

## CognitiveSpark™ for Manufacturing

Delivering the AI advantage to life sciences manufacturing

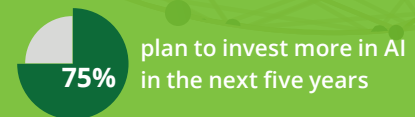
Life sciences manufacturers play a critical role in health care by providing essential drugs and medical supplies to patients and caregivers reliably and consistently. Today, an increasing focus on digital transformation is creating opportunities for manufacturers to meet the challenges of disruption and a competitive marketplace. Are you making the most of the tremendous volume of data being collected? Take a closer look at how CognitiveSpark for Manufacturing leverages data analytics and AI to deliver insights that improve production yield and product quality.

### Optimize manufacturing processes

CognitiveSpark for Manufacturing is a cloud-based, AI-powered solution designed to provide biopharma and medtech manufacturers with proactive insights that help optimize manufacturing processes and product quality. Here's a closer look at the advantages ready to be realized

- **Improve product yield.** Monitor the quality of raw materials and select those materials expected to optimize manufacturing yield.
- **Increase manufacturing efficiencies.** Continuously monitor batch performance and leverage actionable insights to enable real-time manufacturing process optimization, improving process and asset efficiency.
- **Streamline quality control.** Identify any potential deviations of the batch from expected behaviors, helping reduce batch release times and lead times.
- **Reduce maintenance and equipment costs.** Analyze data to detect patterns that indicate premature failure of equipment and recommend proactive maintenance.
- **Improve sustainability.** Automate routine tasks and improve decision making, contributing to higher employee satisfaction, more sustainable practices, fewer safety incidents, and less product waste and harmful environmental impact.
- **Plug into existing platforms.** Integrate with already available third party platforms, enabling ease of data flow and analytics, and enabling scalability and flexibility as other platforms are brought online.

### AI in action: By the numbers! In a survey of biopharma leaders



Source: [Deloitte Center for Health Solutions](#)

### Enhance human potential

CognitiveSpark for Manufacturing provides life sciences operations stakeholders with proactive, actionable insights that can improve decision making and deliver positive outcomes across the end-to-end manufacturing process.

#### Faster.

Reduce time to resolution of adverse manufacturing events.

#### Smarter.

Improve decision making through accurate, actionable predictions.

#### Transparent.

Make essential data available across users and roles, enabling analytics self-service.

## CognitiveSpark for Manufacturing: Powered by AI

An AI-powered platform designed to proactively improve performance for life sciences manufacturers by aggregating and analyzing production data to make predictions and recommend actions that can enhance yield and address quality issues.

<b>1</b> <b>Predictive Analytics &amp; ML</b>  Machine learning and continuous model adjustments, <b>enabling real time predictions and feedback</b> for running processes against optimal target models	<b>2</b> <b>Real time Monitoring &amp; Analysis</b>  <b>Contextualized plant visibility</b> across assets, users and processes, offering <b>real time recommendations</b> to enhance operational efficiency/quality oversight	<b>3</b> <b>Process Normalization</b>  Enables the <b>comparison of manufacturing processes and quality outcomes</b> across batches, products, lines, shifts, operators, etc., <b>uncovering potential discrepancies</b>	<b>4</b> <b>Knowledge Discovery</b>  <b>Templated advanced analytics models</b> for discrete and continuous data to proactively predict, detect and address anomalies	<b>5</b> <b>Advanced Dimensional Analytics</b>  <b>Multivariate calculations</b> across, sites, products, batches, lines, process and operations for <b>incident detection and root cause identification</b> with explicit and implicit variables
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### Improve production yield and quality

The CognitiveSpark for Manufacturing platform offers a suite of modules, each designed to address a different aspect of the production and quality life cycle. Leverage the capabilities you need, then expand your investment in AI to realize continuous improvement.



#### Yield prediction

Use real-time process data to understand causal factors affecting yield.



#### Deviation management

Automate classification capabilities using historical process and eQMS data.



#### Predictive maintenance

Use advanced data analytics from sensorized machines to predict when maintenance is necessary.



#### Supplier performance

Identify which suppliers are providing the best raw materials.



#### Raw material quality

Understand the impact of raw materials on process yield and product quality.



#### Product intelligence

Use complaints data to provide product related insights.

### In development



#### Continuous process verification

Analyze end-to-end production data to ensure product outputs are within predetermined quality limits.



#### Digital RCA

Use pattern recognition analytics to identify trends and conduct root cause using process and quality trends.



#### Batch genealogy

Track relationships between batch processes, materials, and final output.



#### Digital batch disposition

Detect variances in product disposition data allowing for risk mitigation and preventative measures.

## Bottom-line impact

### Opportunity

A leading pharmaceutical company modeled the potential benefits of incorporating AI for its plasma fractionation process, a highly complex process with more than 300 control parameters that needed to be manually optimized.

### Impact

Using data collected over two years and representing around 1500 batches, machine learning models for yield production were used to predict manufacturing yield with 96% accuracy along with quantitative insights regarding the contributions of the control parameters to overall yield. By leveraging AI, a \$10M revenue increase was estimated for the pharma manufacturer.

### Empowering life sciences manufacturers

Today, life sciences manufacturers are challenged to produce quality products at scale while continuously building value—and they must be prepared to act quickly if disruption occurs. That's why Deloitte offers a holistic approach for incorporating AI across all dimensions of the drug manufacturing process from sourcing raw materials to achieving sustainability goals.

CognitiveSpark for Manufacturing leverages your organization's data foundation to provide actionable insights that enable improved decision-making and lead to positive outcomes across the manufacturing process. Consistent results fuel growth and build competitive advantage. Most important, essential drugs and health care supplies are reliably delivered to patients and their care givers when and where they are needed.

Start the conversation.

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