Arena Solutions: Carving Out a High-tech Cloud PLM Software Niche

By PJ Jakovljevic

When thinking product lifecycle management (PLM) software in the high-tech electronics industry, Arena Solutions should be at the top of the list of solutions worth considering. Arena is a market leader and pioneer in pure cloud PLM software, and things have only been getting better and better for the company and its customers. Q4 2016 was the best quarter in Arena's 17-year history, and through continual innovation, including multiple cloud software releases and 10 new products in the last 2 years, Arena doesn't seem to be slowing down its PLM progress.

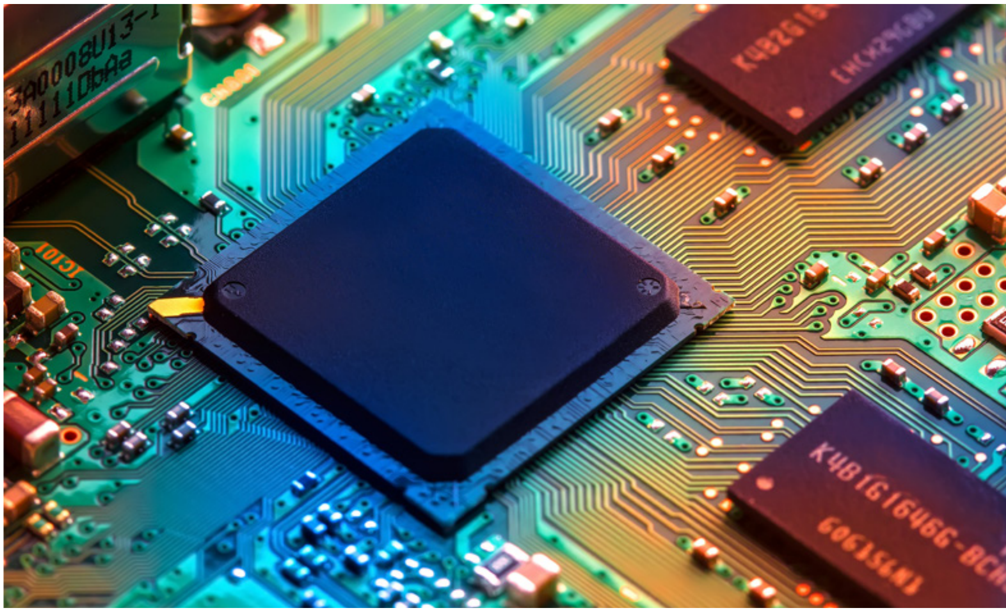
In this article we'll explore Arena's offerings and the company's recent developments in depth, including a brief history, a look at the overall Arena "product development platform," and how Arena's solutions cope with today's changing production environment and challenges/opportunities like the Internet of Things (IoT).

Arena Backgrounder

Founded in 2000 (and known formerly as BOM.com), Arena was the first PLM software vendor to provide its solutions in the software as a service (SaaS) manner. Arena's PLM solutions are built on a true multitenant cloud software platform that resides on Arena-owned servers in co-located datacenters.

The vendor currently has almost 1,000 active subscribing corporate customers in 100 countries, including some well-known entities such as GoPro, Medtronic, and Sonos, and nearly 100,000 end users of its PLM software. Over 60% of Arena PLM software customers have users accessing Arena internationally, and nearly 50% of Arena customers' trading partners and suppliers make use of products and services from Arena's cloud PLM software as well.

Through continual innovation with a minimum viable product concept and agile development process, Arena has been able to progressively expand its cloud PLM software capabilities and learn from its customers' usage without making large and risky product bets (i.e., customers can turn new features on when ready). Arena PLM is also able to create fast



implementation methodologies (with low risk and fixed fee implementations) for clients, and a stable production environment with a quarterly service level agreement (SLA) of 99.5%, a figure that the company publicly reveals and surpasses.

Arena recently announced financial results from Q4 2016 showing that it was the best quarter in the company's history. New customer subscriptions grew 27% over the same quarter in 2015, due to Arena's continued success in selling to larger enterprise customers. The average deal size for the quarter was 32% higher than it was in the same period in 2015. New customers in Q4 2016 included a number of high-tech companies, including FARO Technologies, Corindus Vascular Robotics, ProteinSimple, Bigfoot Biomedical, Geometrics, Aehr Test Systems, Ring (previously Bot Home Automation), and Velo3D.

Much of Arena's success has to do with its embracing of the cloud and its creation of an all-in-one product development platform. While it should come as no surprise that existing implementations of on-premise PLM software solutions are being complemented with cloud-based product development platforms, an increasing number of large manufacturers are beginning to replace on-premise PLM systems with multitenant single-instance cloud-based product development platforms providing the ultimate scalability and ease of upgrades, patches, new seats, and bug fixes for the user. This change will be seen in specific markets where manufacturers are using or embedding complex electronics, oftentimes in a high mix, high rate of change where time to market is important. The main driver is the availability of an expanded set of cloud-based processes, feature sets, and capabilities that are integral to new product development and new product introduction (NPI) in these specific markets. Those companies also have a reduced tolerance for large capital expenses and long enterprise software deployments; they need to realize benefits as quickly as possible.

A Focus on Product Development

Engineers, designers, quality managers, operations, manufacturing, and stakeholders throughout the extended supply chain all need access to product data so they can work together to produce the highest quality product in the shortest possible time. Over the last three years, Arena has expanded its electronics high-tech focused cloud PLM software solution's scope to include QMS (quality management system) and ALM (application lifecycle management) capabilities, creating a comprehensive "product development platform" that spans the different engineering disciplines, along with the supply chain, quality management, and product management teams.

Arena's QMS software helps ensure that organizations produce safe and effective products, with adequate controls in place, from design and manufacturing through delivery and service. By providing a collaborative development environment, each person working on the product will have close at hand the information needed to make the best decisions regarding what to make, what to reuse in the next design, what issues to address, and what future products to plan for.

In mid-2016, Arena announced the availability of the Arena Summer 2016 release, featuring a new module, Arena Training Management for Arena QMS. Today's medical device, consumer electronics, and high tech companies must innovate quickly while complying with standards such as those from the US Food and Drug Administration (FDA), International Organization for Standardization (ISO), Occupational Safety and Health Administration (OSHA), Sarbanes-Oxley (SOX), and Service Organization Control (SOC). Connected QMS processes such as corrective and preventive action (CAPA), complaints, non-conformances, eight disciplines (8Ds), and supplier audits are easiest managed in a single system.

The success of any quality management program is directly related to the quality of the training received by those involved in the entire PLM process. Yet, for many organizations, training management is an afterthought.

Additionally, using spreadsheets to maintain a traditional "training matrix" is a labor-intensive practice, often leading to outdated documentation rarely in sync with the latest policy revisions, standard operation procedures (SOP), and work instruction revision updates, thereby increasing the risk of failing an FDA or OSHA audit.

Arena Training Management simplifies training record management and auditability by integrating training records into a single system with the product record. This enables companies to link their policies and procedures to impacted products and processes to reduce the cost of training and ensure continual training compliance.

In late 2016, Arena announced the immediate release of Arena Verify, a solution that adds requirements issue, bug, and hardware defect management to the vendor's product offering. When defects are discovered, the entire process is captured within the product record, unlike stand-alone solutions, which trap information within a silo accessible by only a few key people. With Arena Verify, requirements management is integrated within the product record so that this critical information can be shared with all relevant stakeholders.

A Product Development Platform for Today's Global Market Challenges

Ongoing global market challenges make Arena's product development platform very relevant— competition now comes from all directions, from start-ups to large global enterprises, and innovation is the buzzword du jour in this economy. One must either find new ways to solve customer problems or be sidelined by the competition. As more companies outsource functions that are not considered their core competencies (e.g., manufacturing), the need to protect intellectual property is key (think of the patent battles between Samsung and Apple over the past few years). Companies also need to ensure that their products are safe and meet regulatory and environmental standards.

A common problem we see in many product companies that don't have a PLM-based product development platform is that there are many key stakeholders (departments and their users), systems, and databases (such as mechanical computer-aided design (CAD), electric CAD, documents vault, back-office software, etc.) in use. With so many disconnected systems and processes, employees must work with multiple systems to identify the product information needed during the new product development stage. This results in difficulty determining correct product versions after revisions of product designs, and the use of departmental and/or personal silos of information that get out of sync or result in redundant data sets. Moreover, there is an inordinate amount of time wasted in ensuring all impacted parties (internal and external stakeholders) are using the latest and the correct product information. Ultimately, this results in delays in getting high quality products to market on time.

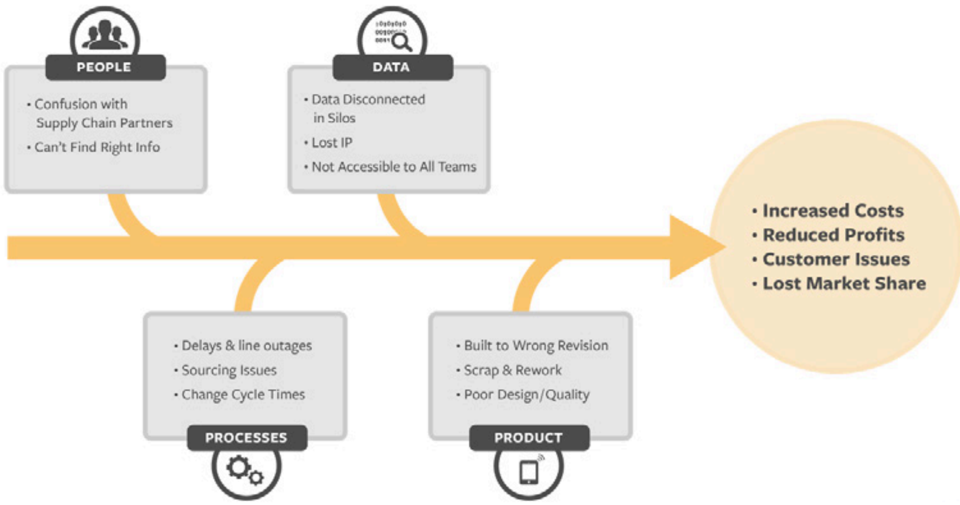


Figure 1. The cost of disconnected silos

As Figure 1 shows, disconnected silos create issues with people, data, processes, and products, ultimately leading to increased costs, reduced profits, lower customer satisfaction, and lost market share. The adoption of a single solution that can replace multiple disparate tools is an increasingly attractive option as it leads to an integrated yet streamlined process that offers a unified collaboration platform tied directly to the product record and extended supply chains. This is especially important for those markets where the quality process is becoming more integral to the product development process.

How Specifically Can Arena PLM Help?

Every product company needs to manage various aspects of its product design to get new products to market. Today, designing and releasing an electronic-focused product requires the printed circuit board assembly (PCBA) design along with the mechanical design, packaging design, firmware, software, and associated documents (manuals) and assembly instructions. With Arena PLM, a complete product assembly can be crafted and delivered as a single package to the supply chain.

Complex product companies need to effectively manage their mechanical, electrical, software, and off-the-shelf commercial parts and documentation (e.g., specs, packaging, etc.). To do this, each respective team needs tools and solutions to manage its product data. Each group manages its part of the product, but it also needs to integrate its product content with the rest of the product record to provide a complete picture of the shippable product. Arena PLM maintains control of all this information, so the entire enterprise has one system of record.

As figure 2 shows, PLM software allows companies to view the bill of material (BOM), propose new engineering change requests and/or orders (ECRs/ECOs) as products evolve from concept through end of life (EOL). Quality management system (QMS) allows companies to have comprehensive closed loop, compliant, corrective and preventive action (CAPA) issue management along with compliance products like training management and requirements management with related test/defect management. For their part, enterprise resource planning (ERP) solutions are used to manage inventory and production plans and ultimately ship products to market based on the latest released designs coming out of PLM software.

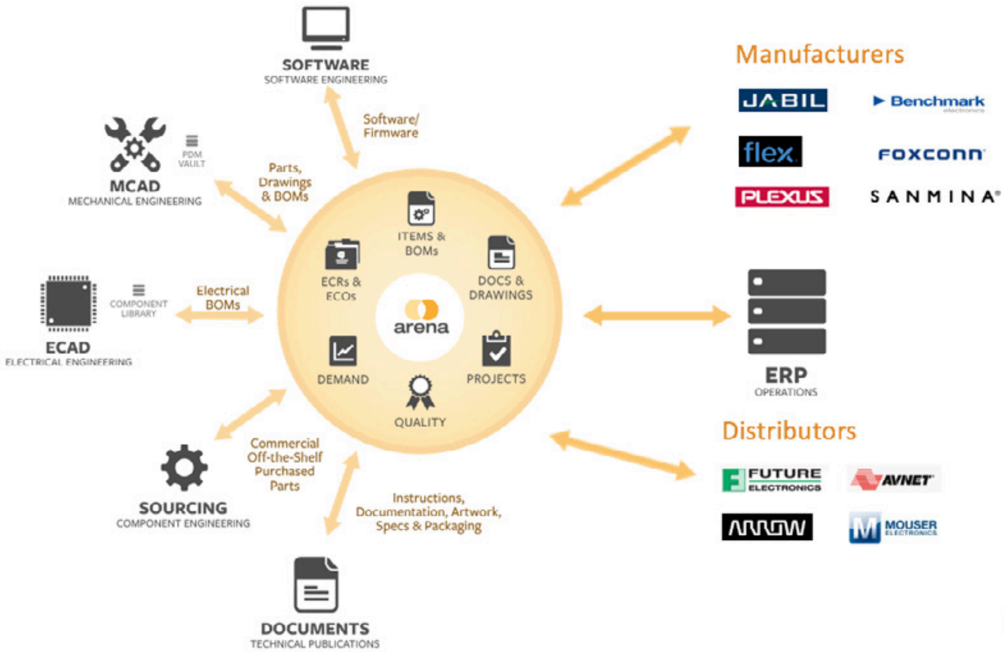


Figure 2. How Arena Cloud PLM software fits

Manufacturers, distributors, and other suppliers leverage Arena to collaborate and look up and leverage the design data to make their products. Arena prices external supplier PLM software users low to get deep user penetration into the supply chain and have the supplier users rely on Arena rather than on local file storage for design information, assembly instructions, and quality test procedures. In addition, Arena PLM is an extensible solution with open application programming interfaces (APIs) and ready-to-deploy integration solutions that allow companies to determine how to import and export the product record and/or automate the transfer of data.

The PLM IoT Boost

Arena already has more than 250 customers in the emerging Internet of Things (IoT) space, demonstrating the vendor's strength among companies designing complex, connected, cutting-edge products. The advent of the IoT is driving companies to "connect" their products and is fueling innovative start-ups in WiFi, cellular, and satellite enablement. It is also driving companies to build electrical and software design (and IoT devices) in industrial machinery for remote management, monitoring, and diagnostics via cameras, controls, and robotics. In the automotive industry, there are 40 to 100 processors per car for entertainment, driver controls, and navigation. Think of consumer products like smartphones and voice controls for entertainment; kitchen use; heating, ventilation, and air conditioning (HVAC); and security; or in medical devices trying to connect the human body to the doctor. Design verification to real-world product application and strong quality feedback loops to manufacturing and engineering teams are critical here.

Moreover, the Industrial Internet of Things (IIoT) phenomenon is driving companies to connect their product development, manufacturing, and service teams due to a new business model of "product as a service" and service organizations becoming profit centers. Manufacturing to service cost optimization, design to quality tolerances, and design to service cost optimization are becoming critical concepts here. The IIoT is also driving companies to connect their factory machines for sensor-enabled automation, deep analytics on processes and machine health, machine-to-machine communication, and machine maintenance optimization. Continuous improvement of productivity, reduced unplanned down time, exact knowledge of finished goods inventory and work in process (WIP) are only some potential benefits. Optimized cut-ins for new products and change releases are also enabled by IIoT concepts.

An optimized product development platform provides a feedback loop to the different engineering teams involved with product design and manufacture. Product development platforms like Arena that combine PLM with QMS and ALM and integrate data and processes with the product record facilitate better quality control on production lines and simplify inspection and test planning, digitize production floor measurement data, enable traceability (by batch, lot, serial number, operator, inspection equipment, etc.), and deliver real-time analysis to help prevent defects and improve processes.

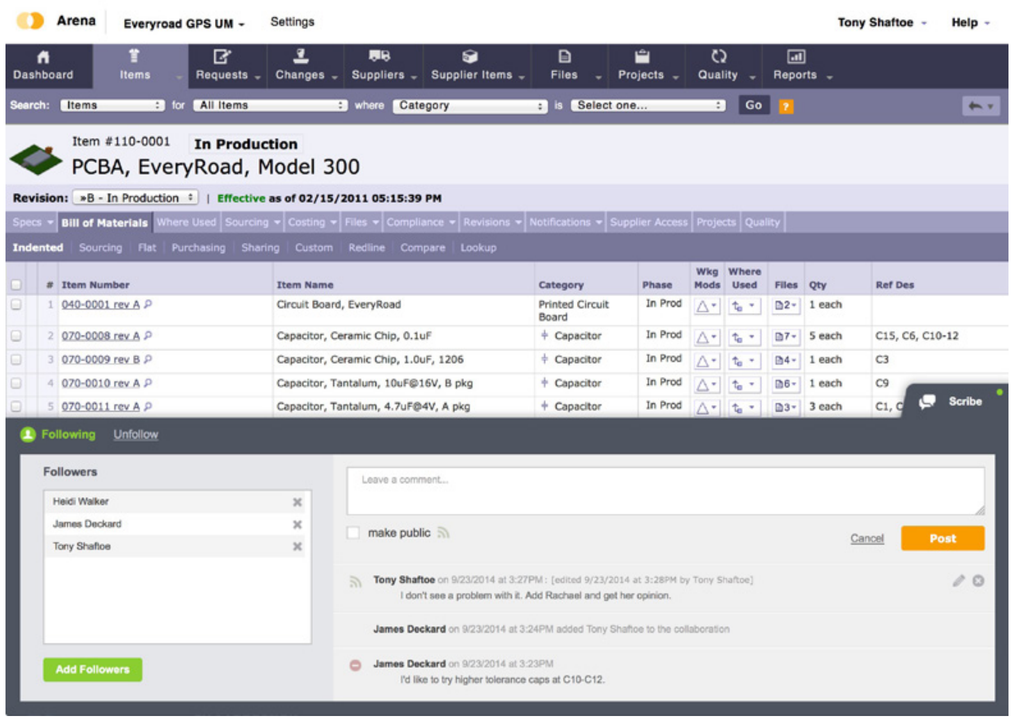


Figure 3. Arena

Arena's Software Portfolio

Arena's core business module is providing comprehensive product data management (PDM) capabilities (i.e., parts, BOMs, approved vendor lists [AVL], documents/drawings, and engineering change management) and enabling collaboration both internally and externally (see figure 3). In addition, the module has lately been extended and connects the core product record to associated business processes such as the aforementioned Verify for ALM and robust quality capabilities for QMS. These all are harmonized with their three supply chain collaboration modules. The module also now provides high-level project management via scheduling and task assignment. The schedule is linked to the product record in Arena, allowing for optimal collaboration on items, changes, files, and tasks.

In addition to enabling supplier collaboration with Arena licenses for external partners/suppliers, Arena also has other solutions that can be used to help manage supply chain collaboration (see figure 4). To that end, Arena Exchange provides an extremely secure way to send PDX snapshots of build packages (parts, BOMs, files, ECOs) to supply chain partners to manage the RFQ process or simply collaborate on designs. It allows the customers' partners to invite/share build packages with unlimited sub-tier partners without having to purchase additional licensing for every partner participant (one price for unlimited use by partners and their partners). For its part, Arena Scribe provides in-context collaboration via a next-generation chat interface that is linked to the product record—upstream and downstream. It enables distributed teams to discuss issues and designs, and resolve concerns through the evolution of the particular product design.

Moreover, Arena has solutions that help companies evaluate component availability and compliance. For example, Supplier Item Lookup enables finding and electronic part availability and can suggest alternates. Arena has solutions that work with leading electronic components databases SiliconExpert and Octopart, as well as Paradata. Arena Analytics provides a business intelligence (BI) solution with easy-to-configure dashboards and reports to enable measurement of various processes, and drive more informed business decision-making.

Figure 4. Arena Cloud PLM software portfolio

Last but not least, Arena Demand works with BOMControl to reduce purchased component costs by aggregating the usage of all individual components across multiple products. Knowing the total aggregated usage of the components in advance provides leverage to negotiate with supply chain partners on price-based volumes.

Easy Integration Remains Important

The aforementioned Arena RESTful API enables companies to connect and integrate to leverage their existing enterprise business systems. There are also a number of other Arena "ready to deploy" integration solutions as well. One is Arena DataExtract, which offers a way to extract data for BI systems. Arena Exchange provides the ability to communicate and transfer parts, BOMs, and AML data via standard product definition exchange (PDX) format for supply chain consumption. ERP Exchange extracts data from existing ERP systems (e.g., NetSuite, Oracle, SAP, QAD, Microsoft Dynamics, Kenandy, etc.).

Arena provides integrations to many electrical and mechanical CAD software solutions, including SolidWorks, Altium, Mentor Graphics, and Cadence OrCAD. Single sign-on means users do not have to re-authenticate with Arena PLM (works with SAML 2.0 compliant LDAP or MS Active Directory). Some other recent noteworthy partner integrations are with Altium's Perception Software for PCB design, 1factory for supply network-wide quality management, and Q Point Technology for environmental compliance via Green Data Exchange (GDX). (See the complete list of partner solutions, enabled via RESTfull API, for further details).

Granted, Arena will have fierce competition from larger PLM software competitors such as Oracle's Agile PLM, Siemens, Aras, Dassault Systèmes, Autodesk, and others. Even in the high-tech space there are still choices like Omnify Software, PropelPLM, Atlassian JIRA, etc. But most of those PLM software companies are toolkits, meaning custom coding is a central part of the implementation at the customer site. Most of them are also on-premise in their design, meaning they are solutions that are installed in a customer's own data center behind a firewall with the need to hire and retain an IT staff to operate into perpetuity. Another point to consider with on-premise solutions is being restricted to "rev lock" in the future due to prohibitive costs to make even minor changes to custom coding, as well as large up-front capital costs for the server as well as a much lengthier deployment.

Arena stands out as a multitenant enterprise application from the ground up, with no coding needed inside the product by the customer. Because of the application design, Arena PLM is implementation-ready, with implementation normally taking just a few months and little consulting support needed. The vendor prices its consulting services at around 25% of the first year annuity, compared to PLM toolkit provider pricing, which typically ends up being multiples of the original on-premise software purchase price. Arena should be fine for some time to come in its high-tech stronghold, and is definitely a solution worth considering for companies with product development platform needs that embrace PLM, ALM, and QMS.

Related Reading

Product Development Software—Year in Review and Look Ahead to 2017

Autodesk Accelerate 2016: Fusing the Cloud Product Development Software Pieces Together

IBM and Aras Reseller Agreement to Enable IoT Product Design, Enhance PLM Software Market

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