SAP Solution in Detail
SAP Manufacturing

SAP® xApp™ MANUFACTURING INTEGRATION AND INTELLIGENCE

Integrating the Shop Floor and the Top Floor

CONTENTS

EXECUTIVE SUMMARY

Historically, manufacturing plants have invested in individual systems for each set of functional requirements needed to produce goods within each plant, such as running equipment, measuring performance, collecting real-time data, and scheduling production orders to individual lines. While this approach achieved the tactical goals of delivering each of these functions for the production of goods, it has created significant challenges for managing local production in line with the dynamic demands of the enterprise.

Today's globally distributed manufacturing environment requires real-time integration of data from existing, disparate plant systems along with enterprise applications such as enterprise resource planning (ERP), supply chain management (SCM), and product life-cycle management. Besides coordinating production across the entire manufacturing enterprise, organizations must ensure the highest level of customer responsiveness, achieve overall compliance with government regulations, and meet quality objectives.

Cost pressures and productivity drivers demand that plants continue to leverage existing assets, IT infrastructure, and applications. A "rip and replace" approach is simply not cost-effective.

Finally, effective global manufacturing coordination and local execution require integration of plant floor systems into existing enterprise systems. Integration is necessary not only to ensure global synchronization but also to provide enterprise and plant personnel with the intelligence and visibility to respond quickly to disruptions in the supply network or exceptions at the plant floor.

The SAP® xApp™ Manufacturing Integration and Intelligence (SAP xMII) composite application helps manufacturers address these challenges by analyzing and linking core manufacturing processes to the enterprise. SAP xMII provides a rich set of integration, intelligence, and innovation elements that organizations can combine freely to create composite applications fusing manufacturing execution and process with enterprise workflows.

SAP xMII works seamlessly with existing instances of ERP software from SAP and manufacturing-specific functionality such as materials management, quality management, plant maintenance, and product planning for process industries. It also enables customers to connect to virtually any plant floor or IT system, contextualize the information with ERP data, and provide rich analytics to support informed strategic, tactical, and operational decisions. SAP xMII provides a composite application framework specific to manufacturing applications as a strategic platform for customers to work with SAP partners to further enhance and drive functionality in selected applications.

INTRODUCING SAP xMII

SAP xMII enables the handling of manufacturing processes and their close ties to the enterprise and supply chain. It does so via two main components: manufacturing intelligence and manufacturing integration.

SAP xMII manufacturing intelligence functionality allows organizations to gather data from a variety of different systems – in shop floors, enterprises, and the supply chain – and model a composite application providing unified visibility into and handling of any manufacturing process. A classic example is the gathering, aggregation, and analysis of shop floor data; its display in the form of easily understood and easily used gadgets, graphics, and key performance indicators (KPIs); and the handling of associated events and alerts to support decision making by production personnel through role-based dashboards.

Since manufacturing processes are highly specific, the strength of SAP xMII manufacturing intelligence functionality lies in the simplicity it introduces to build an application adapted to these individual needs. For the most common processes of shop floor analytics, visualization, and integration to enterprise and legacy systems, manufacturing intelligence comes with a set of out-of-the-box template applications, which can be adapted to individual scenarios. Examples include the classic presentation of key plant figures (overall equipment effectiveness, cost, and performance) and integration to SAP enterprise systems.

SAP xMII manufacturing integration functionality forms the backbone of SAP xMII architecture by providing universal data connectivity to a variety of plant floor, enterprise, and other systems. Examples include plant floor systems from Invensys, Siemens, GE Fanuc, Visiprise, and Honeywell; enterprise systems from SAP, Oracle, and IFS; manufacturing execution systems (MES); laboratory information management systems (LIMS); and other legacy applications. SAP xMII manufacturing integration functionality also supports manufacturing industry standards, such as ISA-S95, to integrate plant floor and enterprise systems.

Figure 1 shows the main components of SAP xMII and their interaction with shop floor systems and other components of SAP Business Suite applications in a sample composite application for a shop floor operator dashboard.

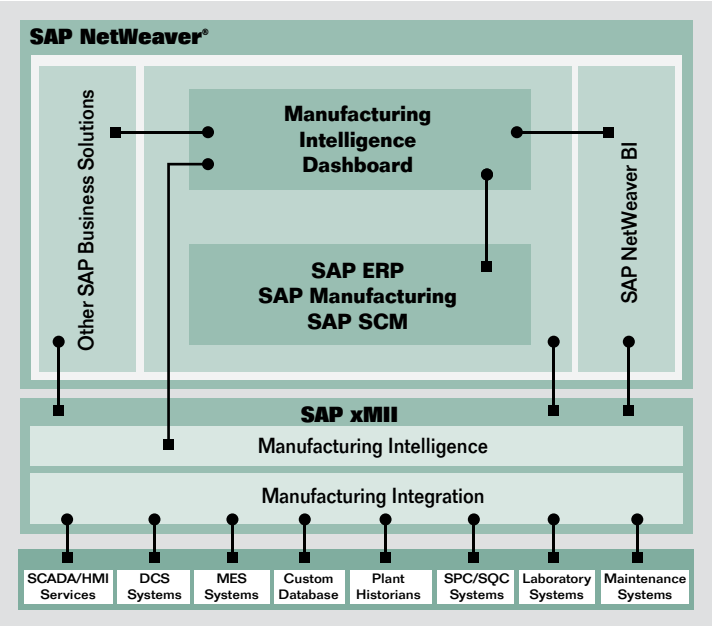

Figure 1: SAP® xApp™ Manufacturing Integration and Intelligence (SAP xMII) Components in a Sample Composite Application

The integration component uses its connector framework to bring together the necessary data from all different plant site sources and merge that data into one common format. The intelligence component provides further analysis and composes the different elements of the dashboard, as well as their interaction and additional activities, like alerts and notifications. In addition, the intelligence component allows a deep integration of the data to other SAP components.

A typical example is the integration of aggregated shop floor data into SAP manufacturing and supply chain applications, or into an SAP NetWeaver® Business Intelligence (SAP NetWeaver BI) component to produce metrics spanning the whole enterprise.

To determine the layout of the dashboard, the system administrator specifies visual components to graphically represent the data of each component. In the example in Figure 1, the dashboard is a combined view of several machines and their schedules. The actual status of the equipment is gathered directly and combined with data from an MES system providing the detailed scheduling of production orders.

The intelligence component of SAP xMII makes sure that every time the operator selects another element of the schedule, the correct equipment/machine information appears. In addition, it constantly evaluates machine conditions for alert situations and notifies the operator if one arises. The whole user interface can be used as a stand-alone for shop floor personnel or as an integrated part of the SAP enterprise portal.

KEY SAP xMII APPLICATIONS

Key application areas in SAP xMII include the following:

- Performance management
- Manufacturing analytics
- Synchronization

Performance Management: Driving Continuous Improvement

One key application area for SAP xMII is performance management. The ability to manage performance metrics and feed back real-time achievements is a significant driver for improvement. Providing actionable intelligence around performance management allows all employees to drive continuous improvement initiatives. Latent feedback, such as reports that are a week or a month old, is not effective in driving behavioral change.

The first key to performance management is understanding the drivers that impact business performance and making these visible to all employees who can make an impact. Key performance indicators are generally created to allow workers to focus on areas they can affect. Dashboards that present these in real time, with drill downs to underlying data, assist in root-cause analysis of issues preventing performance. Alerts that trigger e-mails or pagers to highlight problems are another method for bringing attention to problem areas.

SAP xMII plays a key role in the presentation of these metrics, the gathering of data, the calculations (with associated business rules), and the presentation of results for general consumption.

Performance management applications with SAP xMII can be extended to many continuous improvement activities including Six Sigma and balanced scorecard. SAP xMII dashboards are ideal for delivering performance metrics for these initiatives.

Customer feedback has shown that the mere presentation of performance metrics against goals in real time has an effect on employee behavior – improving performance dramatically.

Manufacturing Analytics: Delivering Actionable Information

SAP xMII provides a powerful environment for delivering manufacturing analytics to management, supply chain, quality, and plant floor operations personnel. Data can be delivered in the context of each individual's role. Contextual presentation of data enables multiple organizations to collaborate more effectively.

Trending and statistical process control (SPC) functionality extends the value of manufacturing analytics assisting in root-cause analysis of performance deviations. SAP xMII includes extensive SPC calculations and a wide range of variable and attribute chart types. It also includes the full Western Electric Rules set, which can trigger alerts based on rule violations. Companies can also easily generate custom rules. This improves quality by heading off control issues before the generation of substandard product.

Charts can incorporate attributes from multiple systems, simplifying root-cause analysis. A single view can relate customer orders to production lots and lab results. Further drill down of data by plant, production line, shift, operator, and machine allows for dramatic improvement in operational troubleshooting and customer quality.

Synchronization: Linking Plant Floor Activities to the Enterprise

Execution of plant work processes is another key functionality of SAP xMII. The data services and business logic services available in SAP xMII eliminate the task of manually inputting data into ERP software. Streamlined, real-time data gathering and delivery reduce workload, improve accuracy, and accelerate the supply chain. Results include reduced inventories, improved customer deliveries, and reduced cycle times.

SAP xMII also plays a key role in linking enterprise activities to plant floor workers. Companies can quickly deploy simplified user interfaces to allow plant floor workers to consume enterprise data (such as production orders, bills of materials, and material details) in the context of their local work processes. Equally important, interfaces enable shop floor workers to give appropriate feedback on production events and values associated with their work processes. Production confirmations, material transfers, quality characteristics, maintenance notifications, and other transactions can be simplified for the plant environment.

Linking plant floor activities to the enterprise presents dramatic shifts in performance and increased value in a customer's ERP investment. Extending visibility to the plant and automating work processes provide superior decision support, increase accuracy, and drive business thinking to plant operations.

SAP xMII ARCHITECTURE

SAP xMII offers a framework for rapid delivery of composite applications for manufacturing. Running on a Web server, this unique product leverages the manufacturer's investment in shop floor applications. SAP xMII leverages an enterprise service-oriented architecture (enterprise SOA), streamlining application integration and speeding deployment.

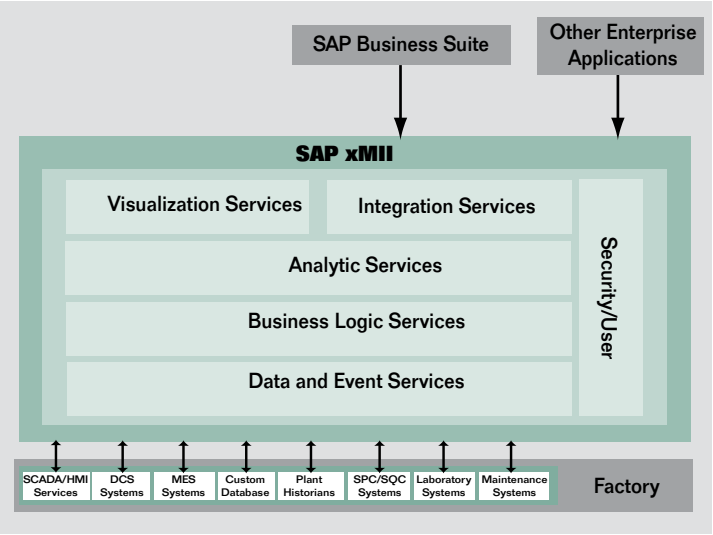

Figure 2: SAP® xApp™ Manufacturing Integration and Intelligence (SAP xMII) Composite Application Architecture

Families of connectors, which come with the product, provide instant access to data from these applications, without requiring data replication into another data store.

Figure 2 gives a big-picture view of SAP xMII architecture. The **data services** of SAP xMII promote rapid development of query templates – named views of data from underlying systems that can be cataloged and used in SAP xMII applications. Templates can be parameterized – that is, they can use placeholders for query values at run time to meet the needs of a user (start date/end date), or to chain queries and use results from one query to filter or impact another. SAP xMII normalizes all data, regardless of its source, into XML. Furthermore, results from query templates can be cached as server-stored XML documents, or they can be stored in a database.

The **business logic services** (BLS) component of SAP xMII includes a graphical logic engine for orchestrating transactions in SAP xMII. Action blocks are placed in sequences within a transaction and are executed via time-based schedules or external triggers. Transactions can issue calls to query templates and can access data from the SAP xMII data service. Complex calculations and KPIs can be run from the BLS. E-mail alerts can be generated based on rules configured in the logic engine. Reports can be generated in HTML or PDF format from the BLS.

The BLS also provides transactional integration to SAP enterprise applications. Action blocks take advantage of numerous mechanisms to consume or post data from SAP core applications. BLS uses the Java Connector to access the remote function calls (RFC), BAPI® programming interface, or intermediate document (IDOC) exchanges to provide integration with the SAP ERP application. Mapping functions in the BLS enables easy integration of plant data and processes to SAP ERP.

Analytic services are another key component in SAP xMII. A full-featured SPC engine, with full Western Electric Rules, allows real-time analysis of data sets from any application. SPC analysis can also run in the background, and custom rules can be quickly deployed to trigger alerts or reports based on violations.

SAP xMII provides a variety of methods to display information through its **visualization services**. SAP xMII comes with a family of rich applets that can deliver views of data in numerous forms. Charts, grids, tickers, and browsers enable users to view and gather data from disparate systems in a very intuitive manner. An additional library of scalable vector graphic objects provides another level of data delivery. The tool kit allows creation of custom objects as well.

Content can be delivered through the SAP xMII lightweight portal, which manages users, roles, and security, and delivers content to users based on their privileges. A security model can be hosted within the SAP xMII model, or SAP xMII can leverage an external Lightweight Directory Access Protocol (LDAP) directory or SAP single sign-on for user authentication.

SAP xMII can also prepare content for consumption in external portals, most notably the SAP NetWeaver Portal component. Manufacturing data can now be easily accessed along with enterprise data through a single common information delivery environment.

Reports can be automated and printed, stored, or e-mailed based on time, event, or demand. The format for these documents can be text, XML, HTML, or PDF. Reports can include summary data, charts, grids, and analysis data. SAP xMII can generate production summaries, quality results, shift performance reports, certificates of conformance, and environmental reports.

SAP xMII also supports handheld mobile devices. Delivery of real-time plant information to Pocket PC wireless devices, Internet phones, and ruggedized plant handheld devices drives efficiencies through a mobile workforce. SAP xMII supports both data consumption and data entry through these devices.

Delivering Intelligence Through SAP NetWeaver BI

Because day-to-day shop floor operations involve large amounts of data originating from many different sources, all shop floor applications must be able to aggregate and extract relevant data easily. For this reason, SAP xMII provides out-of-the-box data translators to read data regardless of where it came from, where it's used, or where it's stored. To enable report creation based on common denominators, all data read is transformed into an internal format and aggregated based on specified parameters such as time or equipment.

SAP xMII provides a variety of calculation functionality to support the evaluation of KPIs. SPC and Six Sigma analyses, including graphical representations, are available as well. In addition, SAP xMII works hand-in-hand with SAP NetWeaver BI to provide a complete set of analytic tools covering data with flexible granularity – from as small as seconds on the shop floor all the way to months in a data warehouse.

A typical example of how SAP xMII supports KPIs and delivers manufacturing intelligence is aggregating shop floor data and performing shift analysis with respect to production performance. At the end of the day, data is further aggregated and transported to SAP NetWeaver BI. Once a week this data can be used to compare planned versus real production cost to support decision making on product-line placements. In the same way, SAP xMII can integrate cost data extracted from ERP software with production performance data to give a daily overview of the costing situation to a shop floor supervisor. Specific connectors in SAP xMII perform this integration with SAP NetWeaver BI, enabling the flow of data into and from the component.

Integrating with Other Manufacturing Systems

SAP xMII provides a single environment to connect to a large variety of shop floor and plant systems and to integrate that data to an SAP ERP application. By combining these functionalities in a single layer, SAP xMII enables the synchronization of ERP data including orders, notifications, and material masters to a plant floor system with minimal total cost of ownership (TCO). At the same time, it allows for an easy path for reporting shop floor information like production output, line performance, and quality results back into the ERP software. A set of connectors enables this bidirectional information flow, connecting to numerous systems:

- Plant automation systems from providers including Wonderware, Siemens, Rockwell Automation, and GE Fanuc
- Plant historians from providers such as Aspen Technology, OSIsoft, and Honeywell
- LIMS systems from providers including Beckman Coulter, LabSystems (Thermo Scientific), and PE Nelson
- MES systems from providers such as GE Fanuc, Visiprise, Apriso, Brooks, and Rockwell Automation

In addition, SAP xMII connects via BAPI/RFC, IDOC, or Web service to the SAP ERP application. In larger SAP landscapes, the SAP NetWeaver Exchange Infrastructure (SAP NetWeaver XI) component serves as a message hub between all systems. In those scenarios SAP xMII provides a set of connectors to move plant floor data to and from SAP NetWeaver XI, thus deeply extending the reach of SAP integration into the plant floor. This shared responsibility between a central message exchange instance for the whole landscape and a specific environment for the plant floor provides for minimal TCO on the corporate and plant level.

Modeling the User Interface

Serving as a composition tool for manufacturing applications, SAP xMII provides a wide range of visualization functionality for data gathered and analyzed from different services and data sources. This allows additional flexibility in choosing the right user interface (UI) for the composite manufacturing application without having to change any part of the service composition. There are several UI patterns available:

- Grids to display information in a tabular way
- Graphics to show trends in the form of lines, charts, and diagrams
- UI controls like gauges and meters to give an instant overview of shop floor data
- HTML elements and Java applets used in composite manufacturing applications

All these elements can be modeled into the UI without manual source-code entry. SAP xMII offers three options for how this UI displays in a framework:

- **Portal lite** is a direct, Web-based access through the SAP xMII portal pages. This is the option most frequently recommended for production personnel, since it involves only a Web browser or handheld device and no further infrastructure at the plant site.
- **Enterprise portal** allows display of all SAP xMII user interfaces in an SAP enterprise portal. This solution is recommended for existing SAP enterprise portal installations supporting a corporate user base and for users focused more on plant supervision than execution. The access to composite applications created by SAP xMII is purely Web based here as well.
- **Analytics UI** is for users mostly focused on analytic scenarios. The SAP xApp Analytics composite application focuses on the additional needs of analytical users, like drill-down and side-by-side comparisons of multiple analytical scenarios. SAP xMII supports the manufacturing execution side of those analytical scenarios by supporting this UI technology. This technology offers a richer set of functions but requires additional, rich client functionality for the user.

Achieving Flexibility Through Enterprise SOA

In SAP manufacturing solutions, the adoption of an enterprise service-oriented architecture plays a crucial role in gaining flexibility and improving performance. In an enterprise SOA, basic building blocks called services provide the framework on which an application is built. SAP xMII serves as counterpart by using and integrating those services to form the final application delivering the UI. By dividing responsibilities between more static services and a highly flexible environment to compose them, manufacturing applications gain the flexibility needed to adapt to changing business processes: a change or extension of the composite application requires only an exchange of the underlying service or inclusion of a new service. However, the main structure of the composite application in SAP xMII does not have to be changed.

Classic examples of services include "GetProductionOrders," delivered from an SAP ERP application, and "GetProductionResults," delivered from an MES system. In a manufacturing composite application, those services are combined and, together with the UI, form the manufacturing application, which, for example, could easily be enhanced with manufacturing metrics from a data warehouse. In manufacturing, SAP xMII plays the role of composition tool, as shown in Figure 3, combining ERP and plant-site services into an easy-to-use UI.

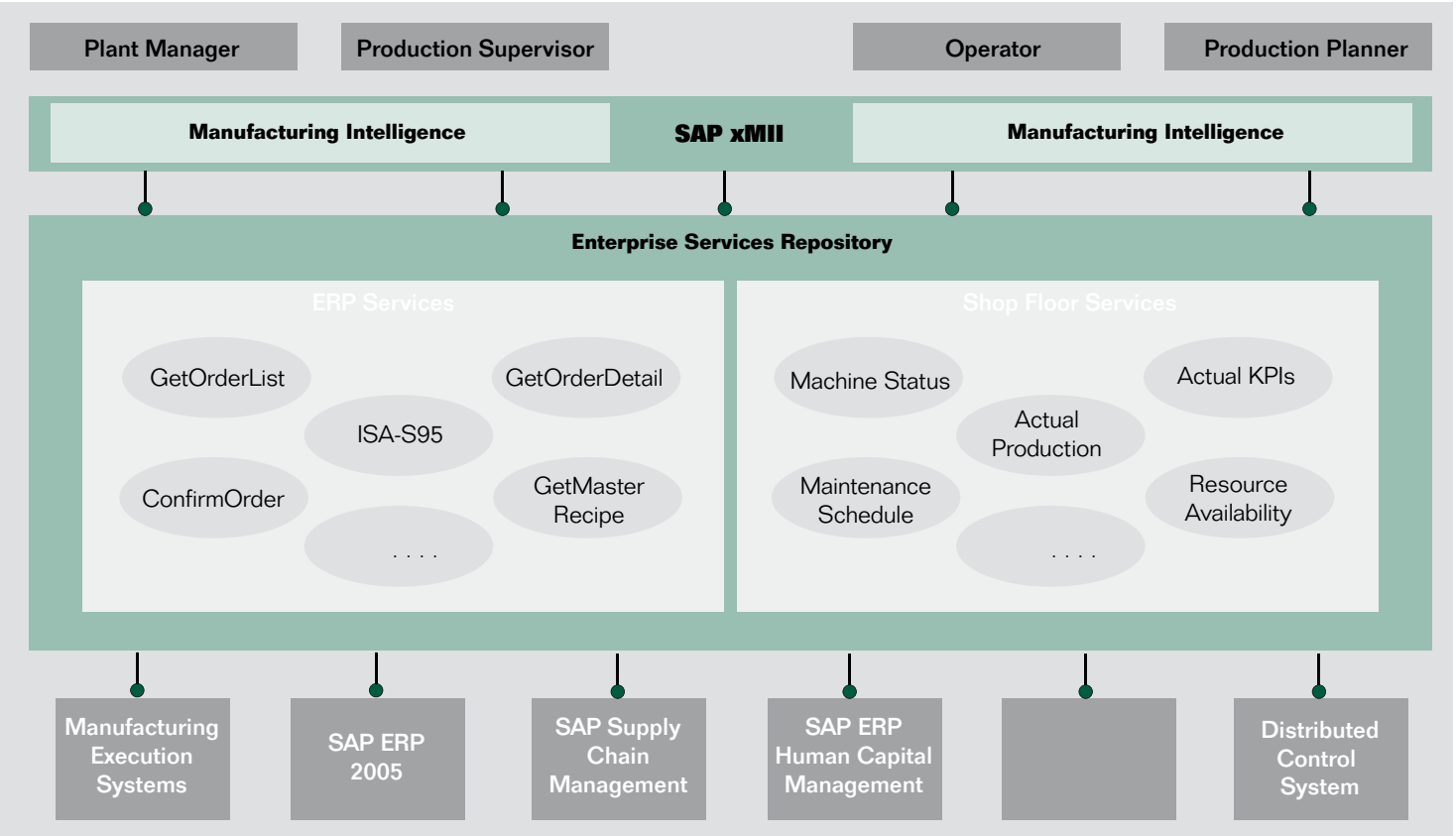

Figure 3: SAP® xApp™ Manufacturing Integration and Intelligence (SAP xMII) Composite Application from an Enterprise Service-Oriented Architecture Perspective

Modeling Workflow Using Composition Tools

As mentioned before, one of the key benefits of SAP xMII lies in its ability to combine data and services flexibly from different sources to form a manufacturing composite application. In today's manufacturing world, the constant changes in business processes make such flexibility increasingly valuable.

The SAP xMII composition tool uses a graphical modeling environment to create a business process or workflow that collects data from multiple services, combines it into a single view, and triggers the display of the user interface. A typical example is a workflow that reads data – like production output – from a plant floor system and combines that data with ERP data such as costing information to come up with a combined view of on-target versus actual production output with respect to cost. The information can appear as a gauge for shop floor personnel during production and as a more-detailed summary list for the shop floor supervisor. In addition, the data read from the machine is fed into an SPC analysis to provide a root-cause analysis of possible deviations. Daily summaries can be transferred to the SAP NetWeaver BI data warehouse for future production and budget planning. If an error condition occurs, an alert is triggered. This workflow can be completely modeled in the business logic services of SAP xMII, a process that a nontechnical user can perform, without any need for source-code creation. Figure 4 shows an example.

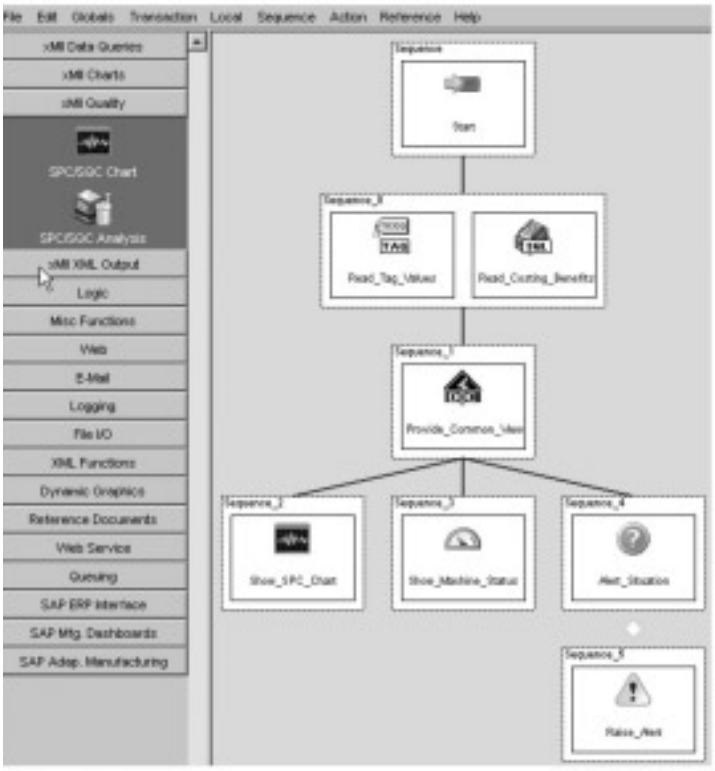

Figure 4: Example of a Workflow Modeled by Using SAP® xApp™ Manufacturing Integration and Intelligence (SAP xMII) Composite Application Business Logic Services

Since this workflow is modeled, the end user can build and change it in minutes rather than the hours it would take to engage IT resources.

Typical service building blocks include:

- Reading enterprise services from an enterprise service repository
- Transferring data to and from plant floor systems
- Transferring data to and from a data warehouse like SAP NetWeaver BI
- Transferring data to and from a Web service or another Web source
- Transferring data to and from Structured Query Language (SQL) databases
- Combining data from several sources into one new view
- Keeping a local copy of data for master data synchronization with other systems
- Transforming data from one format to a standard format understandable by a third system, like ISA-S95
- Performing analysis functions (calculations, Six Sigma) on data gathered
- Sending alerts and e-mails for workflows where a preconfigured error situation has occurred, such as a KPI running out of specification limits

Minimizing Implementation Time Through Extension to Other Systems

Since most manufacturing processes are discrete and plant specific, SAP xMII provides a set of extension functionalities to interact with other shop floor systems to minimize implementation time. By default, all workflows modeled in SAP xMII appear as Web services to other systems.

A typical example is an MES system sending production data back to an ERP system, where in the process of transmitting the data the different naming conventions for materials consumed and produced have to be taken into account. In this scenario the MES system sends its production results to SAP xMII, calling a workflow that acts as intermediary and enriches the output from the MES system, and mapping the material names to input that is expected by the ERP system.

SAP xMII also offers the ability to add custom action blocks in the business logic services. These actions can be provided by a partner or be developed by the customer using the kit included with SAP xMII. Shop floor partners can also add a connector to their systems, thus allowing SAP xMII to extract data from their systems automatically.

Deploying SAP xMII in Distributed or Centralized Scenarios

SAP xMII is a Java 2 Platform, Enterprise Edition (J2EE) application based on the SAP NetWeaver platform. It supports enterprise-level requirements in terms of failover and clustering. There are two basic patterns of deployment, depending on the implementation scenario.

In **distributed deployment**, SAP xMII is deployed at each plant site (see Figure 5). This is the most common deployment form for a scenario where SAP xMII is heavily used for shop floor data access and for creating composite applications for shop floor personnel. Each SAP xMII instance is connected to an ERP system or a data warehouse, usually located at a corporate level.

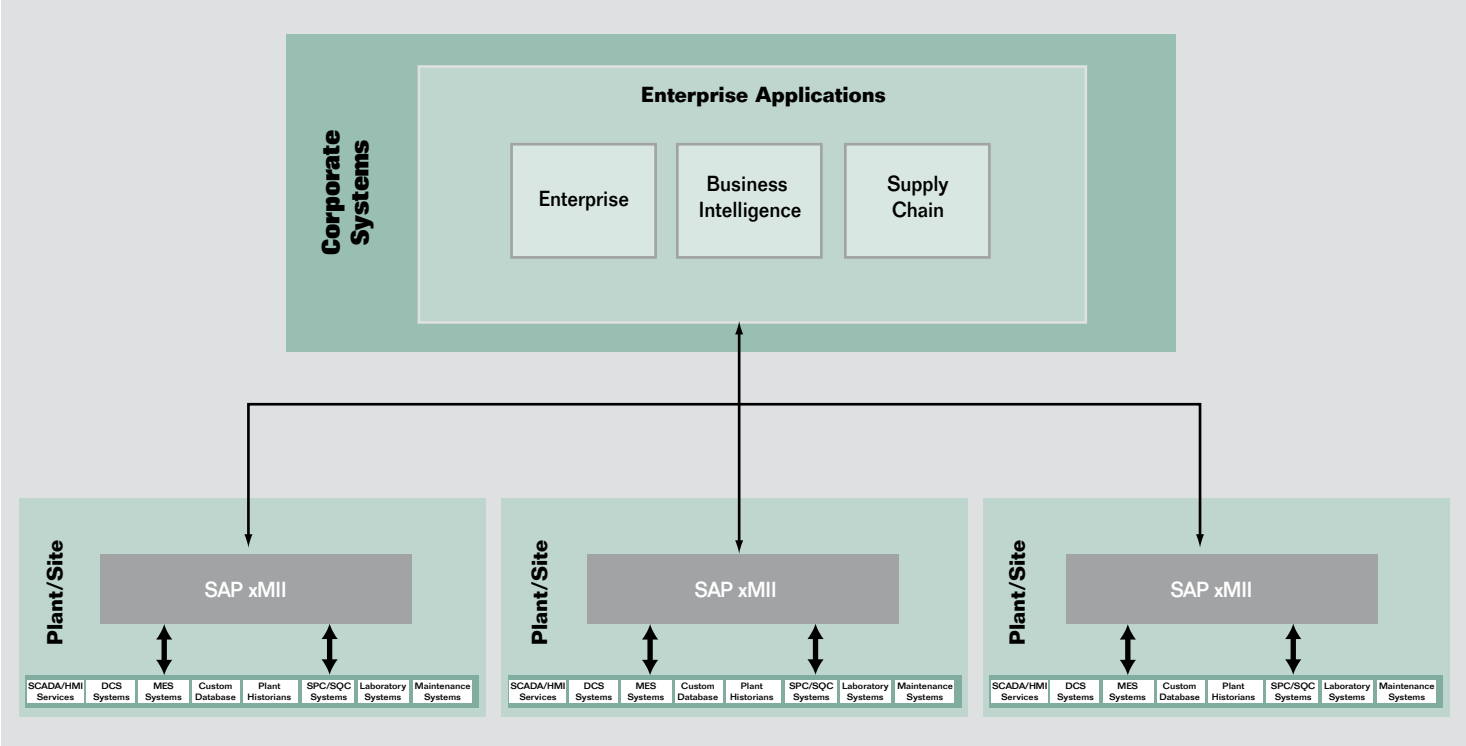

Figure 5: SAP® xApp™ Manufacturing Integration and Intelligence (SAP xMII) Composite Application Distributed Deployment

In **centralized deployment**, SAP xMII is deployed centrally at the corporate level (see Figure 6). This is the most common form when the role of SAP xMII is in integrating shop floor to enterprise systems for intelligence and dashboarding purposes or when the plant is too small to have its own IT infrastructure.

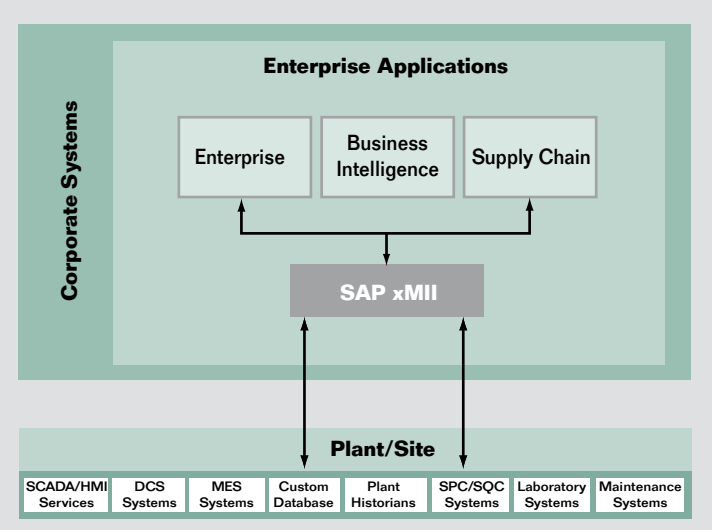

Figure 6: SAP® xApp™ Manufacturing Integration and Intelligence (SAP xMII) Composite Application Centralized Deployment

For larger landscapes in which applications exchange a high volume of messages, SAP xMII provides built-in functionality to support a dedicated message broker such as SAP NetWeaver XI. Figure 7 shows distributed deployment with centralized message management. Note that centralized deployment of SAP xMII can also use a message broker.

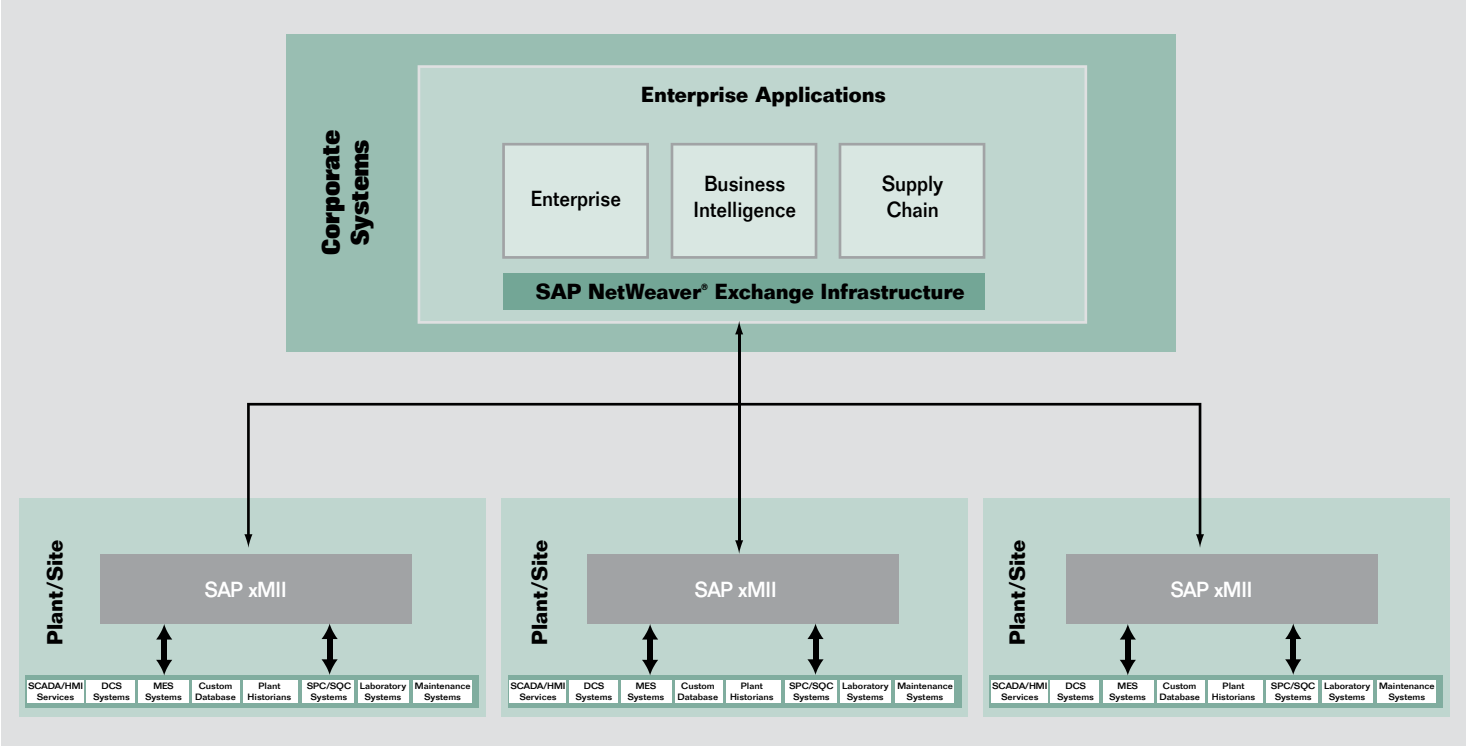

Figure 7: SAP® xApp™ Manufacturing Integration and Intelligence (SAP xMII) Composite Application Distributed Deployment with Message Management

BUSINESS BENEFITS FOR MANUFACTURERS

SAP xApp Manufacturing Integration and Intelligence provides these key benefits:

- Lower TCO
- Higher productivity from plant floor personnel with lower cost of information delivery
- Continuous improvement in processes and performance
- Higher asset utilization
- Faster time to value

Lower Total Cost of Ownership

Through prebuilt connectors providing tight integration with other components of SAP Business Suite, SAP xMII delivers a single layer of connectivity between enterprise software and the real-time plant floor. Manufacturers achieve higher ROI from their plant floor IT infrastructure.

Higher Productivity at a Lower Cost

By aggregating information from multiple systems, SAP xMII delivers actionable intelligence to plant floor personnel through alerts, reports, and KPIs. The rich, unified visualization of analytic information that SAP xMII provides within role-based, configurable dashboards increases productivity and lowers costs in many ways:

- Reduces cycle time
- Saves energy
- Minimizes inventory, rework, overtime, and expediting costs
- Allows rapid and cost-effective response to manufacturing exceptions

Continuous Improvement

Because SAP xMII delivers real-time analytics, it helps manufacturers achieve superior process performance. With SAP xMII, production personnel can do the following:

- Examine manufacturing process execution with near-real-time visibility
- Detect machine, material, labor, and quality problems before their customers do
- Monitor, measure, analyze, and control cost and target variances
- Balance manufacturing priorities against changing demand conditions to align with business objectives

Process improvements, including real-time quality measurement, result in cost-cutting quality improvements such as:

- Elimination of off-quality shipments
- Quarantine of poor-quality products
- Reduction of rework
- Better accuracy in advanced compensation techniques

In addition, SAP xMII helps leverage some new revenue opportunities:

- Delivery of quality metrics to customers
- Delivery of self-service information to customers
- Extension of quality metrics to customers and suppliers

Higher Asset Utilization

SAP xMII enables companies to benchmark and compare plants, lines, shifts, and equipment, leading to improved asset effectiveness.

Faster Time to Value

Companies can typically implement SAP xMII within 90 days per plant, delivering a fast ROI.

CURRENT AND FUTURE DIRECTIONS FOR SAP xMII

From a manufacturing intelligence perspective, there is a clear plan for deeper integration of SAP xMII with the SAP NetWeaver Visual Composer tool to deliver unified analytics leveraging SAP xMII as a back end in addition to SAP NetWeaver BI and other enterprise data sources. Equally important (and especially important in light of recent ERP strategy announcements), SAP xMII will provide comprehensive functionality to SAP ERP customers.

From an integration perspective, SAP xMII is the foundation of the plant-to-enterprise integration strategy. Deployment of SAP NetWeaver XI at the enterprise level further enhances SAP xMII functionality.

Our connectivity infrastructure is undergoing some very substantial enhancements in the coming year, with broad support for the OLE for Process Control Unified Architecture (OPC UA) standard, as well as significant new features to support event-based execution, event-driven activities, and connection to new types of devices (bar code/auto ID, gauging/measurement devices, and others). This will continue to expand the applicability of SAP solutions for manufacturing and other "real-world aware" applications.

The certification program for SAP NetWeaver composite for manufacturing has launched. This certification is for composites built with SAP xMII to extend SAP services to the shop floor. We currently have a number of shop floor partners and consulting partners actively developing SAP xMII–based composites.

Powered by SAP NetWeaver

SAP xMII is powered by the SAP NetWeaver platform. SAP NetWeaver unifies technology components into a single platform, allowing organizations to reduce IT complexity and obtain more business value from their IT investments. It provides the best way to integrate all systems running SAP or non-SAP software.

SAP NetWeaver also helps organizations align IT with their business. With SAP NetWeaver, organizations can compose and enhance business applications rapidly using enterprise services. As the foundation for enterprise SOA, SAP NetWeaver allows organizations to evolve their current IT landscapes into a strategic environment that drives business change.

For More Information

To learn more about how SAP xMII can help improve your manufacturing performance, contact your SAP representative or visit us online at www.sap.com/solutions/xapps/xmii/index.epx.

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