Air pressure: Doubts have surrounded the supply chain's ability to meet 'aggressive' narrow-body production ambitions.
PICTURE: AIRBUS

Everyone knows that sinking feeling when the technology they have used for years is overtaken by something "newer and smarter" and now no longer works. **Ian Blackman** *reveals that there are companies and organisations out there providing solutions.*
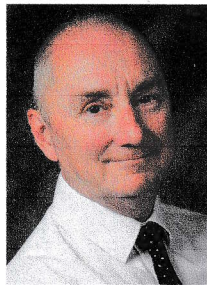
PICTURE: IAN BLACKMAN

NEW TECH, OLD TECH – NOW THIS IS THE DIFFICULT PART

The modern world is a whirlwind of technological creativity and advancement.

For many consumer and business applications we welcome the advanced features and speedier performance from the latest developments.

But... there are many applications for which newer, smarter, and faster means a system or product no longer works and is pushed towards a premature end-of-service or obsolescence.

Systems such as air traffic control, aviation flight computers, railway signalling, nuclear powerplant controls, medical scanners, communication infrastructure, and many legacy business systems and utilities, are good examples of being overtaken by new technology.

These systems often do not need the latest technology immediately and, indeed, may not be able to operate with the new updates.

For these systems, the original design requirement remains unchanged, sometimes for several decades, meaning that proactive obsolescence management becomes a necessity.

Obsolescence management is becoming an important discipline within an engineer's skillset.

It is also now recognised as a vital part of the support and through-life strategy by many companies.

The International Institute of Obsolescence Management (IIOM) has been at the centre of encouraging discussion on the best strategies to resolve obsolescence and has provided most of the expertise for the development of the internationally

recognised obsolescence standard IEC62402, which is now available in its second iteration.

Obsolescence, in these terms, is the non-availability of parts or services that were previously available. They could have been withdrawn for many reasons that may be technical, financial, because of staffing, or legal. It is more than just components.

Consequently, obsolescence management is the need to understand why this may happen and to plan and mitigate for these instances in the future.

Obsolescence occurrences include materials, components, processes, skills, and software. They can occur in all stages of the equipment's life-cycle, such as development, design, production and in-service. They affect components which need to be maintained for extended periods of time.

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There are many reasons for obsolescence. These include:
■ Technological progress – the innovation cycles with which components come on the market become ever shorter;
■ Component manufacturers re-assessing their product offerings and trimming down many "non-profitable" lines, especially during economic recessions;
■ Changes in the standardisation, when 'old' standards are no longer available and are no longer maintained;
■ Legislation created to benefit the environment, banning materials and processes;

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stakeholders is seen by others as a model of collaborative working, and is key in making sure businesses survive, and that opportunities on the horizon land in the UK.

But hard times often spur development. Stone said Covid-19 had "massively accelerated" anything to do with the sustainability agenda in civil aerospace. "The supply chain and skills capabilities needed now aren't what we expected in 2022 – we're probably looking at what we expected in 2025," she said.

"We're now looking at sustainable aviation fuel (SAF), electrification, hydrogen – areas where expertise doesn't yet exist.

"These are long-term challenges, but there are opportunities in how the sector is changing entirely and where the new focus will be.

"We need to be getting into schools to engage with youngsters. There's a huge job to do right now."

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Forbes commentators point out that the world is seeing "the biggest shift in supply chains since the era of globalisation began – perpetual disruption is the new normal". One likely outcome, it suggested, will be a return to domestic or near-shore sourcing.

"All of a sudden 'just-in-case' sounds more reasonable than 'just-in-time'," one expert said.

The longer the sanctions on Russia remain and the longer the production capacity in Ukraine is limited, the more likely that alternative sources will be developed in the west.

In the medium-term – assuming companies survive the short-term shocks – Oliver Wyman says a priority for companies should be rethinking the overall flexibility of their inventory strategy. Among key considerations is the potential for on-shoring the supplier footprint and for shortening supply lines so that they are more resilient to future shocks.

"The key to success is to ensure that procurement and supply are not reliant upon any one supplier or transport mode. In effect, this will mean establishing several parallel supply chains," said Oliver Wyman.

"The big lesson is that resilience is all. Proximity of supply and flexibility in sourcing have become major virtues." ■

■ The original manufacturer is no longer in business;
■ The processes, tools and the knowledge for the maintenance, update or improvement of software, are no longer available;
■ People skills are lost through role changes, redundancy, retirement etc.

The IIOM encourages best practice for material management, risk assessment of obsolescence, the generation of living obsolescence management plans, and the establishment of through-life planning and discussion with end-users.

The organisation is dedicated to improving the knowledge and best practice of obsolescence practitioners through education, networking, and process development.

IIOM member companies and individuals come from sectors including aerospace, defence, the railways, nuclear energy, oil and gas, automation, automotive and industrial. Such companies develop, produce, and maintain products and services with long life-cycles.

The IIOM has members throughout the world and actively encourages individuals from any country to join the institute. It has active national chapters in France, Germany, India, the UK, and the USA.

The IIOM community includes more than 300 companies and in excess of 1,000 individuals across the globe.

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End-users are also becoming more aware of the consequences of obsolescence and developing contractual language and arrangements that give the original designer some responsibility and freedom to maintain equipment, providing it still meets the original system requirements.

Obsolescence management needs to cover all products and may need considerable investment to be completed effectively, particularly with obsolescence engineers and managers in short supply throughout the world.

The good news is that many specialist companies exist to support these long-term markets.

Obsolescence can be resolved at many levels and ADS members are engaged in many different ways. For example:
■ Although the original designer may choose not to maintain a particular product, they may license a specialist aftermarket repair and sustainability company. One such company is Ontic Engineering, which supports systems originally designed by many

Tech challenge: It's vital to keep everything safe as technology develops.
PICTURE IAN BLACKMAN.

internationally recognised companies. Ontic's broad portfolio of established products and maintenance, repair and overhaul (MRO) services span a variety of aerospace sectors, including more than 6,500 top-level assemblies.
■ Many systems use legacy hard disk memory systems. Solid State Disks specialises in the design, development and integration of advanced storage systems and can offer form/fit/function replacements with modern flash technology and remote management capability. These replacements will not require extensive redesign or requalification.
■ Winslow Adaptics can provide custom injection moulded parts, component adapters/interposers and programmable logic component replacements, package/footprint conversion, semiconductor device retargeting, device reengineering, connectors including custom test sockets and test adapters, integrated circuit (IC) sockets and associated formed parts from various materials. Winslow is happy to consider small volume requirements and is proud of its response times.
■ Astute Electronics can help track down components that may be the only item holding up further maintenance, with every effort made to supply them through fully traceable routes. The company also provides component engineering support across its franchises, modifying and adapting

for projects, and supporting customers throughout the design cycle with experienced technical advisers.
■ If people do manage to locate component parts, they may have come from unknown sources and will need to be tested for functionality and authenticity. Retronix offers test services to establish confidence in the parts. Component testing includes resoldering leads, lead alignment, X-ray testing, component reclaiming, temperature cycling, X-ray fluorescence (XRF) screening, and ball grid array (BGA) package reballing.

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Defence and aerospace companies that these ADS members have supported include:

BAE, Boeing, DRS, EDS (HP), General Dynamics, Leonardo, Martin Baker, QinetiQ, Saab, Selex, Thales, and Ultra, as well as end-users such as the Ministry of Defence (MoD), Department of Defense (DoD), and NATO. ■

• Ian Blackman is a former chief technical officer of the International Institute of Obsolescence Management and is a fellow of that organisation. He has spent more than 30 years in the avionics and defence industry working in senior roles within procurement, component engineering, and obsolescence strategy development.