Specialist Vendor iBASEt Solumina at the Forefront of the Manufacturing Operations Management Software Space

by PJ Jakovjevic

Some smaller specialist MOM/MES software providers are also looking for a piece of the manufacturing operations software pie. One way for such vendors to stand out from the crowd in this competitive market is to acquire a laser-sharp focus and astute functionality. One company following this advice is iBASEt, a leading MOM software solution vendor in complex discrete manufacturing and service operations (e.g., aircraft, space, medical devices, ship building, industrial equipment, etc.). These are industries where companies tend to stick with customized legacy solutions and change infrequently—generally only when they find a packaged software solution that is a tight fit for their needs. iBASEt is also focused on industries that are not necessarily considered mainstream in terms of MES software solutions and deployments.

iBASEt's Solumina Division was born out of a contract with Boeing in 1995 to develop a commercial off-the-shelf (COTS) product to take the C-17 shop floor paperless, thereby replacing the myriad of paper forms used to track production progress, history, and quality control. The C-17 large military transport aircraft program ended up receiving the Malcolm Baldridge award for the many improvements it made to its manufacturing operations, including going paperless.

In this article we'll take a close look at the iBASEt MOM solution, including product functionality and integration capabilities. We've also included our recent conversation with iBASEt's vice president of product strategy and alliances, featuring his thoughts on iBASEt Solumina's competitive and market focus, what's changing in the MOS market and how iBASEt is responding to those changes, and the company's plan to remain ahead of the MES-MOM-QMS software curve.

iBASEt Solumina MOM Software Functionality

The iBASEt MOM software product has grown organically (not due to acquisitions) and as a result the solution is very consistent in terms of look and feel, workflows, and integration. iBASEt has over 250 employees, with the main headquarters in Foothill Ranch, California and offices in France and India (product development only). The company has earned the trust of many big Fortune 500 companies, including BAE Systems, Airbus Defense and Space, General Dynamics, Lockheed Martin, NASA, Northrop Grumman, Textron, and United Technologies. There are over 50,000 Solumina end users at companies manufacturing complex products with complex supply chains.

iBASEt refers to its software suite as enabling the product lifecycle execution (PLE) realm. There are usually the following three main capabilities (and related software modules) that open the door for iBASEt (figure 1):

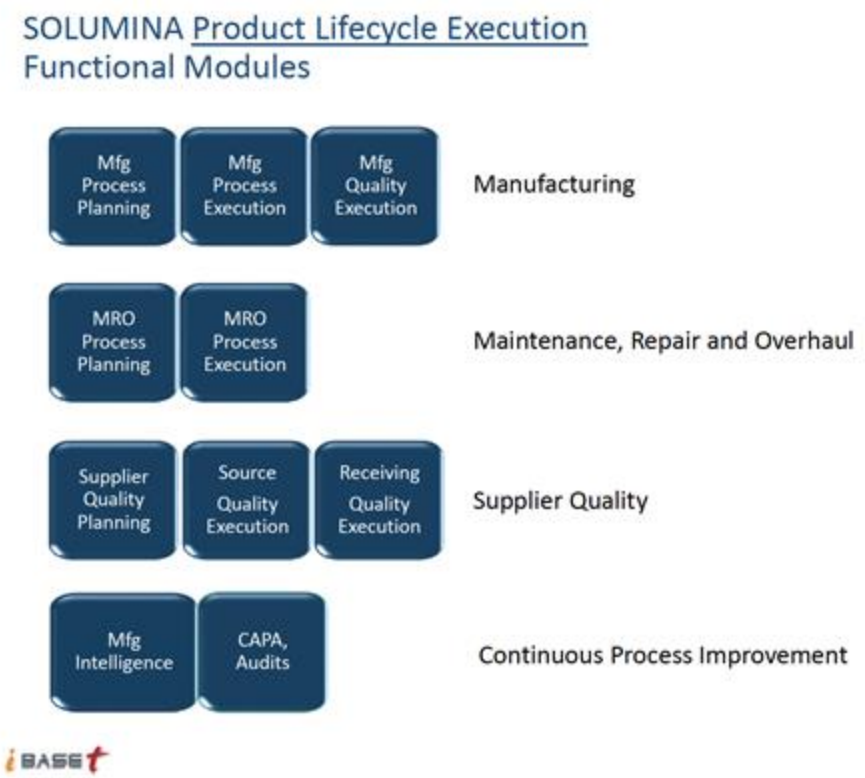

Figure 1. iBASEt Solumina modules (click for larger images)

1. *Manufacturing Execution and Quality*—for taking control and visibility of a shop floor. iBASEt integrates its own quality management system (QMS) software into other capabilities, while maintaining the so-called "digital thread." Most manufacturers have now accepted that they must create and maintain the digital thread throughout their value streams for higher quality, response to changes, and fidelity to design. Yet most QMS software offerings by product lifecycle management (PLM), ERP, MES, and other software providers are modular and there is no real digital thread.
2. *Supply Chain Quality*—for managing quality at the source via a supplier portal. With over 80% of the value add coming from the supplier network, complex manufacturers have to close the quality gap between their own plants and the multiple levels of feeder plants.
3. *Maintenance, Repair, and Overhaul (MRO)*—for MRO task planning and execution processes. MRO shops have taken over as the profit leaders, yet much of their underlying process and product data has to be re-invented time and again, leading to losses rather than profits.

In addition, iBASEt offers a number of business integration services (BIS), given the intricacy of integration between ERP, PLM, and MES software systems (figure 2). There are many iBASEt standard integration packages for popular computer-aided design (CAD)/PLM and ERP packages including SAP, Deltek Costpoint, Kaba AutoTime, PTC Windchill, Siemens Teamcenter, and IBM Cognos.

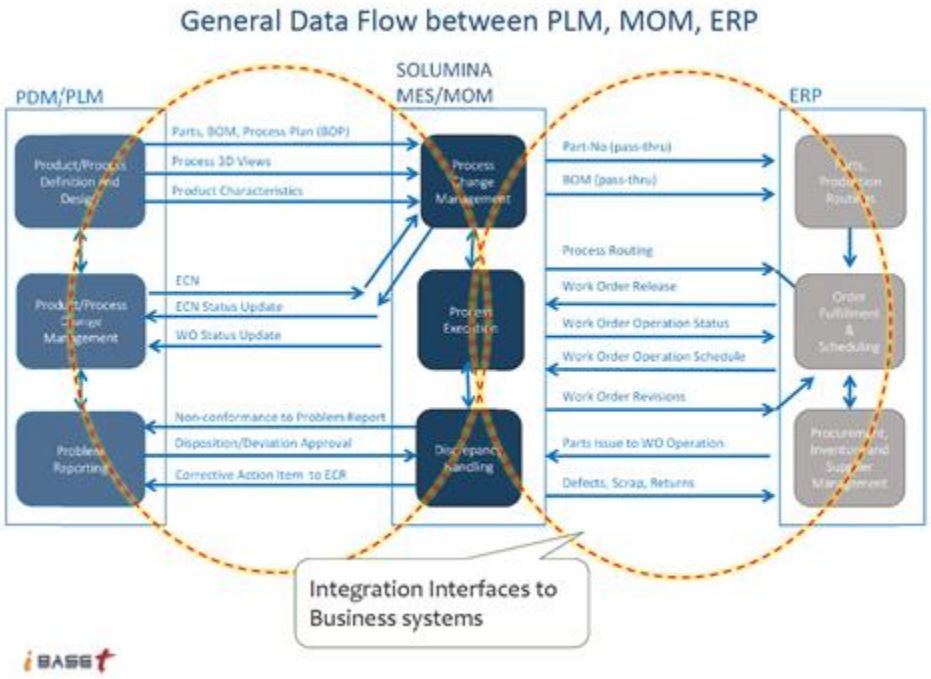

Figure 2. iBASEt Solumina integration

While the completeness of the Solumina MOM software suite is advantageous, it means more competition from QMS software specialists (e.g., IQS, Pilgrim Quality Solutions, QAD CEBOS, Siemens IBS, etc.) and MRO software providers (e.g., IFS, Ramco, IBM Maximo, Infor, etc.), in addition to the aforementioned MES software giants. Moreover, up-and-coming cloud MES software providers like 42Q will bring challenges in the form of providing different deployment options, as iBASEt is still largely deployed on-premise.

iBASEt Executive Tells More

To dig a bit deeper into iBASEt's value proposition, we recently spoke to Conrad Leiva, iBASEt's vice president of product strategy and alliances. Leiva's career has included consulting with many aerospace and defense companies on how to streamline paperwork and information flow among planning, inventory, quality, production, and the supply chain. His experience includes both manufacturing and MRO projects with large defense and engineering companies, including ARINC, ATK, Boeing, DRS, Lockheed Martin, General Dynamics, Gulfstream, Parker Hannifin, Pratt & Whitney, and the US Navy Shipyards.

Recently, Leiva has focused his work on manufacturing intelligence and has been working with PLM and ERP software partners on the integration between engineering, business, and manufacturing systems. Leiva holds a Master of Science in Industrial Engineering from Georgia Institute of Technology, certifications in MES/MOM methodologies, and is a certified quality auditor. He is also a board member and chair of the Smart Manufacturing Group at MESA (Manufacturing Enterprise Systems Association) and periodically posts on his Manufacturing Operations Management blog.

TEC: What is your ideal customer profile and what particular underserved market needs does iBASEt fulfill?
CL: iBASEt Solumina has been designed for the requirements of complex discrete manufacturing in terms of catering to the following issues:

- Long cycle times, low volume, make-to-order (MTO) or engineer-to-order (ETO) manufacturing environments

- Complex products with deep bills of materials (BOMs)
- Highly skilled labor performing manual assembly and fabrication work including complex machines and special materials like composites
- Complex process routing sequences with decision points and loops (figure 3)
- High flow of engineering changes affecting work in process (WIP)
- Production is not repetitive and labor (e.g., mechanics) must be alerted for changes
- Data collection during production includes manual data entry, verifications, and signatures
- Personnel has qualification requirements and equipment has calibration and certification requirements
- Documentation requirements include complete history for each product unit and traceability of components installed and material used

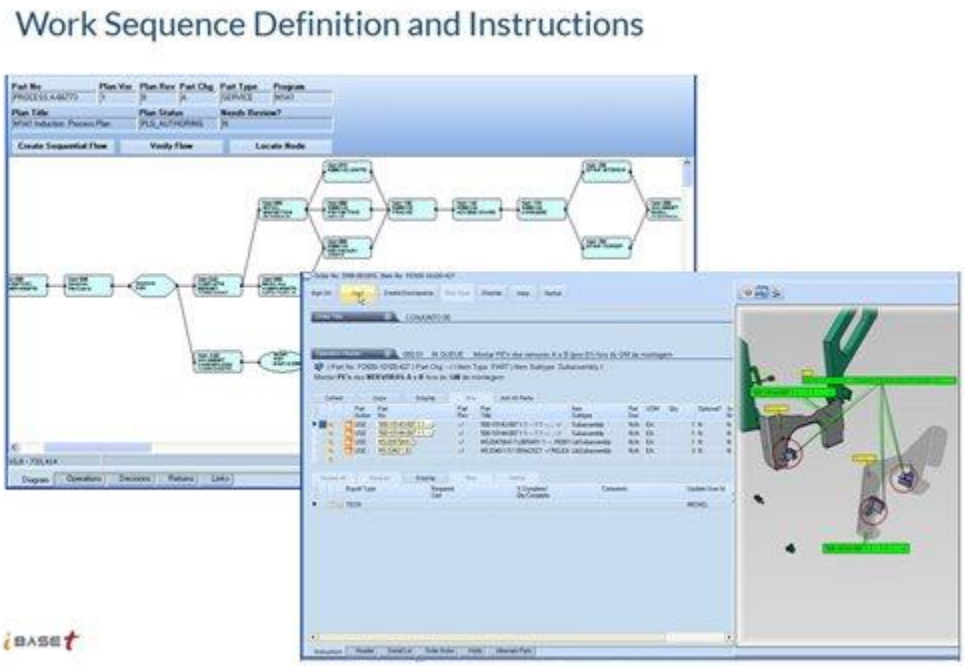

Figure 3. iBASEt Solumina MES screenshots

TEC: Who are your major competitors and why do you win over/lose to them?
CL: Because not many other MES software providers focus on the aforementioned requirements anymore, our major competitor is still custom software, either built from the ground up or built on top of an ERP software platform. We win when the prospect's IT department or operations are ready to stop developing a custom solution and move to commercial off-the-shelf (COTS) software.

We also compete with Dassault Apriso, SAP ME (Manufacturing Execution), Siemens SIMATIC IT, and Aegis FactoryLogix. We win over these solutions when the prospective customer sees our out-of-the-box functionality in a demo that meets their unique requirements.

TEC: What are your mobility, cloud, and Internet of Things (IoT) strategies, and related generally available (GA) products (or those soon to be GA)?
CL: Our product is Solumina, which is an integrated suite of solutions for product lifecycle execution. The customer can choose to deploy the manufacturing execution, MRO, or supply chain quality solutions as needed.

Mobility is currently supported via wireless Microsoft tablets. Our new Offline Execution module allows support for environments where Wi-Fi is not available or reliable. Our roadmap cloud strategy is to

leverage new cloud integration methodologies to expand our business-to-business (B2B) integration for supply chain quality management.

The Industrial Internet of Things (IIoT) and smart factory trends are creating new opportunities to rewire the manufacturing platform for new levels of efficiency and flexibility to support mass customization and products sold as a service. Our IIoT strategy is to use a manufacturing service bus (MSB) layer between the machine and our application machine integration interface.

TEC: Has your market and competitive landscape changed recently and how? What trends have you noticed in the market of late, and what might be coming in the future?
CL: We see an increase in interest in our MRO solution. We suspect that the emphasis on services over products in the new marketplace is fueling this interest combined with a readiness for MRO shops to adopt new technology and go completely paperless. We are also seeing increased interest in our solution in the medical devices industry.

TEC: What were the major highlights in 2016 (customer, partner, and functionality-wise), and what do you expect in 2017 and after regarding demand for your solutions across different territories and product modules/capabilities?
CL: The major highlight in 2016 on the partnering side has been our close work with engineering CAD/PLM vendors on integrating PLM and MES functions to achieve higher levels of digital thread and change management for our customers. We expect this trend to continue into 2017. We have also seen a rise of interest in these types of solutions in Europe.

TEC: How do you plan to remain ahead of the MES-MOM-QMS software curve? In other words, what issues/challenges are keeping you up at night? Conversely, what makes you optimistic about iBASEt's future outlook?
CL: We feel optimistic about the future since iBASEt has been at the forefront of offering integration to engineering and quality management, and across the entire product lifecycle. This puts iBASEt at an advantage moving forward to help our customers create a more integrated real-time enterprise that eliminates the old walls between engineering and production and between suppliers and operations.

Our main concern is our ability to scale to keep up with the workload from new implementations. We are developing third-party system integrator resources to help scale but ensuring the quality of work of third-party resources is something that we need to continuously monitor and work on.