Fixing data management in the data-intensive aerospace sector

A major aerospace company is turning a hurdle into an asset

Enterprises in every industry sector can benefit from high-quality, trusted data – but in the aerospace industry, it's critical. If airplanes fail, people may die – so failure is not an option. That's why aircraft manufacturers must keep excellent data on the components and processes used to build and test their products.

Aerospace companies need to know which supplier made every part and component that goes into an aircraft's construction – right down to the rivet, bolt, cable, and wire. They also need to closely test, monitor, and record the processes used to assemble these components into an aircraft, and that generates even more data.

With such a pressing need for high-quality data, one might assume that aerospace companies are data masters. But this is not the case. Yes, these companies generate, store, and use data – lots of it – but at a tremendous cost.

A dearth of top-class data-management strategies is directly affecting the bottom line – often totaling hundreds of millions of dollars annually. Bad data management practices typically cost an enterprise 12 million dollars for every billion dollars in annual revenue.

The good news is that fixing this problem is relatively painless. Even better, the solution will more than pay for itself.

The most important data is often the worst

When assessing the challenges related to data management, here's a good general rule: Whatever the company's business is, that's the source of its worst data.

There are two, related, reasons for this. First, any large company will generate a huge amount of core data. Second, this inevitably ends up being stored and used by many discrete business processes, applications, and systems.

A major North American aerospace company found itself in this situation in 2017, when it was implementing a planning and forecasting solution. The data that was critical for the company's supply chain management and aftermarket operations required significant improvement to be optimal.

The company started to address this in 2019. Its first step was to conduct a Capability Maturity Model Integration-Data Management Maturity assessment (CMMI-DMM) – a process-improvement framework originally developed by Carnegie Mellon.

Results reflected lack of investment

The company had not been spending significantly on data management. This was reflected in its CMMI-DMM score of 0.28 on a scale of zero to five. This was a wake-up call for the executives, who until that point did not fully appreciate the negative impact of their data-management strategy.

Defining the scope of the challenge within the supply chain and aftermarket division involved conducting interviews with 26 groups across the value chain. The results revealed hundreds of negative business outcomes, with poor data as the root cause.

For example, the division could not generate a single, division-wide list of parts. The same part number was sometimes used for different products from different suppliers, while systems used varying formatting conventions for the same part, affecting their ability to communicate information about that part. As a consequence, the operation:

- could not do strategic sourcing
- could not track inventory, so was often over stocked
- could not effectively distribute inventory to ensure parts were where they needed to be
- could not consistently meet delivery schedules
- might order the wrong parts.

In addition, with so many different systems in use, the division relied heavily on employee knowledge. Whenever an employee moved on – even to another area of the division – their replacement required time to get up to speed. This resulted in ordering errors and other problems.

The solution was to create and implement an overall data-management framework.

From custodian to stewardship

Often, enterprises assume technology can solve the problem and executives leave it to the IT department to address the issue. IT plays a crucial role as the custodian of a company's data but that's only one aspect of the solution. It's the enterprise as a whole that owns the data, therefore the enterprise must become stewards of that data.

Proper stewardship requires a culture shift – a buy-in from all members of the company, starting at the executive level. Fortunately, the company recognized this. (One result of this is that the IT team's role has been elevated within the division to become more strategic.)

Prioritizing tasks based on business value

The insights collected from the initial interviews enabled the company to identify the division's common business problems and their impact on the bottom line. An Agile project-management approach was employed to assemble a work backlog.

From this backlog, the company had an initial set of prioritized tasks, based on business value. These tasks included creating a data-governance organization, standardizing the definitions for information, implementing a data architecture, and introducing capabilities such as modeling, requirement management, information delivery, and so on.

In addition to the data-governance organization, four important capabilities for the data-management framework included requirements management to maintain the prioritized backlog, data architecture and modeling, data stewardship, and data quality management. These have been fully formalized, are overseen by the governance organization, and the appropriate tools have been utilized.

Impressive results

The good news is, making this shift does not have to be resource intensive. The initial team of company personnel and consultants from Capgemini's Insights & Data and Aerospace practices comprised just six people and used the client's existing software tools, and the money this initiative saved the company has paid for the project multiple times over.

This is a journey – not a single, large project. Capgemini has been working with this company on this initiative for more than three years and, as the project has scaled up, the joint team has grown to 14 personnel.

The division has benefitted from some impressive outcomes. For example:

- By standardizing, aggregating, and improving the quality of supplier and parts information, the division's strategic sourcing team achieved an almost immediate seven percent reduction in one segment of supplier spending.
- By improving data management, the division is now able to view planning and forecasting data in aggregate for the first time. As a result, sales inventory and operations planning (SIOP) has evolved from a contract-by-contract basis to a more strategic, executive-level activity.
- Data from engineering systems and other sources is being leveraged to develop new specification templates and populate those with better information, to improve the division's ecommerce site.
- Similarly, data is being aggregated and improved to enhance the enterprise resource-planning implementation the division is undertaking.
- More robust communication across systems is reducing excess inventory, cycle times, and order lead times. As a result, inventory levels are better, and the division is experiencing reduced out-of-stock situations.
- Quoting and proposal systems are being improved.

This division's success is getting noticed elsewhere in the company – including in its engineering, defense, and commercial aircraft operations. Best of all, the cultural shift the company is undertaking means data is now treated as a real asset that provides competitive advantages.

In short, the company's business teams have gone from cursing their data to brainstorming what they can do with it.

FOR MORE INFORMATION, **PLEASE CONTACT:**

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