AN OVERVIEW OF
ARAS INNOVATOR®
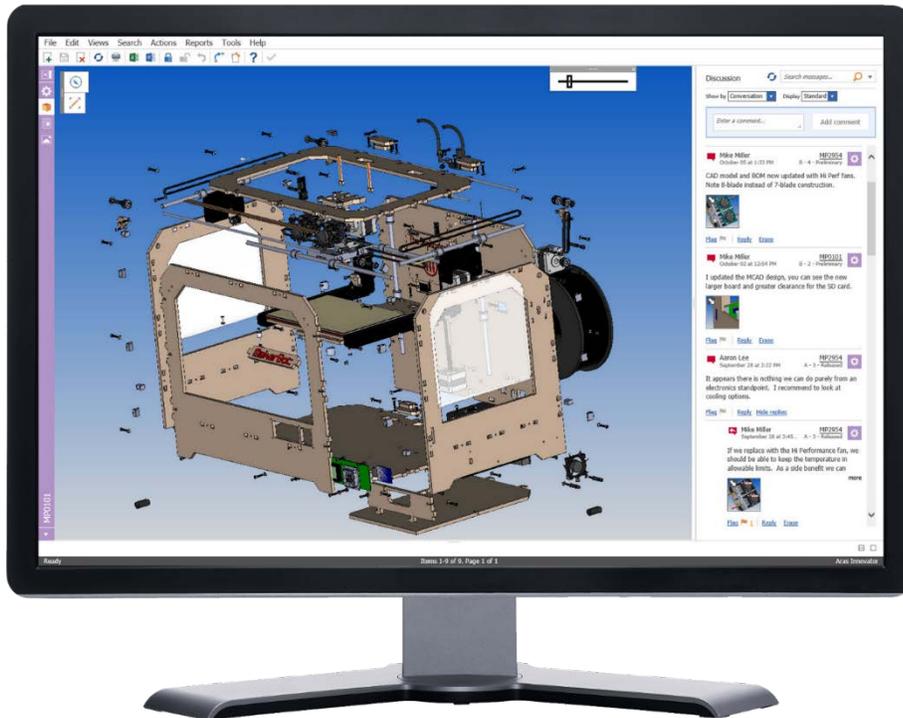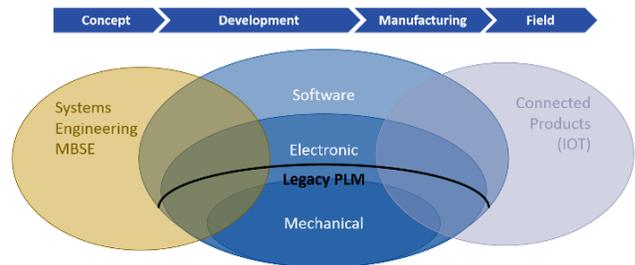

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1 | THE ARAS® APPROACH TO PLM AND PDM

YOUR BUSINESS IS EVOLVING

The evolution of the business environment is proceeding at a rapid pace. The complexity of today's products continues to increase as software and internet connectivity become integral components in products from all industries. Globalization creates opportunities and disrupts existing markets in the form of extended international supply chains and collaborative partnerships, where new competitors, mergers, and acquisitions can change the landscape of a market overnight. In this fast-paced environment, businesses developing the complex products of tomorrow are facing new challenges as they strive to keep ahead of these evolving markets.

TRADITIONAL PLM IS FAILING TO GROW WITH TODAY'S PRODUCTS

Product lifecycle management (PLM) systems have helped many companies to stay abreast of changing market conditions over the past few decades. However, as product complexity increases, more and more businesses are finding that their PLM systems are unable to keep up with the shifting landscapes of today's markets. These traditional, monolithic PLM systems, many of which were put in place years ago, are constrained by outdated technology and slow, costly upgrades.

Traditional PLM systems were designed to manage mechanical components and are constrained by outdated technology when it comes to managing cross-disciplinary products.

This is due in part to the fact that traditional PLM systems are frequently a compilation of independent modules, forced together through company buyouts and mergers, resulting in a system that has difficulty communicating between applications. These systems often require extended implementation time and expect businesses to conform to their data model, not the other way around. Even more so, they cannot integrate well with other, best-in-breed systems.

In today's business environment, there is no more room for data silos in the product lifecycle. Product development requires a systems approach where the management of mechanical, electrical, and software components can all be seamlessly integrated, creating a unified digital thread of product data. This digital thread needs to continue unbroken from systems engineering, through product development and manufacturing, and on into service. Additionally, the data and process models should follow your business and engineering processes, not the other way around.

THE ARAS® DIFFERENCE: CHANGING THE STATUS QUO

At Aras®, we're dedicated to providing a new approach to enterprise PLM that is as flexible and innovative as the products it helps to create. That's why we developed Aras Innovator®, a resilient PLM and PDM solution that will help you to bring innovative products to market quickly and support them throughout the product lifecycle.

Aras Innovator® is based on a **unique, service-oriented architecture** that we built from the ground up to be flexible, scalable, and upgradable. The Aras platform for PLM and PDM can be easily customized to align with your unique business needs and can be seamlessly integrated with the software systems you already use. And, because of the platform's underlying technology, upgrades are straightforward and easy, regardless of the amount of tailoring an application has undergone.

We also offer a subscription model that requires **no up-front software licensing costs**, reducing risk and changing the economics of PLM in your favor with a dramatically lower total cost of ownership (TCO).
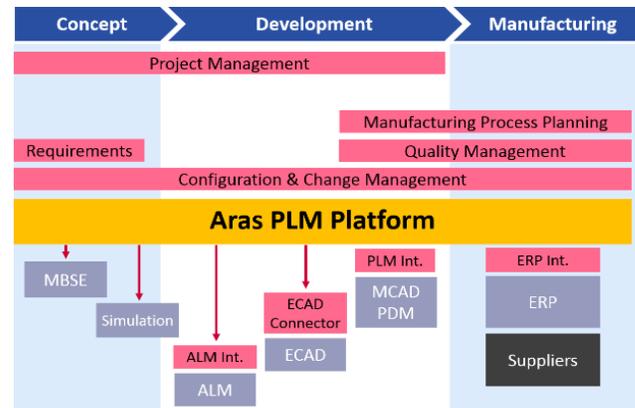
> **"Aras is different than other PLM products. The key was that we started adding value to the business right out of the gate."**
>
> **- Jared Sund, Manager of Engineering Support, Xerox**

ARAS INNOVATOR® GROWS WITH YOUR BUSINESS

With the trend toward smart, connected products comes a shift in the way product compliance, configuration management, and design validation is achieved. What is needed to account for these changing products is a digital thread of synchronized information that remains up-to-date across departments and throughout the product lifecycle. To help create tomorrow's new products, PLM must adapt to this changing environment to efficiently manage enterprise bill of materials (BOM), supply chain processes, embedded software, quality, and more, from the conceptual design phase and out into the field.

With this in mind, Aras Innovator® was built to span the entire product lifecycle. With integrations for PDM, ALM, ECAD, MCAD, ERP, and more, the Aras platform enables a true

Aras can interface with virtually any software, providing an overarching platform for promoting efficient, multidisciplinary collaboration.

digital thread to be constructed and maintained, one that stays up-to-date throughout the product lifecycle, no matter the number of versions a part goes through. The core capabilities of Aras solutions, which include configuration and change management, project and requirements management, and manufacturing process planning, provide you with visibility into the product lifecycle across all disciplines. And as your business and processes change, Aras is built to adapt to your evolving needs.

> **"With Aras, we have a single, scalable software solution for managing and coordinating a diverse set of projects."**
>
> **- Dan Woodman, Associate Director of R&D at Dow Chemical**

CUSTOMIZE, DON'T RE-CREATE

Historically, "customization" in the PLM industry has been perceived negatively. This is because customizations have traditionally been costly and time-consuming to implement due to the fact that they require complex reprogramming of a system's underlying code. Additionally, subsequent updates required that customizations were re-implemented, again a costly and lengthy process that was often avoided. However, without the ability to customize, companies are confined to the PLM vendor's definition of "best practices", leaving them without the ability to adapt, innovate, improve, and compete.

With Aras Innovator®, gone are the days when your business must choose between costly customizations or out-of-the-box options. Aras Innovator® users, including the U.S. Army, Airbus, Boeing, GE, and Honda have found that Aras solutions provide a solid basis of predefined capabilities that can be easily tailored using graphical drag-and-drop operations and universal item types, enabling **customized solutions to be developed quickly** and deployed immediately. With Aras, you can make real-time changes to business rules, forms, workflows, and lifecycles without complex programming, allowing you to customize Aras solutions to meet your business needs.

And, due to the platform's unique underlying code, **upgrades remain quick and easy**, and are usually completed in only two months by the Aras Upgrade Team for customers on subscription.

> **"Aras Innovator® is redefining customization in the PLM market;** the days of worrying about the potential impact on upgradeability are disappearing. Aras Innovator's ability to deploy quickly with real-time customization of predefined, best practice solutions is a key market differentiator; it is engineered to be highly customized…to protect investments, and to ensure future adaptability."
>
> CIMdata
>
> *Aras Innovator - Redefining Customization & Upgrades*

Aras Subscription Model

The Aras Innovator® core PLM and PDM capabilities are available for download at no cost. For customers who choose to be on subscription with Aras, additional capabilities and services are available. There is no licensing cost for the software, no matter if you chose the open-access capabilities, or if you sign up for subscription benefits.

A subscription to Aras also provides a unique benefit you can't get anywhere else – upgrades included in your subscription. The Aras Upgrade Team will perform the upgrade to the latest release, no matter how much you have customized. Additionally, the role out of updates only takes months, compared to the years it can take with traditional PLM systems.

More information: See page 16 for more information about the open-access capabilities and Aras subscription model.

Proven Scalability

Aras provides a new level of PLM scalability for enterprises with global supply chains and a significant number of users. The underlying model-based service-oriented architecture (model-based SOA) of the Aras platform uses a dynamic schema with loosely coupled, federated web services designed for scalability, flexibility, and extensibility. It was designed to enable scale-out on the file system and web servers with scale-up on the database by moving non-transactional data to the scale-out servers. This allows for the handling of very large levels of throughput using frequent, short transactions that are optimized by the database.

In a recent benchmark study by Logic20/20 with one million named and 250,000 concurrent users, Aras Innovator® running on standard HP® server configurations showed strong performance and excellent resource utilization. Average CPU usage was consistently below 10 percent, and the total percentage of CPU utilization never exceeded 20 percent. The average response times were fast across all different user loads tested.

More information: To learn more, visit *www.aras.com/technology/scalability.aspx*

"Aras Innovator®... scales to 1,000,000 named users with 250,000 concurrent users while maintaining excellent performance."
- Logic20/20 Benchmark Report

Open Software Promise

To customize or extend traditional PLM applications, you have to use the vendor's published API. But without detailed knowledge of the internal workings of the application, you are working blind, adding cost and risk to your PLM implementation.

Uniquely among PLM solution providers, Aras has an open architecture that features an open data model, open interfaces, and the use of open web standards. This allows customizations to be more easily carried out by your IT teams, saving you time and money and reducing project risk. In fact, you'll have the same access to the software's underlying code as our in-house developers do. And because customizations don't affect the software's core code, you'll still be able to upgrade to the next release without any headaches.

More information: To learn more, visit *www.aras.com/technology/open-architecture.aspx*

Discover Resilient PLM with Aras Innovator®

Flexible → Can be customized quickly to fit your business needs and changed at any time

Scalable → Performance proven at 1,000,000 named and 250,000 concurrent users

Upgradable → Upgrades are performed quickly by Aras at no additional cost for subscribers

STREAMLINE GLOBAL PRODUCT DEVELOPMENT

In a world where globalization means managing diverse regional requirements, multiple approved manufacturer lists (AML), and varying local supply chain partners – not to mention development teams located around the globe – you're faced with the challenge of how to provide a secure, connected, and collaborative environment for promoting efficient product development.

Aras Innovator® provides you with a fully integrated PLM and PDM platform that brings global teams in all disciplines together to create tomorrow's innovative products. Not only does Aras provide comprehensive PLM and PDM capabilities that extend from systems engineering through manufacturing and into service, but with Aras' unique subscription model, all users have accesses to the complete set of solutions at no additional cost.

SHORTEN TIME-TO-MARKET

In today's fast-paced environment where managing numerous concurrent projects is commonplace, a segregated product development process can result in inefficiencies.

With Aras Innovator®, engineering teams can come together to collaborate on the production of mechanical, electronic, and software components and manage industry requirements in a single, unified platform where data integrity is always maintained. Additionally, integrated change management tools ensure that all teams have access to the most recent, comprehensive product information and that the information remains up-to-date through the use of automated links to documents, bill of materials, parts, etc.

PROMOTE PRODUCT INNOVATION & REDUCE RISK

The challenges of successful product innovation lie in managing the increasing complexity of product systems while simultaneously keeping pace with changing markets. This makes it difficult to define and verify requirements, align engineering disciplines, and prioritize resources. A unified PLM and PDM platform can promote innovation by bringing global product development teams together to efficiently collaborate on complex products and processes.

With Aras PLM, you can explore multiple product concepts, investigate feasibility and cost, propose and carry out changes, and select the best design. This reduces the risk associated with new product introduction and translates into better, smarter products with improved capabilities. A systematic, enterprise-wide approach for acquiring company and supplier data and managing numerous regulatory obligations and customer requirements gives you the ability to focus on product innovation, while efficiently and consistently meeting compliance goals.

REDUCE COSTS

Globalization places new demands on product development teams, challenging them to collaborate on diverse projects with colleagues located around the globe. Additionally, managing approved manufacturers (AML), vendors, and regional compliance requirements becomes increasingly difficult in a disparate global marketplace.

From reducing development costs to minimizing supplier expenditure, Aras Innovator® enables efficient team collaboration and provides you with real-time visibility into product compliance metrics, helping to reduce the cost and effort required to ensure compliance, eliminate expensive late-cycle product changes, and improve time-to-market. Product cost management and approved manufacturer lists also help ensure that products are delivered to market on time and at the lowest possible cost. By centralizing information and implementing standardized processes, productivity surges, management of local requirements improves, and product quality increases, all while driving down costs.

3 | INTRODUCTION TO ARAS CAPABILITIES

PRODUCT OVERVIEW

With increasing product complexity, your organization needs to do much more than manage CAD files and the mechanical design process. Aras Innovator® offers a fully integrated, multidisciplinary solution for PDM and PLM that can bring together mechanical, electrical, and software engineers from around world to develop complex products. Aras solutions were architected from the ground up to provide you with the scalability and flexibility required to meet your unique business needs and get you working more productively as quickly as possible.

PLM
Manage collaborative processes through the product lifecycle

+

PDM
Securely manage CAD data, parts, and, documents

+

PLATFORM
Customize, extend, and build applications to meet your unique needs

PRODUCT LIFECYCLE MANAGEMENT (PLM)

As mechanical, electrical, and software components become an integral part of today's products, PLM solutions must be able to manage the production of these increasingly complex products from concept through to end of life. PLM with Aras Innovator® enables organizations to develop consistent, repeatable processes to optimize resources, minimize errors, and reduce time to market, leading to increased revenues and profitability. Additionally, Aras can integrate with your existing PLM and PDM systems to expand your capabilities beyond what you have today.

Aras Innovator® PLM capabilities include:

- Bill of Materials (BOM)
- Parts Management
- Component Engineering
- Change Management
- Project Management
- Technical Publications

- Quality Management
- Requirements Management
- Systems Engineering
- Configuration Management
- Document Management

PRODUCT DATA MANAGEMENT (PDM)

Organizations using CAD authoring tools need to securely manage design files, associated parts, and multidisciplinary bill of materials (BOMs). PDM with Aras Innovator® manages the lifecycle of ECAD and MCAD information and the extraction and synchronization of parts and BOMs. In addition, all CAD files are stored in a secure repository and are easily accessible by all users using visual collaboration capabilities that enable in-context discussions and facilitate in the change approval process, helping to avoid errors and eliminate delays.

Aras Innovator® PDM capabilities include:

- Bill of Materials (BOM)
- Parts Management
- Change Management
- Multiple CAD Integrations
- 3D PDF Converter

- Office Integration
- Vaults
- Digital Mockup
- Document Management

ARAS INNOVATOR® PLATFORM

The Aras Innovator® platform provides a robust, secure foundation for your PLM and PDM solution that can grow and evolve as your business does. The unique architecture of the Aras platform allows you to customize and extend existing PLM applications and easily build your own, all while ensuring upgradability even when applications are heavily customized.

The Aras innovator® platform capabilities include ALM, ERP, and ECAD and MCAD integration, internationalization, and visual collaboration tools. All capabilities available on the Aras platform can be used in the PLM and PDM solutions.

4 | PRODUCT LIFECYCLE MANAGEMENT (PLM)

To meet the challenges of today's global business environment, organizations need an adaptable and customizable system to manage products from concept through to end of life. Additionally, they must ensure they can quickly respond to market opportunities as well as changes in technology and customer requirements.

With Aras, organizations can develop consistent, repeatable processes that extend through the product lifecycle and enable collaboration across multiple disciplines and in the extended supply chain. PLM with Aras is highly flexible, allowing organizations to tailor business processes to their specific requirements. Additionally, real-time deployment of customizations and updates allow you to stay ahead of changing markets and evolving business processes.

FULLY INTEGRATED PRODUCT DEVELOPMENT

With increasing product complexity, product development is no longer just about mechanical components. Instead, a fully integrated platform for managing the design, development, and release of mechanical, electronics, software, and hardware components is needed. While many traditional PLM systems claim to have capabilities for integrated product development and program management, many of their offers are based on multiple systems that were developed for different disciplines and that don't always work together well. Aras Innovator® and all of its capabilities operate in a single, unified platform and were designed to be easily configured to work the way your business does, not the other way around.

PLM with Aras Innovator® provides a complete set of capabilities for multidisciplinary product development. This means that solutions for EBOMs and MBOMs, change management, requirements and configuration management, technical documents, and more can all be linked together across electrical, mechanical, and software/firmware disciplines. Additionally, Aras' centralized database ensures that all users have access to the correct, most current product information, no matter the department from which the data originated.

Overall, Aras' PLM solutions allow organizations to efficiently collaborate to optimize resources, minimize costly errors, and reduce time to market, leading to better products and increased profitability.

PLM CAPABILITIES

BILL OF MATERIALS (BOMs)

BOMs management with Aras Innovator® helps organizations to manage and synchronize multiple sources of information in a single database in order to create and maintain structured, multi-level bill of materials for each stage of the product lifecycle including design, manufacture, and support. Additionally, EBOMs and MBOMs can be easily synchronized, providing visibility into cross-disciplinary change statuses throughout the product workflow.

PARTS MANAGEMENT

Parts Management in Aras Innovator® provides you with complete control over the lifecycle of parts, including automated workflows and permissions to help manage the approval processes. Links to CAD models, drawings, and documents are automatically maintained, and classification schemes may be implemented to support search and reuse.

COMPONENT ENGINEERING

Component Engineering in Aras Innovator® simplifies electronic component selection, approval, sourcing, and compliance processes. Engineers and procurement specialists have instant access to complete, current technical data, as well as obsolescence and compliance information, on over 450 million board-level components in 400+ categories from leading manufacturers around the world. Information is provided by the IHS CAPS Universe database, which is directly accessible from within the Aras software environment.

CHANGE MANAGEMENT

Aras' cross-discipline Change Management capabilities provide mechanical, electrical, software, and documentation teams with complete visibility into the change status of a product or system. Change histories are automatically captured, providing upstream and downstream traceability and ensuring users throughout the extended supply chain have easy visibility into the engineering change status throughout the product lifecycle.

PROJECT MANAGEMENT

Project Management with Aras facilitates the management of new product development and engineer-to-order processes for complex projects that require global collaboration. Project completion status, deliverables, stage-gate management, and Gantt charts provide visibility into ongoing projects. Additionally, dashboards can track project status for an individual user's assigned tasks or provide an overview of company-wide or department-wide projects.

REQUIREMENTS MANAGEMENT

Requirements Management with Aras enables the creation of a single, multidiscipline requirements hierarchy for managing complex engineering systems including planning, development, and realization. Requirements stay in sync as a system or product evolves, providing accountability over the product lifecycle for all disciplines including mechanical, electrical, software, and firmware.

CONFIGURATION MANAGEMENT

Aras' solutions for Configuration Management provide a comprehensive methodology for managing the configuration (hierarchical set of information) of a product or system throughout its life. The capability provides identification, control, status accounting, and verification of configuration changes throughout the product lifecycle using graphical online business process workflows with email notifications and reminders. It also utilizes CMII- and CMPIC-certified best practices for configuration and change management.

DOCUMENT MANAGEMENT

Document Management with Aras includes version and change control for files in multiple formats in a secure, searchable repository. Users across multiple teams and locations can access the critical information required for the projects they are working on. The capability allows users of various disciplines and departments to author, visualize, share, and publish information all within a central, controlled, and collaborative environment.

QUALITY MANAGEMENT

Quality Management with Aras provides organizations with tools to manage risk, improve quality, and attain environmental, regulatory, safety, medical, and other forms of compliance. The application uses advanced product quality planning (APQP) to help you to control and mitigate critical product risks. Using the capability, you can deploy failure mode effects analysis (FMEA) processes to achieve compliance with regulatory requirements and quality standards including TS/16949, AS9100, FDA QSR. Other features allow you to manage libraries of critical characteristics, failure modes, effects, and control mechanisms, utilize ISO-compliant process flows to drive cross-functional collaboration, and create dashboards, scorecards, KPI metrics, and reports to track your project's status.
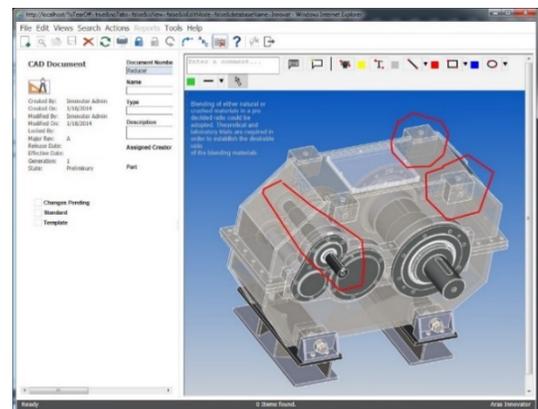
SYSTEMS ENGINEERING

Aras provides a complete set of capabilities to manage the lifecycle of complex multidisciplinary products from requirements, through development, manufacture and support. Systems-level product design (functional blocks, model based) is achieved through cross-discipline and cross-functional team collaboration, helping to you to efficiently manage evolving configurations of multidisciplinary deliverables for hardware and software development and maintenance as well as the associated technical documentation.

TECHNICAL PUBLICATIONS

Technical Publications is a content authoring tool in Aras that provides component content management capabilities for topics-based, modular documentation. Technical Documentation enables users of various disciplines to author, visualize, share, and publish information within a central, controlled, and collaborative environment, where change management capabilities ensure document quality.

Visual Collaboration: In-context discussions provide teams with a platform for secure, threaded communications where visual markups help decisions to be made quickly.

VISUAL COLLABORATION

The Visual Collaboration capability in Aras Innovator® allows you to easily view and comment on parts and documents,

providing security, control, and context to your day-to-day product development discussions. It includes threaded discussions with comments and replies, configurable discussion forums, and the ability to easily view and graphically comment on all your file content, including 3D models, drawings, and Office documents. Visual Collaboration provides everyone from engineering, operations, quality, and the supply chain with a way to communicate about products more effectively, make decisions quickly, and solve problems faster.

INTEGRATION CAPABILITIES

PDM INTEGRATION

While Aras provides full PDM capabilities, Aras Innovator® can also be fully integrated with existing PDM environments to provide enhanced PLM capabilities using your existing system. This provides organizations with a low-risk approach to making CAD deliverables and documents available to the wider enterprise and to provide full integration into enterprise processes, including BOM and change management. Multiple PDM systems can be integrated with the Aras platform, creating a single, unified PDM/PLM environment.

ERP INTEGRATION

With integrations possible for all popular ERP systems, Aras connected to ERP provides a bi-directional exchange of BOMs, parts, classification, and item statuses. ERP integration also links structures and workflow supporting part and BOM release and change processes.

APPLICATION LIFECYCLE MANAGEMENT (ALM) INTEGRATION

Aras Innovator® can be fully integrated with an existing ALM environment, creating a complete view of multidisciplinary products that fully integrates embedded software into enterprise processes, including BOM and change management.

Traditional PLM systems can take months – or even years – to implement. Aras Innovator® solutions can be rolled out **quickly and efficiently**, and can be easily customized to meet your unique needs.

Boeing-Insitu successfully implemented part master, EBOM, problem reporting, engineering change request, and engineering change notice **…all in less than 60 days**.

5 | Product Data Management (PDM)

Organizations are faced with the increasing challenge of ensuring that all types of CAD data and documents are easily accessible to all users, regardless of their department, discipline, or location. Additionally, they must ensure that accurate, up-to-date information can be viewed by any user during design reviews, engineering changes, defect investigations, and other processes.

PDM with Aras manages the creation, change, and archive of all information in a centralized or distributed data repository that provides easy, secure access to all users through the Aras Visual Collaboration tools. Connectors are available for all popular MCAD, ECAD and ALM tools, as well as for Microsoft Office, where parts and BOM items are automatically extracted and linked to corresponding CAD and document items in Aras. With the bi-directional exchange of data across departments, engineers can more easily streamline cross-disciplinary change management.

Aras Innovator® Benefits

Powerful PDM capabilities ensure that everyone is accessing the right information, which helps to avoid errors and eliminate delays. Distributed storage vaults make information quickly accessible anywhere, supporting global product development and supply chain collaboration strategies. Visual Collaboration broadens and increases the pace of discussions, resulting in better products that can be brought to market faster.

PDM Capabilities

Bill of Materials (BOMs)

BOM management with Aras Innovator® helps organizations to manage and synchronize multiple sources of information in a single database in order to create and maintain structured, multi-level bill of materials for each stage of the product lifecycle including design, manufacture, and support. Additionally, EBOMs and MBOMs can be easily synchronized, providing visibility into cross-disciplinary change statuses throughout the product lifecycle.

Parts Management

Parts Management in Aras Innovator® provides you with complete control over the lifecycle of parts, including automated workflows and permissions to help manage the approval processes. Links to CAD models, drawings, and documents are automatically maintained, and classification schemes may be implemented to support search and reuse.

Change Management

Aras' cross-discipline Change Management capabilities provide mechanical, electrical, software, and documentation teams with complete visibility into the change status of a product or system. Change histories are automatically captured, providing upstream and downstream traceability and ensuring users throughout the extended supply chain have easy visibility into the engineering change status throughout the product lifecycle.
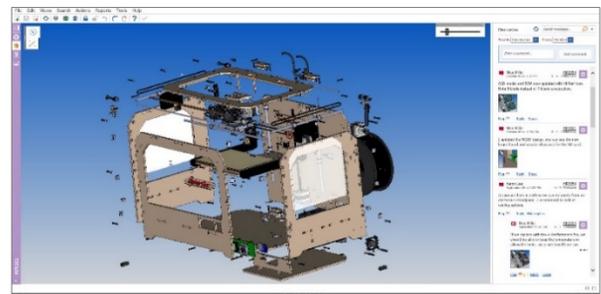
3D PDF Converter

With the 3D PDF Converter, CAD files from all major vendors including CATIA, Creo, SOLIDWORKS, NX, NJ, and STEP can be converted into a 3D PDF and viewed within Aras Innovator. The compressed PDF can be shown in exploded, cross-sectioning, and stored views, and 3D measurements can be taken. The capability supports 3D and 2D CAD files, Microsoft Office documents, images and scans, and other data types.

3D PDF Converter: With the embedded 3D PDF Viewer, CAD files from any major vendor can be converted to a 3D PDF and used from within the Aras Innovator® visual collaboration environment.

Digital Mockup

The Digital Mockup tool in Aras provides high-performance 3D viewing and analysis for product designs. The viewer enables simultaneous import and analysis of data from industry leading CAD programs, allowing teams to make decisions based on visualizations of the complete product, and by performing analyses on those visualizations from anywhere within the Aras software.

VAULTS
Vaults are managed in Aras to ensure that application files can be quickly and securely accessed using distributed/replicated capabilities and high-speed file transfer. Vaults work in conjunction with CAD Connectors and the Microsoft Office Connector.

DOCUMENT MANAGEMENT
Document Management with Aras includes version and change control for files in multiple formats in a secure, searchable repository. Users across multiple teams and locations can access the critical information required for the projects they are working on. The capability allows users of various disciplines and departments to author, visualize, share, and publish information all within a central, controlled, and collaborative environment.

VISUAL COLLABORATION
The Visual Collaboration capability in Aras Innovator® allows you to easily view and comment on parts and documents, providing security, control, and context to your day-to-day product development discussions. It includes threaded discussions with comments and replies, configurable discussion forums, and the ability to easily view and graphically comment on all your file content, including 3D models, drawings, and Office documents. Visual Collaboration provides everyone from engineering, operations, quality, and the supply chain with a way to communicate about products more effectively, make decisions quickly, and solve problems faster.

SELF-SERVICE REPORTING
Create, share, and export reports detailing items in the Aras including project statuses, parts and part statuses, cost analysis, approved manufacturer and supplier lists, and more. Reports are generated with an easy-to-use wizard-driven interface and can be exported to various formats. This provides organizations with greater insight into the progress of projects and the performance of key processes.

INTEGRATION CAPABILITIES
OFFICE INTEGRATION
Office Connector extends the benefits of PLM to Excel, Word, and Outlook. Users can manage documents while working within the familiar, easy to use Microsoft environment. Additionally Office Connector provides administrators with capabilities for document control, security, naming, templates, etc.

CAD INTEGRATIONS
Aras CAD integrations provide secure and consistent management of the creation, change, and archive of information from all popular MCAD and ECAD systems. Integration with PDM/PLM makes information available across the enterprise as well as supply chain partners and fully integrates it with parts and BOM structures.

APPLICATION LIFECYCLE MANAGEMENT (ALM) INTEGRATION
Aras Innovator® can be fully integrated with an existing ALM environment, creating a complete view of multidisciplinary products that fully integrates embedded software into enterprise processes, including BOM and change management.

ARAS SECURITY
The Aras Innovator® security, authentication, and data access rights model manages user authentication and data access privileges. It was designed to meet the needs of companies in the defense industry and to comply with International Traffic in Arms Regulation (ITAR) and other military security requirements.

The U.S. Army has worked with Aras Innovator for 14 years and performed 9 major version upgrades

6 | ARAS INNOVATOR® PLATFORM

The Aras Innovator® platform is the core of the Aras product suite and the backbone upon which all solutions are built. The platform is based on two key principles: Large scale enterprise applications must be capable of quickly adapting to dynamic and unpredictable business requirements, and customizations must not impede upgradability. In a word, your PLM solution must be resilient. With Aras, you can customize, extend, or build completely new applications on the Aras platform, providing a unified solution that is accessible across all disciplines and departments, eliminating barriers to collaboration and simplifying development and maintenance.

In addition, regardless of the amount of tailoring an Aras application has undergone, upgrades remain straightforward and easy, and are performed by Aras Support for customers on subscription.

HOW IS THIS POSSIBLE?

The Aras Innovator® platform is built using a model-based service-oriented architecture (SOA) where the applications and core services are inherently separate. This unique architecture is what allows the applications to be customized and extended, while still maintaining upgradability. The core functionalities of the Aras Innovator® platform, including visual collaboration, self-service reporting, internationalization, lifecycles, and workflows, are inherent capabilities of Aras Innovator® and can be used with all Aras applications.

MODEL-BASED SERVICE-ORIENTED ARCHITECTURE (SOA)

Aras Innovator® is the only PLM solution that is based on an open, web based SOA. This allows you to make real-time modification to Aras applications using browser-based modeling environment with graphical, drag-and-drop operations that make it easy to customize solutions and create your own. Additionally, Aras Innovator® is the only PLM software with an enterprise open-source business model, which provides an unlimited number of users with full access.

DEFINING CAPABILITIES AS ITEMS

Almost everything in Aras Innovator® is defined through an Item Type, including properties views, lifecycles, workflows, access permissions, relationships, and program methods. Item Types are the basis for the self-describing property of the Aras Platform and are what allow for all aspects of the solutions offered with Aras Innovator® to be integrated. Additionally, since all capabilities are described as Item Types, customizations are straight forward and are implemented in a similar manner throughout the entire Aras product suite.

BENEFITS OF THE ARAS INNOVATOR® PLATFORM

CUSTOMIZE
Compared to conventional PLM systems, which usually require months to customize, Aras allows you to quickly and easily make real-time modifications to business rules, forms, workflows, and even the data model using browser-based, drag-and-drop operations. Workflows, lifecycles, access privileges, properties, and forms are all based on Item Types and can be easily tailored to fit your exact needs, maximizing the benefits.

EXTEND
Most organizations have many information management systems that they make significant use of. Aras allows you to keep these systems in place by providing applications that can either be extended to cover additional business requirements or can be integrated with your other systems. And, with the ability to create new Item Types, workflows, lifecycles, and relationships as your company grows and changes, you can derive incremental benefits from your Aras implementations that support your business processes, not hold them back.

BUILD
For your businesses unique needs, the power and flexibility of the Aras platform allows you to build completely new applications. These applications can either operate as stand-alone solutions or can be fully integrated with other PDM and PLM solutions from Aras.

PLATFORM CORE FUNCTIONALITIES

The core capabilities provided with the Aras Innovator® platform are leveraged by all other PLM and PDM solutions.

VISUAL COLLABORATION

The Visual Collaboration capability in Aras Innovator® allows you to easily view and comment on parts and documents, providing security, control, and context to your day-to-day product development discussions. It includes threaded discussions with comments and replies, configurable discussion forums, and the ability to easily view and graphically comment on all your file content, including 3D models, drawings, and Office documents. Visual Collaboration provides everyone from engineering, operations, quality, and the supply chain with a way to communicate about products more effectively, make decisions quickly, and solve problems faster.

INTEGRATION TO CAD, PDM, ERP, & ALM

Aras offers a number of integration options and provides developers with a range of capabilities to help you create integrations and connections to the systems and tools used by your business.

Visual collaboration: In-context discussions provide teams with a platform for secure, threaded communications where visual markups help decisions to be made quickly.

SELF-SERVICE REPORTING

Generate, share, and export self-generated reports detailing any item in the Aras that they have access to, including project statuses, parts and part statuses, cost analysis, approved manufacturer and supplier lists, and more. Reports are generated with an easy-to-use wizard-driven interface and can be exported to various formats. This provides organizations with greater insight into the progress of projects and the performance of key processes.

INTERNATIONALIZATION

Aras has multi-language support that includes both the solution screens and all end user data. Translations are stored as data in the database, which dramatically simplifies the development and sharing of language packs by eliminating external resource files and the need to re-compile code. Supported languages: English, German, French, Mandarin, simplified Chinese, Japanese, Hebrew, Spanish, and Russian.

WORKFLOWS

Aras workflows ensure that business processes are consistently executed in a timely manner and provide accountability, data integrity, and visibly into projects and processes. In Aras Innovator®, a workflow defines the set of activities representing the template for a business process, such as an engineering change order (ECO) approval, where work assignments, voting, approvals, and project delegation can all be automated.

LIFECYCLES

You can define lifecycles in Aras using graphical drag-and-drop tools to help you track item status and control access and privileges. With Aras Innovator®, you can define lifecycle states and transitions, trigger item versioning, control access privileges and item locking, and initiate emails. Lifecycles state changes are typically automated by workflows, providing a foundation for managing business processes.

VAULTS

Vault management with Aras ensures that application files are managed securely and can be accessed quickly using distributed/replicated capabilities and high-speed file transfers. Vaults work in conjunction with CAD Connectors and the Microsoft Office Connector.

SECURITY

Aras Innovator's security, authentication, and data access rights model manages user authentication and data access privileges. It was designed to meet the needs of companies in the defense industry to comply with International Traffic in Arms Regulations (ITAR) and other military security requirements.

7 | THE ARAS PRODUCT SUITE

The Aras suite of products includes Aras Innovator®, the Aras platform, as well as additional applications that extend the PLM and PDM capabilities of Aras. Aras Innovator® and the Aras platform are open-access and include the fundamental capabilities of the Aras PLM/PDM solution. Additional applications with added capabilities are available via subscription. The entire Aras product suite, including all applications, are inherently integrated with one another, no matter how much customization has been implemented.

In addition to the core applications offered by Aras, there are solutions developed by Aras Partners and the Aras Community that offer added capabilities.

ARAS INNOVATOR®

Aras Innovator® is an open, web-based PLM and PDM solution for managing global product development that provides a secure platform for cross-functional teams to efficiently collaborate on the production of complex, cross-discipline products, from conception through to end of life. With integrations for ECAD, MCAD, ERP, and ALM, the Aras platform enables fully integrated product development, providing requirements, change, configuration, and project management for components spanning the mechanical, electrical, and software disciplines. Aras Innovator® is easily customizable and the unique architecture provides scalable, flexible, and upgradable solutions – no matter the amount of customization.

Aras Innovator® is bundled with the Aras Product Engineering and Aras Program Management applications. Its capabilities can also be extended with the subscription-only applications. The platform is designed to be deployed on the Microsoft SQL Server, .NET, and Windows Server.

ARAS INNOVATOR® APPLICATIONS

The Aras Innovator® PLM/PDM solutions are divided into applications for easy download and implementation. The first two applications, Aras Product Engineering and Aras Program Management, are bundled with Aras Innovator® and contain the fundamental open-access capabilities of the Aras PLM/PDM solution. The remaining four applications – Aras Requirements Management, Aras Component Engineering, Aras Technical Documents, and Aras Quality Management – provide enhanced PLM capabilities and are available via subscription.

Aras Product Engineering	Aras Program Management	Aras Requirements Management	Aras Component Engineering	Aras Quality Management
Aras Innovator® Platform				

ARAS PRODUCT ENGINEERING APPLICATION

The Aras Product Engineering application helps you to define and manage information throughout the product lifecycle from design and development, verification and validation, manufacturing, service, and through to end of life. This includes all aspects of complex electromechanical systems and software components. The application supports parts, multi-level bill of materials (BOMs), CMII standard configuration management and change management, approved vendor and manufacturer lists (AVL/AML), and documents.   **Availability:** Open-access

ARAS PROGRAM MANAGEMENT APPLICATION

The Aras Program Management application automates the product development process with comprehensive tools for monitoring projects and managing new product development. The application offers stage-gate/phase-gate organizations, project trees, Gantt charts, tasks and activities, work breakdown structure (WBS), status roll-ups, and many more capabilities. Project manager, contributor, and executive dashboards provide relevant information about project status/overview, costs for active projects, scheduling tools, etc.   **Availability:** Open-access

ARAS REQUIREMENTS MANAGEMENT APPLICATION

The Aras Requirements Management application supports systems engineering by providing a company-wide, multidisciplinary platform for managing physical, functional, logical, and performance related requirements that can be linked to specifications, parts, BOMs, test plans, or other objects. The application creates a centralized, interdisciplinary requirements hierarchy that can be organized into mechanical, electrical, and software, where users can identify, connect, and track different types of requirements. Impact analysis for proposed changes and change histories are automatically created and maintained.   **Availability:** Subscription

ARAS COMPONENT ENGINEERING APPLICATION

Aras Component Engineering makes it easy to select, source, and compare the electronic components that best meet your requirements. With the Aras Component Engineering application, users have instant access to complete, up-to-date technical data, as well as obsolescence and compliance information on more than 450 million board-level components in over 400 categories from leading manufacturers around the world — without launching multiple browsers or separate applications. The application embeds commercial component data from the IHS CAPS Universe database into the Aras environment, providing engineering and sourcing professionals with a single point of access to the information needed to design, procure, and sustain your company's products.   **Availability:** Subscription

ARAS QUALITY MANAGEMENT APPLICATION

The Aras Quality Management application provides organizations with advanced product quality planning (APQP) and failure mode effects analysis (FMEA) tools to manage risk, improve quality, and attain environmental, regulatory, safety, medical, and other forms of compliance. The capability allows you to use Design for Six Sigma (DFSS) to control risks and mitigate critical product risks, deploy FMEA processes to achieve compliance with regulatory requirements and quality standards including TS/16949, AS9100, FDA QSR, manage libraries of critical characteristics, failure modes, effects, and control mechanisms, utilize ISO-compliant process flows to drive cross-functional collaboration, and create dashboards, scorecards, KPI metrics, and reports to track your project's status.   **Availability:** Subscription

ARAS PARTNER & COMMUNITY SOLUTIONS

In addition to the Aras Innovator® applications, there are also open-access, non-commercial community projects and partner-developed subscription solutions.

ARAS COMMUNITY SOLUTIONS

As an open source provider, we also host an online community for our customers to share ideas and innovations. In our online forums, the Aras Community shares their experiences, ideas, and solutions, many of which can be downloaded for free. For more information, visit *www.aras.com/aras-community* or contact us as *info@aras.com*.

PARTNER SOLUTIONS

Many Aras partners have developed industry-specific solutions and expansions in fields such as apparel, electronics, and high-tech. These solutions are available either through the Aras Community online, or through our network of industry-leading partners. Commercially available solutions and are based on the same subscriber model as Aras Innovator®. For more information, visit *www.aras.com/parnters* or contact us as *info@aras.com*.

ARAS APPS

Aras Flow is an integrated mobile tablet app that combines change workflows with discussion commenting, visualization, and markup, allowing users to approve proposed product changes, redline documents, sketch new ideas and capture and add photos, audio, and video, all while on the go.

Aras Component Search is an integrated mobile app that combines component search with part approval workflows in a tablet format. Users can use filters to quickly search for new components, view properties and data sheets, and initiate new part approval requests. The app is available with the Component Engineering application.

Traditionally, business face high initial costs to acquire a PLM or PDM solution and services, followed by unpredictable and ongoing costs for support, maintenance, and upgrades. This places a huge burden of risk on these companies, requiring them to commit significant expenses and resources long before the success of the system can be known.

At Aras, we believe that you shouldn't have to carry this risk. That's why, uniquely, we provide complete flexibility in how you access our solutions, ranging from open-access to enterprise subscriptions.

ARAS IS DIFFERENT

The Aras Innovator® platform and core PLM and PDM are available for download at no upfront cost. For customers who choose to be on subscription with Aras, additional capabilities, services, and upgrades are available. The is no upfront licensing cost for the software, no matter if you choose to use the open-access capabilities for free, or if you sign up for subscription benefits.

OPEN-ACCESS CAPABILITIES

You can access the Aras Innovator® platform and core PDM and PLM capabilities in the Aras Product Engineering and Program Management applications at no cost. This is ideal for evaluations, limited corporate deployments, and academic institutions.

SUBSCRIPTION BENEFITS

An Aras subscription grants you access to the extended PLM/PDM capabilities of Aras Innovator®, as well as new releases, upgrade services (no matter the amount of customization), as well as unlimited training and support. The applications available on a subscription-only basis include Aras Requirements Management, Aras Component Engineering, Aras Technical Documents, and Aras Quality Management. Subscription-only applications always include upgrade services, training, and support.
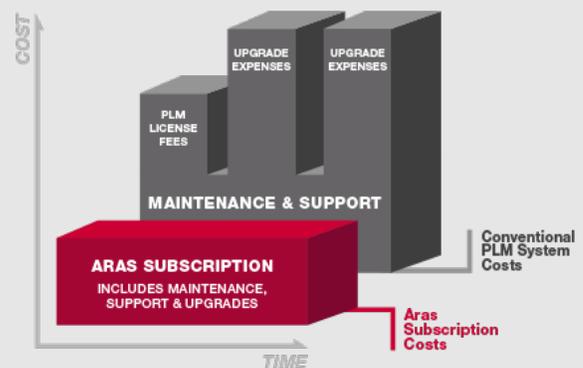
UPGRADES INCLUDED

The Aras subscription includes a unique benefit you can't get anywhere else – upgrades included in your subscription. The Aras Upgrade Team will perform your system upgrade to the latest release, no matter how much you have customized. How can we make this promise? With its modern, service-oriented architecture, the role out of updates takes less than two months, compared to the years it can take with traditional PLM systems. See page 17 for more information about the unique core technology of Aras Innovator®, which makes this possible.

ARAS CHANGES THE ECONOMICS OF PLM

With traditional PLM, you face high up-front costs for software licensing and customization. Further costs are incurred every time the system is upgraded. Benefits are delayed until customization is completed and are limited by the system architecture.

But with Aras Innovator®, there are no software licensing costs, customization costs are lower, and upgrades are included in your subscription. Benefits accrue earlier and increase more quickly due to both the unique architecture and licensing plan.

Subscription services include:
- Release upgrades performed by Aras at no additional cost, no matter how much your solution has been customized
- Unlimited on-premises training courses
- Live hotline and online support from a dedicated Aras support engineer, including unlimited support incidents, developer support, and escalation management
- Service packs that can include enhancements, security updates, and hot fixes
- Productivity tools, including Data Load Tool and Vault Recovery Utility
- Access to the Subscriber Portal, which provides online learning and the Aras® Knowledge Base

For a complete list of the capabilities and services that are available on a subscription-only basis, please don't hesitate to contact us:

EMAIL: info@aras.com
PHONE: (978) 691.8900
WEBSITE: www.aras.com

CONSULTING SERVICES

Consulting services and partner consulting services help you get the greatest value out of your Aras solution. Services, available to subscribers at additional cost, include everything from installation and deployment to data migration, advanced customization, and system optimization.

"Aras is different than other PLM products. The key was that we started adding value to the business right out of the gate."

- Jared Sund, Manager of Engineering Support, Xerox

EXPLORE THE ARAS PRODUCT ROADMAP
Unique among PLM software vendors, we publish our product roadmap online and invite you to comment on it. Not only does this help you plan for future upgrades but it also gives you an opportunity to influence our direction and priorities. View the roadmap online at: *www.aras.com/plm-roadmap.*

With Aras Innovator®, instead of defining an object model that is hard coded into the services, we chose to separate the two. The result is a run-time web application framework consisting of loosely coupled / federated web services that are optimized for performance and scalability that form a service-oriented architecture (SOA). We call this a model-based SOA, and it is the core of what makes Aras Innovator® different.

M<small>ODEL</small>-B<small>ASED</small> S<small>ERVICE</small> O<small>RIENTED</small> A<small>RCHITECTURE</small> (SOA)

Whereas traditional PLM systems have complied data solutions and code that is difficult to separate, the Aras Innovator® platform is built from the ground up to have the code and defined solutions separated. Customizations are made to the defined solutions, not to the underlying program code. This means that no matter the amount of customizations that are made to a solution, the core code is still able to be updated without compromising the customizations.

C<small>ORE</small> T<small>ECHNOLOGY</small>

At its core, Aras is an object-oriented, web-based solution. It contains a behavioral modeler that provides a graphical drag-and-drop environment for real-time system definitions and alterations that do not require complex programming. Modifications to Aras Innovator® are made by editing the model definition directly, rather than by having to edit the source code, then compile, link, and redeploy to make the necessary application changes and enhancements. By supporting solution model modification in real-time, Aras Innovator's platform allows changes to be implemented on a live system. The solutions behavioral modeler stores the XML solution models (e.g. object model, relationships, business logic, and methods) as normalized data structures in the database, separate from the underlying web services framework that comprises the Aras Innovator® applications. The software is designed to be deployed on the Microsoft® SQL Server, .NET, and Windows Server.

E<small>NABLING</small> E<small>ASY</small> C<small>USTOMIZATIONS</small>

There out-of-the-box solution models offered with Aras can be easily modified, combined, and extended using the graphical model editor and simple forms. The solution models subscribe to web services programs found in the Enterprise Application Framework. When upgrades occur to the web services programs, these programs are replaced without impacting the XML models residing at the higher level. And, since there is no implementation-specific business logic in Aras Innovator's web services programs, all business logic is made available and is endlessly customizable within the modeling environment since upgrades do not require code changes to the solution models.

B<small>REAK FROM</small> T<small>RADITION</small>

Conventional enterprise system vendors mask the rigid nature of their software by convincing customers to deploy "best practice" solutions. However, you will inevitably be confronted with situations where the vendor's "best practices" do not match your company's specific competitive practices. At this point you must pick one of two unattractive options:

Do not change the system
If you opt not to customize the system, you face the loss of competitive advantage by forcing your business to conform to the system.

Customize the system
If you opt to customize the system, complex recoding and schema changes will typically be required. As most companies know first-hand, these customizations are complicated, time-consuming, and expensive, not to mention they will prevent the system from being easily upgraded when the next version of the software is available.

With Aras Innovator®, you don't have to make this choice. You can customize your PLM solution, while also maintaining easy upgradability with the unique architecture of the Aras platform.

Aras is a global company that is providing a new approach to enterprise product lifecycle management software. We focus on markets with complex products and processes including automotive, industrial, aerospace and defense, high-tech, consumer goods, life sciences, and energy.

Staffed by highly experienced PLM experts, we at Aras have a long history in the PLM business and we understand the complexity involved in enterprise-wide PLM projects. We've built a successful business by establishing long-term, meaningful relationships with our customers and committing ourselves to their success.

In addition, our enterprise open-source model enables us to give back to the global PLM community by providing thousands of companies with a world-class PLM software solution that they would otherwise be unable to afford.

ARAS COMMUNITY

The Aras online community includes thousands of users, partners, developers, and enthusiasts around the world. We encourage you to tap into this rich network to collaborate on solutions, support one another and help us make our products and technology better every day.

Explore online: *www.aras.com/aras-community*

Aras Corporation Global Headquarters
Andover, MA USA
300 Brickstone Square
Andover, MA 01810-1492
United States

Email: info@aras.com
Phone: (978) 691.8900
Web: www.aras.com