# Aras Innovator - Open Source PLM

**This paper discusses Innovator, the open-source enterprise PLM solution from Aras Corporation and explains how its technology and business model challenges existing paradigms in some interesting ways.**

## Introduction

Managing engineering projects and activities to stringent cost, quality and performance requirements has always been challenging.  But with today's increasingly complex product requirements and geographically dispersed engineering teams combined with constant pressure to reduce cost and increase productivity, the traditional ways of handling some key engineering processes like engineering change and release are beginning to creak under the strain.

Deficiencies in the way companies manage information and its progressive embodiment into products or assets create hidden barriers and risks that can have a profound impact on quality, development lead times, the speed and accuracy of bid and quote response and on project & product costs.

One solution to this situation is of course product lifecycle management or PLM.  PLM helps companies bring the right products to market quickly, cost effectively and at the right quality.  It also allows them maintain those products in the field more cost effectively.  It does so by enabling organisations to;

- Capture more accurate requirements,
- Create & manage the processes and information that define the product,
- Create & manage the processes and information that define manufacturing processes,
- Create & manage the processes and information that controls product quality,
- Collaborate more easily with customers, partners & suppliers,
- Re-use information,
- Manage & control complex projects.

At the heart of all PLM systems there is a database or 'single source of the truth' where all product-related information is maintained.  Participants in the product development process work with and contribute to this information in an organised and disciplined way as the product evolves.

Significant operational benefits follow from organising and interacting with product information in such a structured and logical way.  Business processes can be streamlined reducing cost and improving productivity.  Some manual tasks can be automated.  Others can be eliminated altogether.

The problem is that many organisations are not doing PLM and many of those that are doing it have experienced unanticipated difficulties.  Why?

There are probably a couple main reasons.  Up to now, introducing product lifecycle management technologies has been a costly exercise (the traditional PLM software vendors charge hefty up-front license fees for their software and high day rates for the consultants required to deploy it).

It has also been risky.  Some projects have consumed large upfront capital investments in software but have then disappointed because it has been difficult to adapt the solution to the precise needs of the organisation (and vice-versa).

If you agree with this assessment then you might also conclude that what business needs is;

- A flexible PLM technology that is easier to adapt to an organisations specific business processes (without coding).  That way, users would not feel that they were being 'shoe horned' into a system and the system itself would be more cost effective to deploy and upgrade.
- A PLM solution that did not demand a large upfront software investment before the organisation had had a chance to achieve success with it and proven to its own satisfaction that it works for them.  This would eliminate much of the business risk from the decision to move forward with a process improvement project.

In our view, Aras Innovator, the open-source PLM solution from Aras Corporation, arguably comes closer to meeting these needs than any other solution has.

## Aras Innovator

Aras Innovator (which, according to Aras, is used by companies such as Motorola, Lockheed Martin, Delphi & Ingersoll Rand) challenges existing paradigms in a number of interesting ways. Each of these in isolation would be strong enough reasons to look further but, in combination, the case becomes compelling.

### The Architecture

Aras Innovator is built on an advanced Model-Based Service Oriented Architecture (SOA). Applications can be quickly tailored and extended to meet specific business requirements. Business logic, rules, workflows and data structures can be created and modified using browser-based graphical administration tools without programming.

What does that mean? It means the solution is very flexible. It can be adapted to the organisation rather than the other way around. It also means the solution is very scaleable. You can add lots of users without breaking it.

### The Open Source Approach

With Aras Innovator both the source code for the software solutions and the ideas behind the implemented best practices are openly shared.

Why does this matter? It means there is a large and growing community of organisations and companies who are collaborating to create new engineering, supply chain, sales, quality and manufacturing applications on top of the Innovator core and many of these applications are available free or at a modest price to community members. This represents an exciting shift in the way PLM applications are developed and is a tremendous engine for innovation.

### The Breadth & Scope of its PLM Applications

Aras Innovator delivers an integrated and comprehensive set of applications covering the product lifecycle from concept to development and introduction, and through production to end of life.

Built on a strong PLM back-bone which provides state of the art workflow, version control, security and change management (the solution achieved a four-star CMII certification rating from the Institute of Configuration Management recently) there are a really comprehensive set of tools for product lifecycle participants.

These take the solution well beyond the scope of more limited product or design data management tools (who's principle functions are to manage, control and provide access to CAD data) and into the realms of the high end PLM systems (which set out to transform the entire process by which organisations bring products to market and beyond) but at a fraction of the price and risk.

It is impossible to do the solution justice in a few paragraphs but it is worth spending a few moments illustrating the breadth of tools included.

Program Management capabilities deliver excellent project visibility. The status of work that is being performed for key milestones is tracked and is rolled up into a dashboard view of status and risk. The program manager can drill down into areas of concern and initiate action from the web browser.

This means program managers (and senior executives) are able to track projects online and measure progress towards the achievement of key objectives. This, in turn, means they spend more time driving programs proactively towards their cost, quality and timing goals and less time chasing information.

For engineers, a comprehensive set of CAD integrations (for all the main CAD systems) captures (and sychronises bi-directionally) the part to part relationships from the CAD assembly and then strong core PLM capabilities manage and extend these relationships to other document types.

This means engineers are able to understand straight away which parts and documents are affected by a change to another. Industry leading electronic engineering change management capabilities then route concerns, change requests & notifications quickly around the organisation gathering feedback and the proper authorisations. Engineering change workflows can be created and modified on the fly using browser-based graphical administration tools without programming which means this important capability can be adapted to any situation with very little effort.

This means engineers are able to manage all the changes to the product in an auditable, repeatable, verifiable and controlled way. More control can be exerted over parts released into manufacturing and ultimately shipped to customers reducing the risk of non conformance to regulatory and safety requirements.

From a quality planning perspective, a suite of quality applications that are fully integrated with the the engineering information and processes then help the quality organisation identify, control & mitigate risk in a highly inclusive manner. This is important. The quality organisation must not be cut off from the information they need to do their job effectively. Integration of their processes and information requirements into the flow of engineering information means they spend less of their time chasing down information and more of their time focussed on their strategic quality related goals.

Fully integrated, Failure Modes and Effects Analysis (FMEA) and Control Plan capabilities help quality engineers manage the identification and capture of functional and process related risks and then establish control plans to ensure capability and stability of the product over time.

Corrective Action Preventive Action (CAPA) capabilities ensure incidents are fully defined, corrective & preventive actions are issued & tracked and affected parties are kept aware of their role in issue resolution. This prevents reoccurrence of the problem and reduces the amount of unnecessary risk and cost to which the organisation is exposed.

There are also tools for buyers to manage approved vendors and manufacturer lists as well as qualified suppliers. The list goes on.

In summary, it is a broad and comprehensive portfolio of integrated applications that is expanding all the time (thanks to a growing community of stakeholder organisations and companies) and that will serve very well the PLM needs of the vast majority of companies.

### Risk

With Aras Innovator there are no software licensing expenses associated with the product. Production-ready solutions (without any upfront Investment on licenses) are freely available with complete access for unlimited users.

Aras makes its money by selling optional support packages (this is called Aras Unlimited Subscription) later to companies, who have evaluated the product, are fully satisfied with it and intend to use it as a mission critical enterprise application. These packages, which are taylored to the number of people using the system,

provide live support, service packs, software patches, and security updates and provide the extra layer of security that ensures that the system can be used with confidence by employees, trade partners and the entire supply chain.

It is also worth noting that active subscribers on Innovator version 9.1 or higher also have access to an enterprise software upgrade service (performed remotely by Aras engineers) which means that service packs, including the latest security updates, hot fixes, and enhancements which are available to subscribers only, will be installed with no additional consulting service costs. Aras even commit to upgrading customized systems (with other solutions the cost of doing this can be substantial and we estimate the value of this offering to be in the order of $30,000 to $45,000 or even more per year). This is further evidence the one of the real technology breakthroughs with Innovator which is that it can be tailored to companies specific process needs easily without causing upgrade problems. Our view is that no other enterprise software provider comes even close to offering this level of value.

All told, Innovator is great news for organisations because it means they can start solving business problems immediately without purchasing any software up front. It takes most of the business risk out of the equation.

### Cost of Ownership

For a typical mid-size company, the cost saving of Aras Innovator over the PLM solutions from the large PLM vendors can be substantial.
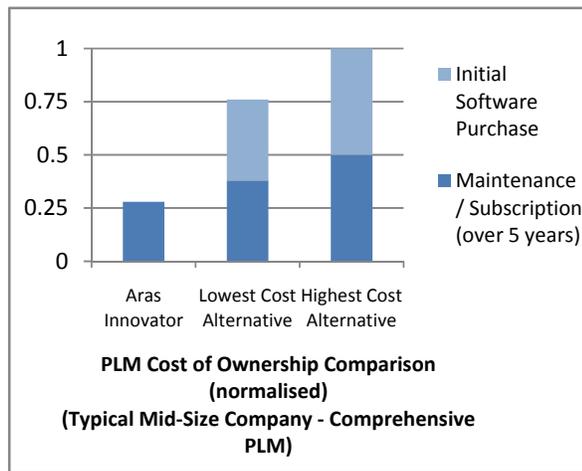
When analysing these savings, the first cost element we usually consider is the up front software license fee. Most of the large CAD/PLM vendors have now shifted to a named-user licensing model. There is considerable variation in the content of core licenses but generally the cost of the software per user depends on the number of applications or modules that need to be purchased. So the cost will increase dramatically as the company goes beyond using PLM to manage only MS Office documents or the vendors own CAD tool towards integrating third party CAD tools, visualisation, change & program management capabilities, collaboration tools, procurement tools, quality & compliance tools...etc. All told, purchasing a comprehensive PLM capability can cost a great deal of money.

**PLM Cost of Ownership Comparison (normalised)**
**(Typical Mid-Size Company - Comprehensive PLM)**

With Aras Innovator, despite comparable technical features and capabilities, these upfront costs do not exist.

The second cost element to consider is the annual software maintenance or recurring licence cost. Annual maintenance generally costs around 20% of the original purchase price of the software therefore the total annual outlay depends on the number of PLM modules purchased. Again, a comprehensive PLM capability can represent a significant and recurring annual spend.

With Aras Innovator, the optional annual subscription is somewhat akin to the traditional annual maintenance. However, the annual spend to support a comprehensive PLM capability is considerably less. On one PLM project we were involved with recently, the annual cost for an Aras Innovator subscription came was only 50% of the annual maintenance costs of the most expensive of the other solutions and 70% of the least expensive.

When you include the original purchase price of the software, the difference between the total cost of obtaining & maintaining Aras Innovator over other comparable solutions is even more striking as the graphic above shows. On the same project, the total cost of the Aras Innovator subscription (over 5 years) came in at 25% of the 5 year cost of purchasing and maintaining the most expensive of the other solutions and 35% of the least expensive.

The third significant cost element we usually consider is the cost of services to deploy the chosen PLM solution. Here direct numerical comparisons are harder to make because every customer deployment is slightly different

but, given the flexibility of the Aras Innovator solution, the ability to configure it without writing code and the fact that it is a completely web-based solution, our assessment is that it is a very cost effective solution to deploy and our experience is that it is cheaper to deploy than most comparable solutions.

## Conclusion

In our view, there is a strong case for companies to conduct a PLM pilot around Aras Innovator because it is likely to meet or exceed technical requirements (saving that company a large amount of money directly). It will also provide a baseline against which to judge the incremental value of other solutions and, ultimately, it may strengthen an organisation's commercial position in relation to the PLM software marketplace.

For more information or to arrange an Aras Innovator Pilot call AESSiS on +44(0)845 680 0501, email us at info@aessis.com or visit our website at www.aessis.com where you will find more information about PLM, Open-Source PLM and how to arrange an Open-Source PLM Pilot.

Aras Innovator itself can also be downloaded free of charge at;
www.aras.com/support/downloads/download.aspx

In order to help organisations quickly get up to speed using Aras Innovator, we offer a free web consultation to help them set up and install the Innovator solution and to show them the possibilities Innovator offers to improve their business processes & save money. To take advantage of this free service, please send an email to info@aessis.com and we will contact you to arrange a convenient date and time with one of our Innovator PLM technical experts.