FTCN Replay: Are We Losing Ground in EW Across DOTMLPF?

The recent discussion between John Knowles and Ken Miller on the "From the Crow's Nest" podcast sheds light on the evolving role of Electromagnetic Spectrum Operations (EMSO) in modern conflicts and military strategy. While the conversation spanned various topics, several crucial themes emerged regarding the current state and future challenges in EMSO.

> *"EMSO has never been more important to warfare; it's at the core of modern conflict."*
> *– John Knowles*

The Growing Importance of EMSO

The world is in an increasingly restless , and conflicts across the globe emphasize the critical role of EMSO in modern warfare. The electromagnetic spectrum (EMS) is not just a battlefield for data; it's a domain where control or disruption can significantly influence the outcome of engagements. With the increasing use of offensive and defensive battle networks, the need for effective EMSO has never been more apparent. As Knowles pointed out, the data in motion – transmitted through EMS links and sensors – is vital, making EMS a central element in military operations.

Despite progress in technology and material capabilities, the military remains behind in areas such as personnel, organizational leadership, and training. Knowles emphasized that while advancements in material resources are evident, the other aspects of Doctrine, Organization, Training, Materiel, Leadership, Personnel, and Facilities (DOTMLPF) are lagging.

Learning from Ongoing Conflicts

The discussion highlighted the military's tendency to invest in electronic warfare (EW) primarily during conflicts, making

progress uneven. Lessons from Ukraine, for example, have exposed the challenges and opportunities within EMSO, including GPS jamming and targeting of communication devices. Both Ukraine and Russia have demonstrated new techniques in EW, pushing military forces worldwide to adapt and learn quickly. However, translating these lessons into training and real-world applications remains a challenge, especially when live training environments are limited by the complexities of simulating the EMS.

The Challenge of Procurement and Progress

One of the major issues discussed was the slowdown in procurement for EMSO-related capabilities. Various systems and programs are lagging behind their original timelines, including the F-15's EPAWSS upgrades and the Army's Common Infrared Countermeasures (CIRCM) initiatives. The ripple effect of these delays can compromise the military's overall networked capability. Once a project falls behind, catching up is often unrealistic due to budget constraints and the complex nature of integrating large-scale systems. Although some programs, like counter-drone initiatives, are gaining traction, the broader procurement landscape still faces significant hurdles.

> *"The biggest challenge with AI in EW is the simulation problem—we need synthetic electromagnetic environments to train effectively." – John Knowles*

The Role of AI in EMSO

The rapid advancement of artificial intelligence (AI) introduces both opportunities and challenges for EMSO. AI has the potential to enhance situational awareness and decision-making, but it also requires training models that account for the full spectrum of potential threats. According to Knowles, there is a substantial gap in creating synthetic electromagnetic environments to adequately train AI models. Furthermore, as AI continues to develop, the military must

address concerns about privacy, security, and the ethical use of data, particularly when using commercially available data sources.

The Road Ahead for EMSO

EMSO’s future hinges on the military’s ability to learn, adapt, and invest in comprehensive capabilities across the DOTMLPF spectrum. While material advancements continue, Knowles argues that personnel development, organizational reforms, and realistic training must catch up. The U.S. and its allies must not only learn from ongoing conflicts but also anticipate the needs of future engagements, especially in increasingly contested electromagnetic environments.

The evolving nature of warfare demands a shift from traditional linear thinking to a more dynamic, networked approach where EMS is treated as a maneuver space. The military’s success in future conflicts will depend on its ability to integrate new technologies, speed up procurement, and ensure that AI models are trained to handle diverse and emerging threats. As EMSO becomes an increasingly central aspect of military strategy, addressing these challenges will be crucial for maintaining a competitive edge on the global stage.

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