DIGITAL TRANSFORMATION BEST PRACTICES IN THE AEROSPACE AND DEFENSE INDUSTRY

From 3D model designs of the next generation of space shuttles to the transfer and storage of trillions of data pieces around the world, the aerospace and defense industry has used digitalization to increase quality, performance, and profitability. The industry is now engaging in the next stage of the process called digital transformation. Digital transformation is about fundamentally changing our thinking of a business, focusing the culture around using new information sources, and using technologies to make radical improvements in competitiveness and capability.

The foundation of digital transformation is the treatment of data as a valuable business asset. It's a priority to collect and analyze data – from internal and external sources – and use that information and new technology to change the way companies deliver processes, products, and services at higher speeds and lower costs.

This paper provides steps for new adopters of digital transformation and best practices for companies that have already begun the process.

STEPS TOWARD DIGITAL TRANSFORMATION

Digital transformation requires a complete culture change for a company. The following steps are vital to any digital transformation effort:

• Acquire executive-level sponsorship, which is the only way to truly focus resources, alter the infrastructure and culture, and make this change possible.

• Inventory and analyze your data to understand how it is currently used and how it needs to be used to help product development, production, and support.

• Invest in transforming your business from paper-based methodology to a digital data-based approach – it is an opportunity to rethink the way we do business and exploit technology.

• Consider the different aspects of interoperability including:

  – Infrastructure   – Architecture
  – Technology   – Data
  – Process   – People
  – Culture

• Collaboratively identify areas where agreement is required to ensure that transformative initiatives do not disrupt the overall approach of the industry. The approach needs to accommodate military and commercial customers.

• Design information storage and sharing processes to be flexible and more easily changed, so your business can keep up with the pace of constantly changing technology.

BEST PRACTICES TO TRANSFORM HOW COMPANIES HANDLE DIGITAL INFORMATION

1. Treat data as an asset and invest in its security, including electronic marking
Accurate and dependable data becomes a valuable business asset, which will need to be protected against loss and corruption. Data that requires protection for security or export control reasons needs to be clearly and permanently labelled, so appropriate controls can be applied.

2. Ensure data repositories can interface with data analytical systems – old and new
Information stored in both new and legacy repositories needs to be exposed to analytical tools in a consistent and unambiguous manner. While new systems can be designed with this in mind, legacy tools may require additional investment to extract information in a non-proprietary form. The goal must be to ensure one can consume and provide information from multiple sources in a timely manner. AIA's NAS9300 series standards for Long Term Archival and Retrieval of data (LOTAR) provide guidance on how to accomplish this task.

3. Ensure capability of consuming and providing information from multiple sources and in a timely manner
Data is only of value if it can be used, and systems need to be able to access data from multiple sources and deliver it flexibly to the value chain when it is needed, even if in real time.

4. Continuously rethink end-to-end processes to fully exploit new technology rather than digitizing old processes
The availability of more accurate data frees organizations to redefine their operations and take advantage of new capabilities. This is the essence of the difference between digitization and digital transformation. This would include process re-engineering across internal organizational boundaries or silos, as well as external partners.

5. Put agreements in place that clearly state ownership, IP, and access rights to the data
Data ownership and the responsibility for maintenance of that data, including feedback loops, ensure quality is maintained and that viable business models are sustained for both an organization and its customer and supply network.

6. Encourage common data standards among customers, manufacturers, and suppliers
Digital transformation of an organization will need to encompass its supply network, and the full benefits of such transformation will only be realized if suppliers can link to their customers in a consistent way, avoiding the need for multiple IT solutions for the same task.

7. Ensure employees are trained to keep up to date on current and future digital transformation technology
The reliance on data implies that the skill requirements for a workforce will evolve in order to support the new focus on data and quality.