

Accelerate the Evolution of Your Supply Chain

Machine Learning for Life Sciences Manufacturing and Supply Chain

Manufacturing and supply chain operations for pharmaceutical and biopharmaceutical companies are under tremendous pressure to transform. Companies not only need to support new types of precision therapies and changing care delivery models, they must also operate under stricter public and legal scrutiny including the DSCSA (Drug Supply Chain Security Act).

While companies recognize the potential of applying machine learning (ML) strategies and algorithms across their data landscapes in order to make manufacturing and supply chain operations more agile, intelligent, and compliant, getting there remains a challenge.

This is where **SpringML** can help. We can rapidly consolidate structured and unstructured data from a variety of different sources. Then we put that data to work for you using customized, highly specialized ML algorithms to make that information more meaningful and actionable across critical touchpoints in your manufacturing and supply chain operations.



Enhance Quality Assurance and Control

Whether you're producing the first grams of a drug for clinical trials or manufacturing metric tons for public markets, you need to maintain extensive quality assurance and control measures throughout their global supply chains. From provisioning raw materials through final dispensing to patients, **SpringML** can help you detect patterns that can alert you before a critical supply chain issue impacts patient safety, operational continuity, and cost.



Predict Supply Chain Issues Before They Happen

Use custom-built SpringML algorithms to detect the slightest change in raw materials and other supply inputs as an early indicator of deterioration of quality. You can accurately pre-assess raw material quality and identify issues, such as improper sourcing or weight-to-volume inconsistencies, before committing them for use in a clinical trial or commercial application.



Detect Formulation Inconsistencies

Build additional checks into your already rigorous formulation quality assurance measures. Our algorithms can detect patterns that indicate deviations in production methodologies, assay testing inconsistencies, or early indicators of potency or solubility issues.



Identify Fraudulent or Adulterated Products

Root out fraudulent, potentially dangerous materials or products that are in your supply chain or in the marketplace. **SpringML** can develop algorithms that look for deviations within your supply network – such as substitutions in ingredients or out-of-spec materials or packaging. **SpringML** can help you extend awareness beyond your supply chain as well, looking across the global marketplace for products that fraudulently carry your label.

Make Supply Chains More Agile

SpringML's predictive forecasting engine – deployed on a responsive, high-speed cloud platform – senses supply networks in real time. Using sophisticated linear regression models to constantly evaluate current and historic inventory levels, supply vendor schedules, and other critical factors, your supply chain operation is able to anticipate potential disruptions on virtually any time scale, whether its four months to four hours before a disruption occurs.



Prevent OUTBOUND stockouts and shortages

Sense and respond to potential shortages in real time – from material sourcing to shelf stock. By combining predictive analytics with Internet of Things (IoT) technology, **Spring ML** can help you increase your insight into the impacts of upstream supply shortage on downstream delivery of the final product to providers and patients.



Prevent INBOUND stockouts and shortages

Keep your resource- and cost-intensive R&D and clinical trial activities on track and free of delays with **SpringML**. You can anticipate any potential shortages or defects of constituent materials (such as consistency, quality, or efficacy) that may impact the precision, small-batch manufacturing typical in drug and biological therapy development and testing.



Uncover hidden opportunities for automation and efficiency

Use **SpringML** analytics to scan your entire manufacturing and supply chain operation for critical process bottlenecks. You can uncover blind spots and gaps in your product, supply chain, and distribution workflows, including areas that require extensive manual processing – and then use ML algorithms to help develop safe and secure automation use cases.

Get More Value and Insight from Your Equipment

With millions of dollars on the line, the risk of batches going bad is ever-present for pharmaceutical and biopharmaceutical companies. Whether you're manufacturing small batches for inbound R&D and clinical trials or operating at a much larger scale for outbound commercial production, you need to monitor precision manufacturing equipment and control your supply to ensure quality and avert disaster.

SpringML can help with ML tools that enable you to keep your equipment up and running and always in compliance with strict performance and calibration requirements.



Upgrade equipment with compliance-based learning

Incorporate the latest threshold values from Current Good Manufacturing Practices (cGMP) into your equipment's predictive maintenance algorithms. With help from **SpringML**, you can detect compliance issues – along with product quality issues – much earlier.



Maximize asset uptime and service life

Combine **SpringML** predictive maintenance algorithms with IoT technology to monitor machine sensors in real time. You can maximize the lifetime of parts by replacing or servicing them only when necessary. You can also compare past equipment data with current sensor data (along with base data from equipment makers) to detect patterns that indicate part failures or failures in equipment calibration before they occur.

No company is better prepared to help you seize the advantage with ML in healthcare and life sciences than **SpringML**. When you partner with us, you get the experience and expertise of a global systems integrator – one with a proven record of helping Fortune 500 companies realize ML value. Our solutions are implemented at more than 150 customer sites worldwide.

Get the Most Out of Machine Learning with SpringML

From data to knowledge to wisdom. From reactive to predictive to prescriptive. If you're on the road to machine learning and insight from data, SpringML is there with the talent, know-how, and offerings to help you reach your destination.

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Learn More

To get started or learn how you can get more value from data with ML technology, visit us at:



www.springml.com/healthcare



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