

# **QES<sup>®</sup>** **QUALITY** **EXECUTION** **SYSTEM**

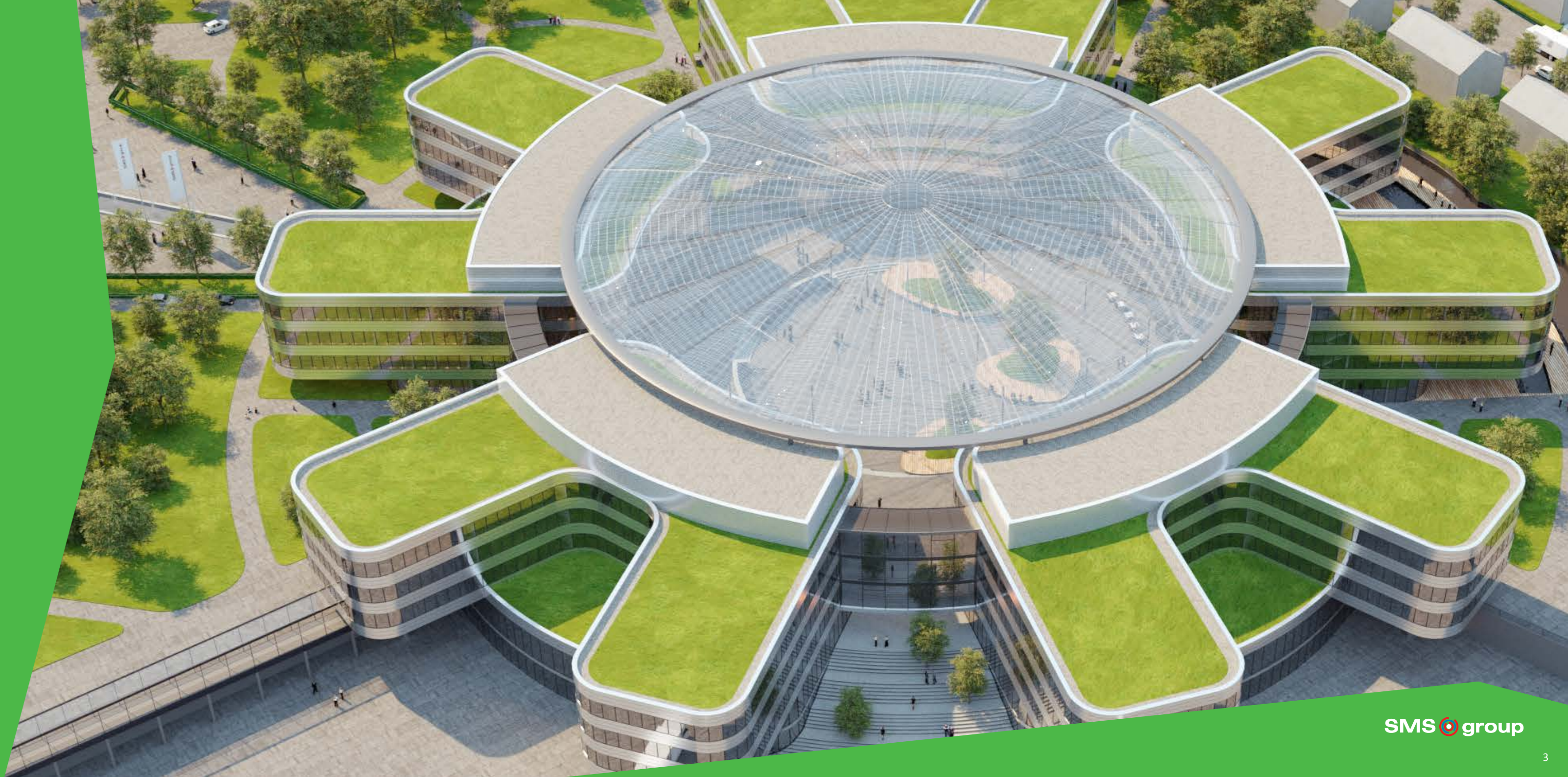
**Predictive Product Quality**

# LEADING PARTNER IN THE WORLD OF METALS

## SMS group going digital

SMS group is renowned worldwide for its future-oriented technologies and outstanding service for the metals industry. We combine 150 years of experience and digital know-how to provide the industry continuously with innovative products and processes. SMS group is the right partner for challenging projects and supports its customers throughout the lifecycle of their plants.

As the digital unit of SMS group, SMS digital develops innovative solutions in the field of digitalization. With our digital applications, we lift your plants and machines into the world of Industry 4.0. Our unique approach of bringing together domain expertise, software, and advanced analytics helps you to meet the challenges of the industry, producing sustainably and efficiently while conserving resources at the same time.



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# QES - A HOLISTIC SUITE OF QUALITY ASSURANCE APPLICATIONS

## DATA INTEGRATION

## AUTOMATIC PRODUCT GRADING & RELEASE

## DATA CORRELATOR

## STATISTICAL PROCESS CONTROL

## ASSIGNMANAGER

- › Claims verification
- › Customer order change feedback
  - › Automatic grading with SAP / Rework feedback
  - › Laboratory conclusions
  - › Process improvements
  - › Know-how preservation
  - › Quality improvement workgroups
  - › Yield optimization
  - › Coil exception processing
  - › Root cause analysis
  - › Test coils and heats
  - › Steel grade development

# PIONEERING QUALITY MANAGEMENT

QuinLogic is the pioneer and leading technology provider for quality management software in the metals industry. With QES QuinLogic sets the standard for state-of-the-art quality management, while ensuring highest competitiveness for customers in ever more demanding markets.

# PREDICTIVE QUALITY MANAGEMENT WITH QES

## Automatic coil release you can rely on

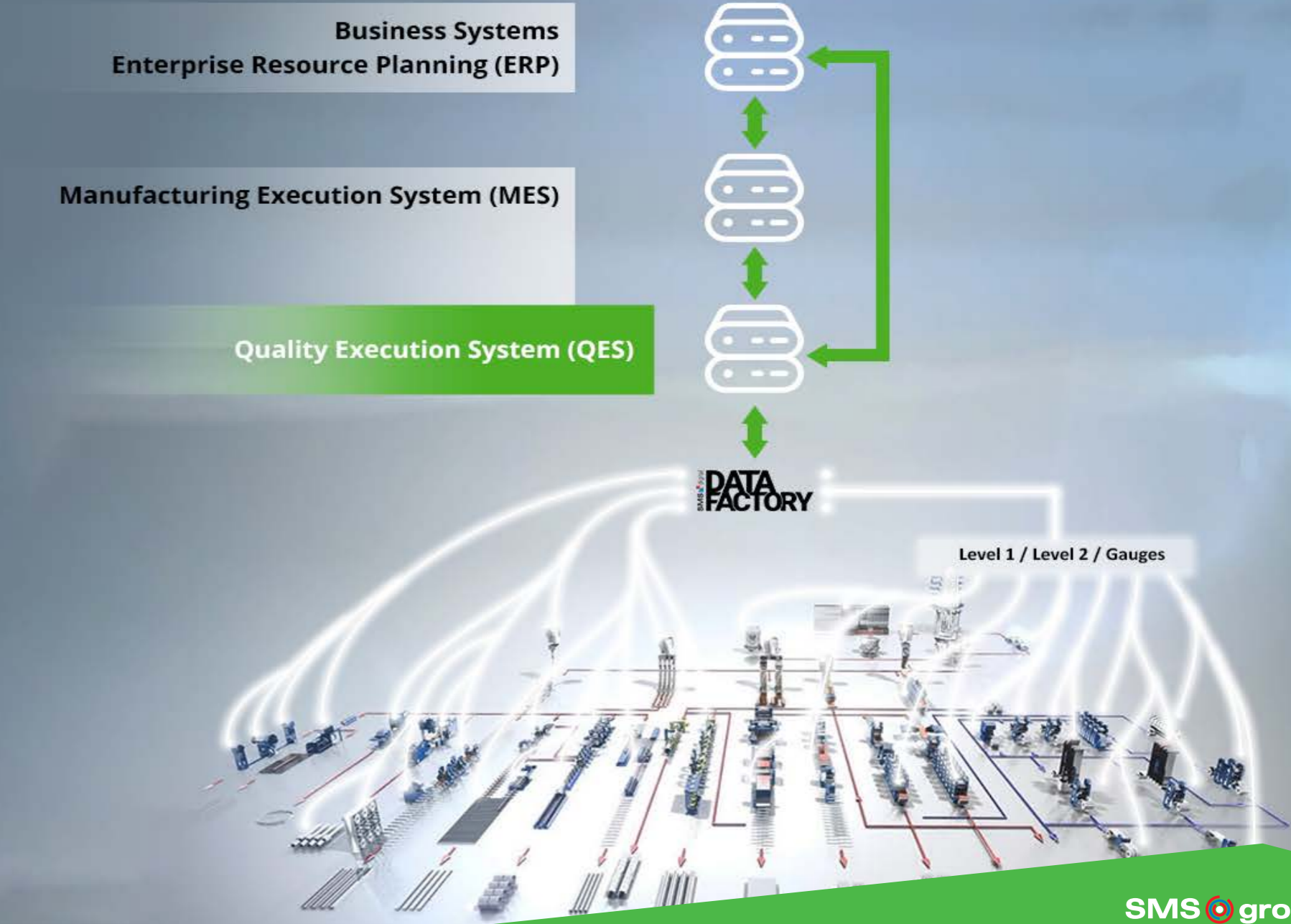
The user-friendly concept of the QES enables the systematic introduction of an automatic coil release system for all production lines. QES captures and pools the quality data from various process stages. The software monitors, records, and ensures product and process quality along the whole production chain – from the raw material to the surface-finished final product. Rules are used in all process stages to check the extent to which quality standards are maintained as per the customer's specifications.

The system includes all kinds of decision-making support that is important for the operation of the plant and for the process chain as well as the delivery of the finished products. QES is the leading software for successful high-performance operation and the production of high-quality products. Its implementation creates valuable benefits for operating costs and customer satisfaction levels.

# UNIFIED DATA LANDSCAPE ACROSS THE ENTIRE PRODUCTION ROUTE

## Data Integration - Creating a digital twin of your coils

Each coil is represented by data from numerous data sources of the different automation levels. For bridging the physical and the digital worlds, data must be transmitted completely and seamlessly allowing the virtual coil to exist simultaneously with the physical coil. However, following the process route each coil can have a digital representative in each individual process step. The Internet of Things thus contains a comprehensive digital replica of the physical coil - with complete mapping of all product, process or specification data. The QES is able to collect, aggregate, and analyze all existing data related to a coil and thus sets the basis for the digital twin of each coil. By comprehensively merging all data for each coil in a digital twin, steel producers can ensure a seamless documentation of product quality and trace hidden quality potentials.



# RULE-BASED QUALITY AND PROCESS EVALUATION

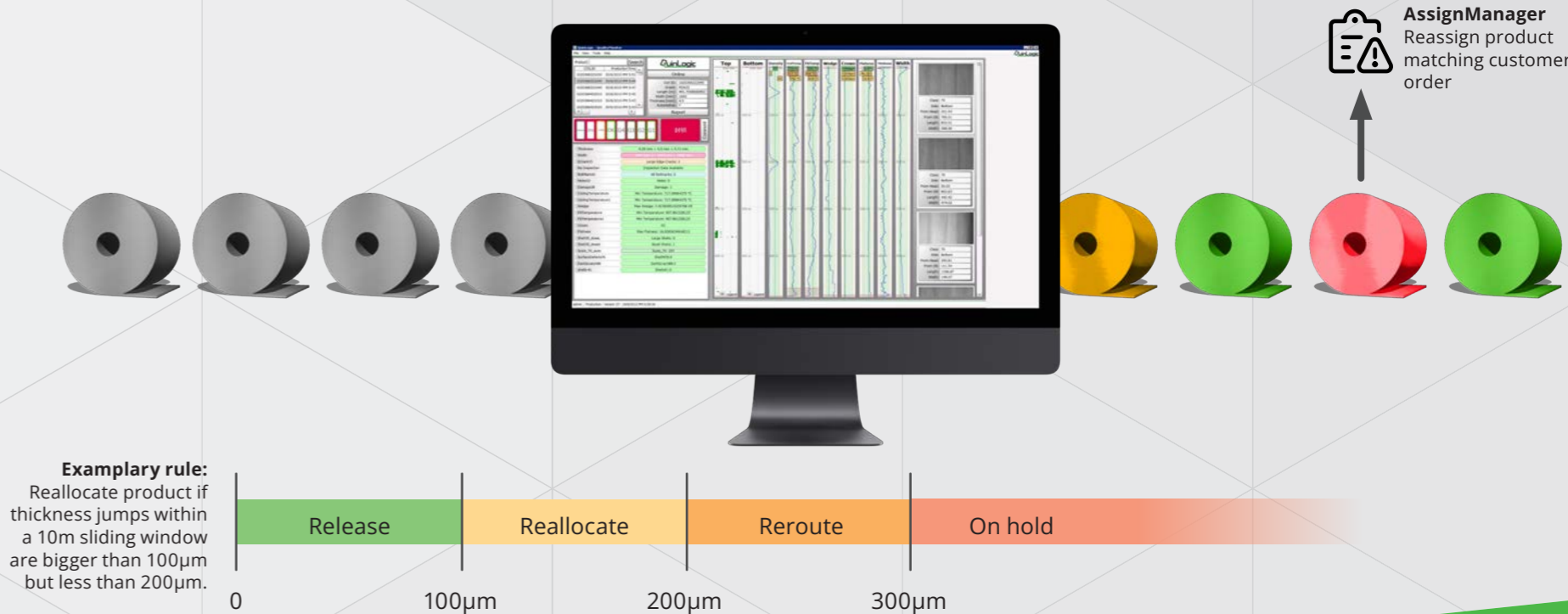
## Automatic Product Grading and Release - Digital tools enhancing product quality

Even today, quality management is not an automated process in most rolling mills. A great deal of time and effort is invested in quality monitoring by plant personnel, for example to determine the exact cause of defects. The Quality Execution System (QES) by QuinLogic is a proven and leading technology for automated coil release. It facilitates quality monitoring for plant personnel, saving a vast amount of time and money. By translating expert know-how into rules, the QES can verify if a specific product meets the customer specification while considering quality and process data from all production steps. That way it can approve and certify product quality automatically, leaving more time for process and quality experts to focus on root cause analysis, continuous process and quality improvements and quality assurance for critical products.



## Find the best alternative order for downgraded coils The AssignManager is made for product dispositioning

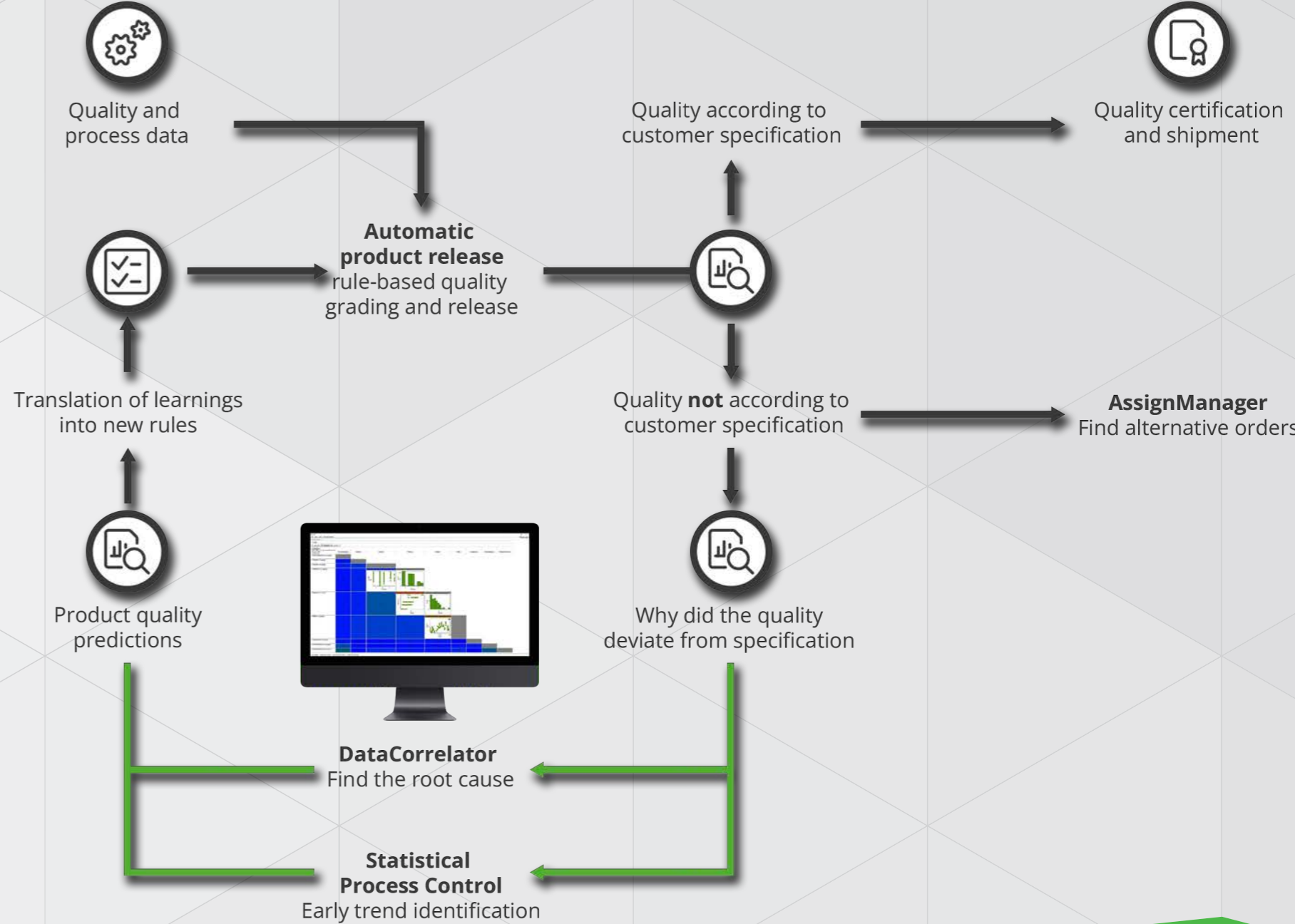
Having both detailed information about the produced quality and all details of the customer specification at your fingertip, this application supports you finding the best alternative orders if a finished product is no longer suitable for its original purpose due to impairment in quality.



# TURN DATA INTO INSIGHTS WITHOUT DATA-SCIENCE SKILLS

## DataCorrelator - The solution for explorative data analysis

As a fully integrated QES application the DataCorrelator provides the user with an explorative data analysis tool. The primary focus are the root cause analysis, comparative analysis and predictive models. This, combined with the user's expertise, allows the determination of the influence that different factors have on a variable, as well as the comparison of a variable under different conditions. In addition, it provides the user with an easy way to export the results of these operations to be utilized for the quality monitoring and to predict a quality risk.



# KEEP THE PROCESS STABLE

## SPC- Statistical Process Control

The SPC (Statistical Process Control) aims to improve product quality through increased process stability. Within the QES, the tool uses data from the entire data pool and leverages it to monitor processes and keep them stable.

By utilizing control charts, you can observe how a process changes over time, identify trends, and recognize special causes of variations. Statistical methods help to recognize process deviations in an early stage automatically.

With SPC, you can define data series based on the QES product data model and select any context data for each data series by filtering, sorting, or grouping it. In addition, the SPC application can be flexibly integrated into the QES workflow.

## Special functionalities of the QuinLogic SPC function:

- › Define data series based on the QES product data model
- › Select any context data for each data series
- › Filter and sort of data series according to context data
- › Split data series according to context data into groups
- › Create template-based control cards for groups automatically
- › Integrate into QES workflow flexibly



# HOLISTIC QUALITY MANAGEMENT AT A GLANCE

**The Quality Execution System is a comprehensive technological suite dedicated to the metals industry. Its holistic approach and vast capabilities are unique:**

- › Give flexible, dynamic decision rules in the hands of QA engineers
- › Provide electronic quality manuals based on decision rule sets, easily transferable to other lines and worldwide
- › Generate comprehensive quality certificates
- › Uncover hidden quality issues and potentials
- › Utilize all available data and improves data quality
- › Find key influential parameters and rules driving quality performance
- › Use web-based KPI monitoring and re-assignments for all grades and rules

**Vance Kendrick**  
General Manager for  
Quality and  
Technology, Nucor  
Steel Gallatin,  
Kentucky, USA

"We selected QuinLogic after a careful evaluation process and are **more than satisfied with the performance of the QES** in our production line. It is not only the excellent software tools but also the outstanding service support that makes us happy with our QES. We have reached our challenging goal to reduce the manual intervention in our release process and also obtained a much better insight into our process capabilities. **Approximately 70% of coils can be shipped without any further examination.**"

**Daniele Talami**  
Quality & Metallurgy  
Manager, NLMK La  
Louvière, Belgium

"NLMK La Louvière chose QES as a tool to support "auto- control" of products by manufacturers. **QES allows us to define advanced rules of grading taking account of specific customer requirements.** As the definition and implementation of the rules are carried out by quality experts (no IT expert needed), the set of rules is no more a black-box with some surprises from time to time. After one year of auto-control at HSM, we can say it is a useful tool to support manufacturing decisions."

## WHAT OUR CUSTOMERS SAY

QES is a well established across the global metals industry. We emphasise user friendliness and customer satisfaction in the highest degree. Here you find some statements from our customers.

## ADVANCED SERVICES

Complex challenges require individual solutions. We combine our metallurgical know-how with our digital expertise to create software solutions that meet our customers' needs precisely. In addition, we deliver customized service packages that complement and extend the actual product.

Our range of advanced services helps you to understand the equipment and software in detail - for example, through operator training and 24/7 expert support. Flexible analytics give you deep insights into your production performance, allowing you to adjust your maintenance, quality, or energy management at any time. With our consulting approach, we support you with optimizing your entire process chain. We offer subscription models and performance-based contract models that suit you best.

**SMS is a solutions provider that directly addresses and efficiently solves the specific challenges of its customers.**

**BY MERGING THE SMS GROUP  
DOMAIN KNOW-HOW, STATE-OF-  
THE-ART SOFTWARE SOLUTIONS  
AND CUSTOMIZED SERVICE  
OUR CUSTOMERS  
GAIN MAXIMUM VALUE**

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