

Takeaways from the AOC International Symposium and Conference

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From the proliferation of smart phones to the introduction of self-driving cars, the last decade has brought sweeping technological advances across all industries. This new and continually changing reality was on everyone's mind at the recent Association of Old Crows (AOC) Symposium and Conference held in Washington. The symposium theme, "Winning the Electromagnetic Spectrum Domain: A Culture and Mind Shift," captured the sentiment clearly.

Fifty years ago the high cost and extended development time of RF systems limited operation in the electromagnetic spectrum. You could choose your frequency with the confidence that interference from others operating at the same frequency would be minimal, or at the least, delayed. However, the times have changed. Now, when I heat up leftovers in the microwave oven my wireless baby monitor temporarily loses its connection. Addressing these challenges truly requires a culture and mind shift.

While the symposium discussed many topics, there are two key takeaways I believe are worth focused attention. The first takeaway is the challenge of operating in the congested and contested electromagnetic spectrum. Not only can the adversary employ jamming technology, but our own use of the spectrum limits the available frequency bands. The second takeaway is the required paradigm shift on the part of government and industry. The old, slow method of specifying and procuring electronic warfare (EW) systems is no longer sufficient to achieve and maintain control of the electromagnetic spectrum (EMS).

Starting with the first takeaway, as the world's hunger for data and the availability of low-cost RF transceivers increases, it becomes challenging to locate available frequency bands. Additionally, since different countries allocate the spectrum differently, the operating frequencies will likely need adjusting for varied geographic locations. On top of this, the current frequency allocations are flexible and open to change. This commercial and industrial usage of the EMS results in congestion that limits the operational frequencies for military and defense systems. The second contributor to the congested and contested spectrum is intentional jamming. With the availability of high-performance commercial components and the ability to digitally implement EW techniques, the adversary can quickly develop an advanced electronic attack capability. As General Paul Selva said in his keynote address, in the digital space, fast followers can quickly jump right past you.

Achieving EMS superiority in this dynamic environment requires the ability to quickly maneuver through the spectrum ahead of the adversary. This maneuverability not only necessitates the development of advanced EW systems, but also the rapid deployment of these systems. This brings us to the second key takeaway—we can no longer afford to spend a decade specifying, developing and deploying EW systems. In his keynote address, Mr. Dana Deasy, the CIO for the U.S. Department of Defense (DoD), described one possible new procurement philosophy. Instead of waiting for the government to specify and fund new programs, the supplier base must use a more innovative approach that combines elements of the commercial and defense industries to apply targeted IRD resources on the technologies required for EMS superiority. By proactively creating new technologies ahead of the lengthy procurement cycle, new systems can be deployed to the field much sooner.

As the Symposium wrapped up, we all headed to the exhibition hall to see how various suppliers were adapting to these new challenges. Fortunately, companies like Mercury Systems and others are investing in a new business model that uses IRD funding to develop open architectures that enable the rapid deployment of new technologies. Instead of waiting for a source control drawing to design a custom solution, products that meet these open architectures can be created in advance and then slightly modified for specific programs. This approach begins to address these new challenges by providing a technology that can be quickly integrated and updated; thereby supporting the critical need for superiority of the EMS.