DATA-DRIVEN QUALITY

A path to superior product quality with greater operational efficiency, revenue, and consumer satisfaction

Quality is vital for product companies. No added benefit or feature can compensate for failing to provide clients with the material or experience they expect in exchange for their valuable money. Creating the products people want requires an efficient supply chain and viable operational model – especially in today's increasingly digital economy.

Proper use of data is essential, as it provides insight into where and how to apply change. But while industry leaders have the data and a proactive focus on quality, they often lack the expert analysts required to fully understand it and draw effective conclusions. This is a major reason why the industry has stagnated for decades in a reactive cycle of building, inspecting, and correcting. Lacking a proper solution for quality control and integrated analytics makes quality a manufacturer's biggest liability.

Data-driven **quality**

Organizations that break this cycle will be poised to turn quality control into a great asset. However, there are numerous challenges to quality improvement: siloed teams and processes around product development, complexity of managing global operations, and upskilling resources and new ways of working within a digital transformation. Transitioning from a standard statistical quality-control model to real-time and predictive quality-based solutions is another common obstacle. And whenever data is involved, security and ownership concerns are central.

Rich data sets must be easily and quickly accessible. Data scientists must be present to interpret the data, provide answers for what is happening, and anticipate future events. And all teams – the engineers, quality managers, analysts, and front-line workers – must work together to reduce scrap and optimize efficiency.

Capgemini has extensive experience in leveraging data to achieve growth for manufacturing companies across sectors, including consumer and industrial electronics, medical devices, automotive, and others. This has given our teams the expertise to design a Data-Driven Quality (DDQ) solution to equip enterprises with a tool for improvement and excellence. With a combination of predictive, preventive, and real-time methods, we can establish a robust framework to predict and track real-time quality outcomes to improve root-cause analysis, reduce scrap, and deliver products to market more quickly – increasing brand reputation and customer satisfaction.

DDQ is our integrated solution built upon Microsoft Azure IoT technology for businesses aiming to modernize and automate data-quality monitoring and analytics. It takes a proactive approach to modern quality-improvement challenges through several actions:

01. Using product, real-time, and condition data to predict quality problems

02. Analyzing process conditions through early warning systems to prevent defects and poor-quality outcomes

03. Quickly identifying complications in manufacturing when they occur

04. Scaling SPC (statistical process control) and quality-management practices to drive operational improvement and efficiencies globally.

The complete
product-quality solution

Bringing traditional product quality and real-time procedures together within the Azure cloud is the blueprint of DDQ. The process begins with historical quality data assessment and manual quality inputs to build SPC models with advanced simulation and insight capabilities on the Azure cloud. Pre-built templates allow for any type of domain data to be utilized from assembly and fabrication processes, and IoT enables capturing, normalizing, and tagging data with identifiers to correlate with real-time quality testing outcomes. Condition monitoring with DDQ and its advanced sensors ensures process conditions do not heavily impact quality – a common defect in the traditional process. And with Azure's ML/AI imaging technology, optical inspection provides any additional test data measurements needed for effective action. All this combines into an end-to-end automated framework that drives superior quality outcomes.

With DDQ, companies can enable their data scientists to better interpret and apply data to root cause issues and ultimately engineer the products for the experiences customers want. Other benefits of the solution include:

01. Cost reductions in the quality-assurance process through automation and scrap savings

02. Bypassing manual entries with quality-control software from Predisys, reducing scrap and enabling the monetization of product-quality data

03. Cycle time improvement through early defect detection along with a lower defect rate

04. Process agility and flexibility for accommodating to new and changing manufacturing requirements and regulations

05. Real-time access to supplier data and an intuitive SPC user interface for immediate feedback, improving supplier relationships.

All this is founded on highly repeatable and customizable architecture, reducing start-up costs and allowing a custom-fit solution for the needs of the organization. DDQ never breaches ownership of data, as it is built on the company's premises to ensure it retains full control of its valuable data – providing security and peace of mind to both the business and its clients. DDQ is also integrated with Microsoft 365 and Teams to enable collaboration between factory groups on a single platform, contributing further to workforce efficiency.

Driving excellence
through expertise

Capgemini understands the challenges of modernizing and streamlining complex monitoring and analytics processes for manufacturers. We recognize the necessity of driving higher productivity through scrap reduction and ensuring optimal quality at large volumes for organizations operating extensive supply chains. DDQ equips an enterprise with the knowledge and insight required to make informed decisions and create a significant impact across its vast global footprint for tangible business value.

Capgemini has two decades of experience working with Microsoft, and a team of Microsoft Certified Professionals plus Azure-certified and Cloud Solution Architects has helped us achieve the status of a Microsoft Azure Expert Managed Services Provider. This enables our company to analyze your existing framework and devise a data-driven quality solution tailored for your business requirements.

By bringing the best of our partnership with Microsoft and a long track record in delivering successful transformations and digital solutions within the manufacturing sector, our solution architects can work closely with your executives and stakeholders to get the future you want for your company. Capgemini's DDQ solution will help you predict and track real-time metrics for data-driven quality at a reduced operational cost, while increasing revenue streams and boosting customer satisfaction.

More
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About
Capgemini

Capgemini is a global leader in partnering with companies to transform and manage their business by harnessing the power of technology. The Group is guided everyday by its purpose of unleashing human energy through technology for an inclusive and sustainable future. It is a responsible and diverse organization of 340,000 team members in more than 50 countries. With its strong 55-year heritage and deep industry expertise, Capgemini is trusted by its clients to address the entire breadth of their business needs, from strategy and design to operations, fueled by the fast evolving and innovative world of cloud, data, AI, connectivity, software, digital engineering and platforms. The Group reported in 2021 global revenues of €18 billion (about $21 billion USD at 2021 average rate).

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