



SIMATIC IT Unified Architecture Foundation

The foundation for optimizing manufacturing execution processes

Answers to market demands

Digitalization is revolutionizing our economy and business models. Customers are increasingly able to tell manufacturers directly – via the internet – exactly what they want and when.

To address this challenge, manufacturers need to significantly reduce their time to market while massively increasing flexibility to enable individualized mass production, and reduce energy and resource consumption while doing so. Solutions to address this challenge are developed by initiatives such as the Internet of Things and Industrie 4.0.

MES/MOM overview

Siemens helps manufacturers become Digital Enterprises by enabling them to digitize and integrate their entire industrial value chain through PLM solutions, Manufacturing Execution System (MES)/ Manufacturing Operations Management (MOM) solutions and TIA equipment. MES/MOM is the core element linking PLM to shop floor automation and providing manufacturers with a real-time industry software layer. Siemens' MES, QMS, APS and HMI solutions are part of its MOM system, which is a holistic approach to improving manufacturing operations performance and consolidating the management of production execution, sequencing, nonconformance handling and end-to-end quality within one system.

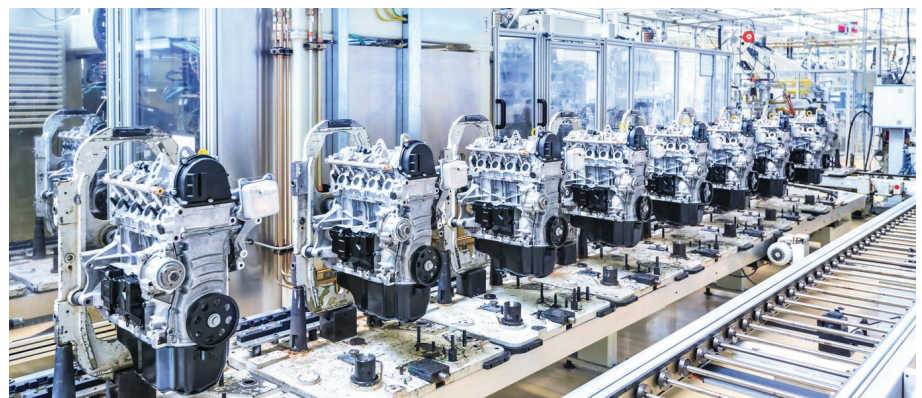
Siemens MOM solutions standardize and optimize manufacturing processes to minimize lead times, optimize asset utilization, reduce global time-to-market and increase production visibility and responsiveness.

SIMATIC IT Unified Architecture Foundation

SIMATIC IT Unified Architecture Foundation (SIT UA Foundation) is a platform for creating an integrated MOM ecosystem, targeting the current and future transformational technologies that are shaping the future of manufacturing: mobile internet, automation of knowledge work, the Internet of Things, and the Cloud.

At the core of SIT UA Foundation is a unified manufacturing operations data bus that provides a common backbone for the integration of legacy applications while providing the first fundamental step towards a unified integrated system. In a nutshell, SIT UA Foundation is:

- The platform approach to creating a Manufacturing Operations Management strategy
- The core element for executing, tracking and monitoring production progress and performance
- The data bridge between PLM and Shop Floor Automation, to create the Digital Enterprise



SIMATIC IT Unified Architecture Foundation cornerstones

Product overview

SIMATIC IT Unified Architecture Foundation (SIT UAF) is a platform for building, running and managing a modern Manufacturing Operation Management (MOM) web application for a rich and fluent user experience.

User interfaces (UI) are HTML5 single-page applications running in a web browser. Data, services and events are exposed to the web through lightweight standard web services consumed by application UIs or external systems. Logics are executed in a distributed execution environment, designed to run on small- to large-scale computing hardware. Data is persisted in a standard Relational Data Base Management System (RDBMS).

SIT UAF is constructed around Domain-Driven Design (DDD). Application data, services and events are defined by a model setting out the application structure and exposed as meta-data at any layer.

SIT UAF features an event-driven Service Oriented Architecture (SOA). Its application is composed of modular functional blocks, deployed and managed by the execution environment, intercommunicating with events and messages. This architecture allows modular application management, thus facilitating functional expansion. Events can be pushed from the application until the web client

notifies users. SIT UAF is designed to scale up, to ensure a high level of performance throughout the application life cycle, supporting a growing load of users and data as well as expansion on a functional level.

SIT UAF includes common MOM components and services for connecting external systems, aggregating and exposing data; defining plant models and connecting the underlying automation data and systems; the UI editor combines automation and operational data (application data and external system data) that can be mashed with external system web UIs.

Main functionalities

SIMATIC IT Unified Architecture Foundation (SIT UAF) offers several functional modules. The project studio module, for application developers, is used to create functional blocks. It includes a modeling tool, a .Net programming environment for developing application logic and an HTML5 java script framework for creating User Interface (UI) components and modules. The HTML5 java script framework comes with a rich library of UI widgets, designed for Manufacturing Operation Management (MOM) applications and natively integrated with the modeled domain. Project studio allows the packaging of functional blocks in distributable files.

The Solution studio module, for system administrators and integrators, is used to set up and deploy solutions in execution environments. It includes a function for installing functional block packages, defining end user UI modules, mashing up UI components and external web components in solution-specific UI modules; setting up the execution environment and finally deploying the solution.

The deployment function deploys web services and application logic on every node of the execution environment and maintains database structure (SIT UAF supports both SqlServer and Oracle database).

Common MOM components and services are integrated to offer additional functions: User management and security management, Plant model management, Automation data connectors (drivers for Siemens automation systems are included), Software Development Kit (SDK) for connecting other automation systems, Human Machine Interface editor.

Other system modules provide additional functions. The event manager provides a function for advanced event and signal management.

SIT UAF includes predefined functional blocks to manage, track and trace all manufacturing activities with an advanced manufacturing task management system.



Find out more

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