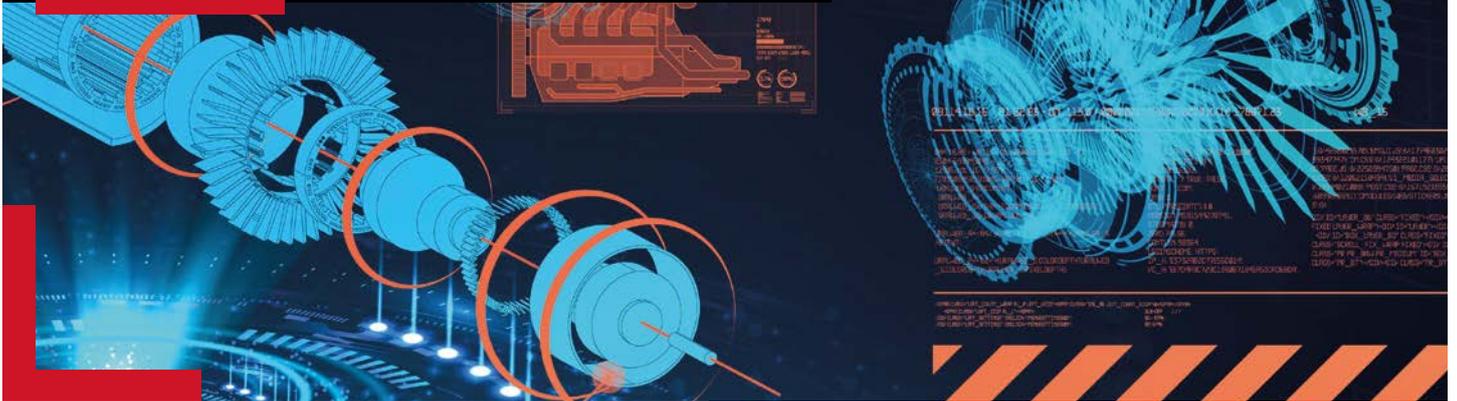# INVESTED IN
BRITAIN

FOCUS ON: DIGITAL THREAD

BY SIMULATING HOW WE MANUFACTURE, DELIVER AND OPERATE OUR PRODUCTS THROUGH A DIGITAL TWIN, WE'RE REDUCING COSTS, SCHEDULES AND THE POTENTIAL FOR HUMAN ERROR.

INFORMATION REQUEST

Welcome

Welcome to the fifth issue of the Raytheon UK Invested in Britain newsletter. This issue, we're taking a look at a digital approach to product and service development, how customers are increasingly expecting this methodology and the value it brings to both our customers and our business.

In the past, digital was only considered at a single point of a product and computer aided design lifecycle – when a product simulation predicted how long it would take a component to wear down, for example.

Now, we're adopting a digital thread principle – a framework that connects product data – so we can reuse data, evolve our practices throughout the development lifecycle of a product and transform how we manufacture, deliver and support our products. By reusing data and following our "right first time" principles, we'll do things quicker, cheaper and be able to engage with customers earlier on in the product lifecycle.

Our digital focus is also enabling us to use collaboration tools – such as virtual reality environments – internally, but also with suppliers, partners and customers to make sure we create and deliver optimal solutions. As these technologies advance and our customer expectations evolve, we'll invest and adopt new principles to make sure we maintain customer satisfaction.

We hope you enjoy this edition of our newsletter. If you want to find out more on Raytheon UK's digital thread principles or have any questions, please get in touch

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Space age solutions

Digital engineering is advancing our space-faring products and helping our manufacturing sites produce leading products with minimal physical testing.

Raytheon UK is employing digital engineering in the spirit of failing fast and learning quickly, using keyboard strokes and digital media to design and build digital twins of future physical products. This means we can learn everything we need to before hardware is built, enabling us to deliver on the commitments we make to our customers.

Take the Maxar WorldView Legion satellite, which was manufactured by our colleagues at Raytheon Intelligence & Space (RI&S) using digital engineering. By using digital renders, modelling and simulations, the process exposes potential problems long before real-world production begins – saving time and money.

This digital-first approach has already paid off, helping the space systems team deliver to a tight schedule of one payload every month.

"From the beginning, we digitally designed a lab with a focus on production," explains Madison Dye, WorldView Legion systems engineer for Space & C2 Systems at RI&S. "We were able to build all our hardware before we even finished testing. That's where digital engineering is helpful. It mitigates the unknowns."

FIND OUT MORE
Visit: raytheonintelligenceandspace.com/news/feature/digital-engineering-space
Contact: Paul Day – paul.day@raytheon.co.uk

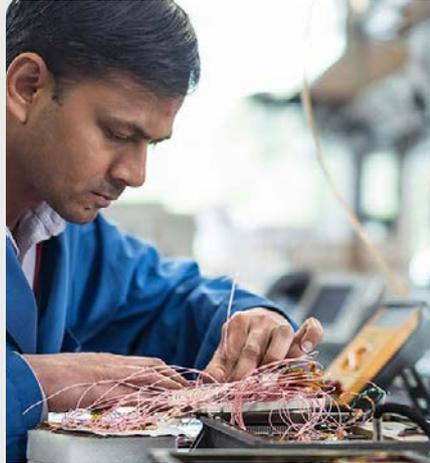**Raytheon**
UK

A design for life

Industry 4.0 – how we transform industrial practices through data and new digital technologies – is changing how we design, manufacture and deliver our products.

Digital technologies – data storage, analysis, augmented reality and advanced robotics – are helping drive Industry 4.0 throughout Raytheon UK's manufacturing efforts.

"In practical terms, this means that we're increasing how we use digital platforms in our manufacturing processes, with our planned expansion in Scotland focused on advanced manufacturing and digitisation," explains Mark Tang, manufacturing engineering manager at Raytheon UK.

This includes conceptualising products more accurately using computer-aided design, to replicating the entire life cycle of a part through a digital twin – a digital representation of a product or process – that can help us spot potential flaws before we produce any physical component.

Digital twins highlight how we're incorporating more technology into our manufacturing processes. They're used at every stage – design, simulation, testing and delivery – to reduce costs, decrease turnaround time, the need for physical labour and the potential for human error.

"But that's just the first step of Industry 4.0 for our business. We have the potential to go from the virtual factory to the 'lights out' factory," said Tang.

Data underpins all our Industry 4.0 efforts, which we'll harness through our digital thread – a framework that connects data from our product design, supply chain, manufacturing and aftercare teams. That's why we're looking to roll out more digital tools in the future.

FIND OUT MORE
Visit: raytheon.com/uk/capabilities/raytheon-in-the-uk/design-manufacturing
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Levelling the playing field

Digital tools are helping new engineers dive into projects and thrive alongside their more experienced peers.

One of the hardest parts of starting a new job is getting up to speed – especially in engineering, where new employees are often thrown into projects alongside experienced colleagues.

Steve Eicher, a recent university graduate and new engineer at Raytheon Intelligence & Space, has discovered that digital engineering is making that transition easier, providing everyone the same information at every point in the process.

This means everyone has a single source of truth – a complete, on-demand reference guide that can help new engineers who want to disrupt the status quo.

"The process keeps me on my toes constantly," explained Eicher. "A lot of the solutions we're working on could have many different approaches so we keep experimenting and continue looking at new ways we can do things better."

By automating some tasks and helping new starters acclimatise to Raytheon Technologies' culture, engineers can also focus on learning from more senior colleagues.

FIND OUT MORE
Visit: raytheonintelligenceandspace.com/news/feature/digital-thread-levels-playing-field

Helping veteran owned SMEs to thrive

Raytheon UK is partnering with small and medium sized enterprises (SMEs) to help them boost their training through technology.

As our focus on training grows, so does our work with data-driven companies such as Cervus – a veteran-owned company that provides insights to military and security customers.

"We wanted to harness Hive – an analytical service from Cervus – to create training measurement and evaluation products," explains Gary Donaldson, lead engineer at Raytheon UK.

"Military planners can use these products to create strategies depending on different variables such as the weather or a change to the environment, which can then be put to the test in a virtual training exercise", Donaldson said.

"By measuring the effectiveness of the training, we can share this emerging technology with customers and build ideas for future opportunities like, the army's Collective Training Transformation Programme."

The short, impactful project risked missing its deadline due to COVID-19. But thanks to a flexible partnership, the project was continued remotely.

By the end of the project, Cervus were able to perform a remote demonstration of their augmented reality training solutions using Hive. Following the success of the Cervus partnership, Raytheon UK has also began working with other SMEs such as Vocavio, a UK speech technology company.

FIND OUT MORE
Visit: raytheon.com/uk/capabilities/raytheon-in-the-uk/training-uk
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