

AI and Automation in the Aerospace and Defence sector: Considerations for Project and Programme professionals



Because when projects
succeed, society benefits

Introduction

The Aerospace and Defence (A&D) industry sits at a critical juncture. The workforce is aging, meaning that incoming and younger talent will need to fill the skills and knowledge gaps that are inevitably going to emerge. However, with automation and artificial intelligence (AI) irrevocably altering the industry, what is the most effective way to fill these workforce gaps?

Project and programme professionals are uniquely equipped to be at the centre of the A&D industry's response – through their leadership, agility, knowledge-sharing and collaborative approach. Project professionals can guide the A&D workforce through technological integration while fostering collaborative environments where people – and organisations – can thrive.

This paper explores these issues through expert insight from industry leaders. It also highlights how project professionals can play a central part in helping the A&D workforce adapt to digital innovations and change in a way that retains organisational knowledge and culture.



AI and automation – opportunity or limitation?

AI is making significant advancements in the aerospace and defence industry, enhancing everything from design and manufacturing to flight operations and safety. AI can accelerate the design process of aircraft by using generative design algorithms that create structures based on criteria such as weight, aerodynamics and material strength. Quality control and precision can also be augmented through the use of AI, increasing the reliability and safety of the industry. The aerospace supply chain can also be optimised by AI, through predicting demand, managing inventory and streamlining logistics.

The rollout of AI and automation throughout the A&D industry can be best described as 'cautious', especially when compared to other industries. While the use of AI is becoming more common, its impacts are not currently as keenly felt as other sectors. Presently its influence is mainly found in early-stage planning; specifically in document preparation and tender responses. This does not mean that it won't be a disruptive force in the A&D industry. Already, AI tools have significantly reduced the time needed to prepare and write these documents, accelerating workflow and freeing up experts to work on higher-value tasks and projects.

While this presents clear advantages, a more widespread adoption is being held back by the industry's inherent complexity.

75%

of project professionals in the A&D sector say AI has been integrated into project management processes

72%

say the use of AI tools has improved outcomes of projects

12%

say the use of AI tools has hindered outcomes of projects

Source: APM and Censuswide, survey of 64 UK-based project professionals in the aerospace and defence sector, November 2024.

There are many security concerns that come with AI and automation. Many projects in the A&D industry handle sensitive data with security classifications, involve non-disclosure agreements and information provided on a need-to-know basis. Andrew Bundock of Sagentia Defence said that these reasons – as well as siloed legacy IT systems, a lack of structured data stored and contextual completeness of historical information – may prohibit AI tools accessing to and learning from historical data/information.

As a result, there are concerns around how AI tools will produce results and, more importantly, the transparency and audit trail of the process used.



The role of the project professional



Project professionals are uniquely positioned to help guide the A&D industry through this transition. With their skills and guidance, automation and AI can be used throughout the industry with transparency, control and foresight.

- Firstly, project professionals can act as a link between technical teams and executive levels to champion the most effective uses of AI and automation in the siloed and security conscious A&D environment, where miscommunication, unrealistic expectations and misunderstandings can undermine adoption and output of teams. Project professionals can communicate to both ends of the hierarchy where AI and automation can be best used.
- At a technical level, project professionals can identify points where AI or automation could relieve pressure. They can also set the necessary conditions for successful implementation. They can ensure that AI and automation supports people and key processes instead of overriding them.
- At an executive level, project professionals can communicate the risks and outcomes of AI and automation, manage the expectations of stakeholders, and advocate for a thoughtful and strategic approach.
- Project professionals can also drive efforts to organise and safeguard project data. According to Bundock, this is one of the biggest challenges that comes with AI implementation. There is only value in the data that AI provides if it is accurate, complete and secure. Project professionals can ensure that policies and processes that maximise the trustworthiness of the data are implemented and enforced. Security and confidentiality are paramount for many projects in these industries. Project professionals can become gatekeepers.

Corporate memory and staffing challenges

The increase of AI and automation in the A&D industry is leading to another issue: the gradual decline of corporate memory. This is a company's ability to store and retrieve information and knowledge from various sources including employees, company culture, processes and formal records. It can be an invaluable resource, offering insights, high level experience and technical skills about delivering long-term, complex projects.

Several factors are contributing to this decline:

- **Workforce retirement** – Members of the workforce are taking their knowledge with them as they enter retirement, leaving some industries struggling to compensate for the huge knowledge gaps. For A&D, where professionals are often expected to have 20–30 years' experience in a high-level role, these knowledge gaps can be very difficult to fill. Bundock describes the challenge as “distilling information out of the brain that's been in the industry for 40 years.”
- **Hybrid working** – The evolution of working styles is also a major factor. While there are certainly benefits that come from a hybrid working approach, the loss of in-person interaction between colleagues has resulted in a barrier to intergenerational learning. Simple, informal learning situations such as over-hearing colleagues talking, having a short chat with managers or just having impromptu discussions about the industry have been lessened by hybrid working approaches.
- Bundock highlighted the differences in working styles: “Early in my career, being at the office would let me observe and listen to experts, gain insights into their roles and ask questions and just have a conversation to reinforce my learning and understanding. I would not be where I am today without the experience and relationships I built because of my interactions with these experts. Today's hybrid working model doesn't lend itself to these situations and experiences for younger people anymore.”
- **Staff retention** – One of the largest ways that younger staff differ from their older counterparts is the amount of time they spend in their position. Instead of staying in one position for 10–20 years, younger members of the workforce are more likely to cycle through roles every 2–3 years, either to seek out a new position or receive higher pay. This lack of retention is making it difficult to capture the knowledge that is being lost by the older retirees.

As strategic enablers, project professionals are in prime position to help the A&D industry to reverse these trends through their knowledge, leadership and collaborative instincts:

- **Bridge the communication divide** – As Bundock noted, there are clear differences between younger workers and older workers. (LinkedIn, 2024) Younger workers have grown up around technology, it comes more naturally to them, whilst older workers are more cautious with it. The differences are most apparent in ways of communicating. Younger members are more comfortable communicating with digital messages and emails, while older members tend to find this technology less accessible and would prefer in-person meets. Project professionals can be the bridge between these ways of communicating, helping both sides to better understand what the other is saying.
- **Shape work environment** – While younger workers may be missing out on informal learning opportunities, project professionals can help by encouraging and leading on structured mentoring, in-person collaboration and digital knowledge sharing tools. Similarly, project professionals can work to address retention challenges and mitigate its impact. They can foster engaging work environments that give younger professionals recognition and growth opportunities, as well as advocate for any emerging talent, supporting the organisations investment in a worker and making it more long term.
- **Knowledge capture** – One of the biggest issues that comes from these challenges is the loss of knowledge. An industry such as aerospace and defence relies upon corporate memory for its long-term effectiveness and efficiency. Project professionals are able to capture and structure this data every step on the way. Through embedding knowledge capture into the life cycle of every project, using lessons learned, project professionals can protect the loss of critical insights when workers leave their role.

As AI continues to advance, there is going to be significant ramifications within the aerospace and defence industry. Supply chains will evolve, reliability and quality control will be optimised, but there will also be danger of staffing challenges and the loss of corporate memory.

The communication, adaptability and leadership of project professionals can help the A&D industry to navigate through these changes successfully. Ultimately, project professionals are strategic enablers whose expertise can help the A&D industry to adapt to new digital innovations whilst ensuring that they retain their organisational culture.

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Further resources

- [Blog - Delivering major defence programmes successfully by Hugo Terry](#)
- [Research report - Digital Transformation and the AI Imperative in Public and Private Sector Projects](#)
- [Research report - Integration of AI with Agile Project Management in the Context of Sustainability](#)





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