

iBASEt Delves Deeper into Digital Manufacturing

By: PJ Jakovljevic

The recent spate of digital technologies such as analytics/big data, the Industrial Internet of Things (IIoT), cloud computing, robotics, artificial intelligence (AI), mobility, 3D printing/additive manufacturing, digital twin, augmented/virtual reality, and other such tools have been transforming the manufacturing industry. This digital transformation (or perhaps revolution) is tearing down the traditional walls and silos of manufacturing via new connectivity and related data acquisition and processing capabilities.

Key Digital Manufacturing Tenets

The aforementioned phenomena aim to transform the entire manufacturing value chain, from product development, supplier networks, factory operations, marketing and sales, to aftermarket services. The advent of concepts like a digital thread (i.e., a seamless flow of data across the entire value chain and product lifecycle), the IIoT, and digital manufacturing have also influenced the data flows between enterprise software systems like [enterprise resource planning \(ERP\) systems](#), [product lifecycle management \(PLM\) software](#), and manufacturing execution system (MES)/manufacturing operations management (MOM) solutions.

Enhanced Data Flow between PLM, MES, ERP

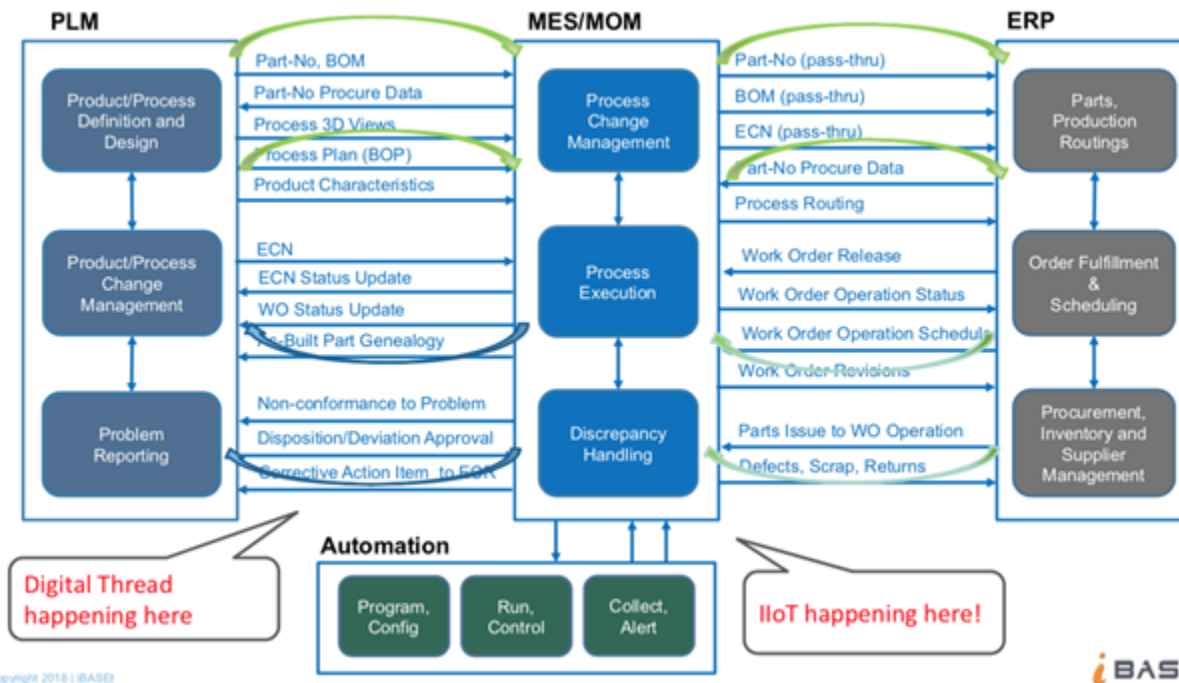


Figure 1. Data flows in digital manufacturing

The combination of integrated PLM, ERP, and MES-MOM software systems is central to a digital manufacturing strategy (see Figure 1). This is the technology infrastructure manufacturers need in order to properly harness the advances in model-based enterprise functionality, such as augmented reality (AR) guidance for the workforce,

IIoT connectivity for equipment, new levels of intelligence for decision-making, and higher levels of customer and supply chain collaboration.

As mentioned before, we are seeing increased interest in the digital manufacturing ecosystem and are moving toward higher levels of connectivity in the enterprise with suppliers and customers. In other words, there is increased interest in realizing the aforementioned digital thread, since virtually everything in all factories worldwide can now be connected.

The “things” in the IIoT world can be materials, test equipment, data collection points, and even people. Related digital manufacturing enterprise systems allow real-time alerts on the actual work in progress (WIP), yields, throughputs, etc.—enabling nearly complete global value chain visibility and traceability.

Enter iBASEt Digital Manufacturing Suite

iBASEt, a provider of MES, maintenance, repair, and overhaul (MRO), and quality management system (QMS) software solutions, recently announced the launch of a new digital manufacturing suite to deliver the foundation needed for the digital manufacturing transformation. Using digital (paperless) work instructions and process planning, iBASEt MES includes job dispatch, process control, resource management, and detailed product genealogy tracking.

The new suite includes an updated version of the flagship iBASEt MES solution adapted to work with new platform connectivity and apps. In addition to a new user experience (UX) that supports several mobile devices and a touch screen (see Figure 2), iBASEt’s expanded MOM software suite includes new applications for manufacturing intelligence, compliance management, and enterprise business systems connectivity.

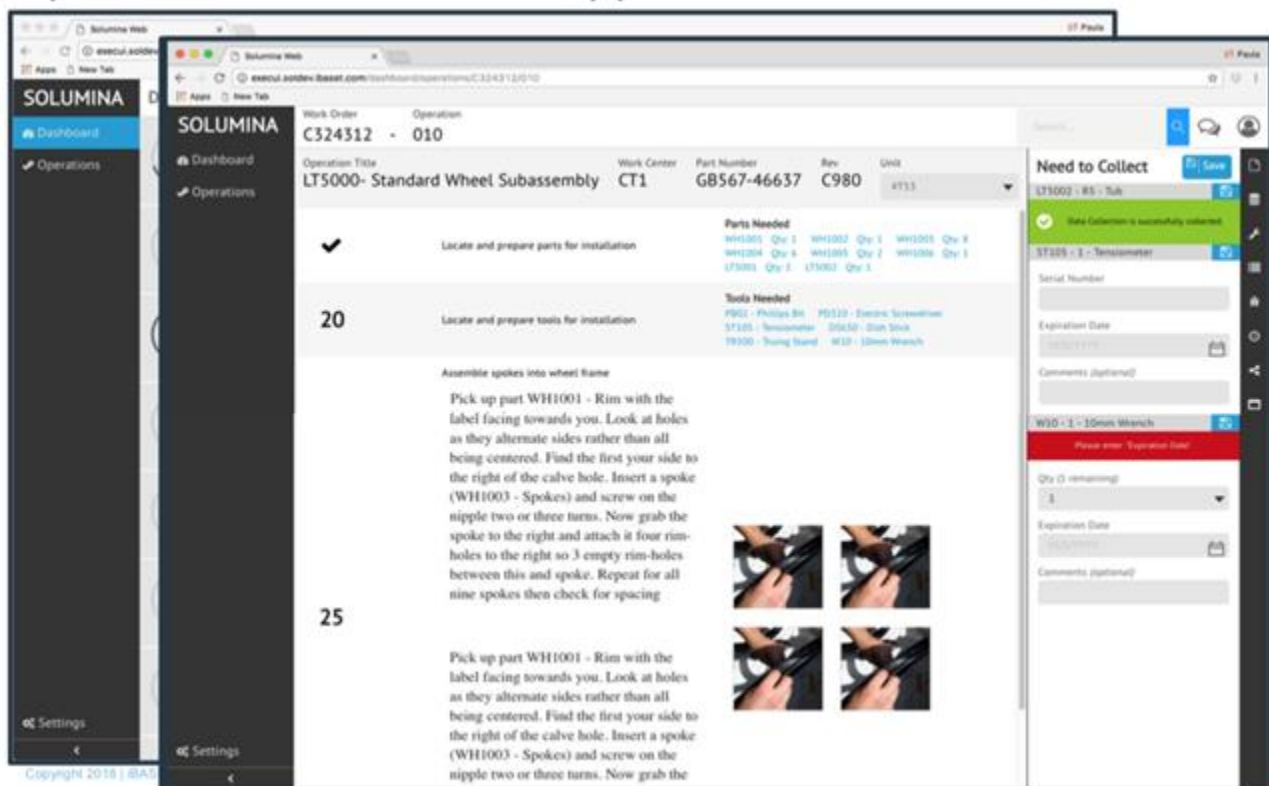


Figure 2. New iBASEt look-and-feel

iBAsEt's Digital Manufacturing Suite is designed for complex, highly regulated discrete manufacturers in aerospace and defense (A&D) and medical devices who seek to digitally transform their operations. iBAsEt's MES digital thread capabilities range from engineering bills of materials (BOMs) via production BOMs to process plans (i.e., actual work plans and work orders).

MES software's as-built and as-maintained data goes beyond BOMs and validation of as-designed, as-manufactured/as-built, and as-serviced/as-maintained. It also includes detailed unique serial identification such as the FDA-mandated unique device identifier (UDI) in medical devices or a lot number (for less regulated manufacturers), and a complete audit trail of engineering changes and approved deviations.

In addition to the MES capabilities, iBAsEt has broad QMS software capabilities that embed quality management into production execution controls. Source inspection orders, non-conformance reports (NCRs), supplier corrective action requests (SCARs), root cause corrective actions (RCCAs), and audits can be automatically displayed to suppliers via the supplier web portal.

The offering supports closed-loop change management processes within the realms of product development, WIP, and supply chain. It also caters to continuous improvement processes via manufacturing intelligence (monitoring the key metrics) and the corrective action/preventive action (CAPA) capabilities.

iBAsEt's Current State of Affairs

iBAsEt has recently had significant new customer additions and an expansion of existing accounts, as well as organizational growth in marketing, business development, sales, product development and services. The company has 200 employees at its long-standing office in the United States, as well as in its newer offices in Europe (France) and India.

Currently, iBAsEt has certified integration packages for [SAP ERP](#), [Deltek Costpoint ERP](#), [PTC Windchill PLM](#), [Kronos Workforce](#), and [Siemens Teamcenter](#) PLM software. The vendor is always on the lookout for additional relevant ERP, PLM, and automation software partners.

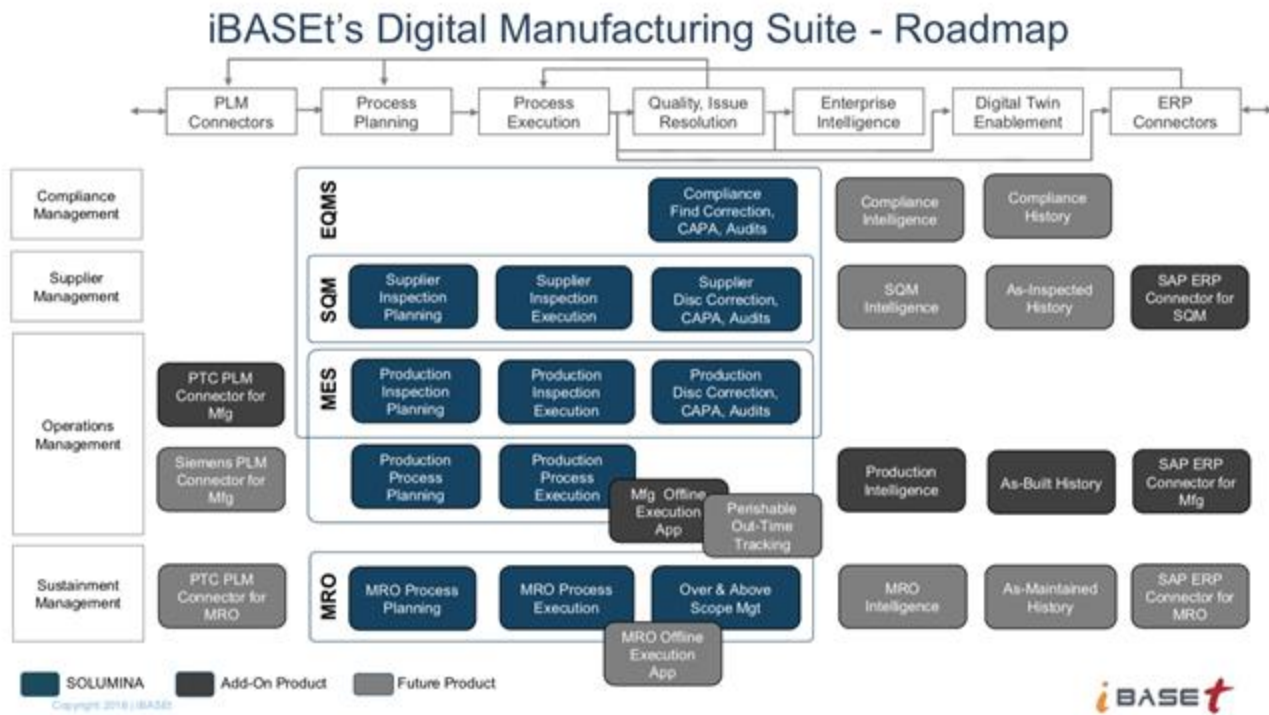


Figure 3. New iBASEt MES roadmap

All of iBASEt's products can be deployed in the cloud and its technology platform is continually evolving. In addition to the aforementioned new web and mobile UX, the vendor has recently added enterprise service bus (ESB), extract, transform, load (ETL), Security Assertion Markup Language (SAML) authentication and authorization, single sign-on (SSO) support, etc.

The business logic layer is in Java containers and iBASEt is using micro-services and web portals for the new and upcoming products layered on top of the Java EE logic (see Figure 3). The vendor is also adding RESTful JSON APIs in addition to web services to enable easier cloud to cloud connectivity.

Some MES software customers in the aforementioned regulated industries might still be slow on cloud adoption because of the International Traffic in Arms Regulations (ITAR) compliance and intellectual property protection concerns. But there is definitely an appetite for more out-of-the-box implementations—and faster ones.

Manufacturers are also more open to having a point MES software solution that gives them incremental gains in functionality rather than big-bang MES suite deployments. Customers want to start with an appetizing selection of solutions, which allows them to avoid the huge risks inherent with large-scale, custom on-premise MES software solutions. iBASEt seems to be staying on top of the current trends while catering to its target customers' exacting needs.