

FTCN Replay: Here is Why EW is Cool

By Ken Miller

In a recent episode of the From the Crows' Nest podcast, I had the pleasure of speaking with Dustan Hellwig, founder and CSO of Chesapeake Technology International. The conversation delved into the latest developments in distributed, collaborative and autonomous electronic warfare (EW), particularly focusing on the role of artificial intelligence (AI) and machine learning in modern military strategies.

Understanding Collaborative and Autonomous EW

Hellwig started by explaining the basic concepts of distributed and collaborative EW. "Distribution really just means we've got more than one actor involved in our mission focus," he said. This approach allows for multiple units to operate in concert, whether tightly coupled or spread across a battle space and is fundamental to modern military tactics.

Autonomy in Military Operations

One of the key aspects of the discussion was the integration of autonomy at various levels. According to Hellwig, autonomy can significantly extend human capability. "We've been discussing these things like forward lines of robots versus the forward line of troops," he explained, highlighting how autonomous systems can keep human forces out of harm's way while still projecting force against the enemy.

Advantages of Autonomous Systems

Hellwig pointed out the advantages of using autonomous or semi-autonomous systems, particularly in special operations. "It gives us longer reach," he said, comparing the advantage to having longer arms in basketball. These systems can alleviate trust issues by initially acting as extensions of

human operators before gradually taking on more autonomous roles.

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The Complexities of EW

The conversation also touched on the complexities of the electromagnetic spectrum (EMS) battlefield. “Our community’s greatest weakness is also its greatest strength: our dependence on the spectrum,” Hellwig noted. Different operational environments and needs, such as signals intelligence versus offensive electronic attack, require distinct approaches, complicating the management of the EMS battlefield.

Technological Integration and Challenges

Discussing technological advancements, Hellwig emphasized the importance of integrated apertures and software-defined radios. “The ability to communicate, sense, and attack through the same system is interesting,” he said. The integration of machine learning at the edge, allowing operations without communication, is also crucial in denied environments.

Commercial Innovations and Military Applications

Hellwig highlighted the convergence of commercial and military technologies. “We used to do very poorly at appreciating what commercial innovation brought to the table,” he admitted. Today, leveraging technologies developed for commercial applications, such as smartphones’ dense sensor capabilities and cloud services, is crucial for modern military operations.

Adapting to Emerging Threats

Reflecting on recent conflicts, Hellwig discussed the impact of low-cost, unmanned drones. “We built our military around fast-moving threats, but we’re being overwhelmed by low-cost, slow-moving drones,” he said. The military’s ability to quickly adapt and develop relevant countermeasures has been

critical in addressing these new threats.

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Strategic and Cultural Shifts

Hellwig also called for strategic and cultural changes within military acquisition processes. “Any strategy that doesn’t incorporate speed and flexibility within the EMSO warfighting environment is flawed,” he asserted. The traditional methods of acquiring technology are too slow and a mindset shift towards rapid deployment and adaptability is necessary.

The Role of Younger Generations

The integration of younger generations into the military technology landscape is another area Hellwig emphasized. “Let’s elevate their voices,” he urged, noting that younger professionals bring fresh perspectives and a natural affinity for technology that can drive innovation in complex military operations.

Ethical Considerations in AI and Autonomy

Finally, Hellwig addressed the ethical considerations of AI and autonomous systems. He argued for a clear distinction between AI applications that augment human capabilities and those that replace human decision-making. “We should segregate those discussions,” he said, emphasizing the need to build trust in autonomous systems through constraints and configuration rather than direct control.

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