Aras Innovator SaaS: A Gen 2 Leader

CIMdata Commentary

Key takeaways:

- *As cloud technology and software as a service (SaaS) delivery have evolved, CIMdata has observed a split in the Cloud PLM market, which we are labeling Gen 1 and Gen 2.*
- *First generation ("Gen 1") SaaS PLM solutions were developed natively on hyperscaler platforms (e.g., AWS, Azure, etc.) with multitenant capabilities focused on being deployable, upgradable, cost effective, but not necessarily configurable. A variant of Gen 1 is deploying an on-premises version of a solution in a cloud data center leveraging Infrastructure as a Service (IaaS) via virtual machines.*
- *Gen 2 refers to second generation SaaS PLM solutions that have been built to leverage full capabilities of hyperscaler platforms usually via containerization. These solutions may be multitenant, but data is often single tenant providing flexibility of upgrade timing. Gen 1 benefits are maintained, but the flexibility of on-premises solutions, such as configurability/customizability, is often maintained enabling companies to maximize their return on investment (ROI).*
- *Aras Innovator SaaS is a SaaS PLM solution that meets and exceeds CIMdata's Gen 2 definition. It offers full PLM functionality, suitable for companies with complex products and a high design content. The solution is fully configurable with no limits on the applications that can be developed or the underlying data model.*

Introduction

Cloud-based PLM solutions started to emerge a little more than 20 years ago, primarily driven by small independent start-ups. Initially, user interest was low due to concerns over security and performance—especially when managing large CAD files. Over time, these concerns have largely been overcome and many leading PLM solution providers are now offering cloud-based versions of their products. Help to migrate from legacy on-premises solutions is also available from many service providers.[1]

Findings from a recent study[2] undertaken by CIMdata validated the move towards the cloud:

- 66% of companies are considering Cloud PLM
- 22% of companies have already selected a Cloud PLM solution

As cloud-based PLM has moved into the mainstream, the technology underpinning it has evolved significantly. Through our research, CIMdata recognizes two distinct generations of SaaS PLM that we are calling Gen 1 and Gen 2. In both generations, the PLM software is provided as a service (SaaS) and payment is in the form of a monthly subscription, usually billed annually and with minimum terms of at least 2 years.

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[1] Research for this commentary was partially supported by Aras.
[2] Cloud-SaaS Adoption in PLM

Cloud Evolution: Gen 1 & Gen 2

According to our definition, Gen 1 SaaS PLM is based on a multi-tenant architecture hosted on a hyperscaler (e.g., AWS, Azure, etc.) cloud platform. Multi-tenant means that all customers run the same version of the software. This benefits customers by ensuring they are all on the current release, taking advantage of performance, security, and feature improvements. The downside is that customers don't control when upgrades happen, but this typically has limited impact on operations.

These Gen 1 solutions typically offer basic capabilities including document, part and BoM management, and limited configurability. These solutions are well suited for companies with simpler products that make extensive use of standard parts assembled by contract manufacturers.

CIMdata defines a Gen 2 SaaS PLM solution as one that has more complete functionality, is highly configurable (often via a low code/no-code interface), and is architected to take full advantage of the hyperscaler platform it's running on, either natively or via containerization. This means that Gen 2 solutions are not only able to deal with higher user and data volumes but also are adaptable to complex business processes without impacting performance.

Gen 2 solutions offer broader capabilities—typically adding CAD integration, manufacturing, simulation management, and others—significantly more configurability, and may have a platform architecture. Companies with more complex products with a high design content or operating in a highly regulated environment should evaluate Gen 2 solutions.

The Product Innovation Platform

A relatively recent innovation in the architecture of PLM solutions is the Product Innovation Platform. In general, platforms deliver an architecture that allows a comprehensive set of heterogeneous process-enabling capabilities to be packaged and configured to establish and support standardized end-to-end business processes and related data access.

First defined by CIMdata in 2017,[3] product innovation platforms are intended to provide the foundation on which functional capabilities, data, and processes are enabled and executed—it is everything users need, when they need it, all in one place. These solutions have been designed to support groups of product-oriented people collaborating across the levels of departments, business units, and the extended enterprise. These capabilities are increasingly needed throughout the entire extended enterprise including customers, suppliers, and business partners, not just by new product development (NPD)—that was product data management (PDM) of old.

An effective product innovation platform encompasses the management of portfolios, programs and projects, profitability, service, systems ideation and realization, quality and compliance, and through life support. Moreover, an effective platform optimizes across these multiple lifecycle domains from a product's conception through its entire life. Figure 1 shows the characteristics that must be supported to be considered a product innovation platform.

While all the characteristics are important, we believe that adaptability, upgradeability, and openness are among the most important characteristics today.

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[3] Product Innovation Platforms: Definition, Their Role in the Enterprise, and Their Long-Term Viability. CIMdata. https://www.cimdata.com/en/resources/complimentary-reports-research/position-papers/item/8484-product-innovation-platforms-definition-their-role-in-the-enterprise-and-their-long-term-viability-position-paper

- Solutions must be easily configurable to meet company requirements when deployed and as they change.
- Software is changing fast and becoming ever more interconnected via new services and other approaches. Solution providers regularly update their software to incorporate new services to better integrate into larger IT strategies and landscapes. Staying up to date is critical for customers to be able to exploit new opportunities and maintain software security.
- Finally, openness lets companies go faster in that they don't have to wait for their solution provider to create new solutions. Data and services are exposed in an open environment allowing companies to create their own solution if so motivated.

Aras Innovator SaaS

Aras Product Innovation Platform

From its earliest incarnation, Aras Innovator has featured a platform architecture. This innovative approach separates applications for the underlying platform services that power them, unlocking a number of critical benefits:

- Customized applications can be created easily (by customers or Aras) using the low-code/no-code user interface and their definitions stored separately from the code that powers the platform
- Platform services can be developed and extended by Aras without interfering with the applications that use them
- Platform services can be upgraded to new releases without disrupting the functions of the applications
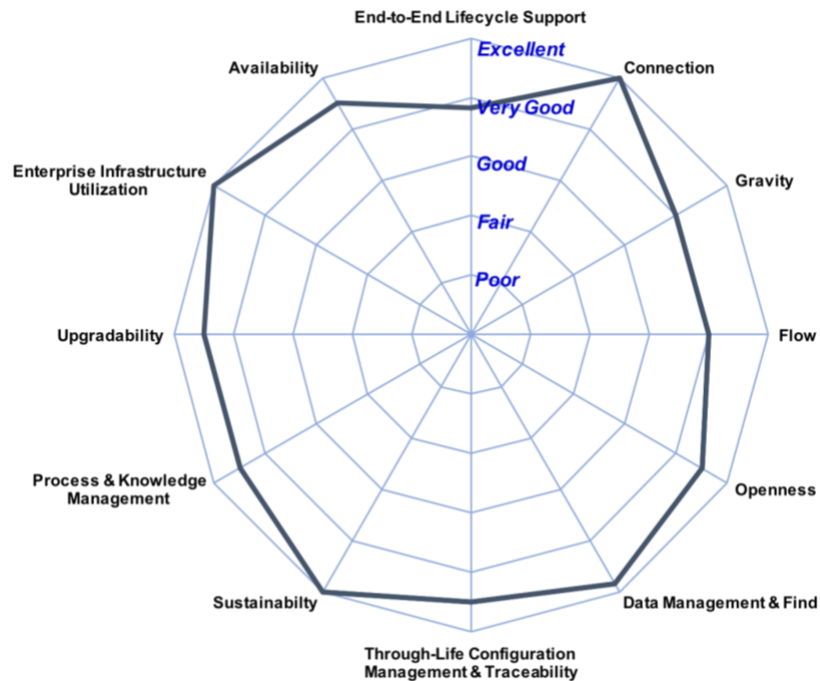- The architecture can be easily moved to the cloud

Figure 1—Aras PLM Platform Scores on CIMdata's Product Innovation Platform Assessment

In a benchmark study conducted by CIMdata,[4] Aras Innovator was shown to meet the requirements of the product innovation platform to a high degree, as shown in Figure 1.

Since the evaluation, Aras has continued to build out the breadth and depth of their platform, addressing many of the gaps identified in the 2017 evaluation. For example, they have added support for simulation and analysis and model-based systems engineering (MBSE): two critical capabilities that are part of the product innovation platform definition.

Aras Innovator Meets Gen 2 Requirements

Aras Innovator SaaS, the Cloud PLM deployment of Aras Innovator, fully meets the requirements of a Gen 2 SaaS PLM solution as defined by CIMdata:

- Full PLM functionality, suitable for companies with complex products and a high design content
- Fully configurable
- Containerized architecture which fully leverages the capabilities of a hyperscaler platform for performance and elasticity, as shown in Figure 2
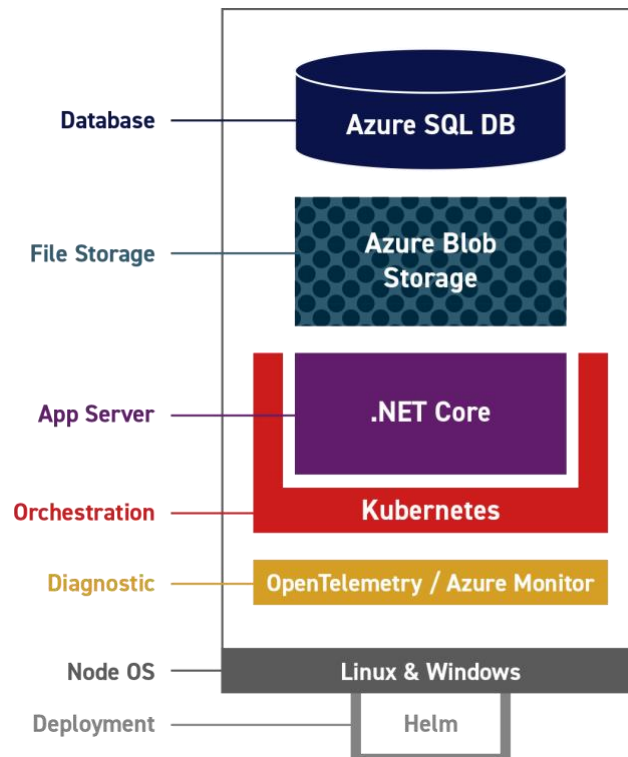- Upgradable on the customer's schedule

Figure 2—Aras Innovator Container Deployment

In addition, Aras Innovator SaaS is highly secure, complying with ISO27001, SOC2, and STAR Level 1 support.

Complying with CIMdata's definition of a Gen 2 solution means that the deep functionality defined in the product innovation platform requirements and required by complex manufacturers are fully supported. Requirements management, MBSE, multi-BOM support,

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[3] Product Innovation Platform Assessment: Aras PLM Platform. https://www.cimdata.com/en/resources/complimentary-reports-research/white-papers

manufacturing process planning, and service lifecycle management are all supported within a single platform and able to directly leverage the benefits of cloud native solutions such as elasticity and accessibility.

Beyond Gen 2

Due to the approach Aras has taken to implementing a product innovation platform, Aras Innovator exceeds CIMdata's definition of Gen 2 SaaS PLM in the following areas:

- The low-code/no-code approach to application development is pervasive from Innovator's inception allowing customer-configured applications and their underlying data models to be developed
- Integrated DevOps functionality allows application updates to be continuously developed, tested, released, and automatically deployed
- Upgrades can be scheduled at any time and are performed by Aras as part of the SaaS subscription (note: this is not a new capability but has always been a feature of the Aras architecture and service)
- 100% compatibility between the cloud and on-premises versions of the product, allowing customers complete flexibility to move between environments, and run in hybrid modes if necessary

Although they are critical differentiating capabilities, the low-code/no-code and upgradeability capabilities are not new for Aras. CIMdata has written about both[5] earlier and Aras has continued to refine them. The inclusion of DevOps is an important development in a Gen 2 solution. As solutions become more configurable there must be a good way to manage the configurations and customizations and ensure they are properly tested before deployment into production.

Compatibility between cloud and on-premises deployments is important for companies that must keep certain capabilities on-premises, usually for security reasons. This flexibility ensures that these security restrictions do not restrict a general move to cloud deployment, or a deployment strategy based on incremental migration to the cloud by department.

Conclusions

As Cloud PLM solutions have evolved, CIMdata has observed a split in the market we are labeling Gen 1 and Gen 2.

Gen 1 SaaS PLM solutions were developed natively on hyperscaler platforms (e.g., AWS, Azure, etc.) with multitenant capabilities focused on being deployable, upgradable, cost effective, but not particularly configurable. A variant of Gen 1 is deploying an on-premises version of a solution in a cloud data center leveraging the infrastructure as a service (IaaS) via virtual machines.

Gen 2 SaaS PLM solutions leverage full capabilities of hyperscaler platforms usually via containerization. Applications may be multitenant, but data is often single tenant providing flexibility of upgrade timing. Gen 1 benefits are maintained, and the flexibility of on-premises solutions such as configurability/customizability is maintained enabling companies to maximize their ROI. While Gen 1 solutions can provide good value for a segment of the market, Gen 2 solutions are required to support complex manufacturing.

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[5] Aras PLM Platform: Redefining Customization & Upgrades. CIMdata. 1 May 2018.
https://www.cimdata.com/en/resources/complimentary-reports-research/white-papers

Aras Innovator SaaS is a SaaS PLM solution that exceeds our Gen 2 definition in a number of areas. It offers full PLM functionality, suitable for companies with complex products and a high design content. The solution is fully configurable with no limits on the applications and underlying data model that can be developed. The containerized cloud architecture fully leverages the capabilities of a hyperscaler platform for performance and elasticity and is 100% compatible with the on-premises version of the product. Integrated DevOps functionality allows application updates to be continuously developed and released and upgrades can be scheduled at any time and are performed by Aras. Companies looking for a Gen 2 solution should take the time to evaluate Aras Innovator SaaS.

About CIMdata

CIMdata, a global strategic management consulting firm, provides services designed to maximize an enterprise's ability to design, deliver, and support innovative products and services. For more than forty years, CIMdata has provided industrial organizations, providers of digital technologies and services, and investment firms with world-class insight, expertise, and best-practice methods on a broad set of product lifecycle management (PLM) topics and the digital transformation they enable. CIMdata also offers research, subscription services, publications, and education through certificate programs and international conferences. To learn more, visit www.CIMdata.com or email info@CIMdata.com.