HOW DO I JUSTIFY A DIGITAL TRANSFORMATION?

BUILDING A BUSINESS CASE FOR 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 Similarly, if other departments or external stakeholders act on outdated or inaccurate product data, it becomes harder for them to source parts and supplies in a timely, cost-effective manner.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.

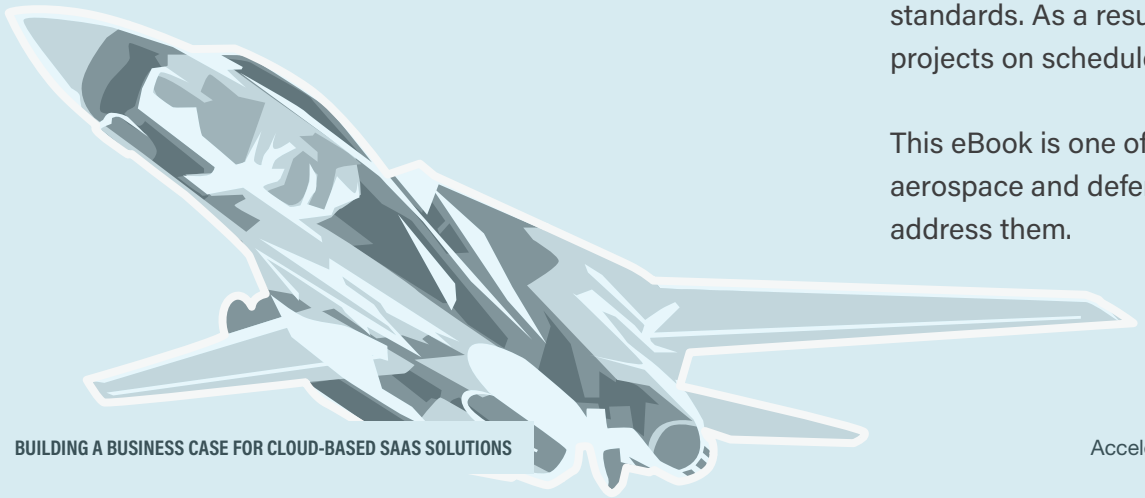

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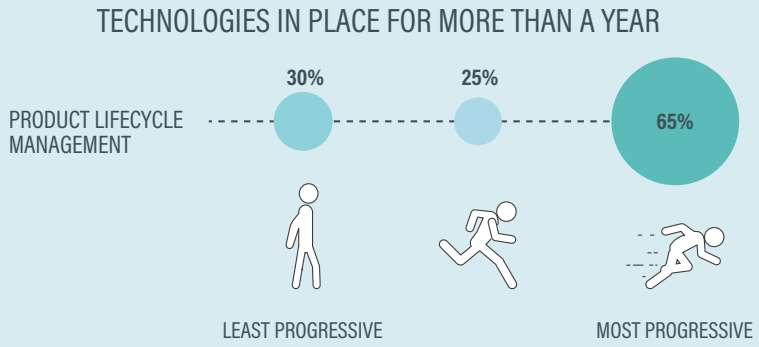
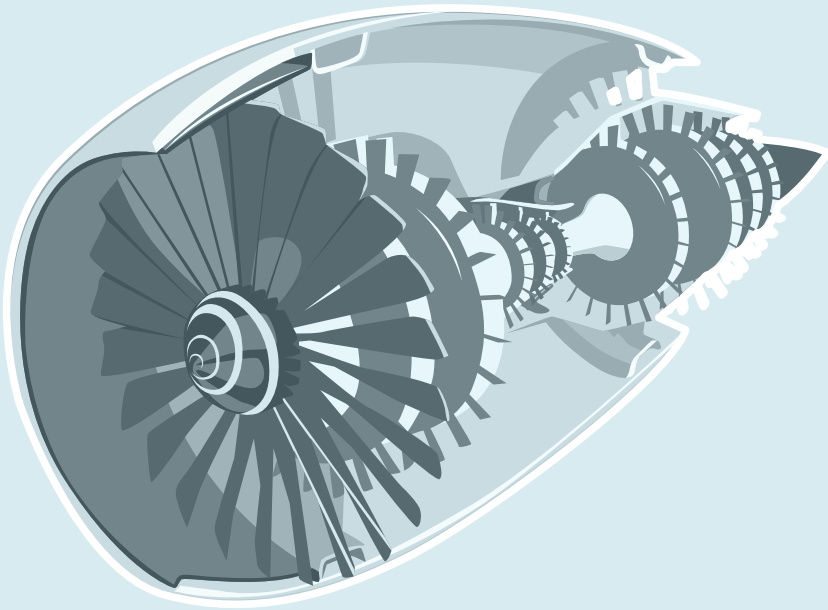
Figure 1

Some 65% of the most progressive companies have had PLM in place for more than a year to support their digital transformation (DX) initiatives.





Overview

Aerospace and defense manufacturers are adopting solutions to support the digital transformation (DX) initiatives that improve their processes and make them more competitive. This trend is particularly evident in product development, where many of these companies are turning to product lifecycle management (PLM). PLM enables companies to manage processes and information across the product lifecycle.

Adopting a PLM solution opens many avenues to value. Such solutions enable aerospace and defense companies to efficiently:

- manage product design data and bills of materials (BOM);
- keep data up to date;
- implement change management;
- accelerate design release;
- enable collaboration across engineering disciplines;
- facilitate communication with external stakeholders including partners, suppliers, and consultants; and
- achieve certification.

The increased availability of cloud-based software-as-a-service (SaaS) PLM solutions is also driving manufacturers that have already adopted PLM to invest in upgrading or switching solutions.

However, it can be difficult for decision-makers to fully understand the benefits of a cloud-based SaaS PLM. This eBook demystifies cloud-based SaaS PLM, showcases its advantages, and answers questions managers often have.

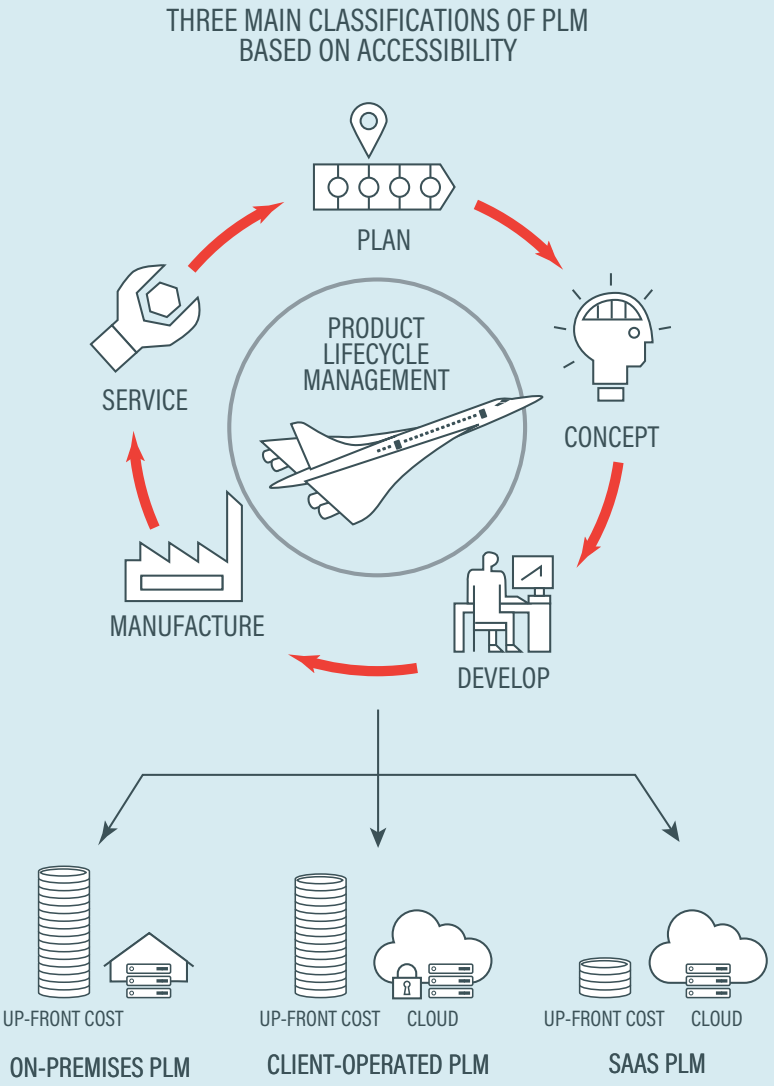
Accessibility of PLM Solutions

To identify the best PLM option, it's helpful to get acquainted with the different types of solutions available today. PLM solutions are classified as on-premises, cloud, or SaaS based on their accessibility.

The accessibility of a given PLM solution determines its suitability for an operation. In an on-premises model, the manufacturer installs, operates, and manages the solution on systems located right inside the premises. In the case of a client-operated cloud model, the manufacturer installs, operates, and manages the PLM solution, but the data center is operated by a cloud provider. The third option is a SaaS PLM solution, where the solution provider installs, maintains, and updates the PLM solution on cloud data centers. This means the customer has no responsibility to install, manage, and update the PLM solution. The customer only deals with the PLM service provider, who acts as a single point of contact for all issues concerning the customer's PLM needs.

Of these three classifications, the on-premises model has been the most popular. But many companies—including small and medium-sized aerospace and defense suppliers—are seriously considering SaaS PLM due to its inherent cost benefits. SaaS PLM is growing in popularity because companies who opt for this PLM model typically only pay an annual fee. This results in a lower up-front startup cost compared to on-premises and client-operated cloud models.

Figure 2
The three main classifications of PLM based on their accessibility.



Understand Investment Implications

Costs are one of the biggest decision drivers for aerospace and defense companies. Managers evaluating PLM solutions need to understand the financial implications of each model. SaaS PLM solutions are available on monthly or annual subscriptions. Companies using on-premises and client-operated cloud models, on the other hand, must purchase a perpetual license to use the PLM solution up front.

In a SaaS PLM model, the up-front investment is far lower because a company is only paying for the initial time—usually one year, but sometimes one month. The up-front cost is lower compared to solutions with perpetual licenses, but the annual cost is higher. Aerospace and defense companies using on-premises and client-operated cloud models incur a significantly higher initial cost when they purchase the PLM license. They also pay an annual maintenance fee, which provides access to the latest release of the PLM solution and technical support. The maintenance fee is included in the SaaS model, while it's a separate cost in the on-premises and client-operated cloud models.

For many companies, the SaaS subscription model is a better option due to lower up-front costs. The SaaS model also offers greater flexibility, as it does not require a long-term commitment to a PLM solution. For example, customers are often unsure whether they will use all the advanced functionalities in a PLM solution, but they can't completely rule them out before they've tried them. SaaS PLM solutions allow companies to access these modules without making a long-term commitment.

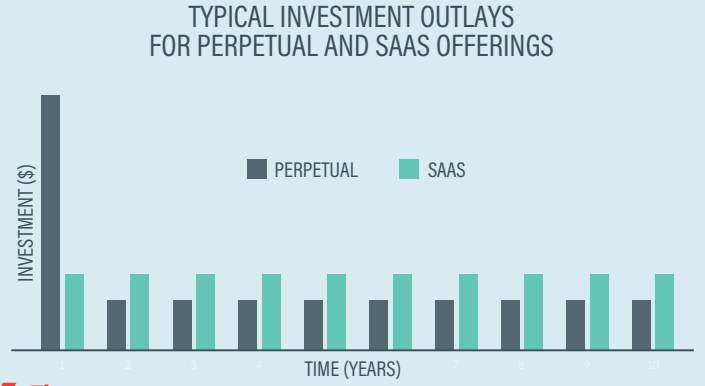


Figure 3

A perpetual (on-premises and cloud-operated) payment and usage model carries a high initial cost, but the annual costs are lower than those of the SaaS model for the same solution.

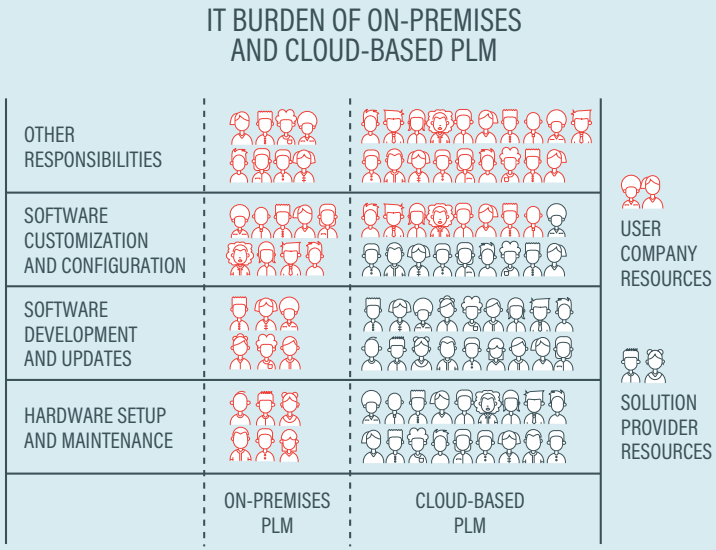


Figure 4

This figure shows that with a cloud-based solution, user companies can shift their IT resources to other responsibilities, relying on more resources and expertise from solution providers.

Shift the IT Burden

Initial investments are not the only costs that aerospace and defense companies need to be aware of. These companies must also consider IT costs. Ensuring that a PLM solution functions properly can be capital-intensive, especially when aerospace and defense companies do not have dedicated IT staff. However, companies can reduce these costs by eliminating the burden around managing the hardware infrastructure, deployment, software updates, data integrity, and data security. This section will discuss how to shift the IT burden.

A SaaS PLM solution provider manages the hardware, solution tuning, and networking infrastructure. Customers, as a result, do not have to devote precious resources to managing those functions. The solution provider is also responsible for developing solutions to any issues that arise, and to keeping the software up to date. And thanks to instantaneous deployment, aerospace and defense companies can use the SaaS PLM solution from day one.

On the other hand, when using on-premises or client-operated cloud PLM solutions, companies have to account for the time it takes to deploy the solution once it is acquired. In these situations, the company's IT staff must manage important PLM operational tasks on their own. These responsibilities can quickly overload IT teams, who may not have set up the PLM for optimal performance in the first place. Based on IT resources, initial deployment time can stretch over many days, if not weeks. As a result, companies often do not immediately benefit from an on-premises or client-operated PLM solution.

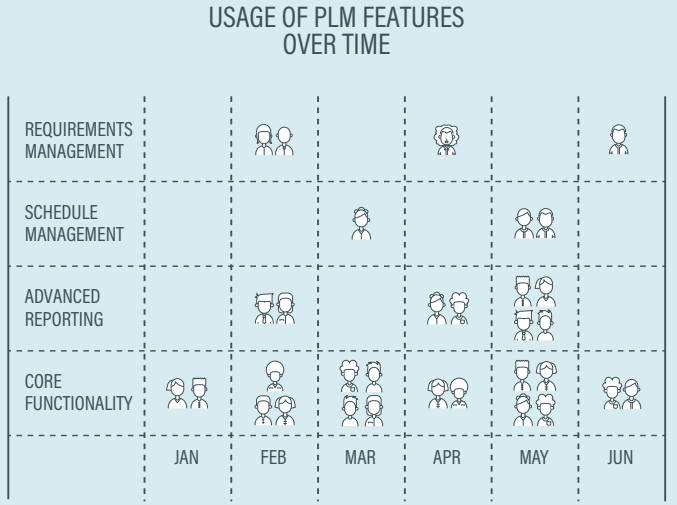
Start Small, Scale Smart

The SaaS PLM solution offers more advantages than on-premises or client-operated cloud alternatives. The chief advantage is flexibility. Aerospace and defense companies have the flexibility to try out features without having to commit to a perpetual license. These SaaS customers are also able to easily add and remove users and can test out new PLM functionalities with ease.

Product development teams are constantly expanding and shrinking. SaaS PLM models allow aerospace and defense companies the flexibility to account for this. If a company needs to expand the team temporarily—adding contractors, consultants, or suppliers—these companies can add more users without any permanent commitment. Once the need is fulfilled, the aerospace and defense companies can easily remove the users and only pay for active users. With perpetually licensed PLM solutions, companies have to pay the large, up-front cost for each license. This means that temporary expansion or removal of users is not a cost-effective option.

SaaS PLM solutions offer flexibility in other areas, as well. When companies are looking at PLM solutions, they are often unsure what modules and capabilities they need. Experimenting to find out their needs involves many days of trying out several add-on capabilities, which adds costs and wastes time. With SaaS PLM, teams are able to add on functionalities for short periods of time and only pay for the extra capability when it is being used. This flexibility means that companies can start small, accessing and paying for only the capabilities that they truly need. This avoids large up-front costs for functionality that is never used.

Figure 5
This figure shows usage going up and down in several areas, including advanced functionality.



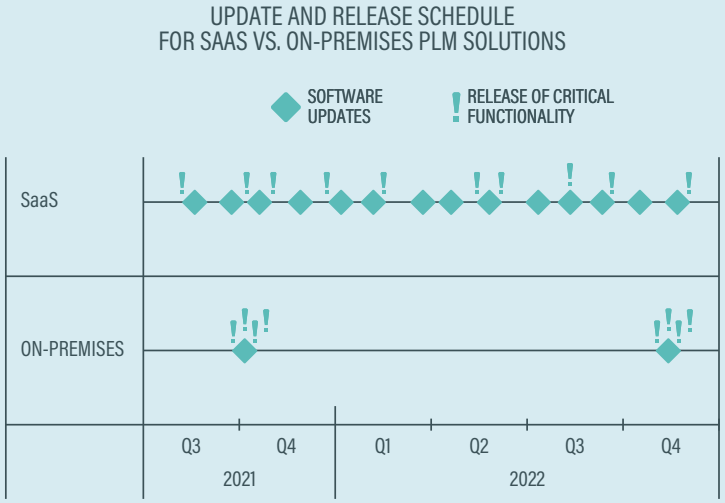


Figure 6
A cloud-based SaaS solution has more frequent software updates with critical functionalities than an on-premises solution.

Stay Up to Date

PLM solution providers update their software regularly. The latest software releases often contain new capabilities and productivity-enhancing features. These features help users better manage products throughout their lifecycle. But there are differences in how PLM solutions help aerospace and defense companies stay up to date.

When aerospace and defense customers use on-premises or client-operated cloud PLM solutions, they only receive software updates from their PLM solution provider once or twice a year. Updating software is a time-consuming process. Once an update becomes available, it can take IT teams several weeks to roll out the update internally. These updates are installed during downtime in development. Migrating existing data from the old version to the newer one is not a trivial task, and requires significant time and effort.

Unlike on-premises and client-operated cloud models, SaaS PLM solutions are updated as often as every two weeks. Better yet, all updates are automatically performed by the PLM solution provider. There is little to no effort on the part of the company's IT team or the product development team. Teams do not have to worry about data migration, as no migration of legacy data is needed. This is good news for customers, who can access new, innovative, and productivity-related PLM functionalities as soon as possible.

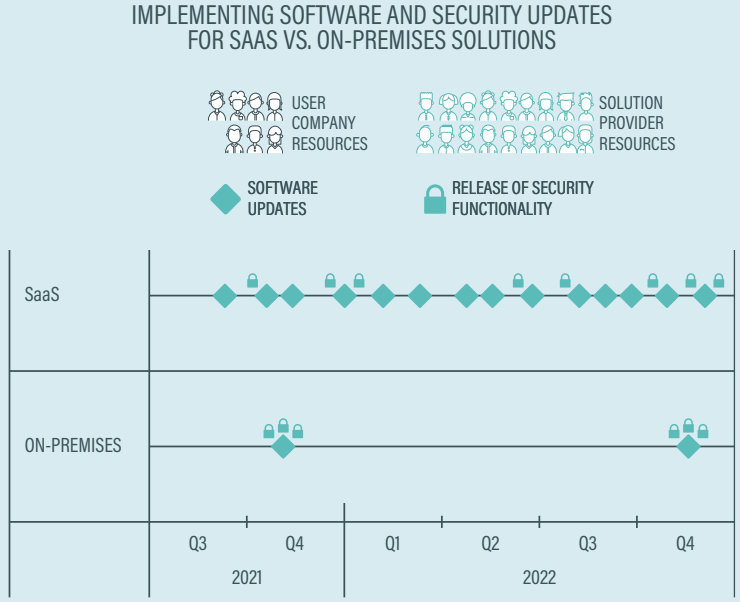


Figure 7

Cloud-based SaaS solutions get more frequent software and security updates than on-premises solutions because the solution provider has more know-how and resources than the customer's company.

Secure the Company's Product Data

Data is now a primary asset for aerospace and defense companies. Cyberattacks and IP theft pose serious threats to data security—threats that progressive companies are actively working to mitigate.

Aerospace and defense companies are 100% responsible for the security of their hardware and data when using on-premises or client-operated cloud solutions. This responsibility calls for IT staff who are well-versed in IT security. They must constantly monitor security risks and implement protocols for employees, including the product development team. They must also ensure data is backed up properly and regularly. These responsibilities are difficult enough to manage for a large aerospace and defense company, let alone for small and medium-sized firms.

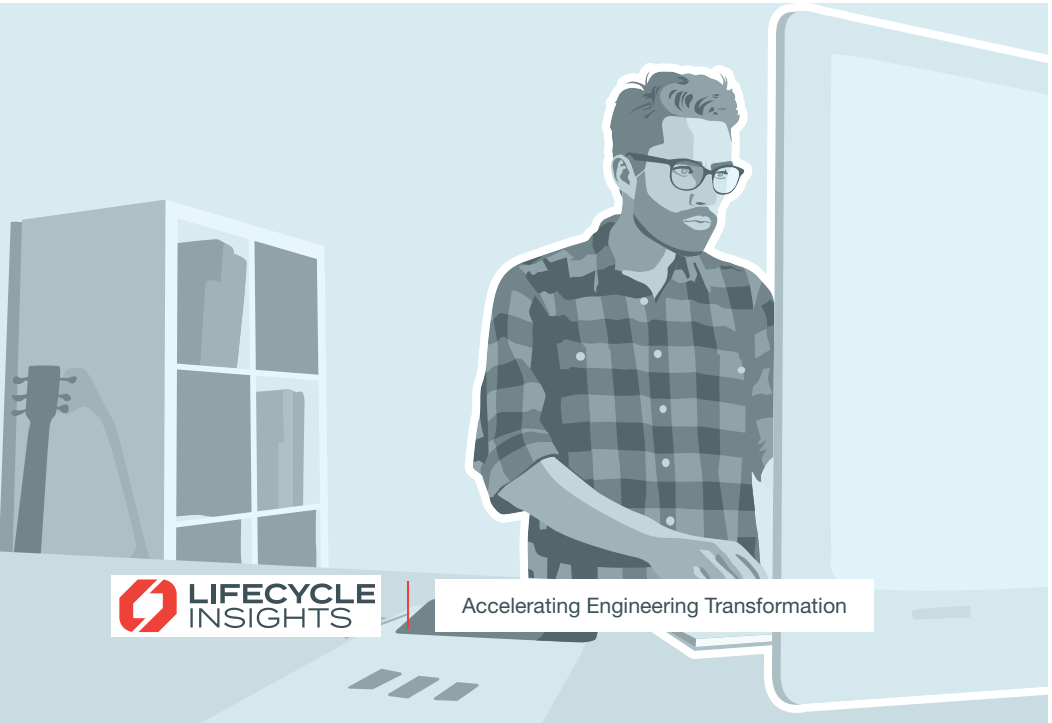
SaaS PLM eliminates those headaches. When a company uses a SaaS PLM solution, data security is the responsibility of the solution provider and its cloud partner. They have more resources, knowledge, and expertise in the areas of IT and data security than most customers. The PLM solution provider ensures customers have the latest security features and manages the backup data. As a result, the likelihood of data theft and product development-crippling malware is much less than with on-premises PLM. Customers also save money as they do not need to spend their IT budget to secure their PLM solution.

Enable More Flexibility With Remote Work

Remote work is here to stay—even in the aerospace and defense industry. This new norm applies to everyone, from suppliers who need to contribute to a project to employees working from home. Yet, not all PLM solutions function the same way in a remote working environment.

On-premises PLM solutions require the client application to be installed on the remote stakeholder's computer. To further complicate matters, remote stakeholders need a virtual private network (VPN) for secure access to the on-premises solution. Configuring this access for remote stakeholders can be difficult. Not to mention, remote access requirements may quickly change due to work-in-process activities. These difficulties are also applicable to client-operated cloud PLM solutions.

Aerospace and defense companies who utilize a SaaS PLM solution do not have these difficulties. New stakeholders can be invited quickly and easily, often via email. Since the client application runs on a web browser, the remote stakeholder only needs internet access to participate in product development. These stakeholders only have access to the parts of the product development process that are necessary for their jobs, reducing security risks. Overall, SaaS PLM provides quick, flexible, and easy access for remote stakeholders, who can hit the ground running from day one.



ACCESS TO SAAS AND ON-PREMISES PLM SOLUTIONS

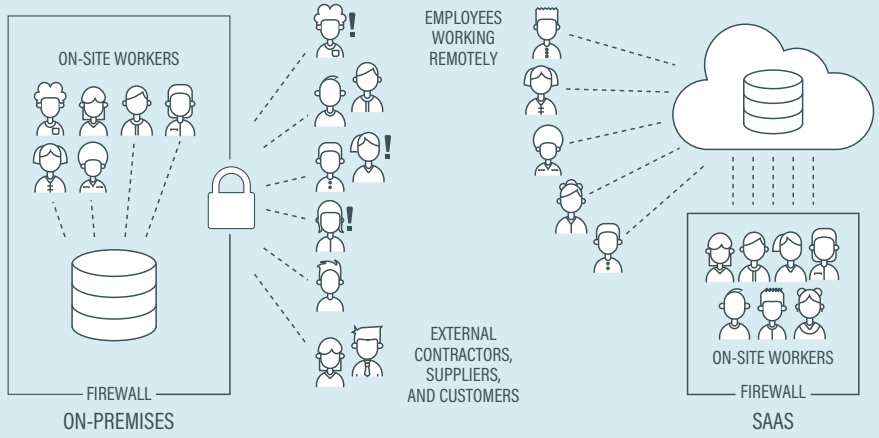


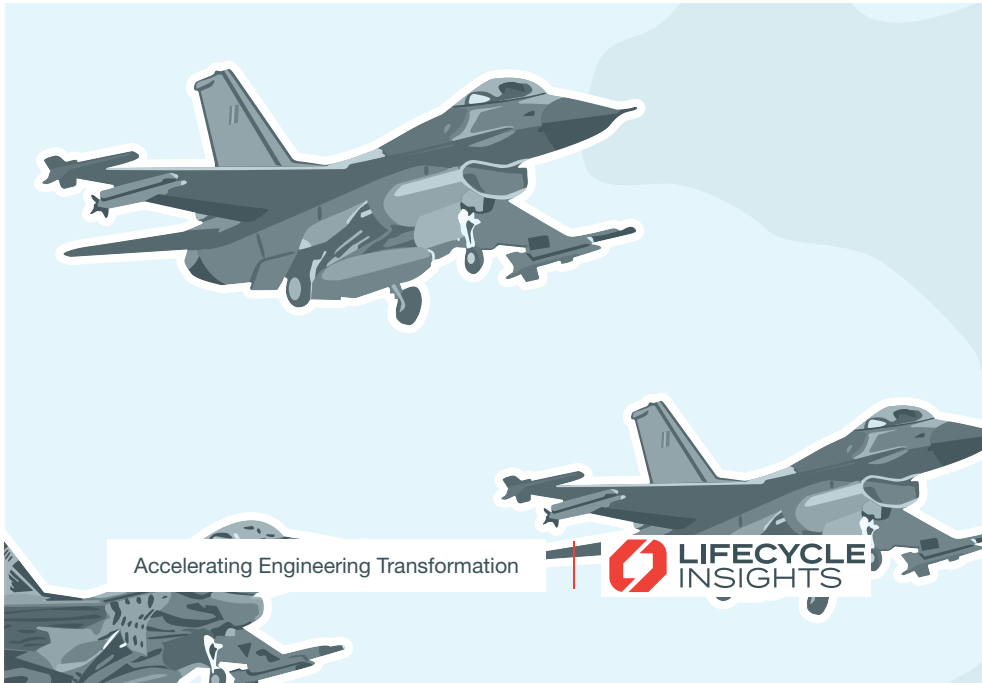
Figure 8
This figure shows the difference in terms of access for two different setups for PLM.

Recap and Conclusions

To support digital transformation initiatives, aerospace and defense companies need to embrace PLM solutions. On-premises and client-operated cloud PLM solutions require higher up-front costs and greater IT investments. They also lack quick scalability, sufficient data security, and the ability to pivot easily in a remote work environment. Companies in the aerospace and defense sector should embrace SaaS PLM solutions to address these challenges and better achieve their DX goals.

- **Accessibility of PLM solutions:** While on-premises PLM models have historically been the most popular solutions, more aerospace and defense companies are embracing SaaS solutions due to several advantages.
- **Understand investment implications:** On-premises and client-operated cloud PLM models have higher up-front costs, while SaaS PLM models have lower up-front costs.
- **Shift the IT burden:** SaaS PLM solution providers cover most needed IT infrastructure, saving aerospace and defense companies IT overhead.
- **Start small, scale smart:** Aerospace and defense companies can quickly scale up or scale down the number of users and software functionalities, according to changing business needs.
- **Stay up to date:** SaaS PLM solution providers keep all applications updated to ensure aerospace and defense companies have access to the latest software functionalities and capabilities.
- **Secure product data:** Aerospace and defense companies do not have to invest in data security, as SaaS PLM solution providers ensure product data is protected from cyberattacks.
- **Enable more flexibility with remote work:** SaaS PLM solutions enable remote workers to access applications they need for product development from anywhere with an internet connection.

Embrace SaaS PLM solutions for quick scalability, sufficient data security, and the ability to pivot easily in a remote work environment.



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