

ENOVIA V6 Whitepaper

Managing Contracts in Aerospace & Defense

From a Single Version of the Truth

a Product Lifecycle Management Whitepaper
Prepared by ENOVIA, a Dassault Systèmes Brand



Executive Summary

The Aerospace and Defense (A&D) industry is a global business with a variety of nations vying for contracts from their own governments as well as business opportunities outside their borders. A weakened US dollar found European A&D companies purchasing US assets. A push for more cost-effective components has enabled Asian countries to surface as strong resources for local sourcing and engineering projects. Regardless of location or project, A&D companies face the same challenges —just at different levels of complexity. Issues such as finding a skilled staff, adding production infrastructure quickly while ensuring quality have kept OEMs and suppliers concerned. Supply chain bottlenecks in the new global marketplace continue to frustrate A&D companies.

Managing the multi-million dollar contracts in the A&D industry is difficult because of a lack of adequate visibility into the contract specifics. Thousands of data sources residing on standalone systems dispersed globally create a chaotic environment of inefficient and complex business processes that lack integration and accuracy. Without an integrated solution that delivers a “single version of the truth,” A&D companies face project delays, cost overruns, regulatory compliance headaches, and loss of profitability.

This whitepaper discusses how A&D companies, faced with increased scrutiny by the public and their own governments, can meet these challenges by adopting a Product Lifecycle Management (PLM) solution that encompasses contracts management. PLM solutions enable a shared understanding across organizational boundaries by delivering a single version of the truth. The integrated capabilities available through a PLM solution enhance compliance and mitigate risk, leading to increased profitability.

PLM works effectively with contract lifecycle management (CLM) strategies. Incorporating contract management in PLM provides a means for performing day-to-day execution of the development, certification, and production of complex, leading edge and regulated products. By safeguarding all the contract artifacts and supporting documents, PLM creates a manageable solution for contract administrators.

Dassault Systèmes develops and markets PLM application software and services that support industrial processes and provide a 3D vision of the entire life cycle of products from conception to maintenance. ENOVIA®, one of six Dassault brands, is a recognized leader in delivering collaborative PLM solutions. The ENOVIA® Aerospace and Defense Accelerator™ for Program Management is built on the Dassault Systèmes V6 platform, a single PLM platform based on MatrixOne technology, for managing product lifecycle business processes. Designed as an out-of-the-box solution, the ENOVIA software enables customers to implement industry standards and best practices. The A&D Accelerator enables companies to deploy a state of the art, scalable enterprise solution for managing programs rapidly across an extended-enterprise in real time that can help them meet product requirements, customer contracts, schedules and regulations within a single, collaborative environment.

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A&D Industry Contract Challenges

In 2005, it was reported that a US jet fighter took 14 years to build from contractor start to initial operational deployment.¹ Long development lead times are only one of the hurdles that the aerospace and defense (A&D) companies must overcome when managing a contract. A&D programs include some of the most intricate, detailed projects ever developed. Technological complexities and a global manufacturing environment play distinct roles in the program management and execution challenges these companies face.

Extended lead times and globally dispersed manufacturing sites, combined with outdated and inefficient business processes, all affect time to market, cost goals, and contract adherence. Effectively managing a contract with all these variables is becoming even more complex as the new A&D manufacturing supply chain model evolves into a global, major systems model. With more contract wins in extended regions of the globe, A&D companies will require better program performance to offset manufacturing delivery delays.

Changing roles is adding to the complexity facing A&D companies. Every day A&D companies must learn to collaborate on one program with a partner that may be a current or future competitor on another program. The size and length of these contracts requires companies to understand clearly, who is a supplier, a partner, or a competitor—and when that title applies.

Successful A&D manufacturers and integrators must be as innovative in their business processes as they are about the aircraft they are designing and building. Relying on standalone, proprietary legacy systems is outmoded.

One of the many aspects of a program is the contracts that drive it. The details in contracts are one type of requirement (along with product and regulatory requirements) that must be met for successful program completion. Today many A&D companies struggle because of poor visibility into

contract terms and conditions by the program team members. Fragmented procedures with information stored on standalone systems have created communication silos that fail to connect deliverables, and the people that generate them, to requirements. Inadequate systems for capturing data and updating the information routinely exist in many A&D sites. Knowledge loss is prevalent because when employees exit over the course of a contract, their program knowledge leaves with them. Without a central data repository to capture the contract knowledge and “flow down” modifications quickly and accurately, employees maintain personal record-keeping systems. These personal systems are subjective, anecdotal, and inject more chaos into the system because the information only reflects that individual’s specific concerns.

The answer to the fragmented communication concerns is not to hire more people; the answer is to improve communication and collaboration by enabling all users to access a central, consolidated “single version of the truth.” With a “single version of the truth” approach, A&D companies can access accurate, real-time data related to contract specifics such as terms, conditions, deliverables, schedules, test requirements, etc. Contract managers working from reliable, real-time, up to date information can use that content to improve demand planning and program management. Better decision-making capabilities improve performance, customer satisfaction, and profitability.

Managing Contracts More Reliably with PLM

Successful execution of an A&D program means managing volumes of information to meet all contractual obligations efficiently. Tracking, reporting, and communicating that information involves teams of people across multiple functions and organizations. Programs succeed or fail on their ability to communicate very reliably with all the team members over long periods. A solution is required that both integrates all of the critical data and program information into one consistent whole to make it more understandable and provides a permanent reference and program “memory” to inform new team members.

Product Lifecycle Management (PLM) is a business process strategy that enables a shared understanding by delivering the “single version

of the truth,” regardless of location. PLM extends beyond the “traditional” design engineering scope and integrates all the functions associated with operating a program—for example, Legal, Program Management, Purchasing, and Finance. By integrating the data from contracts with the other relevant data from the program, PLM can provide the visibility necessary to manage a contract effectively. The result is the ability to aggregate all the product, regulatory, and contract requirements necessary to reliably and efficiently complete programs. PLM integrates the execution tools in the program, enabling creation, test production, delivery, and support of the products and services detailed in the contract. The integrated capabilities enhance compliance and mitigate risk, leading to increased profitability.

Unique Characteristics Associated With A&D Contracts

- **Scope and Complexity**
The customer and the contractor must agree to contract requirements that reflect what the industry can achieve realistically
- **Change Management**
The contractor must adopt change rapidly and cascade those changes quickly and effectively throughout the organization and supply chain
- **Uniform Business Practices**
For conformance across the enterprise, product data must link to various Quality standards, manufacturing specifications, documentation necessities, materials sourcing, etc., require a link to product data
- **IP Security and Export Control**
The national security nature of many A&D contracts requires tight security specifications
- **Narrow Customer Base**
The majority of customers are government defense/aerospace agencies and airlines
- **Limited Number of Qualified Vendors**
Very few companies globally can take the financial risk, absorb the liability, and produce the product or service required

Integrating Contracts Management with PLM

PLM works effectively with Contract Lifecycle Management (CLM) strategies. Incorporating contract management in PLM provides a means for performing day-to-day execution of the development, certification, and production of complex, leading edge and regulated products. The PLM approach safeguards all the contract artifacts and supporting documents, creating a manageable solution for contract administrators. Users find they can manage the deliverables against a contract over the life of the program because PLM enables cross-organizational communication.

As a business integration solution, PLM provides the visibility, access, and supporting data for the contracted products. This integration into one enterprise activity increases predictability and reliability by identifying the requirements for satisfying the contract sooner. By integrating the program execution tools during the product lifecycle, PLM serves as a positive force for profitability over the life of the contract. Improved performance occurs when users integrate CLM capabilities with PLM and the entire team can share the changing contract details from a secure, single, accurate database. With PLM, contract management personnel can:

- Ensure predictability by standardizing business processes globally
- Empower employees and suppliers to access accurate data for unfettered cross-organization communication and collaboration
- Meet delivery, regulatory, and cost goals through unhampered visibility into the contract status
- Replace consumer-based software tools with robust options
- Accurately track physical items from concept to delivery (traceability)
- Decompose contract and project data
- Leverage and protect corporate intellectual property (IP)

Users can access the full spectrum of product and business processes— from small-scale teams to extended enterprises with thousands of users globally. An expanded PLM approach (figure 1) enables contract administrators to integrate contract line items (CLIN), Work Breakdown Structures (WBS), related program schedules (tasks for executing WBS), and work product (reports, data, bill of materials [BOM], etc).

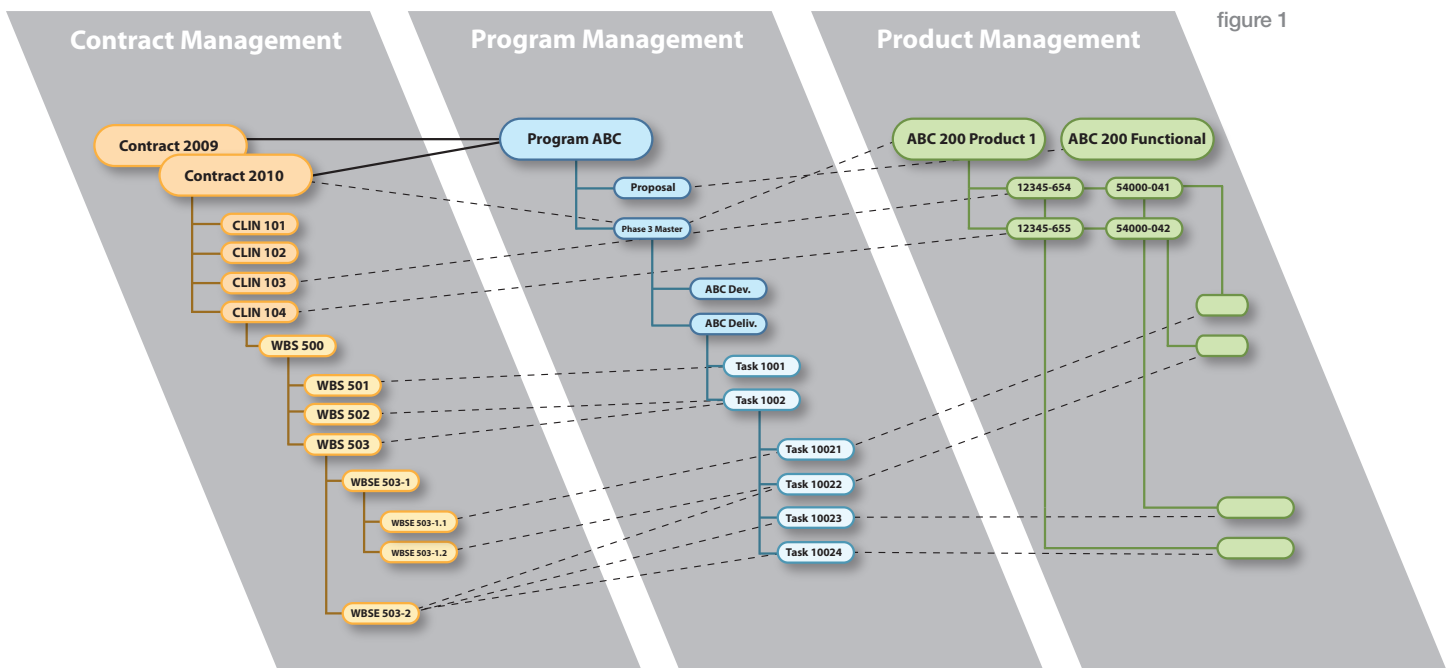


figure 1

An Expanded PLM Approach

ENOVIA Aerospace and Defense Accelerator for Program Management

Through project pipeline dashboards, ENOVIA® Aerospace and Defense Accelerator™ for Program Management provides management with real-time visibility into a project's status in terms of schedule, resources, costs, and benefits. Users can create and access ENOVIA® data from the most popular Microsoft applications, including Word, Excel®, PowerPoint®, Outlook, Project, Windows Explorer, and Windows Desktop Search. By managing product content in the PLM environment rather than on users' PCs, organizations can create, manage, and review product content more securely. Providing a native integration to Microsoft applications supports a rapid adoption of the PLM system by minimizing end-user training.

ENOVIA Aerospace and Defense Accelerator for Program Management uses one central repository to support key functional disciplines within the A&D enterprise:

- Contracts Management
- Program Management
- Program Planning and Control (PP&C)
- System Engineering
- Data Management
- Configuration Management
- Subcontractors Management

Performance-to-contract improves greatly when all requirements are visible to the entire team. Using one system to bring together the core processes of these functional disciplines provides the ability to improve overall performance of program execution and delivery-to-contract. ENOVIA Aerospace and Defense Accelerator for Program Management:

- Captures contracts and the associated work-breakdown elements in line-item detail, ensuring complete assignment, scheduling, and proper execution
- Links projects with critical milestones and deliverables to the contracts and baseline product architectures
- Connects hardware and software deliverables to schedule tasks

- Defines Contract Data Requirements List (CDRL), Supplier Data Requirements List (SDRL) and non-contract data requirements lists as submittal tasks and link actual data deliverables.

ENOVIA Aerospace and Defense Accelerator for Program Management enables users to:

- Secure award fees and profits with very predictable contract delivery performance
- Increase customer satisfaction with responsive and reliable issue and correspondence management with the customer
- Reduce or eliminate penalties and late fees by managing contract work items, schedules, deliverables, and all adjustments and changes
- Eliminate failed contract audits with repeatable and secure storage, submittal and contract verification processes
- Optimize staffing plans with real-time utilization reports to assess availability of key skills across all projects
- Manage complex collaborative projects involving internal and external teams of customers, suppliers, and partners

"Increased global demand and a more complex business environment created unsustainable pressure on our existing legacy technology systems. We therefore needed the lowest risk approach to get maximum benefits from significant business process improvements. The partnership with Dassault Systèmes will enable us to meet these challenges through an integrated solution that will establish a series of best practices to better manage and securely distribute product information globally within our company and across the supply chain."

Glenn Isbell,
Program Manager,
Bell Helicopter

How to Fulfill a US DPAS Order Effectively

The US Defense Priorities and Allocations System (DPAS) mandates the timely availability of industrial resources to meet national defense requirements. Under DPAS, the US President or the Secretary of Defense has the authority to issue a DPAS order, a command that forces a defense contractor to meet all military contractual obligations before those for the private sector or any other non-prioritized defense system. Fines are imposed if the contractor fails to meet the order and the contractor “rating” could slip, affecting future business prospects.

Successful US defense contractors understand the implication of a DPAS order. Without adequate planning and precision visibility into the contract and the DPAS affected bill of material (BOM) items, defense contractors inadvertently run the risk of fines from the federal government and lost business with the private sector (where dual-use technologies may be shared). In either case, often millions of dollars are at stake. The DPAS mandate requires defense contractors to “flow down” the order rapidly to any suppliers involved with contributing to the manufacture of the item the military needs. Defense contractors must inform suppliers quickly so production lines and delivery schedules are re-prioritized to meet the DPAS requirements.

When a defense contractor uses a PLM system tied to the contract involved in a DPAS order, an automated process kicks in, eliminating human errors, speeding up the “flow down” process, and providing suppliers with the same information — “the single version of the truth.” PLM stores the contract information in a centralized database ensuring accurate information that is accessible by anyone with the right security clearance. In an ENOVIA PLM solution, all the part numbers can be associated with specific contract numbers, allowing easy prioritization of DPAS rated parts across all instances of their use and engineering work in process. Through online collaboration capabilities, the ENOVIA solution enables all stakeholders to interact real-time for a speedy resolution to an emergency.

Why Dassault Systèmes ENOVIA

Dassault Systèmes ENOVIA® provides PLM and collaboration solutions for federal agencies, A&D OEMs, and their subcontractors. From the most simple to highly engineered complex products, Dassault Systèmes offers a level of collaboration that addresses a broad range of industry needs for a new class of users within the business, engineering, and manufacturing communities.

V6 is Dassault Systèmes (DS) next generation platform for enabling PLM 2.0 and harnessing the collective intelligence among online communities. PLM 2.0 brings life to knowledge—from idea to product experience—merging the real and virtual in an immersive lifelike experience. Through V6, the ENOVIA Live Collaboration platform delivers the flexibility, open standards, scalability, and industry-specific functionality today’s global companies need to tie together multi-discipline engineering groups and other key contributors. V6 represents the next step in the PLM evolution, extending the breadth, depth, and reach of enterprise-wide collaboration in the new product development process. Combined with reduced total cost of ownership (TCO) and improved return on investment (ROI), V6 offers global enterprises and supply chain participants alike a smart, cost-effective solution.

ENOVIA Aerospace and Defense Accelerator for Program Management contains the functions and features that map to the day-to-day tasks of a contract manager/administrator. The solution facilitates collaboration, ensuring a successful product rollout throughout the enterprise and supply-chain.

To learn more about Dassault Systèmes and ENOVIA, visit: www.3ds.com

About ENOVIA

ENOVIA is a recognized leader in delivering collaborative PLM solutions. We enable companies from a broad range of industries to dramatically accelerate innovation, time-to-market and revenue generation by collaboratively developing, building and managing products. Our solutions facilitate the sharing of concepts, content and context across product lifecycles and throughout value chains of employees, customers, suppliers and partners.

ENOVIA collaborative PLM solutions help global enterprises bring together people, processes, content and systems to achieve a compelling competitive advantage. Our interoperable solutions unify and streamline processes across the product lifecycle, enabling companies to easily and cost-effectively work on projects within and outside of their enterprises. Our adaptable, scalable technology is built to accommodate the ever-changing marketplace.

About Dassault Systèmes

As world leader in 3D and Product Lifecycle Management (PLM) solutions, the Dassault Systèmes group brings value to more than 90,000 customers in 80 countries. A pioneer in the 3D software market since 1981, Dassault Systèmes develops and markets PLM application software and services that support industrial processes and provide a 3D vision of the entire life cycle of products from conception to maintenance. Our offering includes integrated PLM solutions for product development (CATIA®, DELMIA®, ENOVIA®, SMARTEAM®), mainstream product 3D design tools (SolidWorks®), 3D components (Spatial/ACIS®) and SIMULIA®, DS' open scientific platform for realistic simulation. Dassault Systèmes is listed on the Euronext Paris (#13065, DSY.PA) stock exchange. For more information, visit 3ds.com.

PLM Solutions for Your Business

Contact us today to find out how leading companies worldwide are using ENOVIA PLM solutions to beat the competition and speed time-to-market.

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