Military
EMBEDDED SYSTEMS

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Military Committed to Unmanned Platforms

U.S. Air Force courtesy photo.

It's unmanned systems issue time again: That means it's time for the annual xPonential event, which is being held virtually May 4 -6 this year due to the ongoing pandemic. This issue will appear virtually there as well; AUVSI has also announced that the event will be held in person in Atlanta August 16-19. That's good news. Even more positive news: The continued growth of the unmanned systems market plus renewed commitment from U.S military leadership to leverage autonomous systems.

The U.S. Department of Defense (DoD) reconfirmed its focus on unmanned systems at the recent virtual 2021 Unmanned Systems Defense Conference, also run by AUVSI. Speaking at the conference, Rear Adm. Brian Corey, Program Executive Officer for Unmanned Aviation and Strike Weapons, said that "the U.S. military must better prepare to address a changing and dynamic threat landscape. Specific capabilities that support the needs of future missions include vertical takeoff and landing, ease of transportability, noise reduction, and sense-and-avoid capabilities," according to an AUVSI blog.

Navy officials echoed this commitment in the service's Unmanned Campaign Framework, which you can view in depth here: https://bit.ly/2PIRwBq.

"There is a clear need to field affordable, lethal, scalable, and connected capabilities," says Adm. M.M. Gilday, Chief of Naval Operations, in the framework. "That is why the Navy is expanding and developing a range of unmanned aerial vehicles (UAVs), unmanned undersea vehicles (UUVs), and unmanned surface vessels (USVs) that will play key roles as we shift our focus toward smaller platforms that operate in a more dispersed manner."

Commercial partnerships will also be key as the military is no longer the driver of innovation in autonomous systems.

"For the Navy, investing in common manned/unmanned C2 and cross-cutting platforms will provide an incredible force multiplier," writes Dawn Zoldi – Colonel, USAF, Retired and the CEO of P3 Tech Consulting LLC – in her Industry Perspective on page 10. "It seeks commercial partners for a myriad of projected intelligence, studies, wargames, experiments, exercises, testing, modeling, and simulation efforts. The good news for industry is that the Navy has historically put their money where their mouths are, when it comes to research and development (R&D)."

Quoting Vice Adm. Moran, "Industry will be a huge partner. You can look at our budgets. We're committing to this." Zoldi writes that this pledge "opens up an ocean of possibilities for potential for industry."

Working with commercial suppliers, especially in the embedded electronics space, means greater adoption of open architectures, too. The Navy campaign is laying down five goals, which includes creating "a capability-centric and sustainable approach for unmanned contributions (platforms, systems, subsystems) to the force – through a modular and open system environment that will include common standard interfaces, common data and autonomy libraries, an integrated network/naval tactical grid, common control system and interface," Zoldi writes.

Open architectures like the Sensor Open Systems Architecture (SOSA) Technical Standard 1.0, set to be released this summer, would be a natural fit for the Navy's initiatives and is already being considered by embedded systems designers.

For example, open-architecture initiatives like SOSA enable improved signal processing and reduced size, weight, and power (SWaP) in unmanned system payloads, reports Technology Editor Emma Helfrich in the Mil Tech Trends feature on page 24.

"SOSA will inspire competition from vendors to provide more performance in their board-level products for wider bandwidths, higher channel densities, increased digital signal processor capabilities, and faster system interfaces," says Rodger Hosking, VP and cofounder of Pentek, in Helfrich's article. "All of these can benefit SWaP in [UASs] by reducing the number of boards in [UAS] systems."

The DoD and the Navy's commitment to new platforms and embracing of open architecture bodes well for embedded hardware and software suppliers, but the hottest market within the military space might well be counter-UAS (C-UAS) technology, as unmanned platforms become more complex and dangerous threats, especially when they form in swarms.

"Small drones are an asymmetric threat to troops on the ground because an adversary can spend a few hundred dollars on a drone to take out expensive equipment worth much more," says Michael Blades, vice president of Aerospace and Security for Frost & Sullivan (San Antonio, Texas) in the Special Report on page 16. "If you have 50 or 100 drones coming at you it's a vastly different situation than simply one or two drones. If you can't detect, identify, and mitigate swarms quickly, you're in trouble."

C-UAS technology will also rely heavily on radar systems, sophisticated sensors, signal-processing systems, and other technology that leverages open standards. You can see all of these by attending xPonential virtually this month and in-person in August. We'll be at each, in booth #2264. See you soon.

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