Winning the aerospace race for digital operations

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More than a year into the pandemic, much is still up in the proverbial air for the Aerospace and Defense industry.

Passenger expectations and defense budget priorities are shifting. Space is becoming a bourgeoning frontier. Airlines are restructuring fleets. New competitors are emerging.

This inflection point makes winning the race for digital operations more urgent than ever for aerospace and defense companies.

Digital operations impact every part of the business, from design, to supply chain management, to in-service equipment support through digital twins, the Industrial Internet of Things (IIoT), artificial intelligence (AI) and analytics. And the time to act is now.
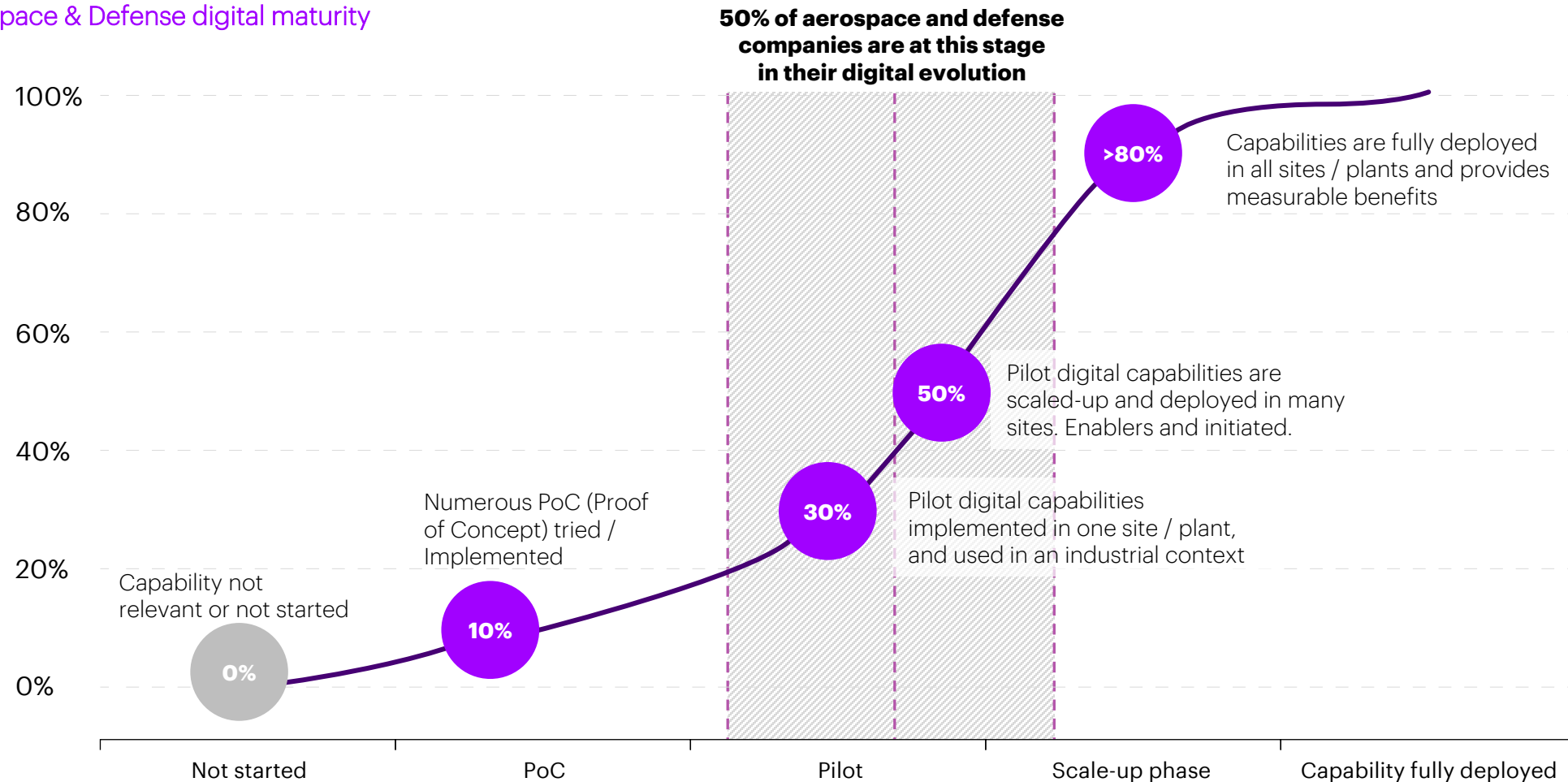
Where things stand

Aerospace and defense companies have made tremendous strides in the race to mature their digital operations, but many are still struggling to fully deploy digital initiatives and realize the anticipated value of those investments.

Most companies' digital operations maturity is somewhere between the pilot stage, with initial digital capabilities implemented in a single site, and the scale-up of those capabilities to multiple sites. (See Figure 1)

Figure 1 – Aerospace & Defense digital maturity

50% of aerospace and defense companies are at this stage in their digital evolution

>80%
Capabilities are fully deployed in all sites / plants and provides measurable benefits

50%
Pilot digital capabilities are scaled-up and deployed in many sites. Enablers and initiated.

30%
Pilot digital capabilities implemented in one site / plant, and used in an industrial context

Numerous PoC (Proof of Concept) tried / Implemented

10%

Capability not relevant or not started

0%

| Not started | PoC | Pilot | Scale-up phase | Capability fully deployed |

Change is in the air

The last year made the importance of digital operations crystal-clear and the pace of digital investment has accelerated as companies seek an agile and adaptable operating model for future success. Still, there is much more to be done.

As aviation picks back up unevenly across the globe, companies will need to be flexible in meeting diverse and ever-changing needs.

At the same time, customers are demanding smarter and swifter solutions, requiring aerospace companies that haven't fully implemented agile operations to play catch-up.

If aerospace and defense companies remain captive to current enterprise technologies—siloed on-premise data centers—they won't have the agility or decision-making ability required to capture new growth.

Aerospace and defense companies have a unique opportunity to simultaneously grow their core business and plant flags in new segments such as urban air mobility and space-based services. Well-funded challengers—whether privately held or supported by the billions being funneled into special purpose acquisition companies (SPACs)—may fill the void if companies don't act now.
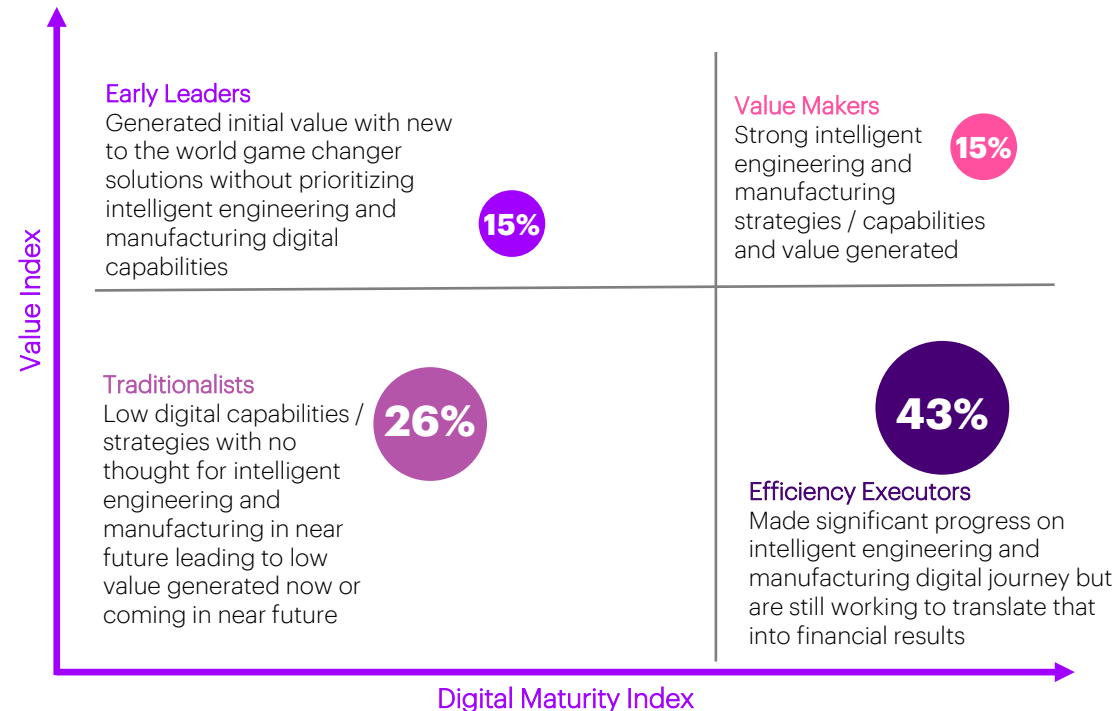
Charting a new course

Profitably capturing growth and long-term program positions requires aerospace and defense companies to take advantage of this moment and mature their digital operations to compete against incumbents and upstarts alike.

Aerospace and defense companies sell to demanding customers and have some of the most complex operations and supply chains in the world. Building a cohesive digital strategy, let alone executing on it, is easier said than done. Only 15% of today's aerospace and defense companies have both strong digital operations strategies and the ability to generate value from those strategies. (See Figure 2).

How can aerospace and defense executives set their companies up to successfully navigate challenges ranging from airline fleet restructuring, to the emerging space market, to defense capability shifts and new competitors?

Figure 2 – Assessing digital strategy and value creation

Early Leaders
Generated initial value with new to the world game changer solutions without prioritizing intelligent engineering and manufacturing digital capabilities

15%

Value Makers
Strong intelligent engineering and manufacturing strategies / capabilities and value generated

15%

Traditionalists
Low digital capabilities / strategies with no thought for intelligent engineering and manufacturing in near future leading to low value generated now or coming in near future

26%

43%

Efficiency Executors
Made significant progress on intelligent engineering and manufacturing digital journey but are still working to translate that into financial results

Value Index

Digital Maturity Index

Companies need to focus on three key strategies to accelerate their transformations and win the digital operations race

1. Leadership

Only 11% of aerospace and defense companies currently have more than half of their leaders skilled in using analytics for decision-making.

Digital operations can't be scaled if leaders don't embrace and embed them. If leaders are not fluent in using data-driven analysis to make decisions, investments in digital operations and a more agile operating model will fail to live up to their potential.

The companies that commit to a digital transformation from the top are seeing the results.

For example, one global aircraft manufacturer had been struggling to turn its digital initiatives into true competitive advantages. The company chose to look outside the industry for new C-level leadership, onboarding both a new CDO and a CIO. Leveraging insights from both inside and outside the industry, these new leaders refocused the company's strategy, setting measurable and achievable short-term goals in order to build confidence in deploying the long-term digital strategy.

2. Governance

Success depends not only on driving decision-making from the top, but also pairing decision-making with the proper oversight of the quality and depth of data that informs it.

Only 46% of aerospace and defense companies governed and steered digital investments and transformation at the group executive or board levels and only 33% have a governance structure fully deployed for data management used for decision-making.

To make better data-driven production decisions, one global aircraft OEM created a digital twin of its manufacturing processes. With this digital twin, they were able to model different production rates and the effects of disturbances on the production line operations.

3. Skills

Digital needs to be part of company culture to win this race, but only 22% of aerospace and defense companies are currently investing to reskill greater than one in five of their employees.

There is increased focus on preparing workers for success in the digital future, though, with firms seeking to increase their digital talent (AI, data science, digital platforms, programming) teams by 61% over the next five years.

To ensure both upskilling and a pipeline of new talent into their organization, a leading European defense company has set up an academy with real-world manufacturing and engineering equipment. They anticipate training hundreds of apprentices and thousands of employees for professional development every year.

Taxiing for Takeoff

What does winning this race mean for the bottom-line?

Aerospace and Defense companies have placed significant digital bets, investing 2.4% of their sales in digital operations and expecting to increase that to 3.8% in the next five years.

They also anticipate seeing operating income impact from their digital plays increase from 2.4% to 3.9% in the same timeframe.

However, outcomes are not only about financial gains. Executives told us that sustainability, workforce engagement, ability to innovate, organizational agility, and better customer experience had come to the forefront as success metrics for digital investments. As the industry taxis for takeoff, significant gains across all these fronts can be made with judicious investment in leadership, data governance, and digital skills.

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