



# A Roadmap for Global Manufacturing Excellence

**DELMIA**

NOVEMBER 2012

# Table of Contents

<b>Abstract .....</b>	<b>3</b>
<b>Introduction .....</b>	<b>4</b>
<b>A Recipe for Success .....</b>	<b>5</b>
<b>3 Pillars of Global Manufacturing Excellence .....</b>	<b>7</b>
<b>Pillar 1: A Global Operations Platform .....</b>	<b>8</b>
Two Critical Components: Flexibility and Standardization .....	8
Technology Enablers .....	10
<b>Pillar 2: A World-Class Services Organization .....</b>	<b>12</b>
Leverage a Strong Partner Network for Global Deployments .....	12
<b>Pillar 3: A Global Deployment Methodology .....</b>	<b>13</b>
A New Twist on a Familiar Methodology .....	14
Effective Governance .....	15
From Models to Deployment – Establishing the Core .....	15
Going Global – The Core Methodology .....	16
Return on Investment .....	17
Leveraging a Center of Excellence Team .....	18
<b>Tying it all Together.....</b>	<b>20</b>
Case in Point – L’Oréal .....	20
Case in Point – Cummins .....	22
<b>Conclusion .....</b>	<b>24</b>
<b>About Apriso Solutions .....</b>	<b>25</b>
<b>About Dassault Systèmes &amp; DELMIA.....</b>	<b>25</b>
<b>Appendix A: Roadmap for Operational Excellence.....</b>	<b>26</b>
<b>Appendix B: Apriso Solution Unique Capabilities .....</b>	<b>27</b>

The information contained in this document is subject to change without notice.

© 2009, 2010, 2011, 2014 Apriso Corporation, a Dassault Systèmes company

This document, the software described in it, and other program materials are copyrighted works of Apriso Corporation, Dassault Systèmes, and/or their subsidiary companies. All rights reserved.

#### Trademark Information

Apriso, CATIA, ENOVIA, DELMIA, SIMULIA, 3D VIA, and SOLIDWORKS are trademarks or registered trademarks of Apriso Corporation, Dassault Systèmes, or their subsidiaries in the US and/or other countries. All other trademarks used herein, if any, are owned by their respective owners.

#### Disclaimer

THIS DOCUMENT IS FOR INFORMATIONAL PURPOSES ONLY AND IS PROVIDED “AS IS” WITH NO WARRANTIES, EXPRESS OR IMPLIED, OF ANY KIND, INCLUDING ANY WARRANTY OF MERCHANTABILITY, FITNESS FOR ANY PARTICULAR PURPOSES, OR ANY OTHER WARRANTY OTHERWISE ARISING OUT OF ANY PROPOSAL, SPECIFICATION OR SAMPLE. NO LICENSE, EXPRESS OR IMPLIED, TO ANY INTELLECTUAL PROPERTY RIGHTS IS GRANTED OR INTENDED HEREBY. THE INFORMATION SHOULD NOT BE RELIED ON FOR THE CURRENT OR FUTURE AVAILABILITY OF FUNCTIONALITY OR PRODUCT UPDATES WITH RESPECT TO ANY APRISO CORPORATION, DASSAULT SYSTEMES, OR THEIR SUBSIDIARY COMPANIES’ PRODUCTS AND SERVICES. APRISO CORPORATION, DASSAULT SYSTEMES AND THEIR SUBSIDIARY COMPANIES DISCLAIM ALL LIABILITY, INCLUDING LIABILITY FOR INFRINGEMENT OF PROPRIETARY RIGHTS, RELATING TO IMPLEMENTATION OF INFORMATION IN THIS DOCUMENT. APRISO CORPORATION, DASSAULT SYSTEMES AND THEIR SUBSIDIARY COMPANIES EXPRESSLY DISCLAIM LIABILITY FOR ANY ERRORS OR OMISSIONS WITH RESPECT TO THE INFORMATION CONTAINED HEREIN.

Please consult your Dassault Systèmes representatives for detailed release schedules of all Apriso products.

#### Dassault Systèmes

301 E. Ocean Boulevard  
Suite 1200  
Long Beach, CA 90802  
Tel: +1 562 951 8000  
+1 888 400 7587  
www.apriso.com

# Abstract

Manufacturing has gone global. Production facilities and supply chain networks are distributed across the world in order to best meet the needs of a highly diverse, dynamic group of customers. Leading firms are racing to standardize and harmonize their processes and systems on a global scale in an effort to ensure the right products are delivered on-time, on-quality, and on-volume. The first step to accomplish this goal is selecting the right business partners with the track record of successful global deployments. The next step is to actually implement a system capable of delivering visibility, control and synchronization of your business processes to attain operational collaboration for manufacturing excellence on a global scale.

The goal of this whitepaper is to educate IT and Line-of-Business executives on what approach is now possible – validated by two case study examples – when utilizing a business-process based IT platform when deploying a global solution for Manufacturing Operations Management (MOM). This type of approach can deliver a globally harmonized plant network that can yield operational and agility benefits and competitive advantage across your organization. And, with the necessary agility to easily support global continuous process improvement, the benefits of your implemented solution will continue to increase over time.

This paper starts with a discussion on the high-level market drivers impacting global manufacturers. These market trends are examined through the lens of a next generation solution, highlighting three competitive differentiators necessary for success. The paper concludes with a roadmap to help manage the necessary changes across your internal business processes and technology architecture to make this vision a reality.

# Introduction

The world is no longer flat. Traditional epicenters of industrial activity have been replaced with new centers located in Brazil, India, Korea, Poland and Thailand, just to name a few. This change in competitive landscape has been driven by many factors, including taxes, energy needs, regulatory requirements and access to talent issues that have put traditional industrial leaders at somewhat of a disadvantage.

At the same time, a new breed of global consumer has emerged that is more diverse, demanding and connected than ever before, thereby raising product quality and service delivery expectations to unprecedented levels. The middle class is becoming a reality all over the world and serving these customers is perhaps the greatest opportunity for growth many global companies will have for a generation.

The financial crisis of 2008 added yet another challenge as capital markets dried up and a lack of credit put new focus on cutting costs, deferring capital investment and preserving cash.

As a result of these (and other) forces, companies have taken a hard look at operations, with an eye to cutting costs, improving productivity and increasing operational responsiveness. These trends have significantly impacted manufacturing operations. Companies understand that they will not succeed if they are not competitive with the level of quality, innovation, efficiency, safety and environmental stewardship delivered within both their home country and in the various countries where they operate.

# A Recipe for Success

Despite these tremendous challenges, a new breed of manufacturing leader has emerged that has identified a winning “recipe” for success. These pioneers recognized that a new perspective was needed with how to best manage their global manufacturing operations. Throughout the rest of this paper we shall examine what capabilities are needed for success as validated through case study review on two industry leaders – L’Oréal and Cummins, Inc. – and how they overcame the operational complexity faced by implementing a global solution for manufacturing operations management.

Let’s take a look at the profile of these two companies:

- **Cummins, Inc.** – serves customer located in 190 different countries with a production footprint that spans nearly 80 plants; Cummins has big ambitions for growth, especially in emerging BRIC and other markets; attention to process consistency and quality is paramount to ensuring consistent product with the highest quality standards is delivered to every customer, every time
- **L’Oréal** – serves customers located in 130 different markets with a production footprint that spans nearly 40 plants; L’Oréal’s are world class, so the attention to brand integrity is acute; the company has very high quality standards, while at the same time must be in compliance with a host of environmental and regulatory compliance initiatives

Global companies are now reaching new markets on a scale never seen before. For example, L’Oréal talks about adding 1 billion new customers over the next decade. Cummins forecasts total revenue to grow from \$18B in 2011 to \$30B in 2015, representing a 14% CAGR that is dependent upon strong growth in emerging markets.<sup>1</sup> Companies need growth in order to remain viable. The key is how to profitably achieve this growth while sustaining manufacturing operations excellence, thereby ensuring customer satisfaction and brand integrity.

Based on the knowledge and experience gained by working with industry leaders Cummins, L’Oréal and others, mastery of four organization skill sets emerged as being critical to achieve as part of a successful global manufacturing strategy:

- **Global Visibility, Control and Synchronization across Operations** – Scale is one of the most important advantages a global manufacturer has, but if not managed properly it can quickly turn into a burden. Successful global manufacturers manage the plant as part of an integrated supply and demand network, allowing the company to optimize working capital and customer service to ensure that the right product is delivered to the right customer, at the right time and at the lowest cost possible.
- **Innovation and New Product Introductions** – All it takes is one look at Apple, now one of the world’s most valuable companies, to see that innovation and new products can be one of the most effective tools for a company to grow by developing new markets, customers and growth.<sup>2</sup> A key requirement to successfully launch new products is adaptability and responsiveness to change and process improvement.

<sup>1</sup> “Analyst Day Meeting Presentation” by Cummins, dated September 13, 2011; <http://phx.corporate-ir.net/External.File?item=UGFyZW50SUQ9MTA3MDAxIENoaWxkSUQ9LTF8VHlwZT0z&t=1>

<sup>2</sup> For more details, see: “The Building Blocks of Manufacturing Innovation,” <http://bit.ly/J7kn1Z>

- **Quality and Product Safety** – Many companies talk about having the necessary “social license” to operate in foreign markets, which is often more important than the actual regulatory license. To maintain this social license, global corporations must ensure that the products they deliver to market are of high quality and safe. They must also ensure that if there is an issue, then there are the necessary traceability systems in place to execute an effective recall. And, it is important today that the facilities developed by global corporations are designed and operated as “Green” entities with sustainability a key design and operations focus so as to not negatively impact their local communities and environments.
- **Process Standardization and Continuous Improvement** – The pace of innovation in global manufacturing operations dictates the need for agility. It is simply impossible to expect that production processes can remain static while adapting to new market needs, new distribution models and new materials requirements that are part of the next “wave” of consumer desires. Therefore, global manufacturers must have a capability of performing process improvement on a global scale – across multiple locations – while still being capable of governing these processes to ensure standardization of corporate best practices.

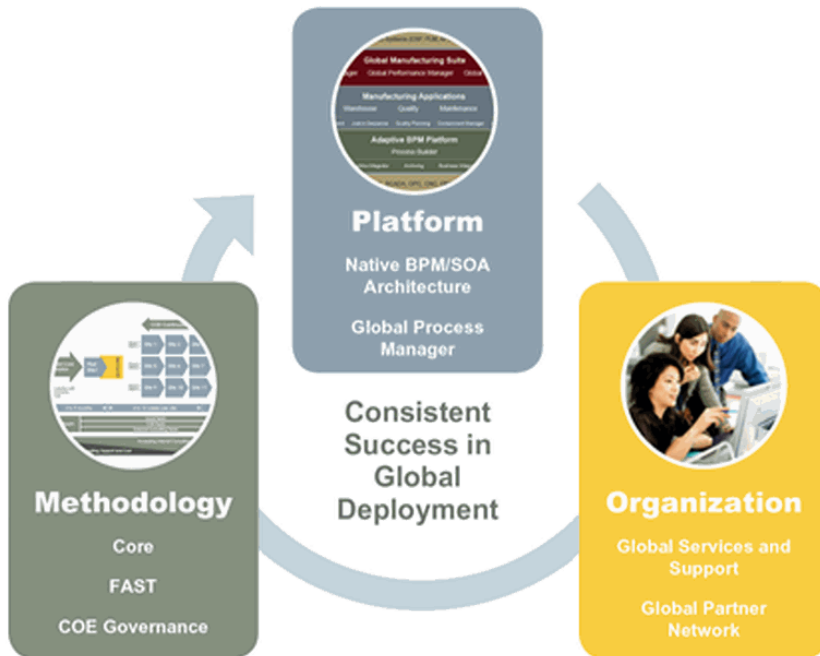
In the next section we will begin to examine how a next generation Manufacturing Operations Management (MOM) solution can help a company effectively deal with these issues.

# 3 Pillars of Global Manufacturing Excellence

Industry-leading manufacturing solutions offer a structured approach to delivering technology, services and best practices in a way that helps to ensure success. Based on the experience and success of working with many industry-leading manufacturers over the past two decades, Dassault Systèmes' DELMIA Apriso solution rests on three pillars (see **Figure 1**):

1. **A Global Manufacturing Operations Foundation** to enable a set of standardized processes that are easily created, updated and distributed across multiple sites; The Apriso solution operates like platform, hosting a set of applications for manufacturing operations that manage production, warehouse, quality, maintenance and time & labor activities
2. **A World Class Services Organization** to offer the necessary industry knowledge and best practices for successful multi-site deployments coupled with a partner network that is second to none, built on relationships of over a decade of delivering manufacturing software solutions
3. **A Global Deployment Methodology** to support multi-site implementations so manufacturing processes can be readily replicated and delivered to multiple sites simultaneously, easing the complexity of sharing what processes are deemed "best in class" across an enterprise. The result is a deployment model with sufficient flexibility to easily update processes as often as needed.

We will now examine each pillar in further detail.



**Figure 1:** Three unique Apriso attributes for global manufacturing success

# Pillar 1 : A Global Operations Platform

Apriso solutions operate like an enterprise platform for manufacturing operations management. They comprise the necessary technology foundation that enables manufacturers to easily develop, model, test and deploy standardized business processes to every site. Its flexibility ensures these processes can be easily changed – as often as necessary. Apriso applications deliver multiple sets of plant level capabilities, including production, quality, logistics, maintenance and time & labor. This set of capabilities can be deployed and managed across multiple sites, thereby ensuring the necessary visibility, control and synchronization to effectively manage plant operations on a global scale. Further, systems interoperability enables business processes and workflows to span between other enterprise applications, such as PLM, ERP and SCM.

## Two Critical Components: Flexibility and Standardization

Two factors are necessary for a best-in-class MOM solution: global process flexibility and standardization. Flexibility is vital as processes must often be changed to reflect new market conditions, government regulations or continuous improvement initiatives. Flexibility is also necessary to support multiple manufacturing modes – global manufacturing organizations typically have multiple divisions manufacturing many different types of products. This means global MOM platforms must support both discrete and batch processing, as well as hybrid modes. It also means supporting the spectrum from repetitive manufacturing to Make-To-Order or Engineer-To-Order. Apriso supports each of these capabilities. Key capabilities that enable Apriso solutions to deliver this diversity of support include:

- Flexibility to configure processes for different manufacturing models, based on the technology foundation that comprise every Apriso solution
- Rich Bill of Materials model for multi-level product structure and packaging requirements
- Substitutions and by-products
- Divergent and convergent manufacturing
- Integration of materials with process steps
- Multi-level unit types (batch, serial, lot, bulk, pallet, container, license plates)

Standardization is essential to ensure consistent product quality and service delivery, regardless the geographical location. In order to address this essential capability, global MOM solutions must be capable of operating across sites, including the sharing of processes between locations, while operations data must be readily accessible from any process, function or site. Equally critical, local site time and language requirements must also be supported.

## **Global Process Standardization**

Apriso Global Process Manager (GPM) is a multi-site management application unique to Apriso solutions. GPM manages, enhances and enforces corporate best practices across all manufacturing plants to manage the 85% of process commonality and the 15% of plant process uniqueness across all sites. This capability supports the inheritance of best practices, as dictated by Six Sigma or Center of Excellence (COE) teams. GPM applications reduce the difficulty of managing process change centrally while easing master data management, process specifications (including routings, operations, work instructions, documents, and quality plans), integration mappings to or from external systems like ERP, machine integration logic (that is not plant-specific), KPIs and much more.

## **Enterprise Manufacturing Intelligence**

An important reason for implementing a global MOM solution is process consistency across locations – other critical factors include data integrity, performance measurement consistency and accurate materials tracking and traceability. Apriso applications include a global solutions suite to help drive multi-site operational excellence, continuous improvement, global visibility and integration and alignment of manufacturing to corporate objectives. Apriso Manufacturing Process Intelligence (MPI) provides visibility and analytical insight into global operations. Apriso's Global Trace and Genealogy (G-TAG) solution manages quality issues globally, across the enterprise and supply chain partners.<sup>3</sup>

MPI is an integrated, out-of-the-box manufacturing Intelligence solution that leverages the wealth of data within Apriso. MPI complements existing Business Intelligence (BI) solutions, so users have the choice to select Apriso, Microsoft Excel or other BI viewers to display and interact with their analyses. Customers can embed analyses within their globally distributed business processes to accelerate response times to the information being analyzed (versus a post-event analysis). MPI comes with pre-packaged Intelligence Packs to perform analyses on various components of manufacturing operations. Each Intelligence Pack includes a complete set of ETL's, Cubes, 100s of KPIs, reports, views and dashboards. These Intelligence Packs can be used immediately – no coding, configuring or data manipulation is required.

## **Fully Localized and Globalized Time and Language Support**

From the highest levels of process deployment to the details of local customs and time zones, Apriso is fully enabled to work in any locale by supporting multiple languages and including the tools to manage the content. All date and time fields are converted to Universal Time Code or GMT format, with on-the-fly conversion to any user's local time. All text is stored in Unicode (UCS-2, UTF-8); database content can be stored in multiple languages. Built-in translation capability for user interfaces and related documentation and training materials enables Apriso users to easily localize icons, graphics and other features to meet their regional needs.

---

<sup>3</sup> *An in-depth discussion of G-TAG is beyond the scope of this paper. For more information, please visit Apriso's website here: [http://www.apriso.com/solutions/global\\_trace\\_and\\_genealogy.php](http://www.apriso.com/solutions/global_trace_and_genealogy.php)*

A table has been prepared to explain in further detail the importance of process flexibility and standardization, and why these two key capabilities must be included with any global MOM solution. Please see [Appendix A](#). Use this table to evaluate how various global MOM solutions compare to what Apriso's best-in-class system can deliver.

Given the importance of global process flexibility and standardization, the next question is how are these two capabilities best delivered? The answer lies within what technology is being utilized as part of your global MOM solution. The next section offers a more detailed examination on key technologies that should be part of any global MOM solution.

## Technology Enablers

A manufacturing software solution is only as good as the technology it leverages and the design with how it was built. Apriso's global MOM solution delivers operational flexibility and process standardization as a solution that can be implemented quickly by relying on the following key technologies.

### Native Business Process Management (BPM)

Most legacy MES systems that claim to have BPM capabilities have simply added a graphics tool with limited ability to actually implement end-to-end process improvement. Apriso, on the other hand, is built on a native BPM foundation that is "manufacturing aware." It is an execution system, not just window dressing. This is an important distinction. Apriso has a built-in understanding of manufacturing equipment, ERP integration, bar code scanning, parts tracking and all other details of production and logistics management. Apriso includes BPM-based, packaged and ready-to-run business process flows, complete with the associated data models, business components and user interface gadgets and interfaces with external systems. As a result, business analysts and industrial engineers can design processes at the activity level using a built-in graphical modeller. This makes implementing change and continuous improvement more agile and cost-effective.

Apriso's native BPM is also particularly important in deploying local configurations – a must-have for any global solution. This ensures quick process changes without IT involvement at sites. Traditional systems comprise large building blocks (low granularity) with limited flexibility to fit the detailed variation of manufacturing processes. Apriso's native BPM architecture enables reusability of high-granularity objects, which can then be tailor-fit to meet the specialized needs of local manufacturing, if required. See **Figure 2**.

### Unified Manufacturing Data Model

Apriso's global MOM solution utilizes a Unified Data Model to ensure a single version of the "truth" for all manufacturing operations, correlating data and processes across operations. This means that whatever Apriso applications you use or wherever you use it, you have one data model for your manufacturing enterprise.

### Defining Business Process Management

*Business Process Management (BPM) is best defined as "Company Performance Management through Processes". Stated differently, BPM is a management method that seeks to improve a company's performance by evaluating and continuously improving business processes, as a way to address a more and more complex and ever-changing environment.*

One facility may use Apriso Production and Apriso Warehouse, while another may use Apriso Production and Apriso Quality. You may have 80 plants worldwide running all possible combinations of Apriso applications. With Apriso, you will always have one data model, ensuring a single version of the truth.

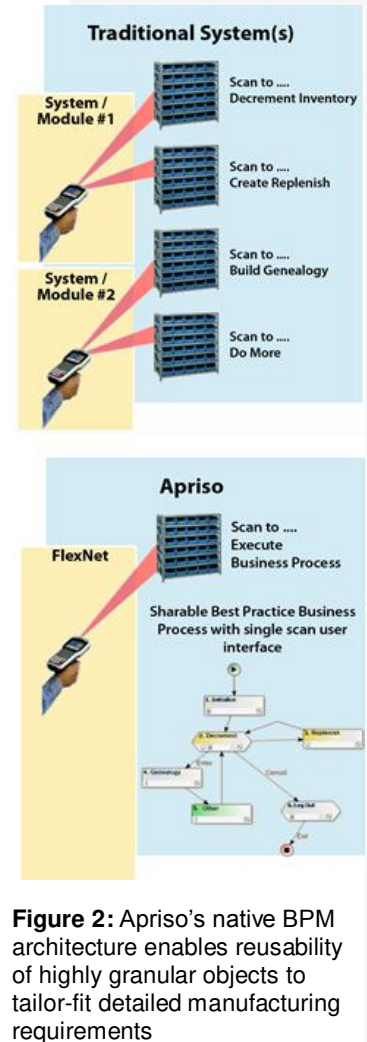
A common, unified data model makes developing and maintaining processes much easier, because there is no need to map databases to each other or spend time integrating various operations. They are already unified – all related manufacturing information is stored in the single, unified database. Apriso is inherently integrated and agile, so there are no silos to connect and no barriers to overcome between operations in a plant or across facilities. The unified database also makes it much easier to integrate Apriso with ERP, PLM and other enterprise systems.

### Service-Oriented Architecture (SOA)

The third key technology enabler is a Service Oriented Architecture (SOA), which allows applications to participate in end-to-end business workflows involving not only internal systems, but other external systems such as ERP, SCM, PLM, shop-floor control and data acquisition (SCADA), among others. Thus, you can achieve the highest level of manufacturing excellence by connecting manufacturing operations to engineering and planning functions, using end-to-end business processes that can be tracked, traced and continuously improved.

Apriso has incorporated a SOA into its application architecture, which gives it a uniquely robust implementation architecture that simplifies connectivity and interaction with all applications as well as the Web. Apriso supports publishing of its SOA components, and can consume external functionality through the use of Web services. Third-party systems can call Apriso functionality, and Apriso applications can call functionality from other systems – a basic premise of the system’s architecture. This translates into an operational advantage. For example, if Apriso Warehouse detects that an item in stock is running low, it can initiate a call to your vendor and place a refill order automatically. You can even use Web service calls to easily outsource production steps or quality processes, maintaining full integration with Apriso.

The Apriso MOM platform is essential when driving agility in both global coordination and in plant-level operational excellence by providing configurable, model-based deployment of distributed business processes. This is what allows manufacturers to continuously adapt in order to remain competitive and differentiated. But, this technology is useless unless it can be correctly configured and implemented, which brings us to the next point of discussion: Apriso’s world-class Professional Services team and partner network.



**Figure 2:** Apriso’s native BPM architecture enables reusability of highly granular objects to tailor-fit detailed manufacturing requirements

## Pillar 2: A World-Class Services Organization

When selecting a solution provider to implement any enterprise software solution, it is important to choose an organization that has had extensive experience with global solutions. Different challenges must be overcome, such as the synchronization of business processes across multiple sites. Solution providers that are inexperienced with how to manage such a deployment will undoubtedly result in project delays, underutilization of potential solution benefits as well as unnecessary costs as part of your deployment.

Dassault Systèmes acquired Apriso in 2013, so can now claim it is the undisputed industry leader in global MOM implementations, with many customers that now have Apriso running at 30, 40 and 50+ sites. As part of the DELMIA brand, the professional services team dedicated to implementing Apriso has served nearly 100 different global manufacturing clients, representing some of the largest and most profitable enterprises in the world.

Apriso customers operate in many different industries such as automotive, aerospace & defense, medical device, packaging and consumer goods. These manufacturers leverage Apriso solutions to improve their ability to accurately and efficiently manufacture a wide variety of products. Customers like Lockheed, Honeywell, Valeo, Bombardier and Saint-Gobain are thriving in today's competitive and highly regulated environment by deploying Apriso across their global production and supply chain operations.

### Leverage a Strong Partner Network for Global Deployments

The network of partners supporting Apriso solutions is unrivalled. Global manufacturing operations necessitate local customization to meet the detailed variations of local requirements. Over the past decade, a network of world-class partners has been established that are now well skilled in implementing Apriso solutions, supporting expansion into 45+ countries. Partners in various disciplines have each helped manufacturers to deploy their local plant instances, which they can do so quickly and efficiently thanks to Apriso solution's native BPM. See **Figure 3** for a select list of Apriso's Implementation partners.

What makes Dassault Systèmes partner strategy unique for implementing MOM solutions comes from five important components:

- Success in global, enterprise implementations
- Long history with existing partner network has resulted in expansion of partner's practices to new regions, industries and markets
- Partners with strong competencies across the IT system landscape from Level 1 to Level 4 (ISA 95 model for details)
- Partner base who offer global coverage and broad implementation capabilities with long term support
- Ability for manufacturers to control their own destiny by picking their partners and the roles they play



**Figure 3:** Apriso's extensive Partner Ecosystem helps assure implementation success

# Pillar 3: A Global Deployment Methodology

Every global implementation of an enterprise IT system must be carefully planned and managed to ensure all objectives are met. Challenges often arise when delays occur while trying to achieve group consensus on final capabilities. Project managers must then balance the need to deploy the best possible solution while meeting stakeholder expectations.

These types of deployments typically include the following steps:

- Assembling a project team
- Developing measurable goals, acceptance criteria, and test scenarios
- Gathering requirements and documenting your business processes
- Developing a project management plan
- Creating a quality assurance and change management process
- Educating your staff on the technology and transferring knowledge to your staff

As an example of the challenges that must be overcome, let's take a look at what is typically involved when installing an Enterprise Resource Planning (ERP) system. The objective is typically to achieve a "single version of the truth" – process and measurement consistency across operations. As a result, ERP projects typically require changes to existing business processes.<sup>4</sup> Poor understanding of needed process changes prior to starting implementation is a primary reason for project failure.<sup>5</sup>

Adding further complexity, these types of installations are considerably more difficult (and politically charged) in decentralized organizations because of the existence of different processes, business rules, data semantics, authorization hierarchies and decision centers.<sup>6</sup> This may require the migration of some business units before others, delaying implementation further to work through the necessary changes for each unit, possibly reducing integration (e.g. linking via Master Data management) or customizing the system to meet specific needs.

These challenges also apply when implementing an enterprise manufacturing IT system (to all sites), as these types of deployments are also de-centralized, with sites located all over the world. Typically with these types of projects, everyone feels great when they begin to work at Site #1, but issues can arise once work begins on Site #2. New functionality or processes might be discovered that invalidates the premise that Site #1's footprint was the right template for the entire enterprise deployment. As new sites go live, this problem can be exacerbated into such a big issue that the entire deployment could be cancelled.

<sup>4</sup> Turban et al. (2008); Information Technology for Management, Transforming Organizations in the Digital Economy; Massachusetts: John Wiley & Sons, Inc., pp. 300–343;

<sup>5</sup> Brown, C., and I. Vessey, "Managing the Next Wave of Enterprise Systems: Leveraging Lessons from ERP," MIS Quarterly Executive, 2(1), 2003

<sup>6</sup> "Requirements Engineering for Cross-organizational ERP Implementation: Undocumented Assumptions and Potential Mismatches" (PDF); University of Twente; retrieved 2008-07-12

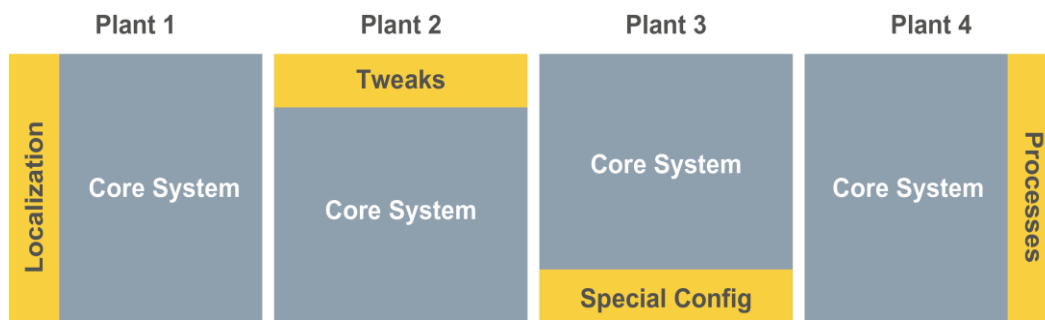
## A New Twist on a Familiar Methodology

A reflection on the previously discussed deployment challenge reveals two common issues that must be addressed in order for large organizations to achieve process consistency across their enterprise. The first is that IT infrastructures must enable agility by **easing how processes are changed** to eliminate concerns over “getting the first site right.” The second is **ease of process “transportation”** to other sites. Once a process improvement has been identified, manufacturing IT systems must then be capable of distributing the update quickly and easily to allow a more fluid set of business processes to be created, modified and continuously improved during and after implementation.

Establishing a “Core footprint” is a well-accepted procedure to install enterprise software, which involves identifying a set of business processes that are deemed “best in class,” and then implementing that set to each location. Apriso’s customers adopt an *evolving* “Core footprint” methodology when implementing Apriso, which effectively addresses these issues, resulting in greater success when completing an enterprise roll out. By leveraging Apriso’s native Business Process Management (BPM) architecture, processes can be easily created and updated through a user interface that is intuitive, role based and easily configured to work on multiple devices and in virtually any language. Once a new process has been created, Apriso Global Process Manager can then be utilized to easily “package” and transport these process improvements to any other Apriso location, as an immediate update.

These capabilities mean that the first site can be implemented with the knowledge that future process improvement is easily accommodated – eliminating the pressure to “get it right” up front. Once the first site is live, those processes are then available to begin work on the second site. Depending upon that site’s requirements, some, all or none of those processes may apply. But, more importantly, processes can be easily shared as often as needed, removing considerable pressure from getting it all right the first time. Over time, a higher level of business process consistency becomes possible across sites, offering a foundation for process standardization to ease future continuous process improvement.

As more sites go live, the total time spent during implementation drops dramatically, based in part on the ever increasing process re-use now possible. **Figure 4** depicts how a Core system with varying local modifications might appear over time, after process alignment has been achieved across multiple sites. Note that these benefits exist regardless of whether Apriso or partner staff performs the implementation.



**Figure 4:** Over time a Core system will ultimately enable greater process consistency across sites

## Effective Governance

To ensure success of this deployment model, Apriso’s customers have found that a strong governance and oversight system is important. This committee, which we will refer to as a “Center of Excellence” team, or simply a “COE”, identifies and controls “best practices” and process standardization. This team considers how processes should be secured, changed and managed as well as when they should be rolled out to each of their manufacturing sites. The group has responsibility to ensure process standardization is important not only from a regulatory and risk management perspective, but also to ensure consistent product quality. The COE team should have representation from many disciplines, including manufacturing, finance, quality, engineering as well as an executive sponsor.

A misconception is to staff a COE with only IT staff. It is much better if this committee includes one or more business owners from the local level. Most high performing COE teams include a representative from a top-performing plant – usually from one of the plants where the Core deployment will be rolled out first. The broad mix of skills on the Governance committee not only leads to a better Core model, but it also helps ensure internal acceptance and buy-in across the organization.

## From Models to Deployment – Establishing the Core

Once the initial starting point for the Core model has been designed and accepted, it is then time to implement processes within Apriso using its global platform capabilities (BPM, interfaces to ERP and interfaces to plant machinery, RFID, etc.) and its wide functional footprint for manufacturing operations. Some of the key stages in moving along the path from an accepted initial model to the first deployment are the following:

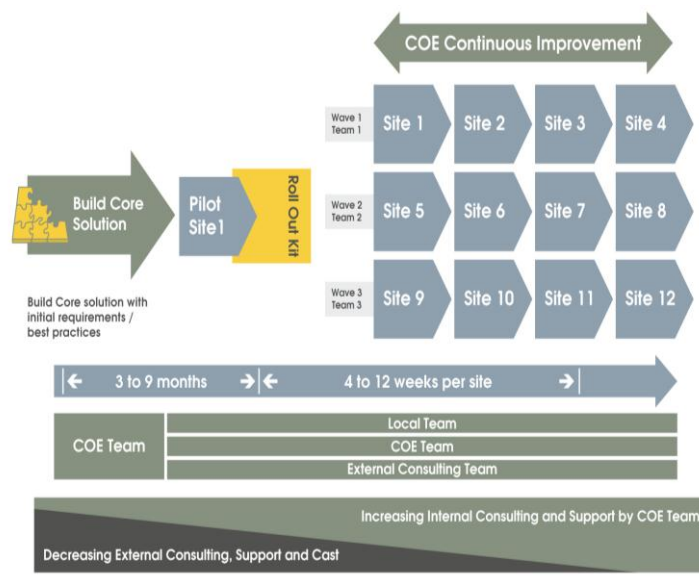
- Prototyping** – Various methods exist on how to model, blue-print or prototype what processes and capabilities should be part of the initial Core model. These requirements can often be difficult to define and understand in manufacturing, particularly when processes are complex and the importance of “getting it right” is so great. The greater use of visual process modeling during the design stage, the better chance that the line of business employees will understand what the IT implementation team is planning. Greater ease of use encourages and promotes increased collaboration between IT and line-of-business users, resulting in a better initial Core model.

- **Determining What Site(s) to Deploy First** – Apriso recommends beginning with one, or at most a few, manufacturing plants for the initial rollout. Obviously, the first deployment is crucial, because success will win allies and lay the foundation for further success, so has political ramifications. For this first deployment, Apriso’s customers typically choose the plants with the greatest chance of success. This is judged by such factors as the historical record, local resources, management team and participation in the Core development and COE team.
- **The Rollout Kit** – As part of the initial deployment, Apriso helps manufacturers document every step, adjusting for problems along the way, with the goal of establishing the procedures that will be used for all subsequent rollouts. This knowledge is then packaged into a formal Rollout Kit, which provides everything needed for subsequent rollouts. The kit typically includes:
  - Configuration of software & delivery of interfaces, forms, reports & conversions
  - Testing of solution and interfaces
  - Complete specifications for servers, displays and interfaces
  - Preparation of production hardware environment
  - Creation of training materials

The Rollout Kit allowing each deployment to follow clear and precise guidelines, which helps to accelerates multi-site roll-outs. For example, when plants are deployed independently, every decision becomes complex and time consuming. Selecting and configuring the right server can take weeks. Using the Rollout Kit, decision delays are avoided, letting the deployment team focus on installing and testing the system as efficiently as possible by following the step-by-step instructions in the kit.

## Going Global – The Core Methodology

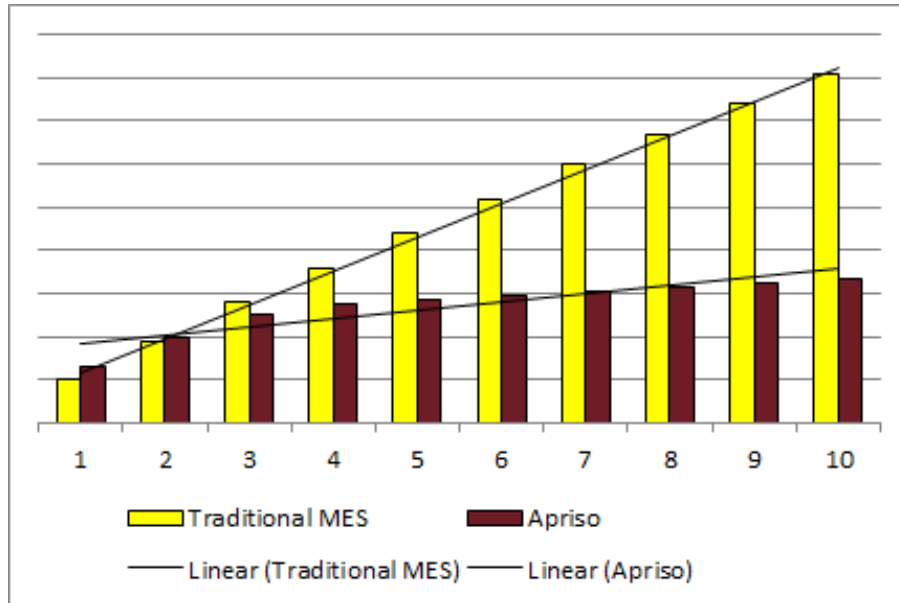
Once established, the Core model and the associated Rollout Kit allows manufacturers to bring plants online at a much faster pace than would otherwise be possible. Every company is different, of course, but the first plant rollout may take six to nine months to complete. After that, Apriso customers can ramp up to one, two or even more “go-lives” per month. Apriso recommends rolling out plants in waves, with a dedicated team assigned to each wave. A typical “wave” approach to multi-site rollouts is shown in **Figure 5**.



**Figure 5:** Graphical depiction of a Core deployment model with decreasing cost over time

## Return on Investment

It is important to understand that deployment costs steadily decrease as more plants are brought online, even as the speed of rollouts accelerates. This is because the rollout teams gain experience and knowledge that helps to streamline the deployment process. By not starting each site with a “blank slate,” considerable cost savings are possible as more and more sites go live. See **Figure 6** for a graphical depiction of these deployment cost savings.



**Figure 6:** Total and average cost per site declines with an Apriso solution, when compared to traditional manufacturing execution systems

There is another way that Return on Investment is amplified when embracing a Core deployment methodology with a software system that supports the readily sharing of best practice processes: The collective knowledge of what processes function best is steadily expanded upon. In other words, as each new site goes live, a new opportunity exists to learn more about what processes can further increase productivity and reduce waste. Based on the fact that processes can be easily transported to any other Apriso site location, this collective knowledge can be readily shared across the enterprise, effectively expanding the cost benefits of implementing a new Apriso solution.

## Leveraging a Center of Excellence Team

After going through the process of rapid, standardized rollouts, a manufacturer now has in place the organizational framework necessary to support continuous improvement. In fact, many times the process of continuous improvement is layered in to the rollouts concurrently. Regardless, once the first site goes live, the importance of a Center of Excellence (COE) team becomes a key element of the deployment and its ultimate success. The COE's governance model is similar to that of the initial project. The only difference is in purpose – to oversee continuous deployment of standard processes, discovery and testing of improvements, and deployment of these improvements everywhere. The COE eventually becomes the owner of change, and the master of best practices spanning manufacturing operations world-wide.

Typically, a COE consists of a multidisciplinary team of experts (sometimes referred to as Subject Matter Experts, or SMEs). This team will include experts focused on process governance, who will then decide what process changes are needed and how they should be applied. These individuals should frequently travel to the plants while also being aware of the various business needs and constraints. Another set of experts are the IT specialists, who will be responsible for scoping decisions done by the process owners, tests and implementation of the actual changes to the plants. All team members must work together to interact with and implement their process changes with the user base in the plants.

The benefits from establishing a COE include:

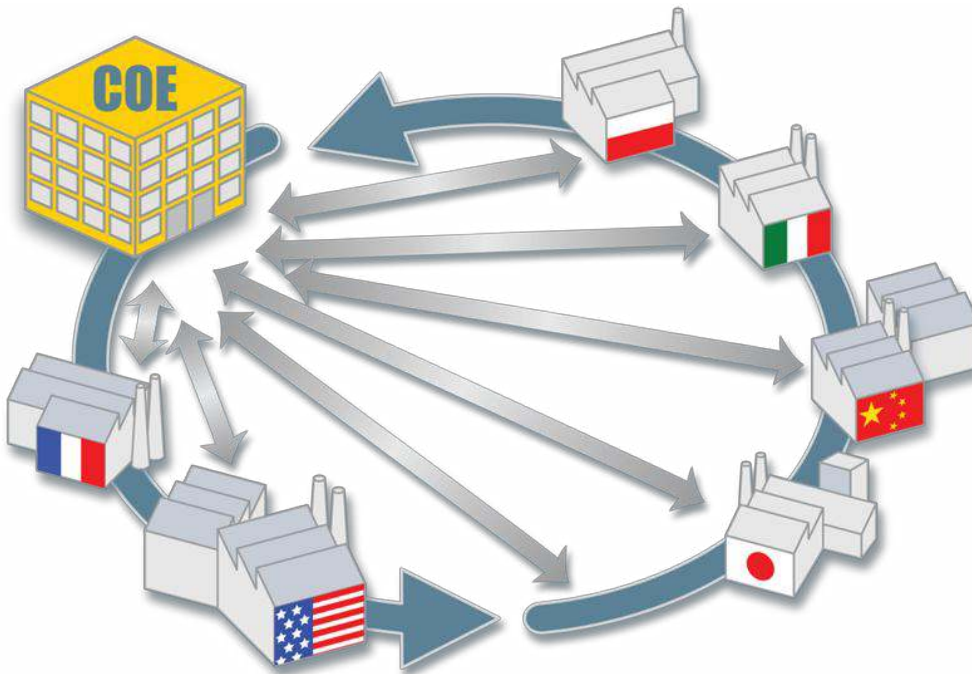
- Greater consistency of best practices across the enterprise, resulting in an increase in quality, efficiency and productivity
- Faster deployments across the enterprise, accelerating ROI
- Improved business continuity and system usage adoption
- Higher degree of business alignment
- Greater consistency with process metrics for analysis and improvement
- Lower Total Cost of Ownership

The Apriso solution – and its platform-like structure – is uniquely capable with regards to its ability to support a Center of Excellence team. The Apriso Global Process Manager module, introduced in the Platform discussion earlier, supports the monitoring and deployment of best practices globally to each plant. As shown in **Figure 7** on the next page, Apriso Global Process Manager can seamlessly deploy standardized processes across the enterprise to assure globally consistent operations. Continuous improvement initiatives can be deployed automatically to the entire landscape of plants to enforce process improvements enterprise-wide; its process monitoring capabilities enable control which processes are used in what versions and in which plants.

Global Process Manager (GPM) and the Apriso MOM solution help IT departments to:

- Deploy processes consistently, on a global scale to multiple sites
- Better manage revision control of each business process
- Secure control of who can change a business process
- Control who can put a process into production
- Track which process and version is running at each site

Harvesting best practices managed by the COE for continuous improvement becomes a way of life. Typically, an Apriso server is located at the COE to build “best practices” and continuously improve manufacturing processes. It builds and tests processes, then uses GPM to deploy manufacturing processes to the field. The system is not just a top-down distribution of best practices. It provides a way to discover process improvements that are made out in the field, by any person at any location. Then, Global Process Manager can bring those processes back from the field to the COE process repository, where they are available to any plant in the enterprise.



**Figure 7:** Harvesting and sharing continuous process improvement via a Center of Excellence team enables all plants to take advantage of best manufacturing practices

# Tying it all Together

Apriso is the only global MOM solution that includes each of the three pillars referenced in this paper. By combining a platform-based approach to manufacturing operations management with a team capable of successfully deploying such a solution, a powerful competitive differentiator is possible capable of providing strategic advantage that can last well beyond when the last site goes live. What now follows are two case study examples of global manufacturers that have embraced Apriso's three pillars, demonstrating that this solution is indeed "real" and achievable within a relatively short time period.

## L'ORÉAL

### Case in Point – L'Oréal

L'Oréal SA is a Paris-based cosmetics company with €19.5 billion consolidated sales in 2010 and operations worldwide. Between 2003 and 2004 the company made the strategic decision to invest in SAP as their global Enterprise Resource Planning (ERP) platform. As with many companies that have made similar IT decisions, there were many reasons that drove this decision. In the case of L'Oréal, management decided that their current IT systems, mainly home grown at the local level, could no longer support their plans for growth. They believed it was important to be able to both re-engineer business processes and clean out the old legacy systems, on a region by region basis.

In and of itself, this decision to deploy a global SAP ERP system is not particularly noteworthy. Many of L'Oréal's competitors in the Consumer Packaged Goods space were also on a similar journey. What was unique with L'Oréal was that at the same time they were planning to roll out a global MOM solution that would interoperate with their ERP. Contrary to popular thought at the time, L'Oréal immediately recognized that their ERP system would not be adequate for managing their manufacturing facilities. A dedicated MOM solution would also be needed.

After a thorough competitive evaluation, L'Oréal picked Apriso as their global MOM standard for all of their plants, which then totaled 37. In 2006, L'Oréal had their first "go-live" as a pilot plant in Belgium; shortly thereafter they went live with their first North American pilot.

### Centers of Excellence

One of the unique approaches L'Oréal took in these deployments was developing Center of Excellence teams to manage the process. These teams were generally cross-functional with resources from Operations, IT, Accenture (their SAP implementation partner) and Dassault Systèmes. Currently there are Centers of Excellence in both North America and Europe. These groups led the implementation process, ensuring that business processes are standardized across facilities. As part of their deployment, L'Oréal achieved a high degree of process standardization (95-99%), which was truly remarkable. The only differences tended to be legal regulatory issues or technical plant issues in how inventory is picked and routed etc.

By establishing Centers of Excellence and ensuring implementations were highly standardized from site to site, L'Oréal was able to consistently complete plant implementations of SAP and Apriso in 9 months. Today L'Oréal has finished their European and North American deployments, and is halfway through its Latin America deployment. Asian and Indian facilities are next. At the time of writing this paper, L'Oréal was live at 23 of their total 37 planned sites.

*"Any company evaluating a global MOM deployment should carefully consider how the change management process will be structured within the company to ensure success. Based on our experience, it is essential to have executive support and bring disparate groups together through a Center of Excellence type model. These groups should include operations, IT, and external resources and they should all have the ability to focus on how the solution can remain standardized across facilities and deliver the needed business processes transformation at the local manufacturing level. By creating these Centers of Excellence and ensuring standardized business process across the manufacturing plant network, we have been able to position our company for the future growth requirements of the business and I am sure other businesses can benefit from the same approach."*

Morris Lenczicki, Vice President of Industrial Systems Applications  
Corporate Operations North America, L'Oréal

In those plants that are up and running on Apriso, L'Oréal management reports a more engaged work force, a demonstrable reduction in paper work and data gathering, more integrated workflows between planning in the supply chain and manufacturing execution. The ability to more easily benchmark performance across the organization has also been achieved. L'Oréal has now ensured that shampoo produced in Brazil, Germany or the US will be made exactly the same, meets cost targets, and is of the highest quality standard.

As evidence of L'Oréal's leadership in manufacturing operational excellence, the company has been recognized by numerous judging panels as being an innovative leader. L'Oréal won the Editor's Choice award at the 2009 Progressive Manufacturing Summit in recognition of their ability to globally standardize plant floor operations and quality processes.<sup>7</sup> And, in 2010 L'Oréal's global standardization was recognized again with an award for operational excellence at the European Manufacturing Strategies summit held on October 20, 2010 in Swissôtel Düsseldorf, Germany.<sup>8</sup>

*"By implementing Apriso as a global solution for manufacturing operations, L'Oréal has successfully expanded the results from our Lean manufacturing, Six Sigma and other continuous improvement programs. It is now faster and easier to deploy and improve best practices across all of our plants"*

Jacques Playe,  
CIO of Operations  
L'Oréal.

<sup>7</sup> L'Oréal Wins Editor's Choice Award at 2009 Progressive Manufacturing Summit, June 18, 2009; <http://bit.ly/L8fPR5>

<sup>8</sup> L'Oréal Wins Awards for Operational Excellence at European Manufacturing Strategies Summit, November 30, 2010; <http://bit.ly/L8gdPw>



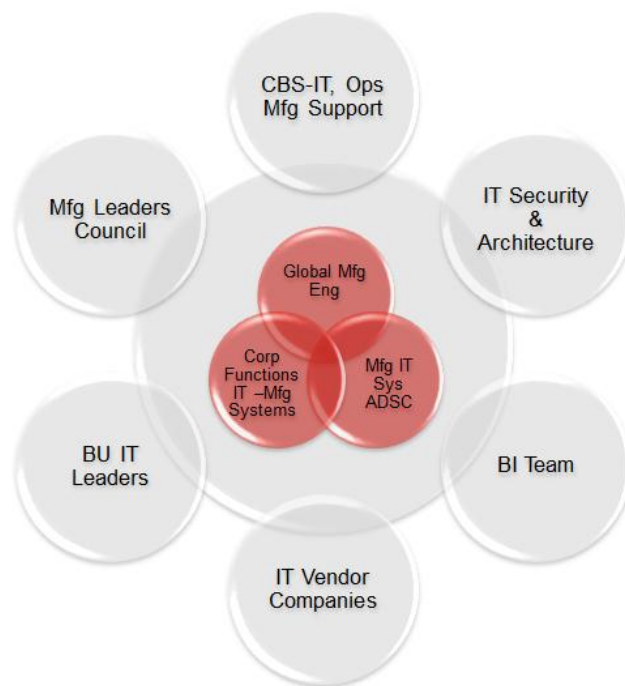
## Case in Point – Cummins

Cummins Inc. is a global power leader with complementary business units that design, manufacture, distribute and service engines and related technologies. Cummins today has \$18.0 billion Sales (2011) and 40,000 employees to serve customers in 190 countries. Cummins turned to Dassault Systèmes to take a more enterprise, holistic approach to better support growth into new, emerging markets. They faced a need for greater flexibility to customer demands while ensuring the highest quality standards. The objective was to improve real-time visibility and control across their global manufacturing operations. In the beginning of 2011 Cummins began replacing its legacy MES and Quality systems with an Apriso global MOM solution.

A comprehensive Apriso Production and Quality footprint was integrated with Cummins' Oracle E-Business Suite R11 (R12 in 2012). Apriso is now live in production in machining, component and engine assembly operations in the UK, Brazil, China and India, including Cummins' joint venture plants. Cummins has made an enterprise decision to implement Apriso's global MOM solution across all 88 plants, as of December 2010.

A “Core” team was established as a critical component of Cummins' global MOM deployment.

This team was assembled with representatives from global manufacturing engineering, manufacturing IT systems and corporate IT personnel. A Change Control Board was established that met bi-weekly to manage Process Change Requests. The team is strategically focused, so evaluates each process change in the greater context of what potential business benefits were possible from each Change Request. See **Figure 8**.



**Figure 8:** Cummins' Core Team structure

Post-Apriso implementation metrics for the first engine assembly plant indicate a 90% reduction in customer defect claims and a 25% improvement in production throughput! As evidence of the financial incentives for process standardization and reuse, Cummins' implementation costs were cut in half for their second engine assembly plant; future cost reductions followed for each of their next Apriso implementations. A total of 20 sites are planned to go live in 2012, a target that is now appearing to be readily achievable.

As another metric of success, Cummins has now experienced months of uninterrupted perfect quality (0 PPM) products delivered to one of their largest European customers. The cost savings, brand benefits and customer satisfaction yields from perfect products is hard to fully capture, as these benefits extend far beyond the simple cost savings avoided from product returns and warranty claims.

In October of 2011, Cummins won the top Manufacturing IT award at the 2011 European Manufacturing Strategies Summit for unrivalled ROI from their Apriso implementation.<sup>9</sup>

*"We are delighted to be recognized for our efforts streamlining and standardizing our manufacturing processes around the globe. By implementing Apriso, we were able to take a global perspective on manufacturing operations and continuous improvement to achieve higher quality, greater efficiency and lower costs by delivering better real-time visibility and control over our operations."*

Dr. Robert D. Borchelt, PhD.  
Director, Manufacturing IT Systems & Industrial Controls at Cummins Inc.

---

<sup>9</sup> Cummins Inc. Wins Top Award for Manufacturing IT, November 3, 2011; <http://bit.ly/veUv7x>

# Conclusion

This whitepaper began with a discussion on why manufacturers have gone global as they seek new growth. Implementing a global MOM solution is an excellent strategic decision to cut costs, improve productivity and increase operational responsiveness. Manufacturers that adhere to the three pillar strategy as outlined in this paper can position themselves for greater success in the execution of their strategic operations plan.

Apriso solutions uniquely deliver each of these pillars – and do so better than any other competitor in the marketplace. In our analysis as to **why** clients have chosen an Apriso solution over the competition, the reasons focus around four major attributes:

- Faster initial deployment
- Faster global deployment
- The professional services team that worked on the deployment
- Continuous improvement enablement

Please see [Appendix B](#) to read in greater detail Apriso's unique solution capabilities, the benefits that can result, and what differentiates these solutions from the competition.

Implementing a global MOM is no easy task. Many vendors say they can do it; none have been able to do so with consistency and the same track record of success as Dassault Systèmes. Speed and scalability are critical keys to deployment success. If it takes 12-24 months to bring a single site live, one at a time, a global deployment of 20 sites will literally never end – it simply won't achieve the necessary momentum to bring to completion. With a three pillar approach, this timeframe is dramatically reduced, and so is the time to value. Many customers now rely on an Apriso solution, in many different industries, which have successfully brought 2-3 sites online per month, not 2-3 per year. This step change in performance has directly impacted their bottom line and their competitive position in the market.

If your organization is currently in the process of trying to get more value out of your current global manufacturing footprint, don't hesitate to contact us, you may be surprised with how refreshing and novel our approach can be. Learn more at <http://www.apriso.com>.

# About Apriso Solutions

Since 1993, some of the world's largest and most successful manufacturers have leveraged Apriso software and services solutions to ease the challenges of global manufacturing operations management. With Apriso, manufacturers can improve organizational agility so as to adapt more quickly and effectively to change. This agility enables firms to take advantage of new market opportunities by delivering the right product at the right time for the lowest total cost. Manufacturers choose Apriso to help manage today's manufacturing transformation of thinking global while acting local.

Apriso software solutions have won numerous awards and accolades for their ability to tightly synchronize global manufacturing operations and supply chain networks to deliver real-time visibility, control and synchronization of business processes performed across plants and the product supply network. Leverage an Apriso solution to establish a common set of operational standards that can be managed holistically on a global scale while still being continuously improved to meet your local market and customer needs.

Apriso Corporation was acquired by Dassault Systèmes in July 2013, and is now a product portfolio within its DELMIA brand. Apriso products and solutions provide a connection between the virtual world of digital manufacturing and the real world of manufacturing production.

# About Dassault Systèmes & DELMIA

Dassault Systèmes, the 3DEXPERIENCE Company, serves 170,000 customers across 140 countries, providing virtual universes for sustainable innovation. Dassault Systèmes' DELMIA brand offers products that connect the virtual and real worlds. As part of DELMIA, the Apriso product portfolio – including its suite of manufacturing operations management applications – helps manufacturers transform their global operations to achieve and sustain operational excellence. Learn more at [apriso.com](http://apriso.com), visit our blog at [apriso.com/blog](http://apriso.com/blog), or follow us on Twitter at [@Apriso](https://twitter.com/Apriso).



[www.apriso.com](http://www.apriso.com)

# Appendix A: Roadmap for Operational Excellence

REFERENCE	WHY IMPORTANT?	APRISO SOLUTION	OTHERS
<b>FLEXIBILITY</b>			
Flexibility to support wide variation of requirements across manufacturing plants and regions	Manufacturing varies widely in levels of automation, products, labor policies etc., across plants, divisions and regions	BPM and configuration on a unified architecture	Scripting or custom code around "fixed footprint" applications
Support for multiple manufacturing models	Large enterprises usually have different types of manufacturing	BPM and configuration on a unified architecture	Applications really aimed at a particular manufacturing model and forced fit into others (SAP ME electronics)
Plants have varying priority around manufacturing applications	Operational applications footprint can vary by plant based on their priorities	Wider Apriso footprint across applications all as a unified architecture	<ul style="list-style-type: none"> <li>SAP can deliver lots of ERP modules</li> <li>Automation providers have purchased lots of piece parts</li> </ul>
Support for localizations and plant specific requirements	Firms using a standard solution must still support special requirements in individual plants	BPM and configuration on a unified architecture	Able to accommodate local variation via scripting/custom code, no ability to roll into core or other plants
Support for a wide variety of automation systems and levels of automation	Varying legacy systems dominate in manufacturing	<ul style="list-style-type: none"> <li>Automation vendor neutrality</li> <li>Standards based machine integration (MI)</li> <li>BPM and configuration</li> <li>Apriso fits as "Jell-O" around automation</li> </ul>	Automation guys all will want to replace competitive automation over time
Support for corporate ERP (SAP) and legacy ERP in the plants	Legacy systems dominate in manufacturing	<ul style="list-style-type: none"> <li>Business system neutrality</li> <li>Certified interfaces and strong integration skills</li> <li>Apriso as "Jell-O" around business systems</li> </ul>	<ul style="list-style-type: none"> <li>SAP wants you to replace all the ERP first</li> <li>Automation and Pure Plays are not focused on ERP integration</li> </ul>
<b>PROCESS STANDARDIZATION</b>			
Ability to transport & execute "Best Practices" across locations	<ul style="list-style-type: none"> <li>Process standardization is a key goal</li> <li>7x24 requirements lead to physically distributed servers</li> </ul>	Global Process Manager with language localization	No known capabilities
Support multiple process versions and multiple versions of the mfg software deployed in the field	<ul style="list-style-type: none"> <li>Process standardization is a key goal</li> <li>Challenged by different software versions across a number of plants</li> </ul>	Cross Version support in v9.6	<ul style="list-style-type: none"> <li>No capabilities to transport</li> <li>No standard capabilities to support multiple versions</li> </ul>
Visibility and common metrics into and across all plants	<ul style="list-style-type: none"> <li>Can't compare if there is no standardization</li> <li>Real-time visibility critical in production process mgmt.</li> </ul>	<ul style="list-style-type: none"> <li>Manufacturing Process Intelligence (MPI)</li> <li>BPM</li> <li>Global Process Manager</li> </ul>	<ul style="list-style-type: none"> <li>SAP can with Business Objects but that is complex and slow (some experiencing up to four months for first draft of report)</li> </ul>
Ability to support plants from a centralized or regionalized location	<ul style="list-style-type: none"> <li>Continuous improvement is required in manufacturing</li> <li>Excellence is dispersed</li> </ul>	Global Process Manager enables a virtual COE	All will talk about a COE but substantial IT resources still needed in the plant to support code changes, upgrades and shutdowns
Multilingual, multi-time zone	Globally dispersed plants	<ul style="list-style-type: none"> <li>Standard capability</li> <li>Unicode (double-byte) database</li> <li>Database content in multiple languages</li> </ul>	All competitors imply they have it
Track and Trace across plants	<ul style="list-style-type: none"> <li>Most products are now made across multiple plants</li> <li>Compliance requirements</li> <li>Some yield and quality problems need multi-site visibility</li> </ul>	Apriso's Global Trace and Genealogy Solution (G-TAG)	<ul style="list-style-type: none"> <li>SAP can do it awkwardly</li> <li>Rockwell say they can do it</li> <li>Automation guys are plant centric</li> </ul>

# Appendix B: Apriso Solution Unique Capabilities

DIFFERENTIATOR	CAPABILITY	ENABLERS / FEATURES	BENEFIT
<b>FASTER INITIAL IMPLEMENTATION</b>			
1. Progressive build methodology with Evolving Core	<ul style="list-style-type: none"> <li>• Visual Iterative configuration of Business Processes</li> <li>• Conceptualize global solution architecture</li> <li>• Systematic design/build within global framework</li> <li>• Collaborative approach engages across departments</li> <li>• Visual business process configuration</li> <li>• Support geographically dispersed teams</li> <li>• Consistent and repeatable implementation methodology</li> </ul>	<ul style="list-style-type: none"> <li>• Methodology anticipates conceptualization of global solution architecture</li> <li>• Rapid Prototyping and Blueprinting available within the product (Process Builder (PB)) to support visual, iterative configuration</li> <li>• Validate as you go (PB+Global Process Manager (GPM))</li> <li>• Process versioning and release validation (PB+GPM)</li> </ul>	<ul style="list-style-type: none"> <li>• Eliminates requirements churn and rework of processes</li> <li>• Accelerates initial deployment</li> <li>• Easier change management / greater user acceptance</li> </ul>
2. Leverage Solutions Assets	<ul style="list-style-type: none"> <li>• Solution assets proven in previous deployments</li> <li>• "Best Practices" developed over multiple implementations</li> <li>• Methodology to package and reuse business functionality</li> </ul>	<ul style="list-style-type: none"> <li>• Solution repository (PB)</li> <li>• Documented and proven solutions</li> <li>• Architecture for accelerated integration</li> <li>• Package &amp; deploy business process based solutions (PB+GPM)</li> </ul>	<ul style="list-style-type: none"> <li>• Faster time to first "Go Live"</li> <li>• Reduces risks of pilot</li> <li>• Ideal application architecture and foundation for continuous improvement</li> </ul>
<b>FASTER GLOBAL DEPLOYMENT</b>			
1. Progressive Build Methodology - resulting in a portfolio of processes	<ul style="list-style-type: none"> <li>• Evolving Core</li> <li>• Build/assemble reusable, extendable pieces create business flows</li> <li>• Collaborative approach engages across departments</li> <li>• Identify and prioritize business requirements</li> <li>• Agile or Lean approach with iterative, visual development</li> <li>• World Class Project Management</li> </ul>	<ul style="list-style-type: none"> <li>• Rapid prototyping of solution flow</li> <li>• Phased deployment</li> <li>• Blueprinting (PB)</li> <li>• Phased deployment with requirements validated as you go (PB+GPM)</li> <li>• Process versioning and release validation (PB+GPM)</li> </ul>	<ul style="list-style-type: none"> <li>• Greater probability of project success from initial deployment to wide-scale roll out</li> <li>• Decrease cost and risk of roll outs</li> <li>• Easier change management / greater user acceptance</li> </ul>
2. Evolving Core Solution	<ul style="list-style-type: none"> <li>• Phased, systematic roll out</li> <li>• Core solution evolves/grows as new "best practices" are found</li> <li>• Core solution + Local enhancements</li> <li>• Forward / Backward Process Deployment without shutting down production</li> </ul>	<ul style="list-style-type: none"> <li>• Validate and enhance as you go (PB+GPM)</li> <li>• Monitor, package and distribute processes (GPM)</li> <li>• Process versioning and release validation (PB+GPM)</li> <li>• Executable BPM with local extensions</li> </ul>	<ul style="list-style-type: none"> <li>• Scale and speed of deployment</li> <li>• Eliminates risk and delay of big bang implementations</li> <li>• Enables multiple (near) simultaneous Go-lives</li> <li>• Increases value of solution as you go</li> <li>• Increased knowledge capture, collaboration and satisfaction of operations people</li> </ul>
3. Process standardization on your best practices	<ul style="list-style-type: none"> <li>• Executable Business Process Management</li> <li>• Model executable business processes that cross functional boundaries</li> <li>• Standardize metrics and KPIs</li> <li>• Governance model</li> </ul>	<ul style="list-style-type: none"> <li>• Monitor, package and distribute processes (PB+GPM)</li> <li>• Executable BPM platform</li> <li>• Unified data model</li> <li>• Global Manufacturing Process Intelligence (MPI)</li> <li>• Global manufacturing platform</li> </ul>	<ul style="list-style-type: none"> <li>• Reduces scope of the project by eliminating inefficient, unapproved, unofficial processes</li> <li>• Focuses technical team on improving best practices &amp; eliminating cost of supporting bad practices</li> <li>• Standardization is first step to process optimization</li> </ul>

DIFFERENTIATOR	CAPABILITY	ENABLERS / FEATURES	BENEFIT
4. Reduce dependency on technical resources over time	<ul style="list-style-type: none"> <li>Ability to configure reusable sub-processes</li> <li>Wave deployments over time</li> <li>Evolving Core will eventually cover all "best practices"</li> <li>Collaborative implementation method for knowledge transfer &amp; enablement</li> <li>Process standardization</li> <li>Simplified Forward / Backward Process Deployment</li> <li>Ability to define &amp; deploy localizations centrally</li> </ul>	<ul style="list-style-type: none"> <li>Executable BPM foundation</li> <li>Monitor, package and distribute processes (PB+GPM)</li> <li>Global Manufacturing solution</li> </ul>	<ul style="list-style-type: none"> <li>COE can do the work, reducing need for local plant IT</li> <li>Enables multiple simultaneous Go-lives</li> <li>Reduces schedule and resource risk</li> <li>Reduces deployment cost</li> </ul>
5. Vendor Neutral Integration to Business and Automation systems (PLM-ERP-Automation)	<ul style="list-style-type: none"> <li>Build standard interface architecture that can be "mapped" to external systems</li> <li>Vendor neutrality supports system diversity</li> <li>Minimize interface (re)work</li> <li>Provide abstraction layer to enable common control maps to handle diversity in automation</li> <li>Remove business logic from automation layer</li> </ul>	<ul style="list-style-type: none"> <li>Standards based Machine Integrator layer (MI)</li> <li>Certified Business Integrator layer (BI)</li> <li>BPM for flexible business logic outside of automation layer</li> <li>BPM enables flexible functional deployment ("Jell-O")</li> </ul>	<ul style="list-style-type: none"> <li>Reduce customization of business systems</li> <li>Faster to connect MES into manufacturing IT for the plant</li> <li>Eliminates dependency on vendor specific automation integration</li> </ul>
6. Experienced people - Proven and with References	<p>Expertise and proven in advising on:</p> <ul style="list-style-type: none"> <li>Cultural and governance model to develop and enforce strategy</li> <li>Functional partitioning and data mastering</li> <li>Global manufacturing roll out strategy</li> <li>Manufacturing transformation strategy</li> <li>Identifying &amp; prioritizing business requirements &amp; value streams</li> <li>Proven Trusted Advisor to the management team</li> <li>Proven World Class Project Management</li> </ul>	<ul style="list-style-type: none"> <li>Working with partners to support global and wave deployment</li> <li>Expert knowledge of deployment strategies</li> <li>Portfolio of solution assets proven in previous deployments</li> <li>Six Sigma Certified Professional Services</li> <li>Experience with 100's of successful implementations</li> </ul>	<ul style="list-style-type: none"> <li>Reduce implementation risk and cost</li> <li>Enable adaptability and flexibility</li> <li>Enhance value of existing business and manufacturing systems</li> <li>Faster roll outs and shorter time to value</li> <li>Ensure high project performance – quality, budget, time, acceptance</li> </ul>
7. Global Mfg Platform -Common solution across multiple production/mfg and logistic models	<ul style="list-style-type: none"> <li>Common SOA technology platform</li> <li>Executable Business Process Management</li> <li>Supports multiple manufacturing models</li> <li>Supports multiple logistic models</li> </ul>	<ul style="list-style-type: none"> <li>Common data model across all sites and applications</li> <li>Wider footprint -unified applications</li> <li>BPM + local execution</li> <li>Monitor, package and distribute processes (PB+GPM)</li> </ul>	<ul style="list-style-type: none"> <li>Reduce mfg IT costs</li> <li>Improve visibility, control and synchronization across enterprise</li> <li>Reduce customization of business systems</li> <li>Improve system acceptance and usage</li> </ul>
<b>CONTINUOUS IMPROVEMENT ENABLEMENT</b>			
1. Center of Excellence (COE) on Steroids (Advanced COE Capabilities)	<ul style="list-style-type: none"> <li>"Managed innovation" -harvest innovation from the field</li> <li>Simplified Forward / Backward Process Deployment</li> <li>Identify and deploy best practices</li> <li>Dynamic / Virtual COE (global team)</li> <li>Enhance existing processes and introduce new processes</li> <li>Implement and deploy changes and fixes</li> </ul>	<ul style="list-style-type: none"> <li>Monitor process version and deployment (PB+GPM)</li> <li>Globally standardize metrics</li> <li>Global manufacturing process intelligence (MPI)</li> <li>Define common mfg operations across sites (PB+GPM)</li> <li>Enforce governance for process validation &amp; release (PB+GPM)</li> </ul>	<ul style="list-style-type: none"> <li>Better COE: Distributed, not just top-down</li> <li>Leverage scarce manufacturing talent</li> <li>Enforceable governance to risk of noncompliance</li> </ul>
2. Platform approach to all of mfg ops	<ul style="list-style-type: none"> <li>Extend footprint into additional functional areas</li> </ul>	<ul style="list-style-type: none"> <li>All applications built on a unified architecture</li> <li>See deployment items above</li> </ul>	<ul style="list-style-type: none"> <li>Lower mfg IT costs</li> <li>Future proof mfg platform</li> <li>Greater flexibility</li> </ul>
3. Evolutionary Functional Capability without the need for software upgrade	<ul style="list-style-type: none"> <li>Implement and deploy incremental process updates and additions quickly across one or more sites</li> <li>Collaborative approach incorporates input from operations faster</li> <li>Enables and supports Lean approach</li> <li>Global visibility to identify best practices, performance, bottlenecks and constraints</li> <li>Centralized, rolled up Analytics and KPIs</li> </ul>	<ul style="list-style-type: none"> <li>Visually model and configure business processes</li> <li>Monitor, package and distribute processes (PB+GPM)</li> <li>Global manufacturing process intelligence, which can be embedded into any process</li> </ul>	<ul style="list-style-type: none"> <li>More manageable pieces (no recompile or plant shutdown)</li> <li>Avoid risk and delay of big bang upgrades</li> <li>Accelerate innovation</li> <li>Lower risk of nonconformance</li> <li>Better perfect order performance</li> </ul>

DIFFERENTIATOR	CAPABILITY	ENABLERS / FEATURES	BENEFIT
<b>APRISO TEAM DIFFERENTIATING CAPABILITIES</b>			
1. World Class Solution Architects and Project Managers	<ul style="list-style-type: none"> <li>Comprehensive knowledge of Manufacturing Operations, ERP, PLM and automation systems</li> <li>Flexible and adaptable processes that support Lean/Six Sigma initiatives (that can be adjusted to fit customers' methodologies)</li> <li>Understanding of confluence of 3 major technologies (BPM, BI and MES)</li> <li>Ability to work with network of Systems Integrators and local implementation firms</li> <li>Consistent and repeatable implementation methodology</li> </ul>	<ul style="list-style-type: none"> <li>Highly experienced employees with domain expertise across the enterprise landscape AND a detailed understanding of mfg and logistics execution</li> <li>Project Management team with vast industry experience and detailed understanding of how to do a global deployment</li> <li>Ability to work as a trusted advisor across manufacturing, leveraging best practices from across industries</li> </ul>	<ul style="list-style-type: none"> <li>Reduces implementation time and risk</li> <li>Highest rate of implementation success</li> </ul>
2. Best People in the Industry	<ul style="list-style-type: none"> <li>Six sigma certified professionals</li> <li>Service professionals with many years of experience in a proven methodology</li> <li>Ability to work with network of Systems Integrators and local implementation firms</li> </ul>	<ul style="list-style-type: none"> <li>Professional services team with 10+ average years of experience; 7+ years at Apriso</li> <li>Extensive supply chain, ERP and manufacturing experience</li> <li>Accountability that customers can count on</li> <li>Ability to share experience for 100's of successful implementations and industry best practices</li> </ul>	<ul style="list-style-type: none"> <li>Achieve a high quality deliverable</li> </ul>
<b>THE BOTTOM-LINE</b>			
Apriso is the only vendor who can enable manufacturers to roll out 10-20 sites/year	<ul style="list-style-type: none"> <li>100's of successful implementations of MOM across 45 countries</li> <li>4 sites on the same day (Volvo CE); 11 sites on same day (St. Gobain)</li> <li>Multiple other simultaneous go-lives</li> <li>Deploy in multiple regions simultaneously</li> <li>Valeo @ 100 sites; GM @ 30+ sites in ~2 years; L'Oréal in Europe and US in ~2 yrs</li> <li>Flexible deployment methodology follows strategic goals and capabilities</li> <li>Implementation methodology that is consistent and repeatable</li> </ul>	<ul style="list-style-type: none"> <li>People, processes, methodology and product all come together in a consistent and repeatable way ... to provide a unique capability proven in large scale roll outs.</li> <li>See all the capabilities above (and Global Check List)</li> </ul>	<ul style="list-style-type: none"> <li>Faster time to value</li> <li>Reduced cost of IT</li> <li>Consistent processes</li> <li>Uniform Metrics, KPIs</li> <li>Broader visibility and control</li> <li>Cross enterprise synchronization</li> <li>You'll keep your job</li> <li>Ensure high project performance – quality, budget, time, acceptance</li> </ul>