# HOW DO I FAST TRACK DESIGN RELEASE?

## ACCELERATING DESIGN RELEASE WITH CLOUD-BASED SAAS SOLUTIONS

AN AEROSPACE AND DEFENSE INDUSTRY GUIDE

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# Introduction

The aerospace and defense sector is entering a period of significant change, driven by the need to create more sustainable aircraft and reduce the industry's environmental impact. At the same time, the certification process– and the safety it ensures– remains an essential concern for every aerospace and defense company. As these companies strive to improve sustainability and maximize safety, they must also contend with the increasing complexity of their systems and products. Companies must efficiently coordinate engineering work across multiple domains to address this challenge while meeting project deadlines and controlling costs. They must also work closely with other vital stakeholders in their procurement, manufacturing, and service departments and integrate the efforts of suppliers and original equipment manufacturers (OEMs).

Managing all of these efforts using traditional tools and existing development practices can lead to difficulties. Serious performance and safety issues can arise if even minor design changes made by one team are not propagated to other departments. Those issues may not be evident until prototyping and testing occur, at which point the engineers must complete arduous, expensive redesigns. Similarly, if other departments or external stakeholders act on outdated or inaccurate product data, it becomes harder for them to source parts and supplies in a timely, cost-effective manner.

Digital product lifecycle management (PLM) solutions give aerospace and defense companies the capability to deal with rising system complexity while pursuing safety and sustainability priorities. These solutions connect internal and external stakeholders, processes, and technologies through a common digital thread. Because this thread provides a single source of truth for team members throughout the organization, development decisions are always made based on up-to-the-minute product data. This improves the systems integration process and reduces the rounds of prototyping and testing required to achieve sustainable designs that meet the industry's rigorous certification standards. As a result, companies can control costs and keep projects on schedule.

This eBook is one of a series focusing on the challenges facing aerospace and defense companies, and how PLM solutions can address them.

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# Design Release - A Crucial Milestone In Development

Design releases are becoming increasingly complex. Today's smarter, more connected products include a variety of mechanical, electrical, electronics, and software components. These products need to meet tougher regulatory standards and achieve certification quickly. Modern product development processes are also inherently collaborative, requiring engagement with multiple engineering domains, customers, suppliers, contractors, and other collaborators to create design deliverables.

In a typical design release process, engineers collaborate extensively with both internal and external stakeholders to drive superior product design. Once this iterative process is complete, the design team releases the related design deliverables to facilitate the next steps in development, including certification. Downstream operations such as manufacturing and servicing use these deliverables as critical inputs to plan their operations. Thus, design release documents are vital, and releasing them on-time is crucial.

In this eBook, we focus on the challenges that aerospace and defense companies face in hitting design release—and how the adoption of a cloud-based software-as- a-service (SaaS) platform can help them better manage all that complexity.



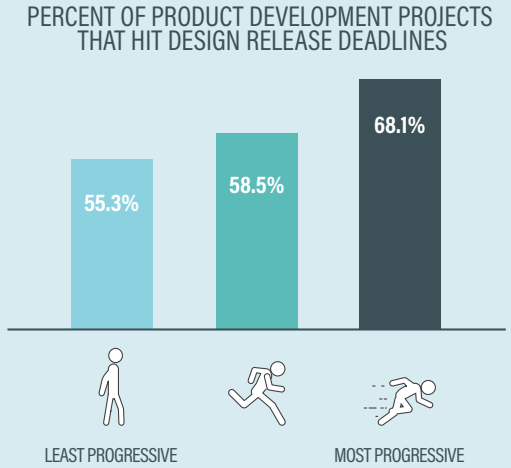



***Figure 1***
*There is a lot of room for improvement for companies to hit design release on time.*

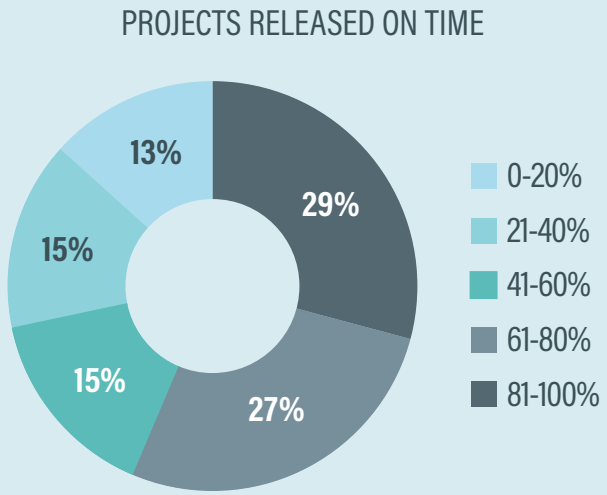
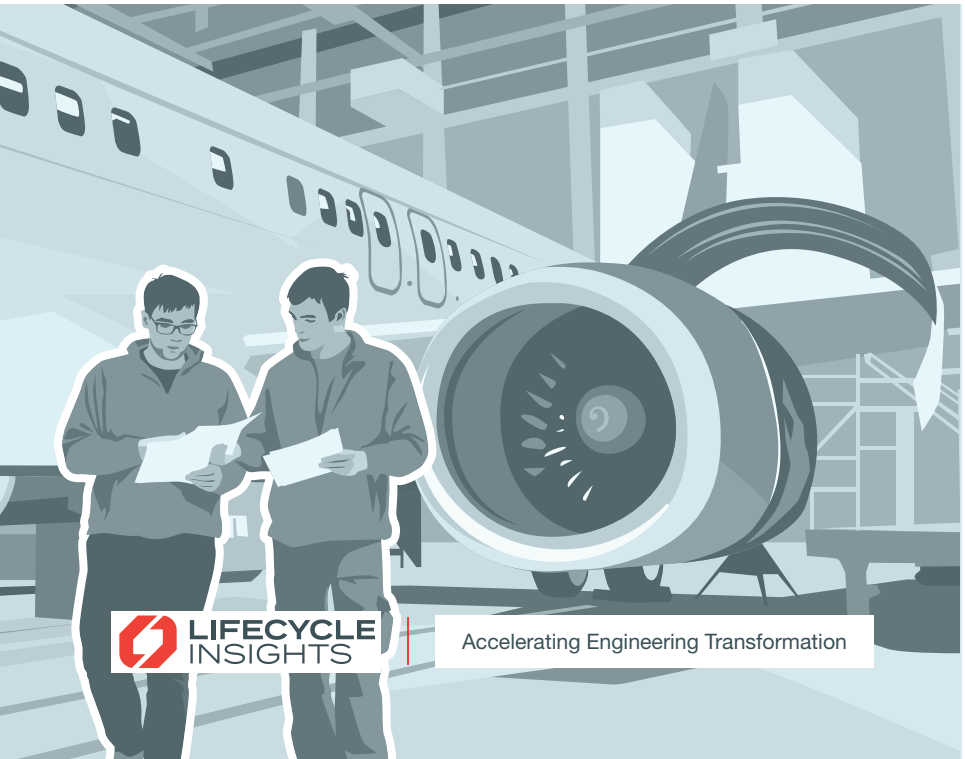



***Figure 2***
*Less than a third of executives claimed to hit design release more than 80% of the time. But about 55% hit design release less than 60% of the time.*




# The Poor Health of Modern Development

As noted in Lifecycle Insights' 2020 Engineering Executive's Strategic Agenda study, less than one-third of respondents hit design release more than 80% of the time, and 55% hit design release less than 60% of the time. It's clear this is an area where organizations currently struggle.

Aerospace and defense companies that can hit design release on time for most of their projects will decrease time to market, achieve certification more quickly, improve their brands, get higher marks for customer service, and increase their profit margins. It's no wonder that companies of all sizes have invested in product lifecycle management (PLM) and product data management (PDM) platforms to upgrade their design release and review processes.

Communication is also crucial. The COVID-19 pandemic forced remote stakeholders to review design release documents virtually. Design teams must be able to incorporate their feedback quickly to accelerate design release. Progressive solutions that allow quick and seamless communication are key to reducing friction while meeting design release deadlines.

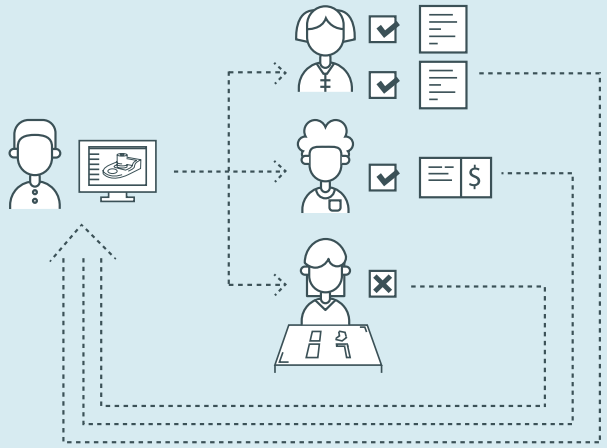


*Figure 3*
*Today's complex products must satisfy requirements across many engineering domains.*

# The Role of Design Reviews In Development

Most aerospace and defense companies mandate multiple reviews before a design can be finalized and released. They may employ automated requirements and compliance checking solutions as well as several levels of peer review to identify issues and gather feedback to improve the design. Such peer reviews often go beyond notes from internal staff. They may also solicit input from external stakeholders like customers or public safety regulators.

To be successful, these companies must ensure requirements are current and accurate. Ideally, reviewers would install software locally to review designs, especially designs created by CAD or simulation software. But licensing restrictions can make this impossible. Instead, stakeholders are forced to exchange screenshots, images, and text files via email, diminishing traceability and accountability during the review process.

Aerospace and defense companies can adopt more progressive solutions, like PLM, to overcome these obstacles and make the design review process more efficient. Such solutions can manage all aspects of design review, including communications, in one central location. Stakeholders can access requirements, the results from automated requirements and compliance checking solutions, CAD models, assembly drawings, and other deliverables crucial to design review, all in one place.

# Leveraging a Comprehensive Digital Twin

The increase in smart, connected products comes hand in hand with a proliferation in the quantity and diversity of design stakeholders. Each stakeholder has its own requirements, making the process of defining the product much more complicated.

Traditionally, each design domain maintained product definitions in separate design documents. Users shared those deliverables via email or shared drives. But, when product definitions were updated, those changes were not always shared with the rest of the design team. The result? Outdated files, which introduced errors and delayed design release.

Aerospace and defense companies can avoid these problems entirely through review and release processes that account for all design domains. The use of a comprehensive digital twin enables an unambiguous product definition that is accessible to all stakeholders via a common PLM digital thread. The digital twin facilitates efficient design review and release. The system can automatically assign review tasks while maintaining updates and communications in a single location. Progressive PLM solutions that involve a comprehensive digital twin can help ensure a higher percentage of projects will hit design release, saving both time and money.

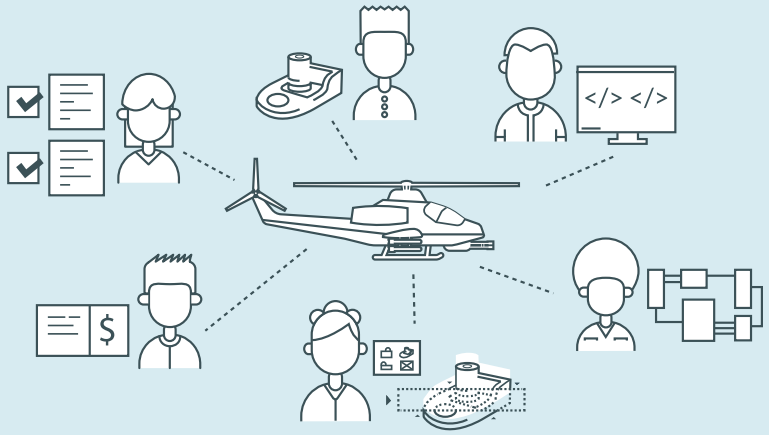
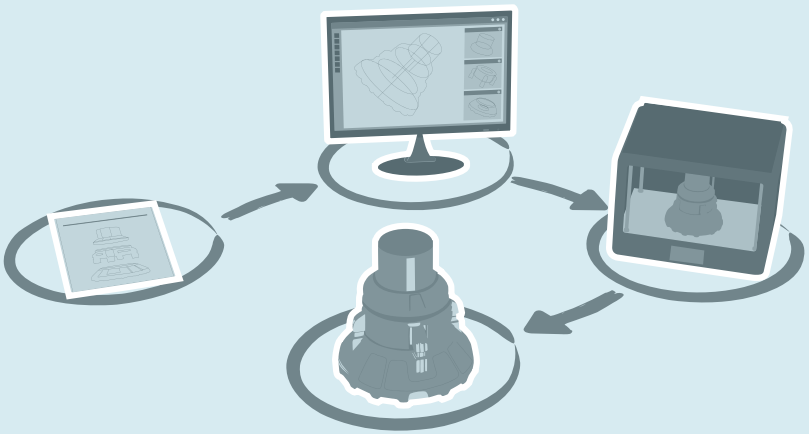



***Figure 4***
*PLM solutions that involve a comprehensive digital twin include all the stakeholders.*



# Employing Automation In Design Reviews and Release

Automation plays a huge role in meeting design release schedules. When aerospace and defense companies automate review and release tasks on a single platform, stakeholders can complete tasks with minimal effort. Everyone always has access to up-to-date, unambiguous definitions, reducing the risk of errors and, by extension, time delays.

Historically, automating review and release tasks involved heavy IT work, including updating automation scripts as needed. As a result, smaller companies without a dedicated IT team could not harness automated processes. Without automation, tasks can be lost or forgotten, communications can be mislaid, and teams can find themselves working with outdated files and data.

Investing in a PLM solution with readily deployable automation tools, however, can facilitate automation with minimal IT support. This can help keep definitions and files up to date, improving productivity, minimizing errors, reducing frustration, and helping aerospace and defense companies hit design release for all projects.

***Figure 5***
*Automation links the different tasks associated with design release and enables stakeholders to complete them with minimum friction.*

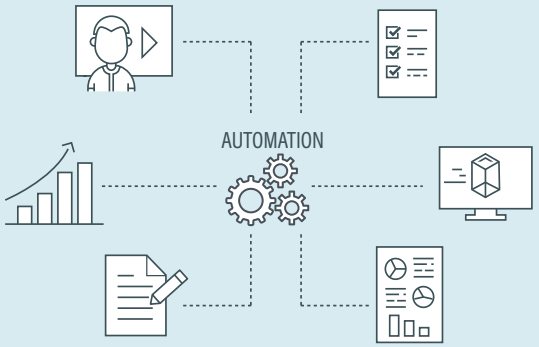
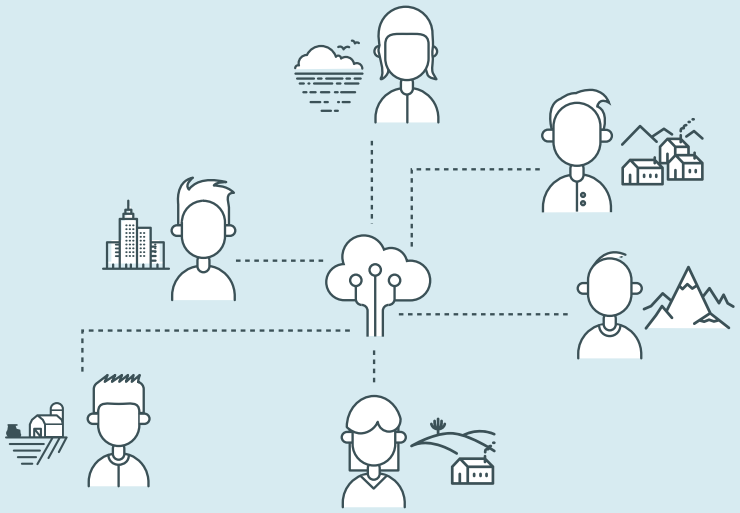
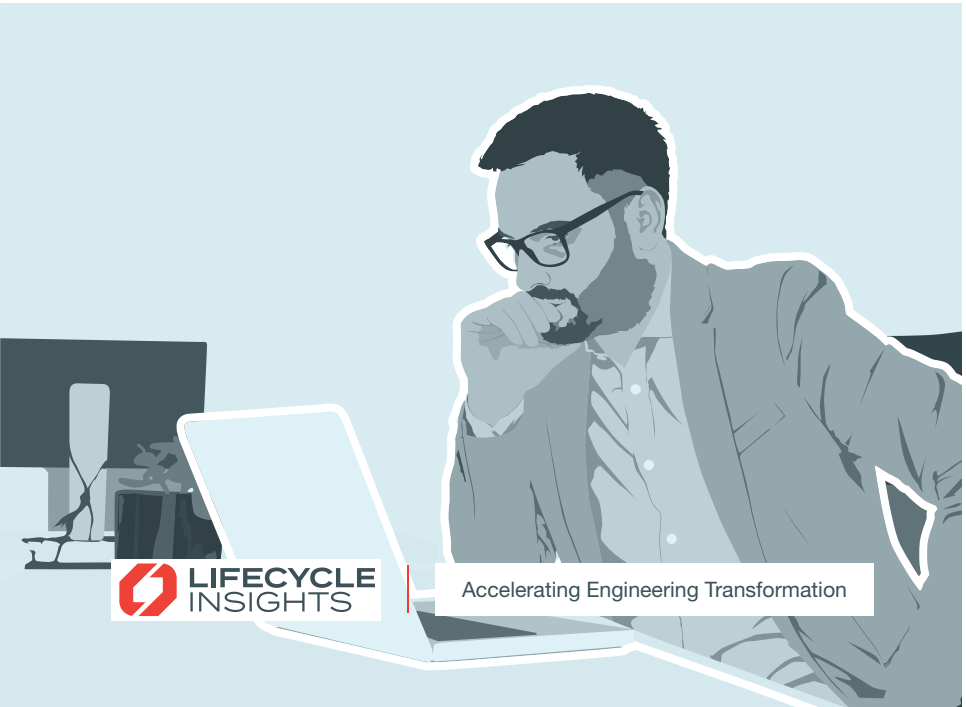


***Figure 6***

*SaaS PLM solutions provide quick access to address immediate needs and require less IT support. These solutions offer an accelerated path to the capabilities that today's companies need.*






# The Advantage of SaaS Solutions

Cloud-based SaaS PLM solutions harness best practices curated by the solution provider, tailored to the aerospace and defense industry or customizable to meet a particular organization's needs. Either way, these solutions allow aerospace and defense companies to quickly and accurately access requirements, detailed product definitions, and other design data necessary to execute a design release. Cloud-based SaaS PLM provides the following advantages:

- *Efficiency.* The solution comes with built-in, prescriptive best practices that an organization can easily customize to meet its needs.
- *Productivity.* The use of artificial intelligence and machine learning (AI/ML) allows these solutions to gain an in-depth understanding of your company's workflows, correcting problems and reducing friction in the process.
- *Fast implementation.* Users can immediately access and implement the solution through a web browser, requiring less IT support.
- *Distributed total ownership.* A SaaS PLM solution distributes the total ownership costs over time, allowing companies to make it an operating expense (OPEX) instead of a capital expenditure (CAPEX).
- *Extended collaboration.* A browser-based SaaS solution supports remote collaboration by all stakeholders, regardless of role or location.
- *Security.* Aerospace and defense companies can secure intellectual property by setting their own standards and permissions.

*Aerospace And Defense Companies Are Looking Toward New Technology Initiatives To Help Them Enhance Collaboration, Reduce Errors, And Maintain A Single Source Of Truth*

## Recap and Conclusions

The increasing complexity of today's products has many aerospace and defense struggling to hit design release deadlines. Traditional approaches to designing and managing deliverables can bog down design release schedules. As a result, many of these companies are looking toward new technology initiatives to help them enhance collaboration, reduce errors, achieve certification more efficiently, and maintain a single source of truth about product requirements for all domains.

PLM solutions improve on traditional methods, but cloud-based SaaS PLM solutions are an even better choice. The benefits include:

- creating a single source of truth for product definitions and design requirements;
- managing all aspects of design updates and review, including communications, in one centralized location;
- supporting the use of a comprehensive digital twin to promote time and cost savings;
- automating manual tasks to streamline the design process; and
- providing stakeholders easy yet secure access to the design documents through a web browser.

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