



SIMATIC IT R&D Suite

Driving innovation efficiency

SIMATIC IT R&D Suite

Answers for industry.

SIEMENS

SIMATIC IT Integrating R&D and Manufacturing

Driving excellence into the manufacturing enterprise

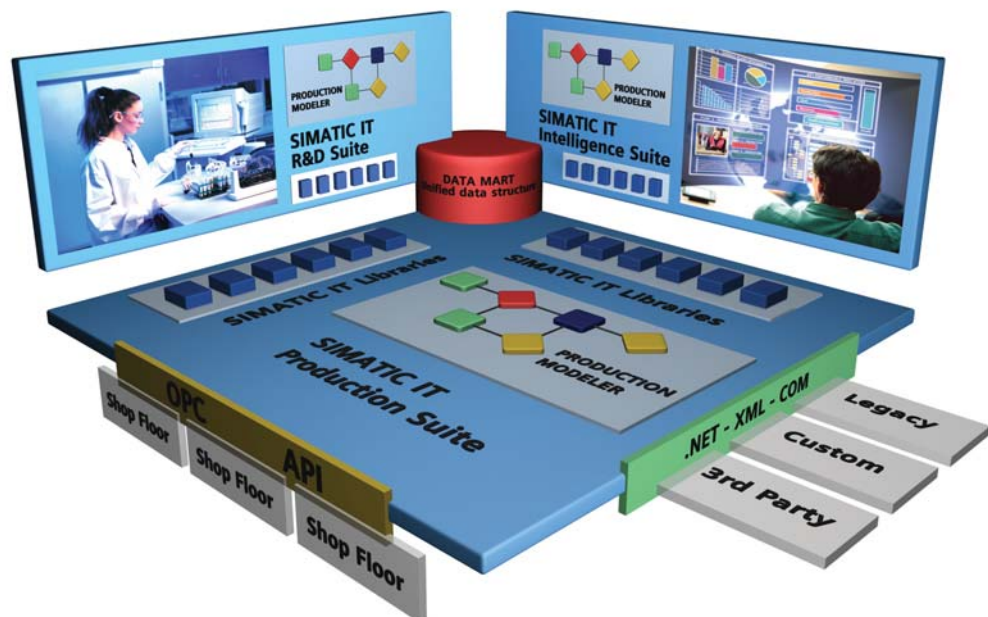
With SIMATIC IT, Siemens is broadening the scope of MES. Plant IT solutions must be based on a strong technology platform, compatible with the enterprise's IT infrastructure, flexible and scalable at the same time.

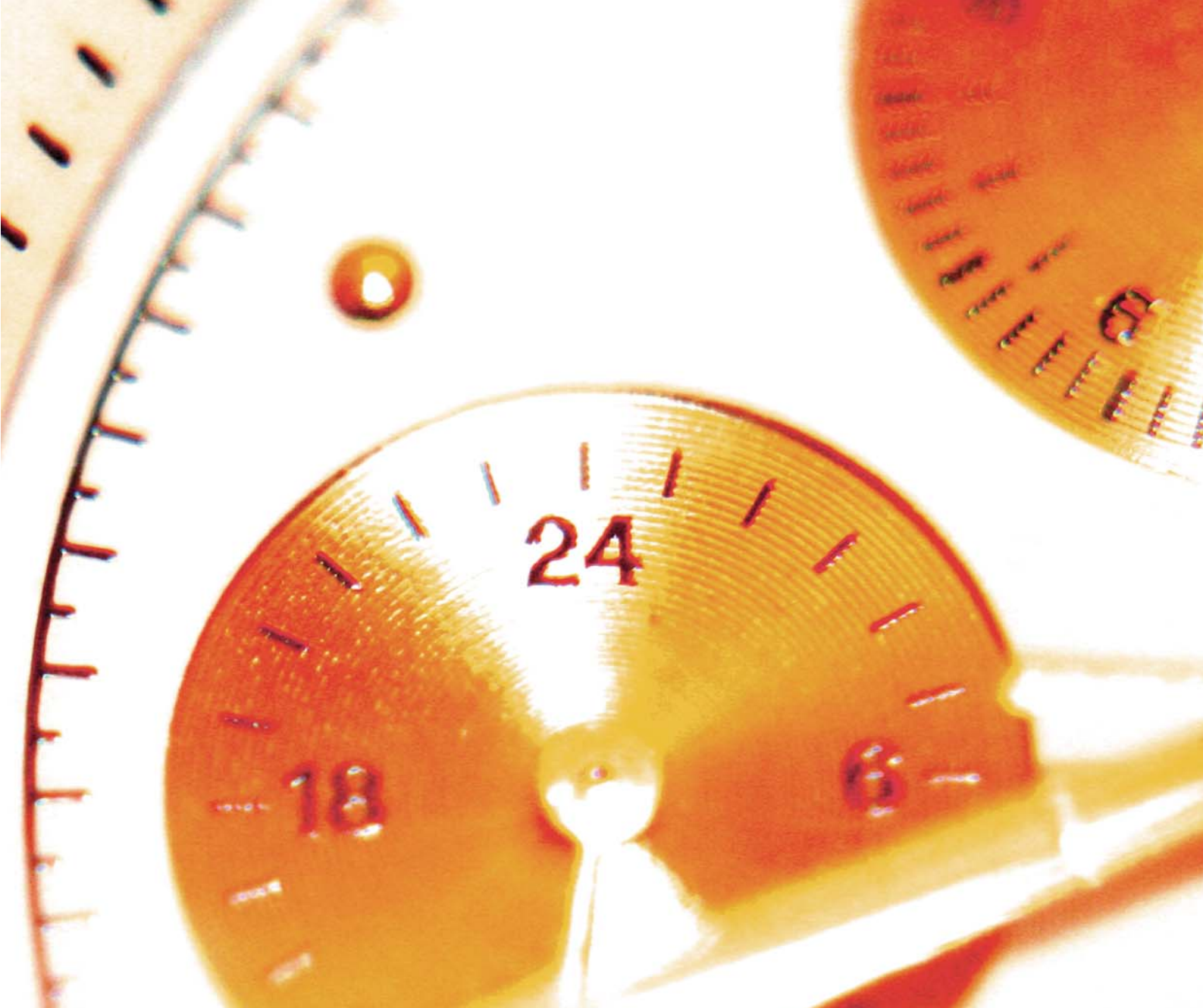
But IT increasingly has to enable the integration of processes and systems over divisions of a plant and various – or all – plants in the enterprise, synchronizing manufacturing processes with business processes and complex supply chains. The SIMATIC IT portfolio can cover these requirements offering the platform to achieve the real-time enterprise.

SIMATIC IT Production Suite is the plant-centric IT solution covering all manufacturing needs.

SIMATIC IT Intelligence Suite makes the real-time enterprise possible, translating critical, real-time manufacturing information into business-level performance indicators.

SIMATIC IT R&D Suite streamlines R&D and Manufacturing processes, and enables seamless transition of product data and definitions through the entire manufacturing process by integrating R&D labs with the plants.





R&D to the Center Stage

The drive for growth and the increasing competitive pressure of the Global Economy are pushing companies throughout the process industry to put a strategic focus on the continuous search for new innovative products.

These challenges have promoted the industrial Research and Development function to the center stage and leading edge, where it is fast becoming the key driver of a company's commercial success.

As consumer demands are becoming more complex and varied, product life-cycles are getting shorter and regulatory compliance issues heavily influence processes and system infrastructures. In this complex world, there is a lot of room for

improvement in reducing the failure rate of new product introductions, the amount of missed market and growth opportunities. Today, successful companies are those who combine timely and insightful product innovation with a fast global time-to-production and hence time-to-market.

As such, more and more business executives realize that there's a pressing need to streamline their R&D processes, and define a platform allowing an easy and consistent transfer of the final product designs to the involved manufacturing plants around the globe. Integration of R&D and Manufacturing is becoming more and more a basic business requirement.

Siemens understands these challenges and offers SIMATIC IT R&D Suite for efficient innovation.

SIMATIC IT R&D Suite

Capitalize on R&D potential

By offering innovative products onto the market, fast and at a fair price, manufacturers can gain a true competitive edge that creates the necessary revenue to fuel further innovation. Only when a company is able to secure a leadership position in this way, is it able to create a platform for sustainable profitability needed to invest in fundamental research. Innovation and manufacturing efficiency is the key to success.

The cornerstone for a successful R&D strategy

SIMATIC IT R&D Suite allows companies in process industries to capitalize on their R&D potential and develop new products faster. SIMATIC IT R&D Suite offers a scalable and flexible platform to streamline, optimize, and align all R&D related processes with manufacturing. It keeps the product designs and processes well in-line with quality and regulatory requirements. The smooth integration and alignment of R&D and manufacturing data and processes drastically speeds up the transfer of final product designs to mainstream manufacturing.

Typical R&D activities such as project management, formula and packaging development, trial and experiment management, and production process design require an integrated set of best-in-class components ranging from electronic notebooks to laboratory management over specification management to batch and inventory management, pilot plant manufacturing and the like. Key functionalities like regulatory compliance and support for the Intellectual Property process have to be part of such a common platform.

Suiting Customer Requirements

SIMATIC IT R&D Suite is a well-considered answer to the real-life requirements expressed by existing SIMATIC IT customers. Major players in the process industry voiced their interest and need for a platform that would manage their entire R&D process in a structured, yet flexible manner, starting from a new project in research and development right up to the final product design, and smoothly transfer this to the manufacturing area.

Siemens believes that with the SIMATIC IT R&D Suite, it has a strong and unique market offering for the R&D space in the process industry.

Common architecture for R&D and Manufacturing

To achieve coexistence of best-in-class functionality, integrated workflow and configurable flexibility, SIMATIC IT R&D Suite is based on the standard SIMATIC IT Framework and Components:

- **SIMATIC IT Modeler** – for the configuration and coordination of cross-component activities and interactions with Design, Quality, MES, ERP and other Business Systems
- **SIMATIC IT Interspec** – for corporate-wide and individual product specification management supporting the needs of multi-site and multi-language environments, and supplying the necessary data to the operational systems like ERP, MES and LIMS
- **SIMATIC IT Unilab** – Laboratory & Quality Information Management System to manage the workflow in laboratories, optimizing collection, analysis and reporting of quality data in the lab and on the production line
- Other **SIMATIC IT Components** like Material Manager, Product Definition Manager, Report Manager, Historian, ...
- **SIMATIC IT Client Application Builder (CAB)** – to build specific user interfaces in a flexible way. This results in role-based screens that capture the specific business processes and use integrated functionality from different SIMATIC IT as well as third party components.
- **SIMATIC IT Data Integration Service** – for the integration of third party applications by means of standard technologies.
- **SIMATIC IT Product Definition Manager** defines all arguments for the production of a specific product

Manufacturers benefit from the unique modeling capabilities of SIMATIC IT leveraging standard components with the highest level of reusability. This not only reduces TCO and improves ROI but makes it easy to adapt the IT solution as processes change, new products are introduced and legal directives become stricter.

Specific R&D focused functionality comes in SIMATIC IT Cross Industry Libraries (CIL), which are designed and defined to meet industry specific customer requirements, without compromising flexibility or standardization. These Cross Industry Libraries do not require a fully installed SIMATIC IT solution to realize their wide benefits.

Electronic Lab Notebook (ELN)

Provides targeted functionality to make sure that every researcher has the full freedom to easily capture all data of any type of experiment or report in electronic format.

Contextual handling of raw data, experimental details, and test results can be configured according to the corporate policy whilst allowing complete flexibility for annotations and additional activities.

It allows cross-references between projects and links the phases of the defined State Transition Diagram with the business rules in SIMATIC IT Production Modeler to automate the process as much as possible.

Other information that needs to be captured or shown during certain process steps is presented to the notebook user by means of configurable forms that she or he needs to fill in. These forms can either be fixed, or the user can be allowed to dynamically add in other fields at runtime, based on his user profile. Data validation checks ensure that the complete process is managed in an integrated and secure manner.

Formula Workbench

Provides the creative environment to manage large numbers of prototypes in a workbench and supports trials and experiments to introduce and verify new formulas, raw materials, packaging materials, ingredients, manufacturing process designs, and test designs. The results of those are stored together with associated documentation and objects in a searchable way, available for future re-use.



Structured Flexibility

- **Structured and optimized collaboration**
- **Reduced complexity, increased flexibility**
- **Global Harmonized Specification Management**

SIMATIC IT R&D Suite enables collaborative product development within and across different R&D sites, both locally and around the globe, by taking care of the complex, day to day technical information transactions and flows between R&D teams and sites on a local, regional and/or global scale through a mechanism of integrated workflows. It allows sharing data from specialized silos making it available for cross-disciplinary collaborative analysis and getting it aligned with the supply chain and manufacturing by enforcing common standards and data integrity rules.

All data is stored in a single federated repository with fine-grained data access mechanisms and appropriate security measures. This repository is the R&D reference for the enterprise, and is linked and integrated in all involved processes. As the SIMATIC IT R&D Suite is fully

capable of capturing and assuring the integrity of all data, its repository is for example used to feed and support the IPR process.

SIMATIC IT R&D Suite covers the actual product development and the design of specifications and production processes, respecting product quality requirements, and ensuring compliance of applied processes and final product designs and formulas, not only with the business requirements but also with the applicable industry regulations and standards.

The integrated global specification management system ensures the distribution of accurate and up-to-date information without time-consuming and error-prone manual or inter-system data transfers. This increases responsiveness and efficiency, results in less complex R&D processes, and helps to speed up the transfer from R&D to manufacturing.



Integrated Innovation

- **Reduced R&D time and costs**
- **Less failures and faster time-to-market**
- **Integrated R&D and manufacturing processes**

SIMATIC IT R&D Suite handles new product development from the very start when the R&D manager sets up a new project in the R&D Suite. The Electronic Lab Notebook offers each individual researcher the freedom to conduct experiments in the best suitable way.

It captures and deposits observations and comments, either directly, in a structured way or through specific niche applications that can be integrated easily by dragging and dropping.

The Electronic Lab Notebook offers a full audit trail and access control for all data captured and deposited within a specific experiment. This facilitates intellectual property management and drastically speeds up the patent application process.

Knowledge from previous experiments, both successful and abandoned, is available for re-use from the central

data repository avoiding duplication of experiments.

SIMATIC IT R&D Suite provides a complete and scalable offering for the R&D activity; and allows for straightforward alignment and synchronization of R&D results with SIMATIC IT Production Suite.

As such, SIMATIC IT R&D Suite is in line with Siemens overall Totally Integrated Automation (TIA) concept, and realizes the true alignment and integration of R&D and Manufacturing processes covering the complete cycle – from the initial R&D project to the produced commercial product.

SIMATIC IT R&D Suite

Driving Innovation Efficiency

SIMATIC IT R&D Suite completes the success story of SIMATIC IT and TIA (Totally Integrated Automation). SIMATIC IT is a scalable, modular and open Manufacturing Execution System with a broad range of functionality, and a component based approach enabling total integration. SIMATIC IT R&D Suite streamlines R&D and Manufacturing processes, and enables seamless transition of product data and definitions throughout the entire manufacturing process by integrating R&D labs with the plants.

SIMATIC IT R&D Suite offers manufacturers in process industries:

- Efficient and streamlined R&D processes
- Optimized New Product Development and Introduction (NPDI) process and activities, faster and at lower cost
- Alignment of R&D and Manufacturing; resulting in less errors, faster time-to-market and structural savings
- Reduced complexity; increased flexibility, control and collaboration in product development and manufacturing
- Enterprise-wide data consistency
- Intellectual Property Protection
- Regulatory compliance
- Leverage on existing investments in SIMATIC IT and SIMATIC

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