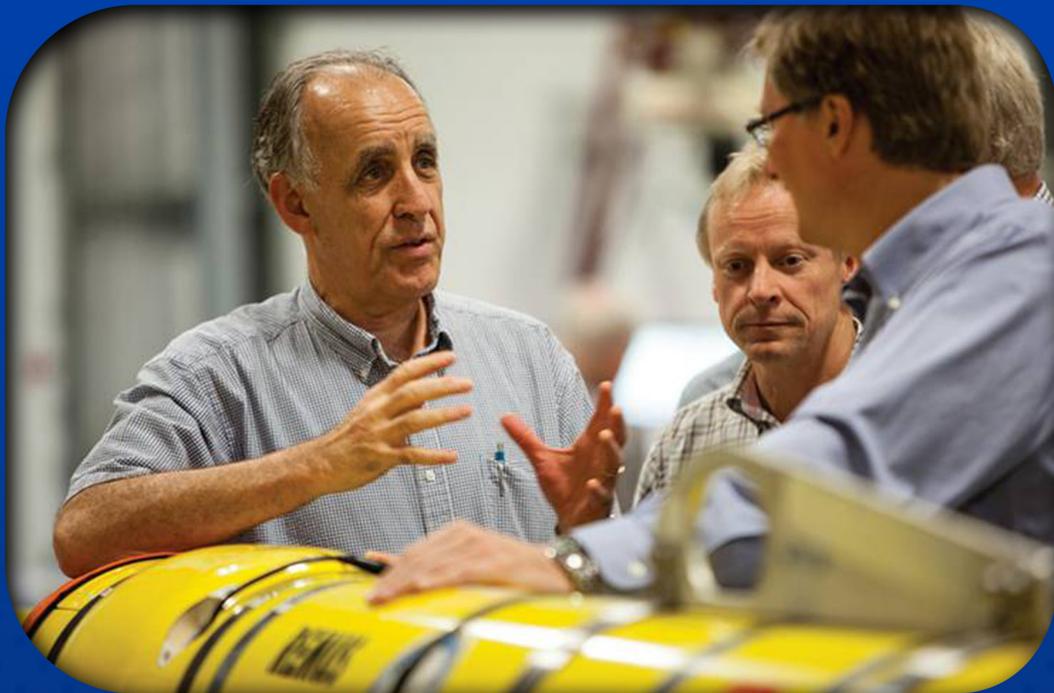




Distinguished
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Oceanography, REMUS and Mine Warfare: An Historical Perspective



Presented by: Hydroid co-founder and former president,
Chris von Alt

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Oceanography, REMUS and Mine Warfare: An Historical Perspective

Over the past 30 years, ONR has demonstrated effective leadership in the successful support of rapid development, fielding and commercialization of numerous marine robotic systems and subsystems. One important area of innovation made possible by ONR involved fielding the Remote Environmental Monitoring UnitS (REMUS) family of autonomous robotic systems. This investment stands out because today these commercially available systems are in active use by over 18 nations, as well as by scientific and commercial communities worldwide. More importantly, these systems are valued by the warfighters that utilize them, because they work, they save time, they save money and they have pretty much eliminated the need for humans to actively participate in the complex and dangerous missions REMUS vehicles now undertake autonomously.

How did this happen and why has ONR had this success?

It began when ONR decided to direct a team of engineers from the Woods Hole Oceanographic Institution, who had developed a small highly portable autonomous underwater vehicle called REMUS, to collaborate with warfighters from the Special Operations Command — to establish through field experimentation if such a system could provide the capabilities required to get these men out of the minefield.

This collaborative approach developed capabilities and requirements incrementally, with those most important to the warfighter having priority. It also established a sense of ownership with the warfighter, ingraining a desire to make the tool work within that community. Thus, ONR's approach not

only developed a tool that was of value to the user, but it also established a community of informed users within the Navy and its laboratories that could further improve and refine the tool's capabilities.

This collaborative approach to acquisition is known as the Users Operational Evaluation System (UOES). It has been adopted by Explosive Ordnance Disposal (EOD) and others in the Navy and has been utilized extensively to further develop and refine the REMUS family of systems.

EOD teamed with ONR to develop both the MK18 Mod 1 and Mod 2 systems using this collaborative approach. In 2012, a Fast Lane initiative was started when a contract was awarded to Hydroid in May of 2012 to manufacture and deliver four Mk18 Mod 2 vehicle systems to CF5 in Bahrain by July of 2013. These systems were delivered on time, and by February of 2015, these systems had logged over 2,600 hours of operations in the fleet and established a 98 percent availability rating.

Improvements and refinements continue to be made to these systems today, using the UOES process at minimal cost to the Navy. As a result, many of the original systems that Hydroid has delivered to navies worldwide are still in use after the systems have been upgraded to include new capabilities that have been identified through the UOES process.

Mr. von Alt will trace the history of the development of these systems and others from the mid 1980s to today, establishing how effective and fun this collaborative acquisition process has been.

ABOUT Mr. Christopher von Alt

Mr. von Alt has more than 30 years of experience developing, fielding and operating towed, tethered, and autonomous underwater vehicle systems and seafloor observatories that function in water depths ranging from 10 - 6,000 meters. During the course of his career, Mr. von Alt co-founded and led the world famous Oceanographic Systems Laboratory of the Woods Hole Oceanographic Institution and oversaw the conception, development and fielding of numerous undersea robotic systems by this laboratory.

After 20 years at the Woods Hole Oceanographic Institution, Mr. von Alt co-founded Hydroid, creating an independent company whose mission is to commercialize and further develop the REMUS family of marine robotic systems. Mr. von

Alt served as the chairman of the board and/or president of Hydroid from its inception in 2001 until he stepped down in January of 2016. Under his leadership, Hydroid became the world's largest provider of autonomous underwater vehicle systems, which are now operated by over 18 independent navies.

Mr. von Alt received a degree in Electrical Science from the University of New York at Stony Brook in 1978 and a Masters degree in Ocean Engineering from M.I.T. in 1984. He received the IEEE Oceanic Engineering Society's Distinguished Technical Achievement Award in 2011 for his work involving the development and fielding of autonomous underwater vehicles.

