



Winning the Adaptation Battle

Multi-Spectral Deception, Interoperability
and the Role of the Mission Partners

TEAM FORTITUDE



Mission Partners

NOUN. PLURAL.

Trusted and dedicated SME's working alongside military operators, trainers and capability developers to accelerate experimentation, training and operational learning.





The Truth about Modern Warfare

The war in Ukraine has reinforced a fundamental truth about modern warfare...

...the side that adapts fastest gains the advantage.

Across the land domain, the proliferation of uncrewed systems, advanced sensor, electronic warfare capabilities and precision effects has accelerated the pace of battlefield innovation to unprecedented levels. Technologies that provide a tactical advantage today may become obsolete within months as adversaries develop countermeasures and adapt their tactics.

For Defence, this creates a strategic challenge. Traditional acquisition, training and doctrinal development cycles were designed for an era where capability evolved over **decades**. Modern conflict increasingly demands adaptation measured in **weeks and months**.

This challenge is particularly pertinent with deception.

Historically, deception could often be achieved through a single effect, whether physical, electronic or informational. Modern sensor fusion has changed that reality. Adversaries increasingly combine radio frequency (RF), thermal, acoustic, visual and radar signatures to identify, classify and target forces.

As a result, Electronic Warfare Deception alone is no longer sufficient. Effective deception must become **integrated, combined** and **multi-spectral**.

The challenge for Defence is therefore twofold:



The requirement to rapidly adopt emerging technologies



Ensuring operational cohesiveness as part of a wider force.

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Mission Partners such as **Team FORTITUDE** have a critical role in supporting this effort, working alongside military operators, trainers and capability developers to accelerate experimentation, training and operational learning. Equally important are interoperability standards that enable emerging capabilities to communicate and operate together without imposing unnecessary barriers to innovation.

Adaption as a Warfighting Advantage

One of the clearest lessons from Ukraine is that adaptation itself has become a warfighting function.

Across the Russian Ukrainian conflict, new technologies have been introduced, modified and countered at a pace rarely seen in modern warfare. Commercial drones have been transformed into battlefield sensors and strike systems. Electronic Warfare techniques have evolved continuously. Software updates and hardware modifications have often been introduced in response to operational feedback measured in days rather than months.

The implication is significant.

The military organisation that can rapidly identify, evaluate and exploit emerging technologies gains a substantial operational advantage over one constrained by lengthy development cycles.

Future success will depend not solely upon technological superiority, but upon the ability to **learn, adapt** and **integrate** new capabilities **faster** than an adversary.

The Evolution of Deception

The character of Deception is also changing.

Historically, Deception often focused on a **single domain**. False radio traffic, physical decoys or carefully managed information operations could create sufficient uncertainty to influence enemy decision-making.

Modern battlefields combine information from multiple sources, including RF emissions, electro-optical sensors, thermal imaging systems, acoustic sensors, radar systems, satellite imagery, uncrewed systems and more. These sources are **increasingly fused together** to create a comprehensive understanding of the operational environment.

As a result, Deception can no longer rely on manipulating a single signature:



Risk: Being spotted

A false RF emitter without corresponding thermal characteristics may quickly be identified as a decoy



Risk: Failed effects

A convincing visual decoy without expected electromagnetic activity may fail to generate the desired effect



Risk: Defeat

A deception plan that focuses on a single sensor type risks failure when confronted by a multi-sensor adversary



Multi-Spectral Deception

Electronic Warfare remains a critical component of Deception but is no longer sufficient in isolation.

Future deception capabilities must be capable of **synchronising** and **coordinating multiple signatures** including:



RF Emissions



Visual Effects



Thermal Effects



Radar Returns



Acoustic Signatures



Autonomous and Uncrewed Systems

The objective is not merely to generate a false signal.

The objective is to create a **believable alternative reality** capable of influencing adversary decision-making across multiple sensing domains.

This represents a shift from Electronic Warfare Deception towards **Integrated Multi-Spectral Deception**.

Success will increasingly depend upon the ability to coordinate multiple effects rather than optimising individual technologies in isolation.

Training as Forces Expect to Fight

The lessons from Ukraine reinforce the need for **realistic operational training**. Training conducted under uncontested conditions risks preparing forces for an environment that no longer exists.

Operators, Commanders and Planners must therefore gain experience working within contested and degraded environments. Equally important, they must understand how Deception capabilities can be integrated into wider operational plans.

This can only be achieved through **experimentation, realistic training and continuous learning**.

The Role of the Mission Partner

The speed of technological change increasingly exceeds the pace at which Defence can independently evaluate every emerging capability.

Mission Partners provide a mechanism for accelerating military adaptation. Importantly, Mission Partners do not replace military expertise, doctrine development or operational decision-making. Those responsibilities remain firmly within Defence. Instead, Mission Partners work alongside military operators, trainers and capability developers to accelerate learning and capability maturation.

By introducing emerging technologies into realistic operational environments, Mission Partners can:



Support experimentation



Accelerate user feedback



Provide specialist expertise



Inform capability development



Contribute evidence for doctrinal evolution.

The military defines the operational challenge. The Mission Partners help explore potential solutions.

Together they enable Defence to move more rapidly from technological opportunity to operational advantage.

Innovation Must be Integrated

Rapid innovation alone is not sufficient.

Ukraine has demonstrated that operational success increasingly depends upon the ability to connect sensors, effectors, decision-makers and support systems into a coherent operational architecture. The challenge is therefore not simply introducing new capabilities. It is ensuring that those capabilities can share information, coordinate effects and contribute to a **common understanding of the battlespace**.

The requirement becomes particularly important when considering Multi-Spectral Deception, where success depends upon the coordination of numerous systems operating across different domains. Integration is not a technical luxury. It is an operational necessity.



The Importance of Open Interoperability Standards

As Defence seeks to modernise, there is a tendency to view standards primarily through the lens of architectural compliance.

While approaches such as **MOSA**, **SOSA** and **STICS** provide important benefits in terms of modularity, openness and long-term sustainment, they **are not the only mechanisms** through which interoperability can be achieved.

For rapidly evolving capabilities, particularly those developed by SME's and non-traditional suppliers, the immediate **challenge is often operational integration** rather than architectural conformity. This is where open interoperability standards such as SAPIENT have particular value. **SAPIENT** provides a common standard through which sensors, effectors and command systems can exchange information and interact operationally. Importantly, SAPIENT does not dictate how a capability should be designed internally. Instead, it **defines how capabilities communicate** and share information.

This distinction is critical.

It allows innovative technologies to be integrated rapidly into operational environments while retaining the flexibility to evolve in response to changing threats.

For Defence this delivers several advantages:



Faster integration of emerging technologies



Reduced reliance on bespoke interfaces



Increased participation by SME's



Improved interoperability



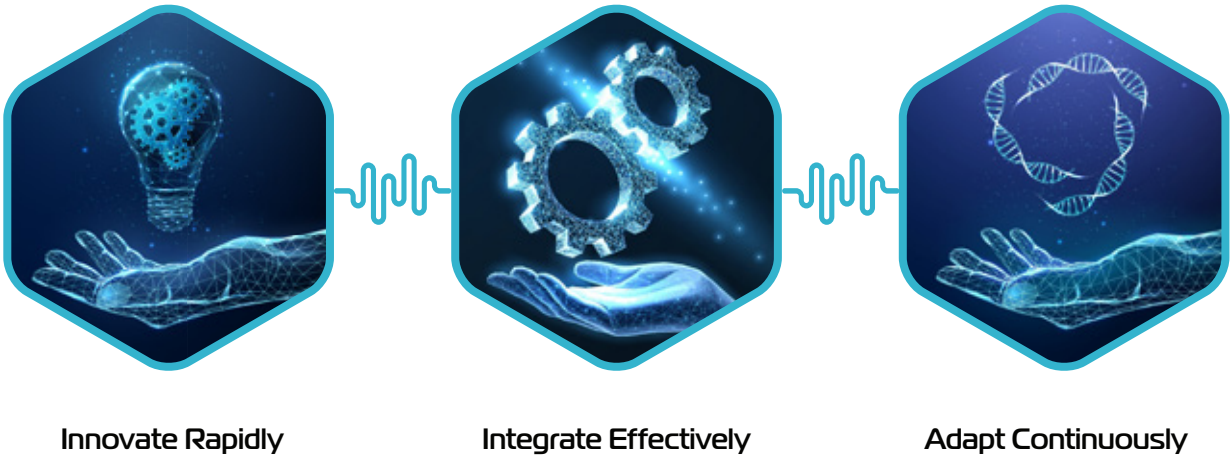
Accelerated experimentation and operational learning.

As deception capabilities become increasingly distributed across RF, thermal, acoustic, visual and autonomous systems, the **ability to coordinate** these effects becomes **as important as the technologies** themselves. Open interoperability standards therefore become key enablers of operational agility.

Conclusion

The lessons emerging from Ukraine are clear.

The future battlefield will reward organisations that can:



Electronic Warfare Deception remains a critical capability, but the evolution of sensor fusion and persistent surveillance means that **future success** will depend increasingly upon **Integrated Multi-Spectral Deception**.

To succeed in this environment, Defence must be able to identify, evaluate and adopt emerging technologies at operational speed.

Mission Partners such as **Team FORTITUDE** have an important role in supporting this effort, working alongside military organisations to accelerate experimentation, training and capability development.

At the same time, open interoperability standards such as SAPIENT provide a practical means of **integrating diverse capabilities** into a coherent force **without** creating **unnecessary barriers** to innovation.

The challenge is not choosing between innovation and standards; the challenge is ensuring that innovation, integration and operational learning occur simultaneously.

Those who can achieve this balance will be best positioned to fight and win the next war...



Team FORTITUDE

Giving Defence partners the operational edge

TEAM FORTITUDE brings together trusted SMEs to deliver agile, sovereign, and integrated Electronic Deception capabilities tailored to the needs of the modern battlespace.

Our mission is to deliver trusted innovation that gives our defence partners the operational edge.

Combining deep knowledge in RF engineering, software-defined systems, data integration, secure communications, and mission focused delivery, TEAM FORTITUDE offers the UK MOD and allied nations a trusted, flexible and scalable innovation-led approach to countering evolving threats across the electromagnetic spectrum.

This mission partner approach enables rapid, sovereign innovation across multiple domains, with a focus on interoperability, scalability, and resilience in real-world operations.



Technical Assurance



Reduced Risk



Timely Delivery



Faster Outcomes



Deeper collaboration with MOD

Some of our members:



PentenAmio.com



filtronic.com



mercuryew.com



1415INDUSTRIES.COM

Glossary of Terms

C5ISR	Command, Control, Communications, Computers, Cyber, Intelligence, Surveillance, and Reconnaissance is a foundational defence and security framework designed to integrate data, sensors, and communications to give commanders real-time situational awareness, enabling them to make faster, data-driven decisions
EW	Electronic Warfare
MOD	Ministry of Defence
MOSA	Modular Open Standards Approach is a technical and business strategy for designing affordable and adaptable systems
RF	Radio Frequency
SAPIENT	Sensing for Asset Protection with Integrated Electronic Networked Technology uses autonomy to reduce the workload of people operating multi-sensor systems, in security and defence scenarios
SME	Small to Medium-sized Enterprise
SOSA	Sensor Open Systems Architecture is a technical standard designed to transition hardware and software from proprietary designs to interchangeable, interoperable modules
STICS	Standards for Integrated C5ISR/EW Systems is a framework that allows the UK military to deploy advanced technologies faster while avoiding vendor lock-in

All information correct at the time of document creation.
We reserve the right to amend document information in line with development.





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