Aras Innovator: Architected for the Future

CIMdata Commentary

Key takeaways:

- *Selecting and deploying a product innovation platform is a sizable investment that if done correctly can have a significant impact on the company's return on investment.*
- *Resilient, sustainable solutions consist of much more than apps, the underlying solution architecture and services must be flexible to run on hardware and technology stacks that will be available in the future while supporting easy app development and maintenance.*
- *The Aras platform's underlying architecture has stood the test of time, it performs, scales, and has enabled a wide variety of industrial applications with its low-code development environment.*
- *Available Aras Innovator apps have grown significantly in number and lifecycle scope over the past few years providing out-of-the-box solutions, as well as demonstrating how legacy tools and best of breed apps can be integrated.*

Business is about converting energy into value, a conversion that PLM solutions can improve the efficiency of. Efficiency is improved by converting data into information and knowledge that support both innovation and cost savings. Historically, PLM supported innovation by capturing and cataloging data so it could be searched and refenced. More recently, the support of artificial intelligence (AI) and machine learning (ML) are promising to automate portions of the innovation process. Cost reductions are most often created by more efficient work methods and part and knowledge reuse. Reuse avoids complexity and usually reduces cost by avoiding redesign, retesting, and unnecessary inventory.[1]

One of the key characteristics of a robust information technology (IT) platform is sustainability. In other words, IT platforms need to be adaptable, upgradable, and cost effective while at the same time increasing value creation efficiency and velocity for their users and owners. While, legacy bespoke solutions have been optimized to a specific set of requirements, they are often unable to address new requirements without significant effort. Within CIMdata's industrial consulting business we are often brought in to assess the current state of a PLM environment and make recommendations for improvement. When the legacy solution is obsolete, years behind on upgrades, too customized to upgrade in a cost-effective manner, and can't meet known, let alone unknown, business needs, a new solution needs to be considered. At the top of the consideration list are usually costs and benefits, often expressed as return on investment (ROI) over a specific period of time. Recently consideration has expanded to include long-term sustainability of the solutions being evaluated.

With PLM, like most enterprise solutions, the costs are sizable and often include licenses, maintenance, subscriptions, implementation services, training, and support. Over five years, the total cost of ownership (TCO) per PLM Solution user can exceed US$20,000, a significant sum. Unfortunately, the opportunity costs from not investing in advancing PLM are even higher. The following simple example demonstrates the opportunity cost:

> Revenue per employee commonly ranges between US$100,000 and US$300,000 for discrete manufacturing companies. For this example, we will

[1] Research for this commentary was partially supported by Aras.

assume US$200,000 per employee. A common innovation target to ensure business sustainability is to replace 20% of revenue annually with new products, $US40,000 for this example, US$200,000 over 5 years.

So, a US$20,000 investment has the opportunity to support US$200,000 in new revenue, a 10:1 return. The actual number may not be this large as there are many other costs and constraints, but the opportunity potential is still very large, and when we perform ROI analyses the returns are impressive validating the opportunity cost premise proposed here.

The question for our clients often becomes "how do we capture as much of this potential as possible? Can we enhance our existing solution, or do we need to rip and replace?"

Sustainability

PLM solution sustainability is a concept that is critical to digital transformation and has many dimensions. Being cloud native, multi-tenant, or having an app for every business function does not make a solution sustainable. CIMdata defines PLM solution sustainability as "the platform's ability to support a company's data and process management requirements over a long period, at a reasonable cost, even as the business needs evolve."

A product innovation platform is the current state of the art way in which to evaluate a sustainable PLM solution. Through our research we have identified and published[2] the most important characteristics of a product innovation platform, and they include:

- Through-Life configuration – The platform's ability to manage a product's configuration from concept management and traceability through its entire lifecycle and provide traceability forward and backwards.
- Process and knowledge – The platform's ability to represent business processes and capture process management outputs, as well as capture and organize data representing knowledge.
- Upgradeability – The platform's ability to easily be updated to use a newer version of a solution.

CIMdata has published a lot on product innovation platforms and PLM solution sustainability. From our research we have found that with a good implementation plan, and proper process design and people support, it should be possible to get a decade or more of strong ROI from a technology platform investment.

Aras Innovator, History, and Plans

Aras Innovator was architected from its inception to be sustainable. Mr. Peter Schroer, Aras' CEO and founder, and the other founders learned from the limitations of earlier PLM solutions and made a bet that service-oriented architectures were the path forward. They understood and sought to enable key product lifecycle data and process management requirements to support common use cases. This background enabled Aras' founders to define generic services that could act as building blocks to meet lifecycle management requirements. Another key requirement they understood was that change happens and enterprise software must be able to change quickly and easily to meet new requirements.

[2] 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

Those early choices have been proven correct and are best validated by Aras' upgrade policy, where Aras subscribers are updated to the latest version by Aras for free, no matter how much customization they had performed. Aras has upgraded hundreds of clients enabling them to receive the latest capabilities from the current platform release. While cloud native PLM solutions include upgrades, CIMdata has not seen one that has the breadth of solutions, configurability, and licensing flexibility of Aras Innovator. CIMdata sees these characteristics as critical, to get to a future-proof single source of truth. If a solution cannot easily support all data and processes within a company's lifecycle, disconnected data silos will not be eliminated and continue to be created thereby requiring the organization to potentially rip and replace.

Aras has been in the press often over past few years due to big sales wins, and recent large investments from venture capitalists. These funds are being used for a variety of purposes that a growing company has. While these purposes all have their value, the most important investment they are making for their customers is in Aras Innovator's core architecture, the platform defined by the web services and new solutions built on those services, e.g., requirements engineering, MRO, and simulation process and data management. While companies have built custom solutions to support these and other critical lifecycle domains, extending the services with recently acquired intellectual property will create new building blocks that enable customers to create better solutions faster.

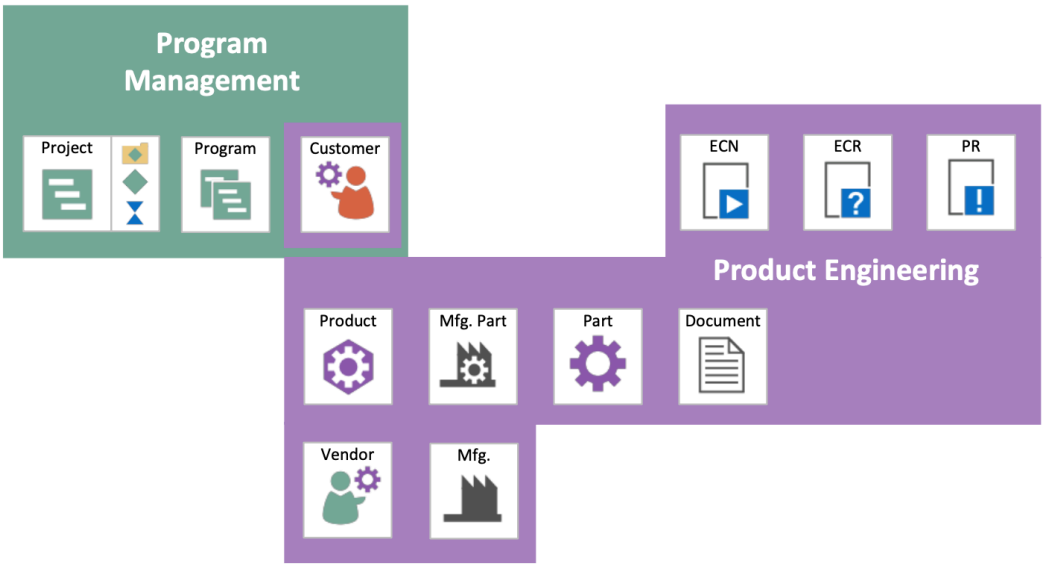

Figure 1–The Original Aras Innovator Out-of-the-Box (OOTB) Apps Circa 2007

Recently, CIMdata had a chance to review a number of topics with Mr. Schroer, during which, he commented that Aras has formalized their mission: "We're reinventing software for engineering and manufacturing to empower our customers with the flexibility to overcome tomorrow's challenges." He further stated, "The increasing importance of (and risk associated with) software and electronics, the impact of compliance, the challenges of continuously field upgradeable products, and the opportunity for pervasive simulation all demand a new approach to PLM." Figure 1 illustrates the apps that were available in 2007. The scope of the current platform is depicted in Figure 2. The basic services such as workflow, lifecycle, and vault have been available from the initial release in 2003, but over time they have been enhanced, and more importantly to end users, so have the number and capabilities of the out-of-the-box apps

available on the platform. Finally, Mr. Schroer noted that, "The current sales-driven processes misalign the motivations of the customer and vendor [i.e., PLM solution provider]. We need to balance the risk between the parties, and eliminate the wasted capital inherent in the current processes."

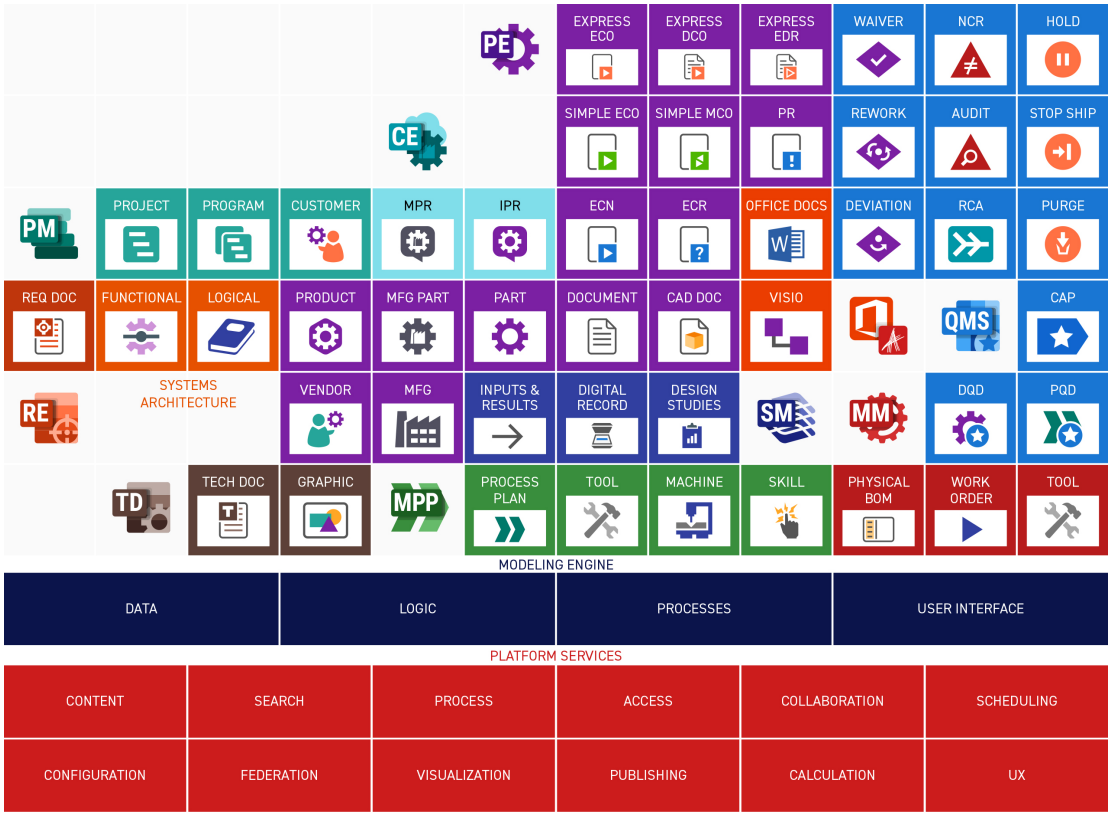

Figure 2—The Aras PLM Platform, Apps, Services, and Clients

CIMdata has heard both of these concepts from Mr. Schroer previously. We believe that he has generally achieved them. The enterprise open source software delivery model enables companies to experiment and even put into production an industrial strength PLM solution without paying Aras anything. CIMdata sees this as much more than "try before you buy" or a "Freemium Model." Most freemium models monetize the user, Aras doesn't. This is an innovative business model that reduces risk for Aras' clients.

It is also important to note that the Aras PLM platform services have been configured into a wide variety of OOTB solutions that can be extensively tailored and reconfigured. Aras Innovator has always been a type of low-code environment for the creation of enterprise applications. The user interface, data model, and process model are all created and maintained using a graphical editor (i.e., no coding required), while business logic is created using a scripting language. Additionally, changes can be controlled through a deployment process or immediately activated in a live environment. These complete, custom solutions are upgradeable just like the OOTB apps. More information on Aras upgradeability is available in a commentary published earlier by CIMdata.[3]

While large discrete manufacturing wins are often promoted, the open source developments are also quite interesting. For example, a school administration solution has been developed

[3] https://www.cimdata.com/en/resources/complimentary-reports-research/commentaries/item/10115-aras-plm-platform-redefining-customization-upgrades-commentary

in India, a medical practice management solution has been developed in Switzerland, and support for Building Information Management (BIM) has been created by several AEC firms. While these applications don't generate revenue for Aras, they do show the flexibility of the Aras PLM platform and part of the reason why Mr. Schroer is so bullish about Aras' growth potential. They are actively courting software companies to incorporate the Aras platform into their solutions.

To further illustrate Aras' impact on the PLM market, Aras has received US$110M from investors over the past two years to accelerate their growth. Additionally, they have completed two acquisitions of intellectual property (IP) to expand their lifecycle coverage to simulation process and data management (SPDM) and maintenance, repair, and overhaul (MRO). Several subscribers are working on early releases that support simulation management and the as-maintained BOM for assets in the field and CIMdata is looking forward to seeing the production releases in 2020 and presentations at ACE 2020 demonstrating what additional use cases can be supported, as well as what apps can be configured when these services are incorporated into the core platform.

Another big project at Aras Mr. Schroer elaborated on was the move of the organization to Scaled Agile Framework (SAFe). He claims this approach combined with the Aras platform will enable Aras to accelerate capability incorporation and expansion into the Aras solution. At ACE Europe, it was noted that the release cadence is every 6 weeks, and the goal is to drop it to every 4 weeks in 2020.

While the Aras web service architecture has been well proven, a big effort in process is refactoring services into microservices. Microservices are a critical architectural strategy to successfully support cost effective cloud deployments. CIMdata sees the migration to microservices as being critical both for cloud deployments and to improve on-premise performance via parallel processing of threads.

Mr. Schroer's final comments were on the future of Aras. He reaffirmed that they intend to go public, and within 5 years have annual recurring revenue of several hundred million dollars, a bold target to put on record. There will be some acquisitions to achieve this goal, as well as significant growth in the PLM mid-market. Finally, Mr. Schroer stated he anticipates 10% of the revenue to come from OEM software licensing such as what is currently being done with Infor and an unnamed major software company. Plans like these are why CIMdata includes Aras in our mindshare leader list.

Conclusion

Innovation is well understood as a key strategy to long-term success, but it needs to be enabled by appropriate technology so it can be scaled and executed successfully. Digital transformation projects are expensive not from software cost, but from the cost of changing how an organization gets its work done. Smart companies understand this and are migrating to a platform approach for their digital transformations. They plan to have the flexibility to adapt to future requirements quickly without retooling again. This requires a resilient technology foundation and the ability to quickly configure apps to solve new and changing business issues.

Designing and maintaining a software platform that can meet requirements for twenty years or more is a complex process. Aras has done just that, solutions configured at several early customers continue to function on the latest Aras platform release while leveraging new features, capabilities, and improvements added to the platform since its first production release in 2003. Aras Innovator has been a low-code platform from its inception and has been used to develop a wide variety of solutions both within target markets and outside them.

The software technology industry is similar to the financial industry in that past performance does not predict future performance, but given the stickiness of enterprise software, the recurring revenue model, and business and technology momentum, Aras and its application architecture appear to be sustainable long into the future. The Aras PLM platform belongs on a short list for companies looking for a flexible platform that can meet their current and long-term PLM requirements.

About CIMdata

CIMdata, an independent worldwide firm, provides strategic management consulting to maximize an enterprise's ability to design and deliver innovative products and services through the application of Product Lifecycle Management (PLM). CIMdata provides world-class knowledge, expertise, and best-practice methods on PLM. CIMdata also offers research, subscription services, publications, and education through international conferences. To learn more about CIMdata's services, visit our website at http://www.CIMdata.com or contact CIMdata at: 3909 Research Park Drive, Ann Arbor, MI 48108, USA. Tel: +1 734.668.9922. Fax: +1 734.668.1957; or at Oogststraat 20, 6004 CV Weert, The Netherlands. Tel: +31 (0) 495.533.666.