

The Asset Management Gap: Why CNI Transformation Can't Wait

Bridging the divide between digital ambition and operational reality in critical infrastructure



Digital Intelligence

BAE SYSTEMS



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Critical National Infrastructure (CNI) organisations are entering a period of unprecedented operational strain. Increasing geopolitical volatility, evolving cyber threats, and the growing complexity of interconnected systems are fundamentally reshaping the way critical assets must be managed.

At the centre of this transformation lies a pressing need: the ability to effectively manage their complex physical assets through robust, data-driven digital frameworks.

Our latest research highlights that 57% of CNI organisations are under significant pressure to ensure the reliability of their operational systems and complex asset bases. This concern is not theoretical - it directly impacts national resilience, service continuity, and public safety.

As a result, 76% of decision makers have identified transformation in asset management as a strategic priority, with an equal proportion attributing this urgency to rising geopolitical tensions.

Despite this awareness, maturity across the sector remains limited. Over half (51%) of organisations are still in a developmental phase when it comes to digitally managing complex assets.

This gap between ambition and capability underscores a critical challenge: legacy systems, fragmented data environments, and poor interoperability continue to constrain progress.

The implications are far-reaching. Without a unified, intelligent approach to managing asset data, organisations struggle to achieve real-time visibility, predictive insight, and secure operations.

At the same time, regulatory expectations and cyber risks continue to intensify, placing additional pressure on already stretched infrastructure providers.

Encouragingly, the sector is increasingly turning toward AI and data-driven connectivity as the foundation for transformation. These technologies offer the potential to unify disparate systems, unlock actionable insights, and enable resilient decision-making.

This research makes one conclusion clear: to thrive in a volatile environment, CNI organisations must evolve toward integrated, AI-enabled complex asset management solutions that can handle both the complexity and criticality of modern infrastructure.

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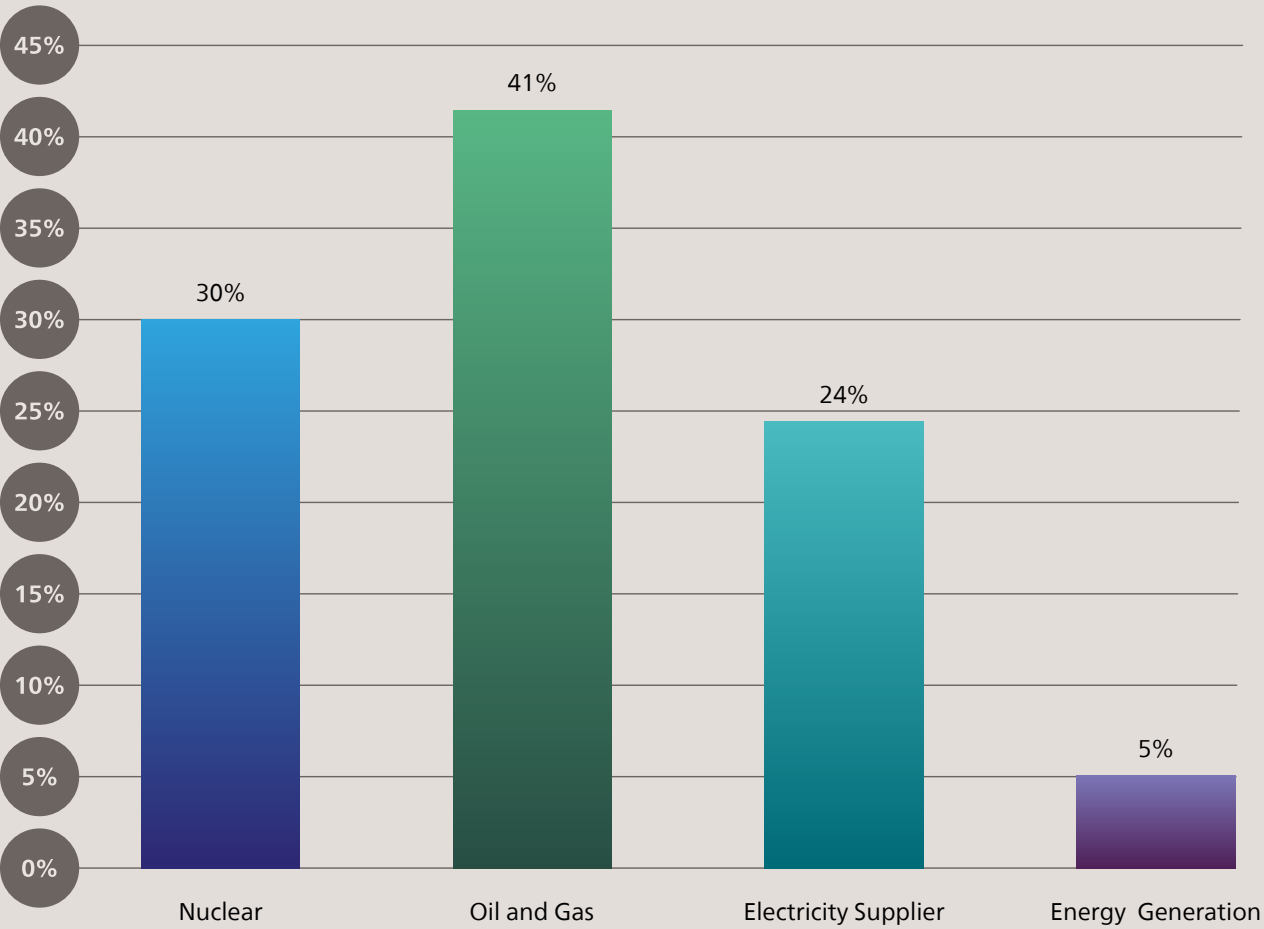


The Research

The research was commissioned by Censuswide on behalf of BAE Systems Digital Intelligence, among a sample of 360 Senior IT Decision Makers, Senior Business Decision Makers and Engineers in CNI across the UK, Sweden, Denmark, Norway, Australia, Japan, France, Canada, and the Kingdom of Saudi Arabia.



Respondents identified as working for critical national infrastructure organisations in the following sectors:



Critical National Infrastructure Under Pressure

57% of Critical National Infrastructure (CNI) organisations report they are under pressure to ensure their operational systems and complex physical assets are reliable, making transformation in this area a priority for 76% of decision makers. 76% attribute this need to mounting geopolitical tensions. But, currently, many (51%) are still only in a 'developing' state of managing their complex physical assets via digital solutions.

57%

under pressure to remain
reliable

For
3-in-4

this is due to mounting geopolitical
tensions

76%

prioritise transformation

51%

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Physical assets in CNI organisations can be geographically dispersed with legacy equipment designed for years, and often decades, of in-service life. In addition, equipment is often managed by long-term service providers / partners. This makes it a challenge for CNI organisations to have a single up to date detailed view of their physical assets.

Simon Viney
Global Resilience Lead,
BAE Systems Digital Intelligence



The external challenges making it hard for CNI organisations to remain reliable

The research tells us that the following external factors are making it harder to ensure organisations' operational systems and complex physical assets continue to be reliable.

Top four external factors that are concerning to CNI organisations:

1



Increased threat of cyber attacks as assets and infrastructure become more digital

2



Supply chain vulnerabilities

3



Regulatory compliance and governance mandates

4



Increasing reliance on interconnected systems (IoT, AI, cloud etc)

“

Given geopolitical tensions, CNI organisations are increasingly finding themselves 'in the firing line' whether from physical, cyber or hybrid threats. A reliance on legacy technology, coupled with the increased interconnectedness of new components presents real challenges to CNI organisations in ensuring they are adequately managing the security risks they face.

Simon Viney
Global Resilience Lead

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Challenges and Consequences

The internal data challenge

While many (76%) are prioritising transformation, the research tells us that the top four internal factors making it harder to ensure organisations' operational systems and complex physical assets continue to be reliable are:

1. **Lack of interoperability between systems** – inability of systems to talk to one another, meaning information cannot move seamlessly between systems (e.g., data is held on different third-party systems)
2. **Ensuring compliance** with strict regulatory requirements when it comes to data management – documentation and traceability (e.g., the EU's Data Act has strong impacts for complex asset owners)
3. **Data fragmentation** – data is distributed across multiple systems and locations
4. **Lack of data standardisation** – collecting data in different formats, leading to messy, unreliable data sets



The risks of inaction

Consequences of poor asset management can be varied, but the research respondents highlighted the following top four.



The Technologies Driving Change

Across the sector we see data access (88%) and artificial intelligence (77%) considered as critical enablers of transformation.

9-in-10

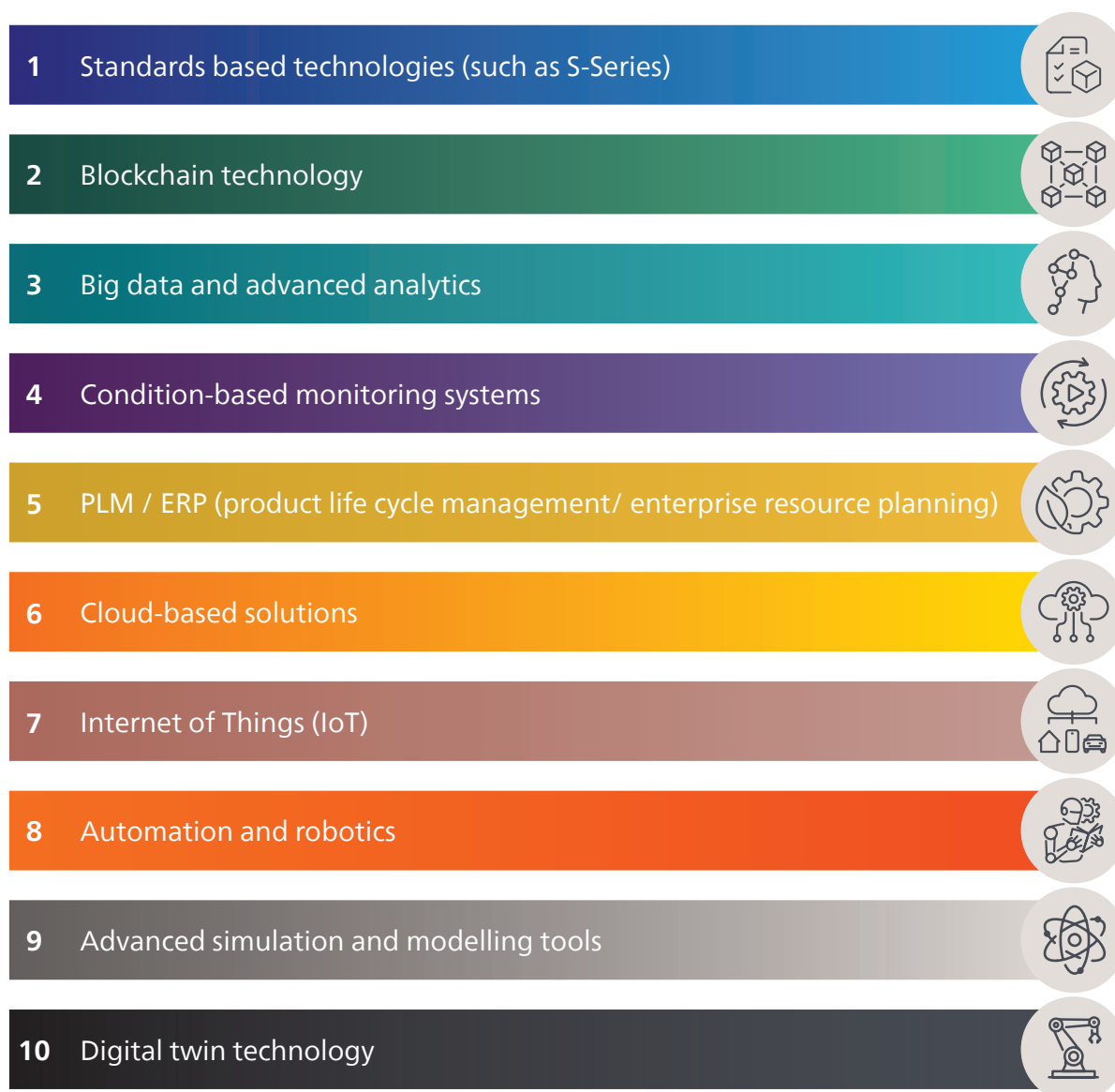
Agree data access enables transformation

77%

Agree AI enables transformation

Other technologies being adopted by CNI organisations include standards-based technologies, big data analytics and product lifecycle management (PLM).

Top ten technologies being adopted by CNI organisations:



The top three target outcomes include better decision making, supply chain efficiency and the reduction of costs



We see AI and data are considered as enablers for transformation by our research respondents, with better decision making a key target outcome. PLM can play a crucial role here, because it can provide a single pane view of an asset, making the best use of available data for predictive insights around maintenance and supply chains. This is something we are already doing in the defence sector to boost the availability of complex defence assets.

Luigi Sidoli
Head of Digital Management



PropheSEA®

Enabling complex asset management in CNI

The findings clearly show that CNI organisations are operating in increasingly complex and volatile environments, where traditional approaches to asset management are no longer sufficient. Despite strong intent to transform, many organisations remain constrained by fragmented systems, limited interoperability, and insufficient digital maturity.

AI and enhanced data access are emerging as critical enablers, transforming asset management into a predictive, connected, and intelligence-driven function. However, unlocking this value requires platforms capable of integrating data, enforcing governance, and operating securely at scale.

Solutions such as PropheSEA® from BAE Systems Digital Intelligence directly address these needs; bridging fragmentation, enabling interoperability, and supporting advanced analytics within high-assurance environments. For CNI organisations, adopting such solutions is essential to ensuring resilience, security, and effective management of increasingly complex infrastructure assets.

Find out more from the experts



Luigi Sidoli

Head of Digital Management



Simon Viney

Global Resilience Lead

About PropheSEA®

- Purpose-built for complex environments
- Designed specifically to operate within highly regulated, high-assurance sectors such as defence and critical infrastructure
- Data integration at scale
- Connects disparate systems and data sources into a unified, governed environment
- Interoperability-first approach
- Enables seamless data sharing across legacy and modern systems using open standards
- Advanced analytics and AI-ready
- Supports the application of AI and machine learning to drive predictive insights and operational intelligence
- Secure-by-design architecture
- Built to meet stringent security and compliance requirements across CNI environments
- Lifecycle visibility and control
- Provides a consistent digital thread across the asset lifecycle—from design to operation and beyond
- Improved decision advantage
- Equips decision-makers with timely, accurate, and contextual insights



Digital Intelligence is home to over 4,500 digital, cyber and intelligence experts across 13 countries. We operate at the cutting edge of digital innovation and at the heart of organisations that keep vital infrastructure running, national security protected and armed forces prepared. Digital Intelligence is part of BAE Systems, which has a rich heritage in delivering technology today to protect our tomorrow. BAE Systems partners with governments, communities and companies large and small to design, build and maintain advanced defence and security solutions.

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