APPLIED FAB300®

MANUFACTURING EXECUTION SYSTEM (MES)

The only fab management system that integrates all MES functions into an extensible framework to deliver the speed, flexibility and cost savings critical for automated, high-volume manufacturing

Industries

- Semiconductor wafer manufacturing
- Semiconductor assembly and test
- Display manufacturing

Features

- Open architecture for keeping up with advanced technology
- Plug and play framework for simple addition of third-party software
- Workflow engine with drag-and-drop interface
- Reliable factory information and controls
- Easy integration with other Applied Materials' automation software products

Benefits

- Increases fab efficiency and lowers total cost of ownership
- Adapts rapidly to process and technology changes without stopping production
- Supports up to 300,000 wafer starts per month (WSPM)
- Allows scaling with additional hardware to meet manufacturing ramp
- Reduces process complexity: changes can be made in minutes instead of weeks or months
- Requires little or no downtime for upgrades
- Eliminates scrap, maintenance and headcount with automation
- Increases factory yield at startup

Challenges

Manufacturers today need an automation system that not only meets high-volume yields and profitability targets, but also supports updates to factory operations as the market changes. Traditional MESs lack the flexibility needed in key areas such as advanced wafer-level traceability, automated shop-floor control and process flows. In many factories, production monitoring is frequently managed through internally developed software without a common factory-wide automation framework. Business rules are often coded, requiring programming that is time-consuming and costly, and application integration is point-to-point, making the overall effort much greater.

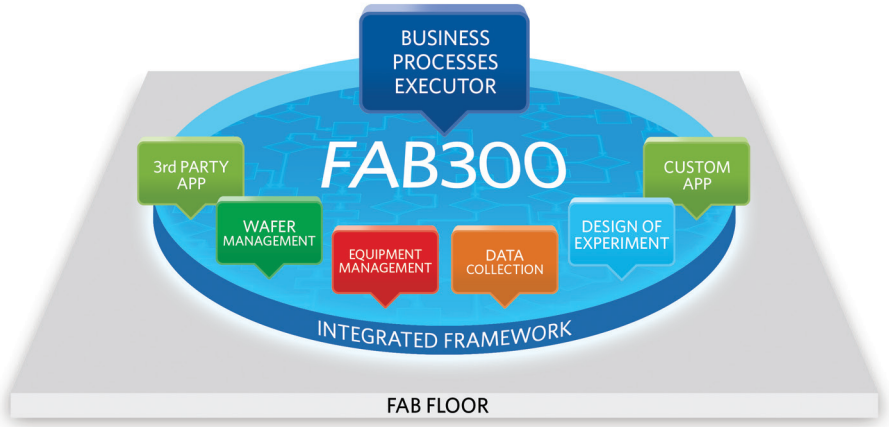
These challenges result in complex manufacturing environments that impede progress and make change management difficult and expensive. The lack of one platform impacts long term effectiveness and is inefficient and costly.

Solution Description

Applied FAB300 is a fab management system that offers a single environment for rapidly building a tailored, computer-integrated manufacturing solution based on standardized components. FAB300 supports wafer traceability, cluster tool models and advanced process controls, which are often lacking in traditional systems. For semi backend, FAB300 is the only MES that delivers die-level traceability from fab to packaging for over one billion parts per year.

INTEGRATION FRAMEWORK. FAB300 is the only MES with a fully automated, integration-ready framework that is proven to integrate with other factory applications, especially other Applied Materials products, including Applied E3™ (for automation scenarios and process control) and Applied APF RTD® (for real-time dispatching and reporting). This open framework combines FAB300 software, third-party applications, business applications and automation systems to achieve a total factory solution.

WORKFLOW MODELING ENVIRONMENT. FAB300 provides a graphical drag-and-drop interface that allows users to easily create workflow models and execute jobs, specific to business needs, without traditional programming. This environment ensures that customer intellectual property (IP) is in the data—maintained in workflow models—separated from the code and easily protected. Applied Materials supplies the components and building blocks, and customers own their processes and business IP.



The open, integrated framework of FAB300 allows fab managers to focus on proprietary business rules—not on programming.

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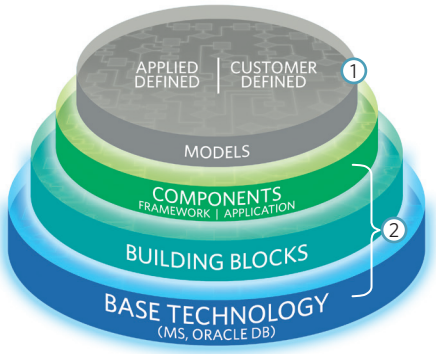
MANUFACTURING EXECUTION SYSTEM (MES)

FAB300 is built in four interconnecting software layers; engineers can use elements from each layer to extend system functionality:



1. Models provide changeable production scenarios in the data (this is what makes the factory so flexible and is central to the speed and simplicity that FAB300 delivers).
2. Components, building blocks and base technology provide common application functionality in the software.

MODELS. Allows engineers to create and execute business logic by defining models through the visual workflow engine, which contains all of the necessary components for engineers to write workflows and execute jobs.

COMPONENTS. Provides the workflow specification engine that models business processes.

BUILDING BLOCKS. Allows rapid construction of powerful applications that provide services to factory objects such as lots, wafers, equipment and reticles.

BASE TECHNOLOGY. Includes industry standard technologies, such as Microsoft and Oracle, which provides database, messaging and transactions software for application functionality. To meet the needs of high volume manufacturing, FAB300 is Oracle Exadata Ready (Oracle Linux 5.5 and Oracle Database 11G R2).

Customer Results

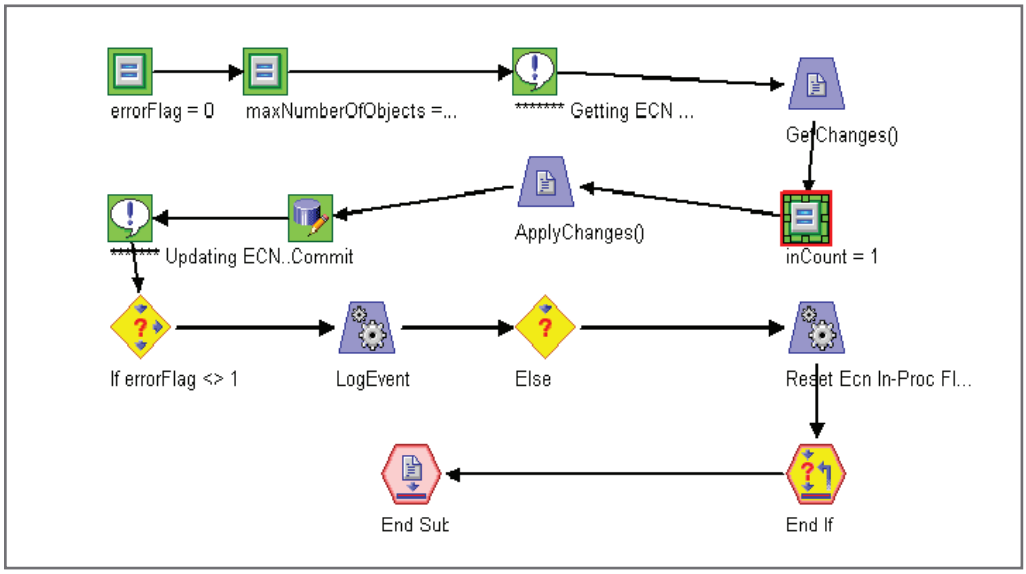
Deployed at major 300mm and 200mm semiconductor facilities, FAB300 is a proven player in highly automated factories. One customer cited that **no factory impacts** due to FAB300 were experienced in any of their 300mm factories **for a full year**. Historical data from FAB300 implementations at customer sites have also consistently shown:

> Support for up to **300,000** 300mm wafer starts per month

> The ability to perform rolling upgrades with **no downtime** or impact to the factory

FAB300 Capabilities for Improved Manufacturing Efficiency

Current Challenges	FAB300 Solution	FAB300 Advantage
Application integration is point-to-point—the overall effort is larger and slower	**Open integration framework**	Connects MES functions, 3rd party applications, business applications, and equipment and automation systems in **less time**, with **less risk** and at **lower cost**
Changes to business rules require complex programming	**Configurable and extensible workflow engine**	Simplifies **quick changes** in business processes in minutes—not months; ensures that complex, distributed business processes are executed correctly and completely
High-volume yield and profit-ability targets must be met while supporting updates to factory operations	**Reliability built into the system**	Supports up to **300K wafer starts per month** and is able to recover with **zero downtime** from failure of a single node
High lifecycle and support costs	**Standards-based architecture**	Eliminates need for branching or custom versions, which is easier to maintain; facilitates rolling upgrades to **lower transition** and **support costs**



With the FAB300 workflow engine, engineers can build workflows, which are represented as a flow chart, using a pallet of services. These flow charts consist of steps that call applications to accomplish specific tasks.

APPLIED GLOBAL SERVICES

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