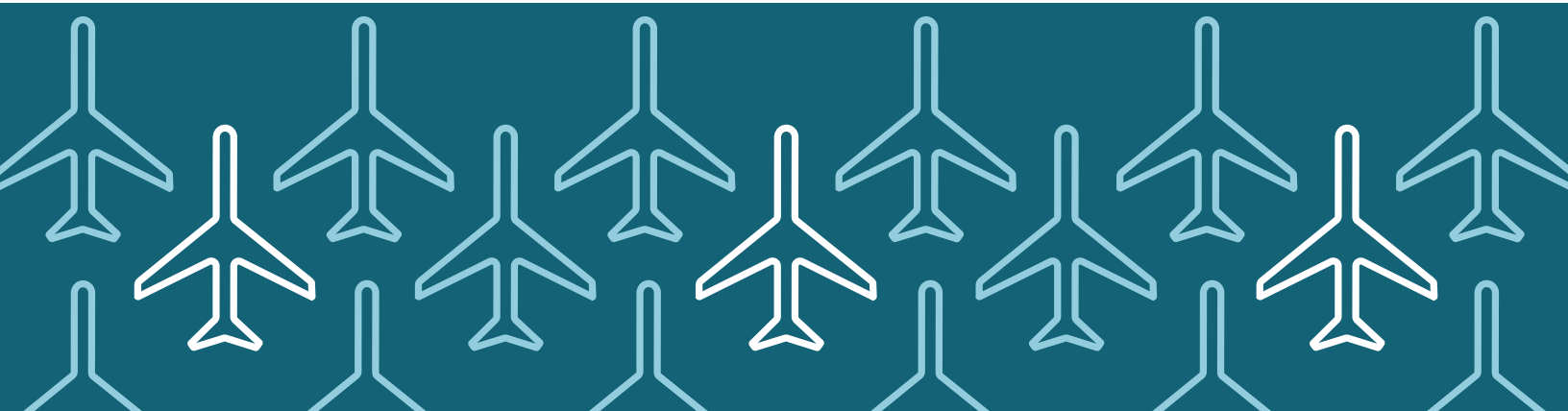


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Digital transformation: aerospace and defense is ready for take off



Digital transformation now lies at the heart of almost every industry strategy. It enhances and—in many cases overhauls—business models, products, services, and operations. Going digital has a big impact on profitability.

In fact, our [joint study](#) with the MIT Center for Information Systems Research shows that future-ready—meaning digitally-transformed companies are **16% more profitable** than their peers.

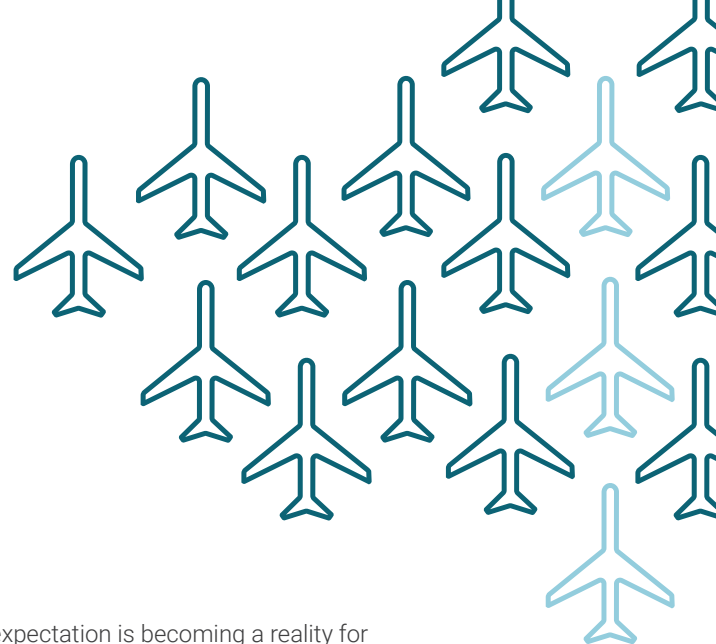
Some sectors like banking and retail have already made big strides. But digital transformation opens many pathways for the aerospace and defense industry as well.

However, the sector has unique characteristics that must be considered for digital transformation. These characteristics range from programs that last decades and modest production volumes that restrain automation to highly complex and regulated products. Paper is still prevalent in many aspects of A&D operations, which is an obvious first hurdle to digitalization. Meanwhile, A&D has a huge opportunity to seize the exponentially growing data from in-service platforms using new technologies.

Many key players have already made headway. Several are launching large-scale digital transformation projects, as we discussed in the latest issue of our annual A&D study. From massive GE investments in 3D printing and its digital Predix platform to Airbus' digital transformation program, and from the Skywise connected services initiative that was recently announced at the Paris Air Show to numerous Silicon Valley initiatives and Boeing's Black Diamond program, most of the big players are extremely active.

16%

Digitally transformed companies are 16% more profitable than their peers



WHEELS UP

Digital transformation impacts all A&D functions and offers a very clear and tangible potential for operational productivity improvement. This starts with product development: A&D companies can develop new products faster by simulating not only the product, but also its production process and in-service operations thanks to 3D digital mock-ups and models supported by faster prototyping. Digitizing the supply chain can provide real-time visibility into a multi-tier supplier landscape. Viewing production status through supply chain watch towers enables companies to predict disruptions based on weak signals (quality, deliveries, and financial data) and tackle them before they occur. Factories of the Future with their paperless shop floors, increased automation, smart pre-calibrated tools, and more intuitive analytics-based tools are increasing both blue and white collar productivity. In the support and services area, leveraging data from in-service aircraft about their health and usage, and combining that data with technical or maintenance data (using big data) can help anticipate breakdowns and improve fleet performance and fuel consumption.

Furthermore, beyond this functional focus, establishing digital continuity—from development to production to in-service life—is a critical part of this transformation. Data sharing across the company speeds up the process of resolving in-service problems for existing programs. And it can also help optimize design and improve costs or performance by drawing on actual in-service insights instead of the traditional “design for certification.”

Digitalization also impacts products and services. For example, airline passengers now expect onboard internet access on par with wi-fi available on the

ground—and that expectation is becoming a reality for airliners globally. The changes don’t stop at the cockpit door. We expect that increased cockpit connectivity will enable airlines to optimize flight operations and fuel burn and reduce delays. In defense, the latest connected platforms, such as the F35, are bringing the industry into a new era. Airplanes are no longer independent from one another and the ground, but rather they can operate as a system, together with other aircrafts, including older-generation aircrafts and drones. This is increasing mission efficiency by up to ten-fold.

FLYING HIGH

How can an A&D company be successful in its digital transformation? It starts with a strong vision from the top management and a clear willingness to invest—up to 1% or more of annual revenues over several years—to engage on this long journey. Opening up to the outside world and thinking in terms of ecosystem, including start-ups, digital-natives, and of course suppliers and customers, are critical success factors. Furthermore, attracting and retaining talent like data scientists and software experts will be key. Additionally, it’s important to nurture a fast-paced, digital culture, which can be difficult in an environment dominated by hardware-focused engineers. Lastly, even companies that have launched successful digital transformations should continually assess the opportunities that new and emerging technologies can offer their businesses.

This transformation also applies to how projects and initiatives are managed. This means moving away from lengthy sequential projects and relying much more on proof of concept to validate the first pathways, and rapidly pivoting to explore new ones when the initial plans don’t pan out.

Like in any large-scale transformation, change management is key, and the same rule applies in A&D. Companies require a strong effort to bring the whole organization—from millennials to baby-boomers—into this new digital culture, where value is delivered more and more through software.

Digital transformation must combine technology with a strong, strategic vision and a clear view of business issues and pain points that need to be fixed. New business horizons will open up for A&D companies that get the recipe right: a strategic vision supported by quantitative ambitions, the right technologies in the right place, and the proper change management support to the teams. **A**

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