



Why Manufacturing Must Modernize in 2021

Data Powers Modern Manufacturing

Fueled by the combination of unpredictable market conditions and the availability of modern analytics and machine learning technologies, 2021 is the year manufacturing will undergo an incredible digital transformation.

Despite an early start in automation, manufacturing lags behind other industries in the race to digitally transform. Although many shop floor assets are connected, most companies are holding onto legacy systems and have failed to transform the way they share and use data intelligence across the entire business to drive productivity and efficiency.

The past year proved the industry can be extremely unpredictable with steep competition and rapidly changing market demands, highlighting the consequences of slow technology adoption.

McKinsey estimates that between \$1.2 and \$3.7 trillion in global productivity gains are up for grabs in the manufacturing sector by 2025. That's why in 2021 it's no longer optional to modernize – it's time to go digital or go out of business.

This paper will explain why modernizing is essential now and how intelligent machine data is critical to driving productivity gains for a modern, agile business.

Why Modernize Now

With machines that typically last 30+ years and processes driven by employees who have been in the business just as long, the manufacturing industry has been one of the last to fully embrace new digital technologies. Several challenges converged in the past few years that provide a warning and prove that now is the time for the industry to modernize.

Increasing Cost of Downtime

A study by Information Technology Intelligence Consulting found that 98% of organizations say a single hour of downtime costs over \$100,000 and 33% of enterprises report that one hour of downtime costs their firms \$1 million to over \$5 million. As manufacturers move towards 100% capacity and OEE, downtime has become more costly and legacy technology is part of the problem.

Fluctuating Market Demand

Unpredictable changes in demand threw the entire manufacturing industry for a loop in 2020. Some businesses saw increased demand and others diminished, all while facing some level of quarantine, travel restrictions, unemployment spikes, and disrupted supply chains. Manufacturing companies will need to look at demand reset in 2021, and the need for agility is clear.

OT-IT Convergence

One of the hinderances for digital transformation in manufacturing has been the disconnect between the shop floor (OT) and the IT department. OT-IT convergence is finally catching on, as businesses see the need for these two groups to create a unified digital transformation approach and work together to improve processes and quality.

Ongoing Talent Challenges

A global skills shortage made it hard to find knowledgeable, qualified employees to fill engineering, technology, quality, and other roles. The Manufacturing Institute estimates a continued labor shortage, growing to 2.4 million by 2028. Manufacturers have to prepare for the long-term challenge of fewer people with legacy knowledge by improving artificial intelligence.

Increased Supply Chain Complexity

No amount of planning or inventory prepared manufacturers for a global crisis. The manufacturing industry saw disruption of raw materials, freight, labor, and even payment along the supply chain, which limited the ability to fill customer orders. A global supply chain with tariff increases and shifting trade policies further increased complexity.

The Arrival of 5G

The arrival of 5G connectivity brings improved speeds that reduce lag to almost zero and strengthen the digitization of the modern factory. 5G paves the way for more advanced use cases like machine learning and AI, which require real-time streaming of data and live video analytics. Factories are creating loads of data, and 5G helps to connect and collect that data at scale.

Data Powers Modern Manufacturing

Liberating data locked in industrial systems provides incredible value as it becomes available to the people, processes and tools that need it to drive operational excellence.

Whether you want to improve OEE, prevent machine failure, or reduce scrap and waste, you need a continuous flow of real-time production data to power the analytics and machine learning systems that can help you improve operations at scale.

Modernization is inevitable. The question you need to ask is, are you making the right technology investments today to harness the data needed to drive better manufacturing decisions tomorrow?

86%

of manufacturers believe that smart factories will be the main driver of competition by 2025

65%

of manufacturers report they've made no progress on modernization initiatives

20%

of manufacturing organizations rate themselves as "highly prepared" to modernize

70%

of companies are expected to adopt AI technology by 2030

What is Preventing Companies from Modernizing Today?

According to McKinsey, 65% of industrial companies worldwide say digitizing is one of their highest priorities, but only 30% are succeeding at moving use cases beyond a pilot into large-scale rollout. There are multiple technical barriers causing modernization efforts to fail both at the factory and enterprise level, preventing companies from adopting modern technology to use data intelligence across the entire business.

Mass Data Fragmentation

Data is the fuel for digital transformation, but data fragmentation is a roadblock. Unstructured data combined with silos across locations leads to an incomplete view of machines and processes. Machine learning and AI can't accomplish anything by themselves, their value lies in good insights gleaned from good data.

Difficulty Ingesting all Data

Data must be ingested before it can be analyzed and transporting data from all sources is not easy. An incomplete data picture can lead to misleading conclusions and bad decision-making, so enterprises need to collect all data from all machines, then feed it to enterprise applications for true modern data intelligence.

Closed OT Infrastructure

Legacy industrial systems were built to be closed and secure, relying on proprietary protocols, management by people with legacy knowledge, and typically having no connection beyond the four walls of the factory. Securely accessing a closed OT infrastructure and bringing it online can be time consuming and costly without the right tools.

Failure to Scale Use Cases

Businesses may prove out a small analytics or machine learning use case, but they often lack the expertise to successfully scale while considering security, interoperability, and integration. According to McKinsey only 20% of organizations have set up a data lake across their network in more than 50% of their plants, and only 25% use an advanced analytics platform at scale.

Mix of Legacy and Modern Systems

The typical OT technology stack includes disparate systems chosen asynchronously including sensors, machines, connectivity, storage, networking, applications and more. Add in IT systems also chosen without collaboration and the result is a complicated spider web of technologies.

Lack of Clear ROI

Many businesses want to modernize, but they don't clearly articulate why. Too many projects start with vague goals and fail when ROI is never realized. Aligning OT and IT on shared objectives and modernizing with clear, precise goals for agility, quality and process improvements allows businesses to measure progress and show ROI.

Modernization Moves from Reactive to Predictive

Moving from reactive to predictive actions is the ultimate goal for modern industry – but it doesn't happen overnight. Until now, companies have relied on legacy systems, tribal knowledge, careful projections, and guesswork to keep operations running as planned. The good news is - the technology exists today to understand, anticipate, and even predict the triggers and events that can disrupt production.

React

The most primitive systems live in a purely reactive state, where they can only act after a process is already interrupted or a machine is broken.

Planned

Slightly more advanced shops try to plan scheduled maintenance based on estimated lifecycle and runtimes.

Condition-Based

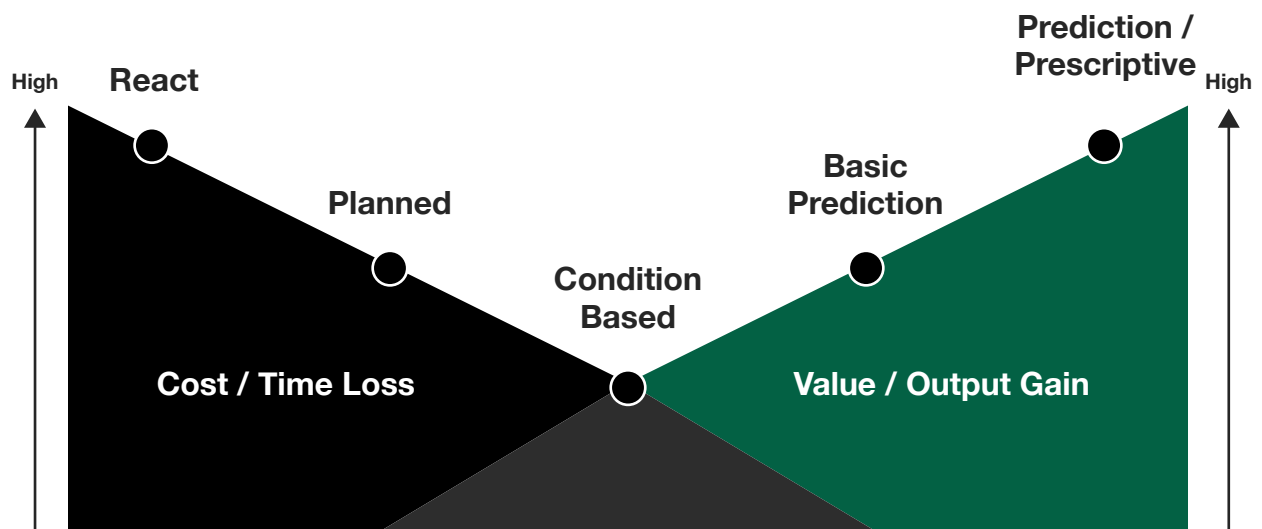
Monitoring all assets enables condition-based maintenance centered on simple logic and thresholds.

Basic Prediction

Real-time analytics and insights can lead to predicting time to failure for more efficient maintenance.

Prediction / Prescriptive

Advanced analytics, machine learning and AI drives true prescriptive maintenance and actions.



Are You Modern Ready?

Being modern-ready means you have alignment across the business on what it takes to enable modernization at scale – everything from investing in the systems needed to liberate and transform data into actionable intelligence, to putting technology into the hands of the people who need it to do their jobs more effectively. There are three questions to answer to determine if you are really modern-ready:

1.

Alignment

You have alignment across the organization that modernization is a top priority and critical to business success

2.

Data

You understand that making data available to the people, processes, and tools that need it to keep operations running is now essential

3.

Intelligence

You know that leveraging ML and AI technology is the only way to move beyond the status quo to operational excellence

What Does a Modern Edge Platform Look Like?

A modern edge platform provides the foundation to drive digital transformation across the entire business and includes four essential functions:

Device Connectivity

Quickly connect and collect data from any industrial asset at the edge – sensors, robotic systems, PLCs, SCADA, historian and more - with pre-loaded drivers and no programming or complex configurations required.

Application Enablement

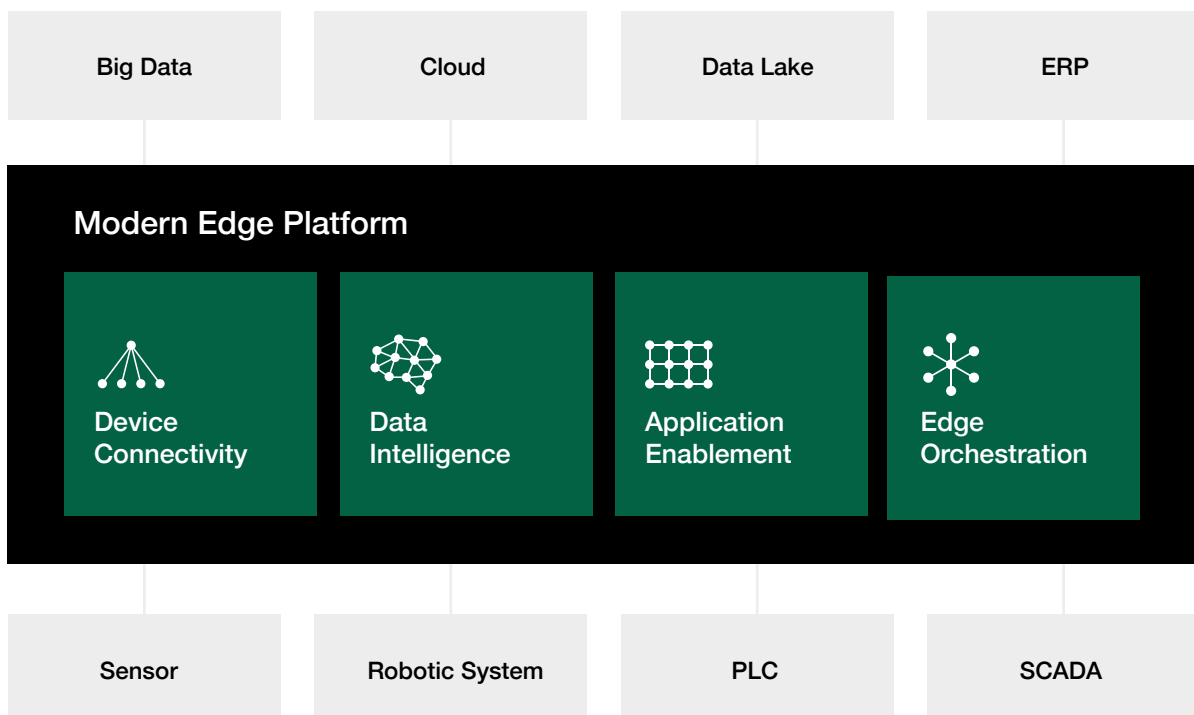
Build, deploy and run pre-built or custom applications at the edge to speed time-to-value for any use case such as process control, traceability, and vision systems.

Data Intelligence

Monitor real-time asset data with visualizations, analytics, and KPIs for predictive maintenance, OEE and more. Share data with any cloud or big data system for advanced analytics.

Edge Orchestration

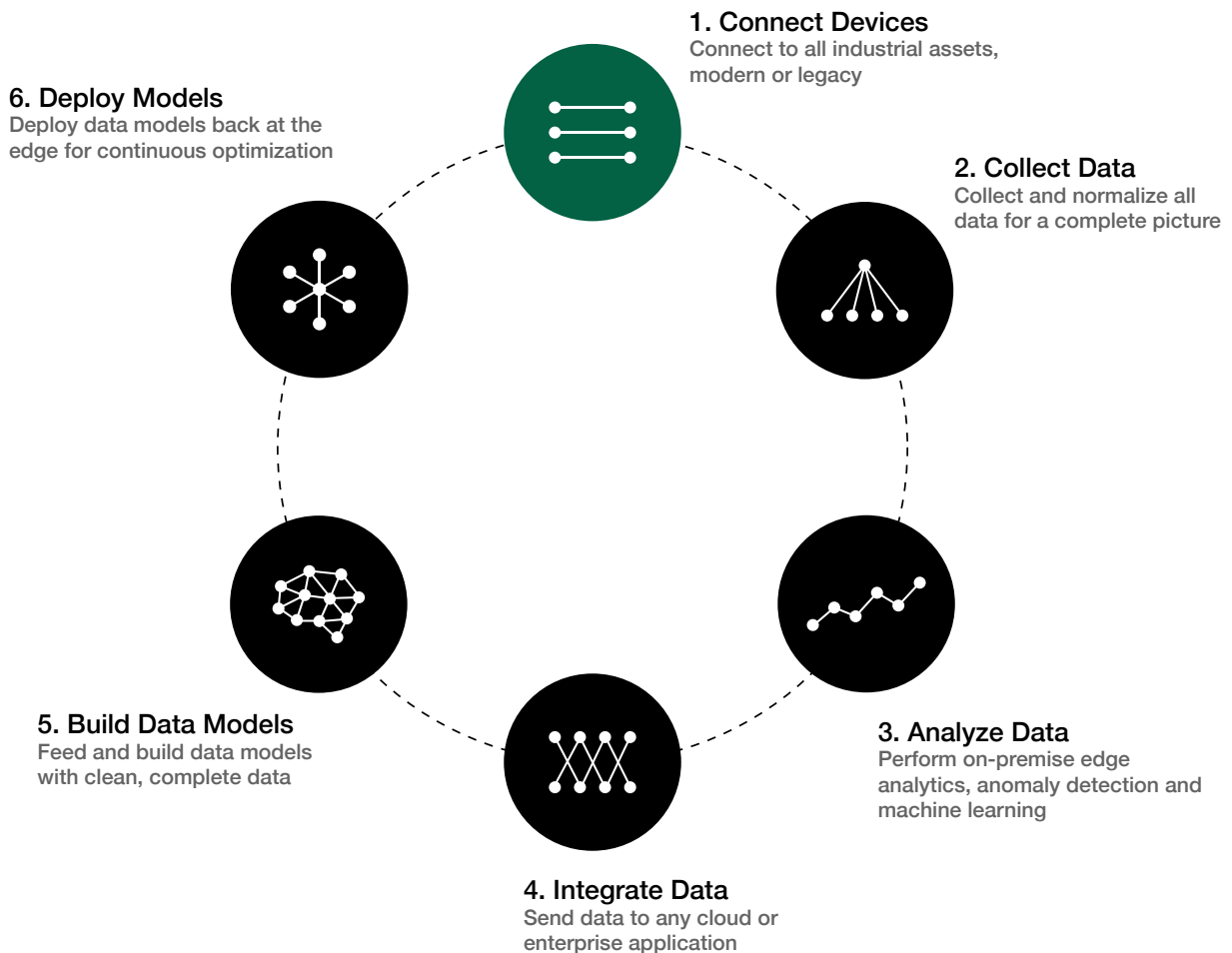
Rapidly and securely deploy a flexible edge platform at scale with centralized management and an orchestration engine that can publish services at the edge.



What is the Edge? <https://litmus.io/what-is-the-edge/>

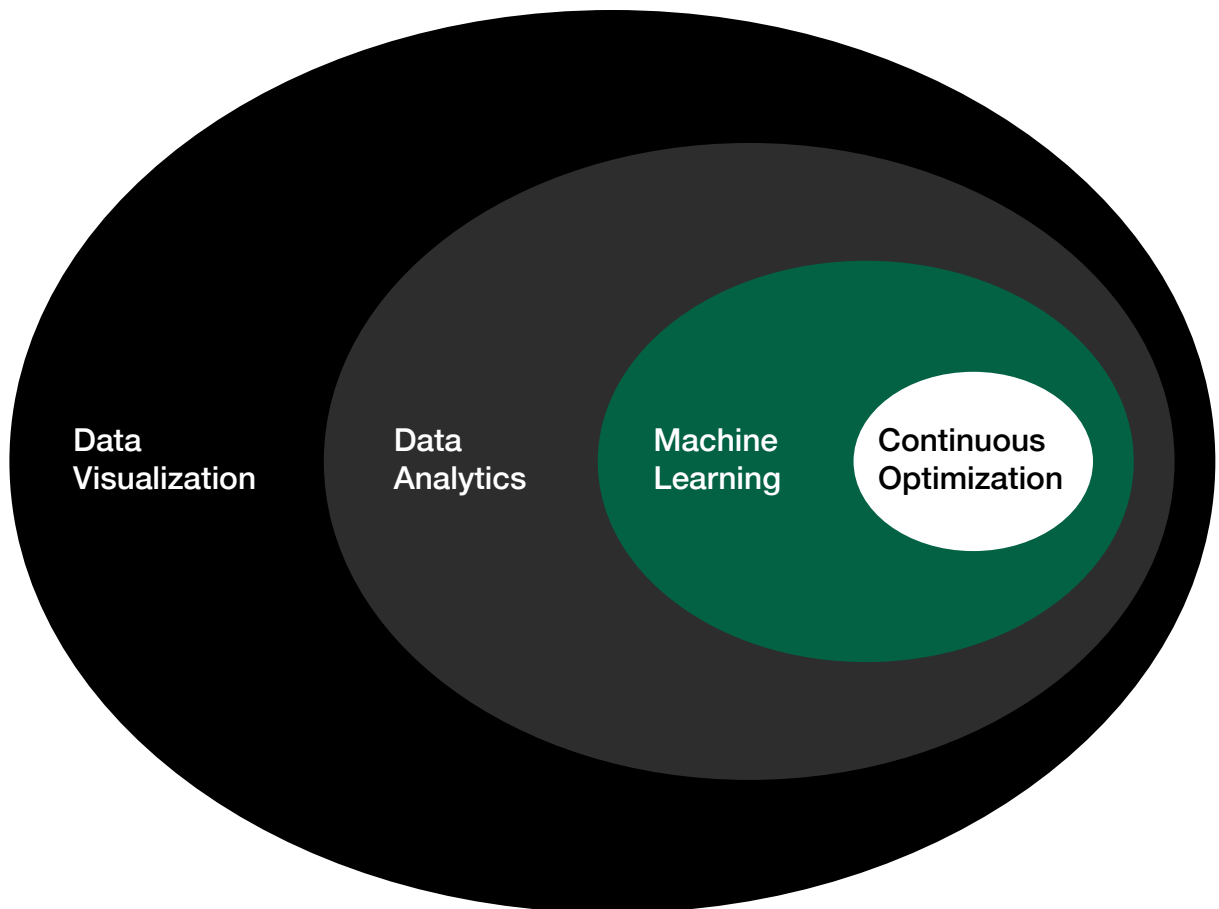
Data Flow is the Foundation for Modernization

With a modern edge platform in place, assets are connected, data is collected securely at the edge, and the people who need it are empowered to take action in real-time against that data. At the same time, data is analyzed and sent to the cloud to build, run and train data models that can be run back at the edge in production to drive change in the entire organization at scale.



Making the Journey to Modernization Seamless

Reaching true continuous optimization and machine learning is the end goal for many organizations. Others simply want to visualize and analyze operations in real-time. No matter what modernization means to you, or where your journey begins, the path is the same – it starts with connecting and collecting data from every machine at every location. A modern edge platform provides the foundation needed for a complete data picture to achieve operational excellence at the edge and beyond.



Modernization Starts Right Now

Modernization is simply not possible without access to complete and accurate data. The biggest and best AI and machine learning systems are only as good as the data they receive. In order to get started today, acknowledge the ROI that can be gained from digital transformation and adopt a solution that puts all of the pieces in place to share and use data intelligence across the entire business to drive productivity and efficiency.

Watch the How to Enable Machine Learning Webinar

<https://litmus.io/litmus-cloudera-machine-learning-webinar/>

Book a Demo to See a Modern Edge Platform in Action

<https://litmus.io/get-started/>



The Modern Edge Platform for Industry

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