SIEMENS

DIGITAL INDUSTRIES SOFTWARE

Opcenter RD&L

Driving innovation efficiency in formulated product design

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R&D to center stage

Integration of R&D and manufacturing is becoming more and more a basic business requirement.

The drive for growth and the increasing competitive pressure of the global economy are pushing companies throughout the process industry to strategically focus on the continuous search for new innovative products. These challenges have promoted the industrial research and development (R&D) function to the center stage and leading edge, where it is fast becoming the key driver of commercial success.

As consumer demands are becoming more complex and varied, product lifecycles are getting shorter and regulatory compliance issues heavily influence processes and system infrastructures. In this complex world, there is much room for improvement in reducing the failure rate of new product introductions and 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 time-to-market.

More and more business executives realize that there is a pressing need to streamline their R&D processes and define a platform that enables easy and consistent transfer of the final product designs to 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 Opcenter™ RD&L software for efficient innovation.

Integrating R&D and manufacturing

Driving excellence into the manufacturing enterprise

With the Opcenter portfolio, Siemens is broadening the scope of manufacturing execution systems (MES). Plant information technology (IT) solutions must be based on a strong technology platform that is compatible with the enterprise's IT infrastructure, flexible and scalable.

IT increasingly must 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 Opcenter portfolio can cover these requirements with a platform for the real-time enterprise.

Opcenter Execution Process is the plant-centric IT solution covering all manufacturing needs. Opcenter Intelligence makes the real-time enterprise possible, translating critical, real-time manufacturing information into business-level performance indicators.

Opcenter Research Development and Laboratory (RD&L) 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 plants.

Opcenter RD&L: Capitalize on R&D potential

Siemens Opcenter RD&L is a carefully designed answer to the real-life requirements of customers

By offering innovative products to the market quickly and at a fair price, manufacturers can gain a true competitive edge that creates the necessary revenue to fuel further innovation. When a company secures a leadership position in this way, it can create a platform for sustainable profitability needed to invest in fundamental research. Innovation and manufacturing efficiency are the keys to success.

The cornerstone for a successful R&D strategy

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

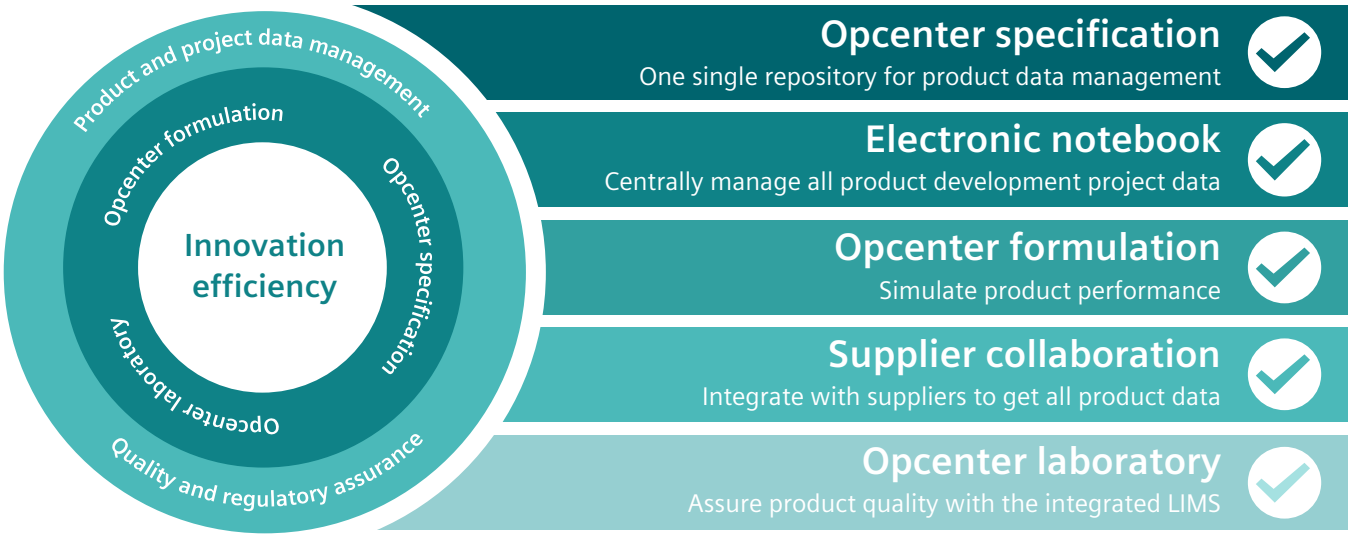
Typical R&D activities such as project management, formula and packaging development, trial and experiment management, and production process design require an integrated set of best-in-class components ranging from electronic notebooks to laboratory and specification management, to batch and inventory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

Addressing customer requirements

Siemens Opcenter RD&L is a carefully designed answer to the real-life requirements of customers. Major players in the process industry voiced their interest and need for a platform that would manage the entire R&D process in a structured, yet flexible manner, starting from new projects in research and development right up to the final product design, and smoothly transferring this to manufacturing.

With Opcenter RD&L, Siemens has a powerful and unique offering for R&D in process industries.

Common architecture for R&D and manufacturing



With best-in-class functionality, integrated workflow and configurable flexibility, Siemens Opcenter RD&L is a unified, integrated platform based on latest technological standards. The result of this innovation is a solution comprising six components working closely together in a single platform that enables customers to create a digital thread from idea generation to production startup:

Specification management is a single point of reference for managing the individual and corporate-wide detailed specifications of raw materials, intermediate products, semi-finished and finished products, packaging materials, utilities and others. This multi-site and multi-language environment supplies operational systems like enterprise resource planning (ERP), MES and laboratory information management systems (LIMS) with data such as product characteristics, quality norms and methods, recipes, nutritional values and statements, production methods and the like.

Electronic lab notebook (ELN) supports the electronic management of project-related data in a notebook structure with a high level of flexibility and stringent data security rules.

Formula workbench supports researching and development of new formulations based on current and new raw materials, taking into account regulatory constraints, consumer expectations, supply chain constraints and company vision. Simulation of product performance (cost, nutritional profile, allergen levels, viscosity, etc.) is an important aspect.

Supplier collaboration involves suppliers in the raw material and packaging management processes, linking them directly to the digital thread of product development. Collaboration is triggered by a simple request-and-response mechanism. Suppliers have the responsibility to continuously update their raw material and package specification data, resulting in reduced administrative effort for the manufacturer.

Laboratory information management system (LIMS) covers the test execution process in R&D labs and quality assurance and control (QA/QC) labs by managing the workflows and optimizing collection, analysis and reporting of quality data in the lab and on the production line. The results of R&D-related product testing help formulators adapt and optimize formulations.

Structured flexibility

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

All data is stored in a federated repository with fine-grained data access mechanisms and appropriate security measures. This repository is the specification reference for the enterprise and is linked and integrated in all involved processes. Opcenter RD&L captures and safeguards the integrity of all data.

Opcenter RD&L covers the actual product development and the design of specifications and production processes, respecting quality requirements and ensuring compliance of applied processes and final product designs and formulas – not only with business requirements but also with industry regulations and standards.

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

Knowledge from previous experiments, both successful and abandoned, is available for re-use from the central data repository to avoid duplication of experiments.

Integrated innovation

Opcenter capabilities

Siemens offers its harmonized manufacturing operations management solutions in one portfolio, Opcenter, to enable digital transformation of manufacturing. The portfolio encompasses integrated MOM capabilities, including advanced planning and scheduling, manufacturing execution, quality management, manufacturing intelligence and performance, and formulation, specification and laboratory management. Opcenter consolidates legacy solutions using best-in-class technologies that help customers meet demands for production efficiency, quality, visibility and reduced time to production. Opcenter adds value by incorporating benchmark technologies and industry-specific capabilities that are easy to deploy, configure, extend and integrate with other systems across the value chain, including product lifecycle management, enterprise resource planning and shop floor automation solutions for closed-loop manufacturing. Opcenter delivers a holistic solution that enables manufacturers to implement strategies for the complete digitalization of manufacturing operations. The portfolio serves major players in industries such as aerospace and defense, automotive, industrial machinery, heavy equipment, chemicals, consumer packed goods, food and beverage, life sciences, electronics, semiconductor and medical devices.

Opcenter RD&L handles new product development from the very beginning, as R&D managers set up new projects. The Electronic Notebook offers each researcher the freedom to conduct experiments in the most 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 Notebook offers a full audit trail and access control for all data captured and deposited within a specific experiment. Knowledge from previous experiments, both successful and abandoned, is available for re-use from the central data repository to avoid duplication of experiments.

Opcenter RD&L provides a complete and scalable offering for R&D and allows for straightforward alignment and synchronization of R&D results with Opcenter Execution Process MES.

Opcenter RD&L 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.

Siemens Digital Industries Software helps organizations of all sizes digitally transform using software, hardware and services from the Siemens Xcelerator business platform. Siemens' software and the comprehensive digital twin enable companies to optimize their design, engineering and manufacturing processes to turn today's ideas into the sustainable products of the future. From chips to entire systems, from product to process, across all industries, Siemens Digital Industries Software is where today meets tomorrow.

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