



Jon Hall, PhD
Managing Director for Technology

Trusted to make the difficult decisions

Our customers always need more performance, more efficiency; and they need their assets to be able to work harder for longer.

Technology is changing the landscape in which we operate; and it is changing the services that we can offer our customers. That's why using technology to strengthen our offering is a strategic priority for the Board.

Taking advantage of the opportunities to give our customer better outcomes means putting an innovative approach to data at the heart of our technology strategy.

We work with big, expensive and complicated assets with a long lifecycle. These are assets on which our customers rely – when you're working with warships or aircraft or nuclear power stations, you need to really understand the asset.

Our customers always need more performance, more efficiency; and they need their assets to be able to work harder for longer. That's our challenge, and meeting it is driving a significant amount of innovation throughout our business.

Our technology strategy informs all our operations – we seek to improve the effectiveness of how we manage assets, infrastructure and people so we can better meet the evolving needs of our customers.

And technology lets us add value and scope to our range of activities, enhancing and expanding our core support services or adding specialist systems or technical services around that core support.

If we want to get more life out of an advanced gas reactor, we've got to think, what are the tools and techniques we can apply to increase its reliable lifespan? If we look at the Type 23 frigates used by the Royal Navy, we have to think about all the ways that we can get more capability on the ship.

We've always been good at making savings for our customers by working more effectively and helping people do their jobs more efficiently. But that only gets you so far, and data and digital enablement is allowing us to make the next step.

For Babcock, the key to data is the engineering insight we bring. You generally hear about big data – people using petabytes of data to find patterns that allow them to sell more product. But in our critical markets, the data is either not fully available or is of poor quality, so we need to find ways of putting it together with a white box model where we have a system engineering understanding of the asset. We know what's important and what will probably affect its performance and maintainability and cost, and we can fit the right data together with that understanding. It's not something everyone could do.

It means we can be a technical authority and be able and trusted to make difficult technical decisions about our customers' assets and their operability and maintenance requirements. Regardless of whether they've been designed by us or by any OEM, we can put that understanding and capability at the service of our customer.

Engineering insight

For Babcock, it's about being a technically intelligent and informed partner, so that when our customers need more life or more capability from their assets, we can make that happen or we can advise them on how they can make that happen.

It's about deploying our high-integrity manufacturing capability, investing in innovative manufacturing technologies like robotic welding or bringing production tools to the component rather than the other way around.

And it's about collaboration with others, from business technology partners to very long-term academic research partnerships. This allows us to drive the focus on innovation throughout our business and to do what, ultimately, it's all about – meeting the needs of customers for whom failure is not an option.

iSupport³⁶⁰: a dynamic new way of interpreting information

iSupport³⁶⁰ is Babcock's approach to the application of digital technologies and data analytics to drive maximum value for our customers in the way we manage and support their critical and complex assets.

It brings together cutting edge technologies and our engineering insight to support our customers, whether it's managing their surface ships, submarines, ground fleets, critical infrastructure or even people. It's an approach that offers us a powerful and dynamic new way of interpreting information, and it gives our customers a complete and interactive view of that intelligent support.

That's why we've designed iSupport³⁶⁰ into the Type 31 programme from the outset; building in advanced analytics and connected sensors which will make it easier and more efficient to maintain and operate throughout its whole life.

Scaleable and flexible

iSupport³⁶⁰ draws on the concept of the Digital Thread, which develops with an asset through its lifecycle. It isn't just an approach we are using in defence. To support technology growth across our markets, we have ensured it is both scaleable and flexible, enabling Babcock to:

- Use **advanced analytics** to lessen operational risk through predictive maintenance modelling.
- Drive **efficiencies** through the **automation of repetitive tasks**, such as business or manufacturing processes.



- Be more proactive in our support through prediction, modelling and simulation, for example, using digital twinning to simulate how the asset will perform, using data from real-time monitoring of assets and operations.
- Offer both **flexibility and agility** in the complex work we undertake.

iSupport³⁶⁰ provides a benefit to people too, whether they are a ship maintainer or data analyst in one of our training contracts. The range of digital technologies we use is designed to enhance the ability of our people, allowing them to make better informed decisions, and equipping them with the best understanding of asset performance and material condition.

From data analytics to digital twins, from AI to VR, we're ensuring our people have the right skills. Investing in these technologies also means we can invest more in our people.

Digital Thread

The Digital Thread is a holistic view of an asset's data throughout its entire lifecycle – its digital DNA. The typical lifecycle of an asset starts in design, then build and onto the operational phase, including maintenance and refits/life extension and finally disposal. So we need to create a powerful framework of digital technologies encompassing all elements: concept, design, manufacturing, operation, post-life, and retirement. All of the multiple sources of digital data need to come together to allow a seamless transition of information from one phase of a project to another.

Working at this scale, it is essential that we collaborate effectively with our partners, supply chain and industry, and the Digital Thread methodology allows us to do that. In the Type 31 programme, we are responsible for the design and build of the five frigates, while also being a key long-term partner supporting the warships through life. So a consistent Digital Thread will allow us to successfully transition from the start of the programme through to the operational phase.

Delivering value through data

During design and build, we employ Industry 4.0 practices to help provide a seamless data flow which delivers efficiencies during the construction phase. During the support and maintenance phase, we will apply our own range of digital technologies and data analytics to deliver value for our customers through our iSupport³⁶⁰ framework.



The advanced analytics that underpin iSupport³⁶⁰ help us simplify complex problems, reduce risk and inform the customer at every stage of the asset's life, providing a fully immersive support service. Real-time analysis also means we can optimise maintenance and increase the asset's efficiency and availability. We have to look at how all our technologies and capabilities can work across any of the assets we manage – be they ship, submarine, critical infrastructure, or people.

To deliver this Digital Thread, we need to invest in our people and give them the skills to embrace advances in technology. We recognise we will need new skills to support this technology growth, and so we are working closely with partners such as Strathclyde, Edinburgh and Cranfield Universities. Whatever the engineering or technology challenges, physical or digital, we know as engineers we have the ability to solve them.