# Digital Engineering Conference 2025

## 18-19 March

Implementing Digital Engineering:

## DAY ONE- INSPIRING CHANGE AND UNLOCKING POTENTIAL

The annual Digital Engineering Conference was a resounding success, attracting a packed audience with over 500 Industry and MOD delegates over the two days. This event united key defence leaders, industry experts, and technology specialists to delve into the changing landscape of Digital Engineering in UK defence. The central theme for this year was "Implementing Digital Engineering."



**PHIL WILLIAMS & STEPHEN WILCOCK**
**TD-INFO                    DE&S**



The conference commenced with an opening address by **Lt Gen Simon Hamilton**, who emphasised the significance of adapting to technological advancements. **Stephen Wilcock** from DE&S shared his hopes and expectations for the conference, highlighting the necessity to act swiftly, with intention and clear direction, to preserve military advantage and stay relevant. He informed the audience that he is focused on unifying DE&S' Safety Management Systems to ensure consistency through a single system, unified approach, common terminology, and a cohesive set of tools. Stephen urged the industry to collaborate and operate as a unified enterprise, allowing DE&S to seize these opportunities at a much quicker pace.

### Panel 1 - Inspiring Change and Implementing Digital Engineering

**Summary:** A central theme from the presentations is the urgent need for the defence sector to adopt digital transformation. This involves focusing on long-term strategies, cultivating a skilled workforce, and encouraging global collaboration. The discussions highlighted the significance of utilising current digital assets and emerging technologies to boost efficiency, lower costs, and improve equipment availability. Success hinges on a mindset shift toward iterative, long-term strategies that emphasise swift feedback loops, practical problem-solving, and proactive preparation for the future through strategic planning and innovation.

### Introduction to the session on inspiring change

In his introduction to the panel, Jason **Bellman** from Dassault Systèmes highlighted the primary challenges we are facing and shared our strategies for addressing them. He laid out the agenda, emphasising that this topic will be thoroughly explored over the next two days.

### Industry Keynote - The Need to do something different

J**im Scott** from Lockheed Martin delivered a captivating keynote, highlighting the influence of emerging technologies, the need for development to prepare a future workforce, and the necessity for the defence sector to embrace new strategies for success.



### Digital Engineering Common Global Defence Challenges

F**ergus Cassidy**, BAE Systems, **Martyn Williams** (independent chair), and **Dr. Alistair Bacon**, BAE Systems, engaged in a discussion about the significance of people and skills, global collaboration, leveraging existing digital assets, and the strategies for accomplishing these goals.

### Digital Transformation in the United States Air Force

We were privileged to welcome our US allies, **Lt. Col. Ryan Pospisal** and **Capt. Taylor La Monica** from the USAF, at DE25. Lt. Col. Ryan delivered an engaging presentation outlining the six essential pillars he believes must be established to foster Digital Transformation. His insights were further bolstered by J. Kyle Hurst (Chief, DAF Digital Transformation Office - USAF), who participated online. He emphasised that while Digital Engineering offers tremendous potential to enhance equipment quality and support while decreasing delivery time and costs, realising this vision necessitates a change in mindset. This shift should focus on long-term, iterative strategies that prioritise rapid feedback loops and practical problem-solving over short-term gains.

## Panel 2 - How to Unlock the Potential of Digital Engineering

**Summary:** The speakers highlighted the need for a holistic, cohesive approach to digital engineering, focusing on seamless integration, data flow, and leveraging emerging technologies to stay ahead of modern threats.

**Deepaa Y Ganesh** from **Qinetiq** emphasised the need for digital transformation to address modern threats, highlighting fragmented progress and the importance of seamless data flow between the MOD and the defence industry for quicker, smarter decision-making. She discussed the role of digital twin technology in connecting physical and digital realms, noting that Qinetiq's future relies on AI and digital twins for innovation and resilience. However, challenges like data security, integration with legacy systems, costs, workforce skills, and intellectual property issues hinder adoption. She concluded with a call to action for the defence sector to take strategic steps forward.

**Will Marsden** from **Ansys** discussed five technology pillars for accelerating engineering, explaining the V Cycle that includes concept operation, system design, analysis, operations, and prognostics. He highlighted the significance of openness, interoperability, and collaboration for successful Digital Engineering Architecture. Will emphasised that digital engineering is crucial at all stages, from program offices to requirements understanding, and that accessing digital assets from the design cycle is valuable, noting it's never too late to incorporate them.

**Kash Addepally** from **tlmNexus** led a dynamic Q&A, emphasising that Digital Engineering requires not just ideas, but structured execution and seamless integration into defence operations.

**Matt Hill** from **Pennant** summarised digital engineering but focused on its importance beyond the initial design phase. He highlighted examples of logistics failures in combat and emphasised that modern warfare requires flexible, adaptable logistics. Matt discussed how defence program costs have spiraled and explored how digital engineering could help manage support costs and improve equipment life cycle support. He pointed out the limitations of commercial PLM systems in defence projects and stressed the need for a cohesive, closed-loop system to support delivery and operational use.

**Ryan Griffin** from **CDSDS** emphasized that digital engineering merges traditional skills with data exploitation, identifying bottlenecks to create value. He discussed his digital engineering ecosystem for managing data and outlined a three-phase implementation model for existing equipment. **Anton Burford** from **Aeralis** shared insights on the collaboration between CDSDS and Aeralis in implementing this model for new products, highlighting the importance of a unified data source achieved through intelligent integration of existing tools.

## Panel 3 - Collaboration along value chains to deliver value through digital engineering

**Summary:** panel discussions highlighted the need for collaboration, data sharing, and a cohesive approach to digital engineering and MBSE across the supply chain. Successful implementation depends on trust, alignment of people and technology, strong data management practices, and the use of AI to support the transition to modern engineering practices.



**James Mansfield** from **Sopra Steria** opened Panel 3 informing the importance of clarifying what we mean by collaboration—whether it's about working together to create or achieve the same goal, or about integration and partnerships. He noted that while the distinction may be subtle, it is significant. James also discussed the barriers to collaboration, suggesting that trust is key to overcoming these challenges.

**Graham Cookman** from **PA Consulting** explained that digital engineering can reach its full potential when extended across the entire enterprise. He emphasised the importance of establishing mutual trust in the digital engineering environment through best practices, confidence in data management, risk management, and getting the commercial aspects right. Graham further discussed how connecting technology is straightforward, but the real challenge lies in connecting people. He suggested that starting with a shared purpose, aligning incentives and commercials, co-creating solutions early with the right people, and deliberately designing the enterprise as a whole have proven successful in approach.

**Chris Hinds** from **Rolls-Royce** emphasised how the aerospace sector within the company had to adapt and work as a unified supply chain, learning from past internal collaboration challenges. He highlighted the importance of collecting data across the entire supply chain. **Chris Spaul, Rolls Royce** discussed the difficulties of sharing data with multiple partners while protecting intellectual property, while also emphasising the need for better data sharing. He explained that Rolls-Royce's solution to eliminating multiple interfaces was creating and agreeing on a common data model, effectively establishing a common language. Chris Hinds further touched on the importance of trust between partners, security, and the use of the common data model to handle official sensitive, secret, and top-secret data.

**Peter Billelo** from **CIMdata** shifted the focus to the supply chain and the effects of technology adoption. He pointed out that while OEMs and Tier 1 suppliers tend to keep pace with digital advancements, companies further down the supply chain often lag behind. Peter discussed how digital engineering transforms business practices, stressing that value chain suppliers are vital for achieving maturity and fostering a digital landscape. He underscored the necessity to evolve the ecosystem and provide support to maximize value. He emphasized that success relies on a robust PLM foundation, as many initiatives in PLM and digital transformation only implement PDM rather than a comprehensive PLM approach. He wrapped up by asserting that the management of intellectual assets throughout the entire lifecycle must be prioritized at the CXO level.

**Stacy Dyer** and **James Wood** from **Deloitte** presented on implementing MBSE (Model-Based Systems Engineering) in the defence sector. Stacy addressed challenges in defence asset development, including commercial inefficiencies, lack of collaboration, limited traceability, complex design documents, underutilized digital skills, and the demands of new product introduction (NPI). He emphasised how MBSE implementation can drive time and cost savings, improve collaboration, and result in higher-quality system requirements. James discussed the process of implementing MBSE, starting with a pilot phase and scaling it up. He outlined three key opportunities where initial value could be demonstrated, helping kickstart MBSE transformation to enhance collaboration, traceability, and reduce time.

**Charles Newhouse** from **Leidos** discussed the value chain concept, stressing the critical role of data exchange and the integration of toolchains within it. He underscored the importance of comprehending customer requirements and effectively translating them into the design phase, ensuring traceability. Charles recognised that engineers often struggle with the transition to Model-Based Systems Engineering (MBSE) and its related languages. To facilitate this shift, Leidos has been exploring AI technology, which has proven beneficial by enabling AI agents to produce clear, well-structured documents from the requirements.

## Chris Hinds - Rolls Royce

Speaking to us post his presentation, Chris Hinds highlighted the importance of moving beyond static document exchanges to real-time, meaningful data sharing. He noted that outdated collaboration methods create inefficiencies and security risks, advocating instead for system-to-system data-sharing approaches that protect intellectual property while enabling seamless collaboration

### Chris Spaul - Rolls Royce

## Panel 4 - Potential of Advanced Digital Technologies

**Summary:** The presentations emphasized the transformative potential of digital technologies like AI, digital twins, and the industrial Metaverse in optimising defence systems, improving collaboration, and streamlining operations across the supply chain.

**John Batterbee** from **Atkins Realis** led the closing session of day 1 exploring the potential of advanced digital technologies and their integration into defence systems.
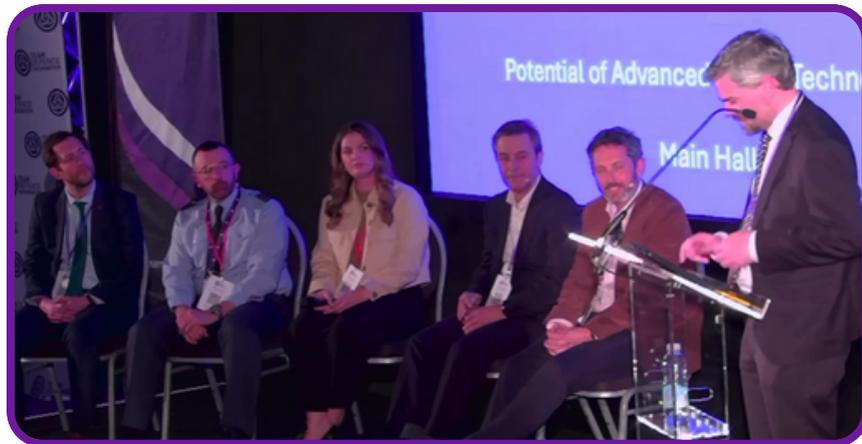
**Prof. John Erkoyuncu** from **Cranfield University** showcased various real-world applications of digital twin technology, featuring the Stewart Platform and a digital twin for wind turbines. He elaborated on the many advantages digital twins offer, including improved responsiveness, elimination of siloes, establishment of a single source of truth, facilitation of predictive capabilities, acceleration of testing and development, enhancement of resilience, and the discovery of emergent phenomena.

**Wing Commander Paul L'Abbate** from the **RAF** discussed the optimisation of Typhoon maintenance, emphasising the increasing workload on the Typhoon fleet and the goal of minimizing maintenance burdens and costs. He detailed how the RAF transformed 20 years of inconsistent and hard-to-utilise data, which now acts as a benchmark for evaluating current AI and large language model-driven processes.

Following on, **Megan Peacock** from **DE&S** addressed the foundational data challenges and described their use of an AI-enabled, SQEP-validated approach to improve their regulated Operating and Maintenance Procedures (OMP)**.**

**Ben Sheath** from **Siemens** explained how AI will free the demand on the mundane tasks so the workforce can focus on more beneficial work, how the cloud can help us work through a wider supply chain, deliver the capability to the SME's industrial Metaverse will help bring all the digital data together to make collaboration much easier and then stressed how none of this will work unless we join the digital thread together.

**Marc Riviere** from **PTC** talked about various types of collaborative working environments and the complexities of systems. He addressed the necessity for rapid innovation, AI integration, and compliance with digital engineering policies to achieve the needed transformation for digital collaboration. Riviere elaborated on how the CWE Architecture is built around four key pillars: a robust and scalable CWE core, seamless and flexible integration, and the importance of embracing a diverse ecosystem.



## Day 1 - Wrap up



**Stephen Wilcock** concluded the day by expressing how he found today's session to be incredibly enriching. It's evident that we are sharing knowledge and exchanging stories about digital engineering; however, there are notable gaps in collaboration and the interfaces that lead us to operate in silos or rely on paper-based analog connections. Today's discussions provided insights into how we might bridge these gaps. Stephen posed a challenge: "What 5 Things?" What actions will we take to create a real impact, and how can we strengthen those weak connections?
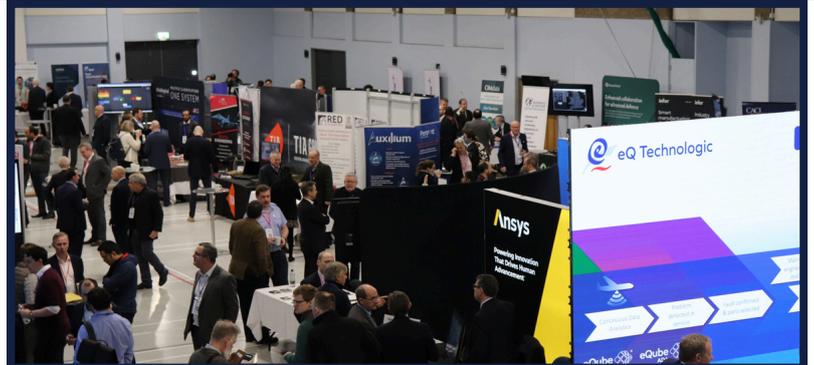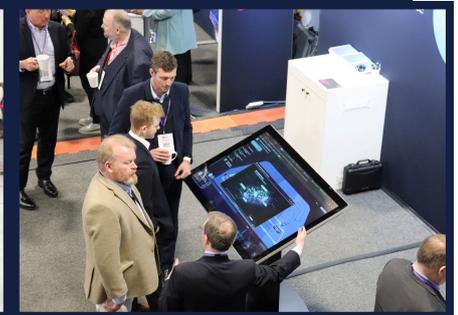


### Professor John Erkoyuncu, Cranfield University

In a conversation with Professor Erkoyuncu, he pointed out the substantial opportunity that Digital Engineering offers in forecasting and enhancing the demand-supply relationship within defence, ultimately leading to improved efficiency and resource allocation. He also underscored the necessity for the UK Ministry of Defence and Industry to work more effectively with academia by prioritising key challenges and focusing on opportunities for value creation. Additionally, he emphasised the vital importance of information sharing, noting that enhanced data exchange improves predictability, planning, and supply chain integration—essential elements for achieving superior performance and cost-effectiveness.
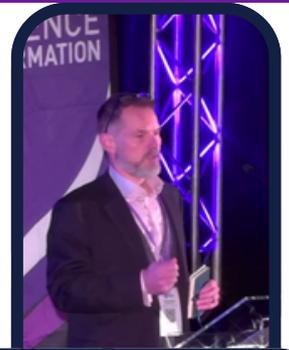
# Network Extra

The presentations from the event offered a wealth of insights into the changing landscape of technology, collaboration, and innovation within the sector. Following the conference, delegates participated in the Network Extra, which allowed industry professionals, MOD representatives, and exhibitors to connect informally with key decision-makers. This setting facilitated the exchange of ideas and the cultivation of relationships with experts in the defence and engineering fields. Attendees had the opportunity to gain first hand knowledge about the latest technologies, best practices, and trends, while also exploring innovative solutions through live demonstrations and direct interactions with exhibitors. The event encouraged collaboration, providing a platform to discuss challenges, share solutions, and discover new methods for integrating cutting-edge technologies like AI and digital twins into projects. Furthermore, it kept attendees updated on policy changes and future industry directions, contributing to both personal and organisational growth in the digital engineering arena.

# DAY 2 -Tracking Progress and Scaling to Achieve Potential

## Welcome to Day 2



**Stephen Wilcock, DE&S** opened Day 2 by expressing his appreciation for the strong turnout. He thanked the delegates for the engaging discussions during the networking session and the thoughtful responses he received via email regarding the "What 5 things?" challenge and welcomed the input. Reflecting on Day 1's presentations, he shared his insights on the content and outlined Day 2's focus on tracking progress and scaling to reach full potential. Stephen encouraged active engagement and the asking of difficult questions, emphasising that such contributions are essential to shaping the ongoing challenges and progress of the enterprise.

## Panel 5-Enabling Scaling through Improved Commercial Processes

Summary: The presentations highlight the need for agility, collaboration, and better engagement with SMEs in defense. Key points include avoiding overextended supply chains, leveraging technology rapidly, and fostering international collaboration. Effective industry collaboration, reducing bureaucratic hurdles, and adopting agile methods are crucial for improving defense capabilities. SMEs play a vital role in innovation and cost-effectiveness, but face challenges in accessing opportunities due to complex processes, requiring better communication and support to unlock their potential.

Peter Wright, Thales initiated panel 5 on day 2 by highlighting a significant lesson from history shared on day 1: overextended supply chains have consistently resulted in military defeats and failures. He encouraged the audience to be mindful of this as we examine commercial processes, emphasising the importance of avoiding the overextension of supply chains. He urged us to consider how we can prepare these supply chains to ensure they remain elastic and flexible, especially during critical moments.

Jane Greenman from Thales stressed the importance of swiftly leveraging technology in the current geopolitical climate. She underlines that collaborating with other nations is vital for the rapid integration of technology into military platforms, ensuring the UK's strategic edge. Jane also examined different strategies to achieve this, emphasising the significance of collaboration and the behaviours that drive it forward.

James Hanlon from Future Capability Innovation (FCI) discussed how FCI has refined its approach to engaging with industry and users by prioritising collaboration, reducing waterfall processes, and enhancing relationships. They employ tools such as backlogs, spirals, and agile methodologies to keep progress on track. James shared practical examples, including one-way

effectors for Ukraine, the heavy lift challenge, and human-machine teaming, while highlighting major challenges like building the right relationships and behaviours, navigating defence lines of development, managing scale, and addressing requirements, system engineering, and assurance issues.

Jeremy Cogman from RED Scientific offered insights from an SME perspective on facilitating technology adoption. He pointed out that overly detailed requirement statements can drain resources and restrict access to potentially superior, quicker, and more cost-effective solutions. While he recognised that the MOD excels in early engagement, he also noted that SMEs often face difficulties in accessing these opportunities, suggesting that improved

communication channels could open up more avenues for engagement.

Fergus Hawkins from TFD Global provided further SME insight on harnessing capability, stressing the crucial role SMEs play in the UK economy, while noting their underrepresentation in defence due to significant barriers such as security clearances, complex contracting processes, and cultural sensitivities within the MOD and Primes. He pointed out the benefits of collaborating with SMEs, including their agility, cost-effectiveness, and independence. Fergus acknowledged the bureaucratic hurdles within government and the lack of support for SMEs but also recognised the progress made through the national procurement policy. He outlined the essential needs of SMEs from the government, crown servants, and primes.
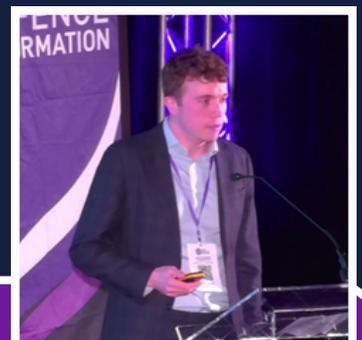
## Panel 6 - Enabling the Digital Engineering through People and Technology

Summary: The overall message from these presentations emphasises the importance of workforce development, digital integration, and collaboration in the defence sector. Key points include the need for mentoring, reskilling, and embracing new talent to bridge the skills gap and foster innovation. Enhancing digital tools and data sharing across defence capabilities is vital for improving efficiency and agility. Challenges in military space and test management highlight the complexities of integrating digital engineering and ensuring seamless collaboration across teams. The emphasis is on fostering a more interconnected, data-driven approach to meet evolving military needs and ensure responsiveness and agility in operations.

Ross Caddens from Siemens led DE25's final panel on digital engineering, emphasizing the value of mentoring and reverse mentoring to integrate fresh insights into business practices. He highlighted the importance of reskilling existing employees while hiring new talent, ensuring younger employees are able to embrace the tools they are familiar with from their learning and allow them to bring that into the business.

TDI Vanguards Jack Hodges, Thales and Eleanor Perry from MOD discussed workforce development in the defence sector, noting a recognised skills shortage and the perception of the industry as slow-moving. They pointed out that remote work has advantages but can hinder development due to less in-person interaction. They emphasised competitive pay and benefits as key for employee retention, concluding that many positives can be leveraged in the industry.

### Nigel Shaw, DE&S

Nigel Shaw emphasised the need for Team Defence to support data standardisation between MoD and Industry to enable better data quality, data sharing and agile collaboration.

## Panel 6 - Enabling the Digital Engineering through People and Technology continued…

**Nigel Shaw** from **DE&S** discussed three essential capability centres: The DAC, The DEC, and the BIC. He emphasised the need for enhanced digital tools to facilitate model-based data sharing among these centres. With a 2.5% commitment, there is growing pressure on the defence sector to enhance efficiency and agility in spending. Shaw views this program as crucial for the new national armaments directorate to collaborate effectively with the industry, aiming for innovative digital solutions to meet military capability requirements.

**Daniel England** from **DE&S** discussed the digital engineering toolchain as it pertains to the defence enterprise, highlighting challenges such as standards, data quality, common tool sets, network connectivity, data sharing, and modelling SQEP. He outlined the four key elements of the digital toolchain as enablers and presented an interventions roadmap aimed at creating an interconnected way of working, with the goal of establishing a data-centric approach.

**Nick Bolan** from **Airbus** discussed the challenges of making digital engineering work for military space, emphasising that the harsh natural environment of space, the high costs, and the global politics make delivering space capabilities difficult. He highlighted that integration is central to current digital technologies, and successfully implementing this through a digital approach is crucial for ensuring a coherent and unified national space capability. Nick also addressed the complexity of these challenges and the activities being undertaken to solve them.

**Will Harrell** and **Kenton Brazelle**, joined us live from the USA to discuss the **Test and Resource Management Centre (TRMC)**. Will explained their role in ensuring the Department of Defence is prepared to test and evaluate new systems. He shared lessons learned, emphasising the importance of language and collaboration. Will discussed the evolving role of test engineers as extensions of the war fighter, noting their deep understanding of mission objectives and the system's functionality. He highlighted the need for test engineers to bridge communication between war fighters and system developers. Will also discussed TRMC's mission to be involved earlier in development and later in operations, stressing that digital engineering enables responsiveness, agility, and collaboration to support this goal.

## IT'S A WRAP!!

**Stephen Wilcock** closed the conference by echoing Will Harrell's point that success in digital engineering requires patience and perseverance. For Stephen, this means ensuring everyone across the enterprise adopts a digital mindset. He set two challenges for next year: focusing on stories of culture and collaboration across the enterprise, and reflecting on what has been achieved, the impact made, and what else is needed to accelerate progress.

Stephen emphasised the need for urgency and stated that he would ask TD-Info to reach out to the audience for feedback on what they would ideally like to see in every contract. He inquired whether it's the standard way of providing data, access to digital models, or other specific elements they would like to have included. So, in very simple language, something that would be in every contract the MOD pushes out to start to unlock collaboration and see what can be done to make a difference now.

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