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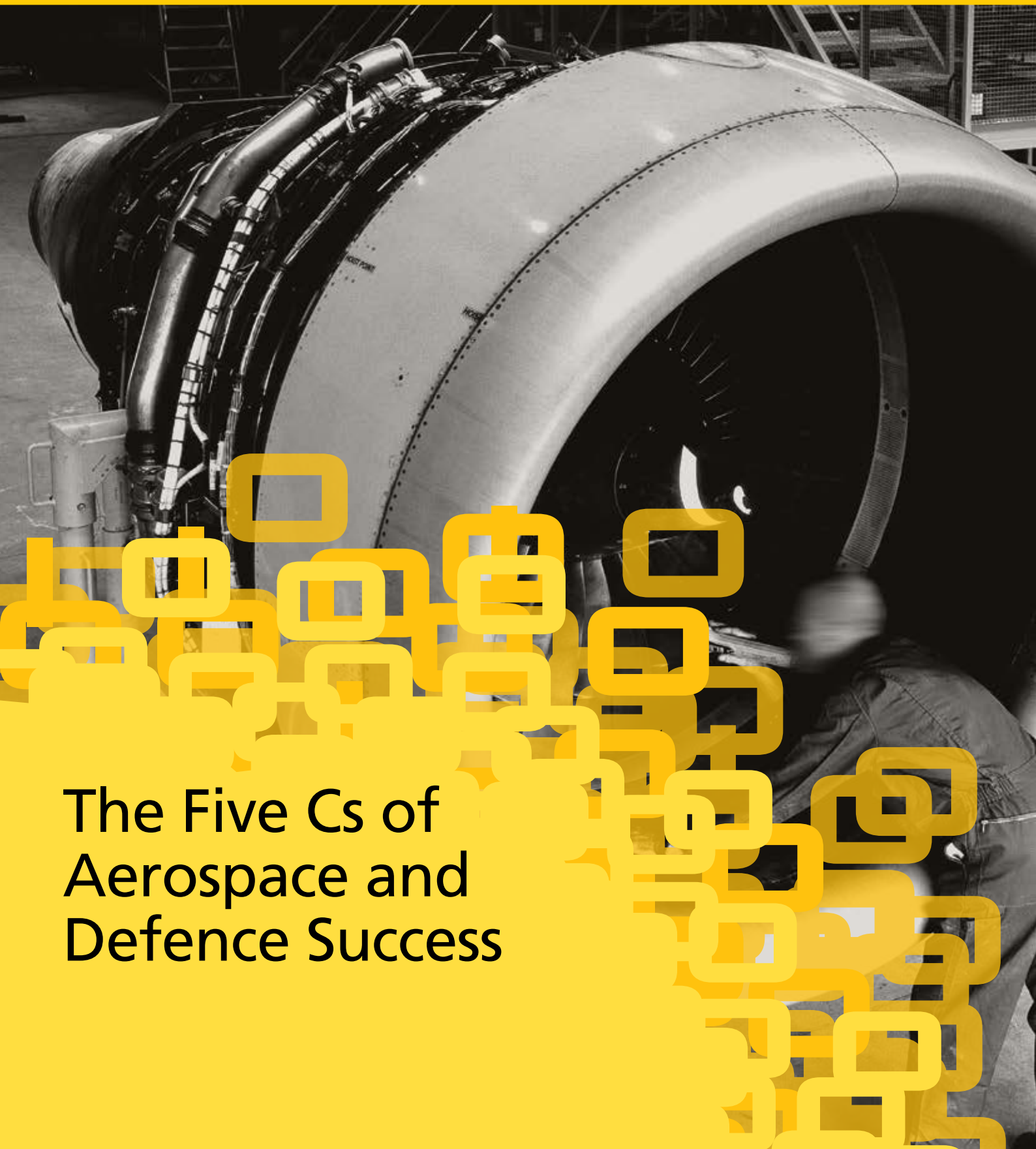

The Five Cs of Aerospace and Defence Success

Executive Summary

Doing business in the Aerospace and Defence (A&D) sector poses additional challenges to a manufacturer beyond what companies face in other markets. They have stringent reporting requirements, often they are held to a higher standard of quality and reliability, and there is continual focus on efficiency and cost cutting. Engineering and product lifecycle management demands tend to be extraordinary and there is usually a strong need for full traceability through the life of the product.

This paper discusses some important considerations for A&D manufacturers in the context of enterprise information systems and how they can help in addressing five important areas of concern—compliance, control, communications, competitiveness and cutting cost, waste and complexity. Enterprise systems are essential tools for running a manufacturing business effectively, but the demands of the A&D market can place demands on system that are not easily addressed by one-size-fits-all products that are not specifically tailored to this environment.

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The A&D Challenge

Manufacturing in the aerospace and defence sector involves the same disciplines and requirements as every other manufacturing segment—plus. Plus the fact that it is nearly always high tech and strongly engineering oriented, with rapid change as a given. Plus increased scrutiny and rigid documentation and reporting requirements. Plus additional testing and certification that is often required. Plus a keen focus on costs and efficiency written right into the procurement contracts. Plus a lot more.

A&D manufacturers need all the help they can get, and appropriate use of information technology can go a long way to help in meeting these challenges. But A&D manufacturers have always struggled with off-the-shelf software that does not support the requirements of the A&D environment. Add-ons for program/project management, work breakdown structure and progress reporting are often cumbersome to work with, incomplete, and not well integrated with the operational applications. Software designed for volume production often falls short in the area of engineering controls and configuration management. Engineering-oriented software might not support the production scheduling and control requirements very well. And the list goes on.

The long and short of it is this—enterprise software should help, not hinder, your efforts to comply, control, communicate, compete, and cut costs and waste. This paper will address each of these areas and discuss how a well designed and supported enterprise software system can be an integral part of an A&D manufacturer's success in serving this very demanding market.

Compliance

In addition to the various compliance requirements there might be in the A&D manufacturer's industry like state and federal tax reporting and regulatory agency requirements (OSHA, FAA, Sarbanes-Oxley, NHTSA, FDA, etc.), most A&D contracts require an additional level of progress and cost reporting that is tied to the structure and nature of the contract. Starting with the work breakdown structure (WBS) in government contracts and similar contract organisation in other markets, cost and schedule information must be accumulated and reported according to what the contract specifies.

In most manufacturing systems, costs and schedule data are accrued and tracked at the work order and purchase order level. Few have a built-in capability to track cost and schedule across multiple work orders or purchase orders and accumulate those costs and schedules according to any other grouping (project, contract phase, or element) that would be useful in providing the customer with the required status information. The default work-around is to establish and maintain a separate spreadsheet-based project/contract tracking system—a tedious, labor-intensive, and error-prone process.

Add-on products or custom programs can be used to bring the data into an auxiliary contract or project structure table (file), but again, this process is not particularly timely and can be difficult to maintain—each activity (PO or work order) must be mapped to the appropriate contract element(s) and auxiliary programs written to bring the data over to these outside files. Reporting is also a custom programming job.

A&D manufacturers should seriously consider a packaged enterprise software system with built-in WBS and project tracking capabilities. They should be able to use this system for initial estimates including material, labor, material burden, overhead, and subcontracting. The estimates are then carried over to the tracking system at contract award and costs to-date and estimate-to-complete readily available as needed for project management purposes as well as for reporting to the customer for billing and revenue recognition. Be sure to look for a system that includes sophisticated ability to create, execute, retain, and reuse allocations of cost and revenue to multiple projects, elements, departments or locations, in order to greatly simplify what can be an otherwise time-consuming and error-prone task.

Control

As much as anything else, the demands of A&D business rely on reporting the way the customer wants it, when the customer wants it, and complete, provable, and timely. Project tracking and WBS capabilities set the stage in allowing you to comply with the contract provisions. The next step is communication beyond those strict reporting requirements.

Under the general title of eBusiness, you want to be able to electronically communicate with suppliers and customers to remove what the consultants call 'latency' in the supply chain—communication delays that lengthen lead times and reduce flexibility. It starts with EDI—the electronic transfer of common business documents like purchase orders, acknowledgements, ship notices, and invoices. Next on the list is electronic funds transfer (ETF) on both the payables and receivables sides. The next capability to look for is the ability to send reports electronically—status reports to customers, plans, forecasts and blanket releases to suppliers. You should be able to export ad hoc query results to Microsoft® Excel® or Microsoft Word® for incorporation into outgoing correspondence.

Another step up the eBusiness evolutionary ladder is collaboration. You'll want the ability to pass designs and specifications to suppliers and work with them to refine the parts and components you will be including in your products. An industrial-strength Product Lifecycle Management (PLM) system (sometimes called Product Data Management or PDM) system will pay big dividends here. Collaboration with suppliers on forecasts and planned purchases can be helpful as well. Share your procurement plans and schedules with key suppliers and work together to develop a purchasing plan that fits with the suppliers' capabilities and resources. They will be better able to meet the schedule and provide reliable on-time deliveries.

On the customer side, embedded Customer Relationship Management (CRM) functionality ensures full communications throughout the project from initial contact through completion. Workflow management helps you keep track of each step of the process to insure that the right documents get into the right hands on the right dates and all steps and requirements are fully coordinated. Embedded demand scheduling and EDI reduce administrative delays in getting plans into action.

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Competitiveness

Since most, if not all, A&D contracts are competitive, an A&D manufacturer must continually strive to make operation more efficient and reduce waste as much as possible, to keep costs down and remain viable. Continuous improvement is often assumed and multiyear or multiunit contracts might even mandate savings and improvements for later phases or deliveries.

Leading manufacturers (in every market) use Lean methodologies to identify and eliminate waste and improve manufacturing performance, quality, and costs. ERP can play a significant role in Lean efforts as outlined in the Epicor white paper "Five Ways ERP Can Help You Implement Lean," available for download at www.epicor.com. The paper discusses ERP's contributions in the areas of waste reduction, continuous improvement, sales and customer service, orderless manufacturing and Kanban, and collaboration. Your A&D enterprise system should be able to handle cell-based manufacturing strategies and demand pull operations in support of your lean initiatives.

Lean efforts should not be confined just to the plant. Time and cost savings are available in engineering, administration, service, maintenance, and throughout the supply chain. Through collaboration, you can encourage your trading partners to 'get lean' and reduce their lead time and costs to you. Through collaboration, you can work together to meet contract objectives and deliver high quality parts and products to the customers. Supply chain management capabilities include coordinated planning, transportation and logistics management, electronic communications and data transfer, and increased mutual visibility.

Cutting

No discussion of manufacturing in the twenty-first century can ignore the realities of a cost-driven environment. Cost cutting is expected, sometimes demanded, and always a part of any process improvement, Lean, or management-oriented program. But blindly cutting costs is risky and often self-defeating. Management must carefully assess the impact of changes made in the name of cost cutting to ensure that these actions will not result in higher costs or other difficulties elsewhere. Cutting inventory is counterproductive if it results in shortages, disrupted production schedules, expensive expediting, and premium freight charges. You have to cut the right inventory (or staff or equipment) so as not to adversely impact performance. Lean programs are well known for their success in this area primarily because all process and procedure changes are well thought out and validated through the structured lean transformation process. Your ERP system can be a key to identifying cost saving opportunities, exploring their impact through simulations and 'what if' scenarios, and measuring the results after implementation.

When considering costs, don't forget the cost of compliance. Extra labor and effort expended on gathering and formatting information for customer reports and accounting purposes is waste by the lean definition—not value adding. Integrated systems with built-in A&D accounting and progress tracking capabilities can significantly cut the cost of compliance by eliminating this waste. Similar arguments can be made in the quality area. System functions can reduce the cost of quality measurement management and reporting.

The third area to consider in the context of 'cutting' is cutting complexity. Simpler systems and processes are the most efficient with less non-value-adding effort required. The more integration your systems contain, the less complex your procedures have to be to get everything together for effective management and operations. The more integrated the systems are out-of-the-box, the simpler your IT environment with fewer custom programs, synchronisation routines, file transfers, and multiple (duplicate) data sets. Cutting complexity is a very 'lean' and a very smart thing to do.

About Epicor

Epicor Software Corporation is a global leader delivering business software solutions to the manufacturing, distribution, retail, and service industries. With more than 40 years of experience, Epicor has more than 20,000 customers in over 150 countries. Epicor solutions enable companies to drive increased efficiency and improve profitability. With a history of innovation, industry expertise and passion for excellence, Epicor inspires customers to build lasting competitive advantage. Epicor provides the single point of accountability that local, regional, and global businesses demand. For more information, visit www.epicor.com.

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