FTCN Replay: Why EW Training Must Shift from Fixed Threats to Dynamic Adaptability

The future of electromagnetic warfare training requires a fundamental shift away from scripted scenarios against known threats toward preparing warfighters to react to constantly evolving spectrum environments, according to an Air Force veteran now leading efforts to revolutionize EW capabilities.

David Coyle, a 20-year Air Force veteran and CEO of **Disruptive EW Machines (DEWM)**, argues that current training approaches leave warfighters unprepared for the dynamic, high-density threat environments they'll face in modern combat. In a recent episode of the **From the Crows' Nest** podcast, Coyle outlined how programmable, adaptable systems can close critical gaps in preparing forces for electromagnetic spectrum operations.

"We need to start training to react to a changing EMSO," Coyle said. "It can't just be, I have threat X and I have this tactic against threat X, and I'm going to go out and I'm going to execute that by the book every time that I see threat X."

From Kill Chains to Kill Webs

The problem, according to Coyle, is that modern EW has evolved from a "kill chain" to a "kill web," with sensors and threats becoming ubiquitous, cheaper, and commercialized. Yet training systems haven't kept pace.

"We've generally been training largely to a one versus one type of a fight," he explained. Traditional approaches train warfighters against specific, known threats with predetermined tactics. But contemporary conflicts reveal a different reality – one where threats can modify their signatures rapidly and

proliferate across the battlefield in unprecedented numbers.

The genesis of Coyle's current work traces back to 2017, when he was stationed at Luke Air Force Base supporting the transition from fourth to fifth-generation fighters. Pilots repeatedly asked him to increase threat density in training scenarios, but the equipment couldn't match the ambition.

"I can write that in the scenario, but you're still going to go fly against the same equipment that's out there," Coyle recalled. The solution emerged from combining software-defined radios with new amplifier technology to create what became known as the Low Cost Threat Emitter.

Programmable Rather Than Pre-Loaded

DEWM's approach represents a departure from conventional EW training systems. Rather than building equipment with fixed threat libraries, the company creates completely programmable platforms that can be reconfigured on the fly.

"We've created a wide open system that allows the user on the ground to be able to then program it to be whatever the threat of the day is," Coyle explained. "It's just totally different from what we've really seen out there available for training or even operations."

This flexibility addresses what Coyle sees as a critical weakness: the inability to rapidly adapt to emerging or modified threats. In modern conflicts, adversary systems don't follow old rules with just a few frequencies or parameter sets. "These things have thousands of modes or hundreds up to thousands of modes, some of which that we have maybe not even seen or collected or analyzed yet," he said.

The company's flagship product, DART (DEWM's Attritable Radar Target), operates across multiple frequency bands including C-band, S-band, and X-band (in development). The system's low size, weight, and power requirements enable unprecedented

mobility and deployment flexibility. Coyle's team has operated emitters on the ground, in pickup trucks, from building balconies, on autonomous vehicles, and aboard surface vessels.

Effect Over Requirements

Rather than building to specific requirements, DEWM focuses on achieving effects in the simplest, most cost-effective way possible. This philosophy aligns with recent acquisition reform proposals from Defense Secretary Pete Hegseth that emphasize fielding "good enough" technology quickly.

"That statement was really kind of speaking to my heart," Coyle said. "Let's get something out there today that focuses on that effect, that achieves that effect, and let's build from there."

Perhaps most innovative is DART's dual application: Beyond replicating adversary systems for training, it can generate friendly signals for military deception operations, turning spectrum awareness into the adversary's problem rather than solely focusing on maintaining friendly awareness.

The AI Integration Path

Looking ahead, Coyle sees artificial intelligence and machine learning as critical to the future of electromagnetic spectrum operations. DEWM is already collaborating with other companies developing AI-enabled receivers that can identify and classify novel signals in real-time, working in tandem with DEWM's rapidly reconfigurable emitters.

"As we look forward to the future of electromagnetic spectrum operations with software-defined systems that are becoming ubiquitous and proliferated across the battlefield, as evidenced by what we see in Ukraine, systems like that are going to be absolutely critical to be able to survive in a future conflict," he said.

The approach represents a broader shift in defense technology

development — one that prioritizes speed, adaptability, and cost-effectiveness over perfection. For warfighters facing increasingly dynamic electromagnetic environments, that shift may prove essential to maintaining battlefield advantage.