Putting the Industrial Internet to Work

2019 Digital Transformation Playbook
Every Day, GE Digital Puts the Industrial Internet to Work

Industrial companies want a solution that works today, with the expertise to help them scale for tomorrow. GE Digital works hard to make digital transformation easy—our teams of Industrial IoT experts and partners use their industry-specific expertise to help customers define, design, and deliver solutions that deliver outcomes.

Inspiration + Celebration

You’re going to need more than imagination. You’re going to need ideas that move your business forward—ideas that work, and there’s plenty of inspiration if you just look around.

Start here, with real-world examples of digital transformation in action. The following pages showcase just some of GE Digital’s clients who exemplify the spirit of digital transformation and operational excellence. They are imaginative, inspired, and constantly in motion.

GE Digital is proud of the results our clients are achieving with our software.
WE HELP OUR CUSTOMERS DRIVE REAL RESULTS

Our software is used by over 19,000 industrial customers around the world, across manufacturing, chemicals, steel, automotive, food & beverage, consumer packaged goods and beyond.

From the field to the plant floor to the C-Suite, GE Digital’s solutions bring the right insights to the right teams at the right time. From mobile solutions designed for engineers to aggregated dashboards that show the performance of dozens of industrial sites in real time, GE Digital’s industrial software helps organizations make smarter decisions at every level.

TAKE THE NEXT STEP

See for yourself how the following organizations—just a few of our customers around the world—are redefining digital transformation. And then go a step further, by exploring insights from GE Digital—insights that can help you understand some of the key forces driving digital transformation today and the potential value that lies ahead.

Want even more inspiration for digital transformation? No matter where you are in your journey, GE Digital can help you focus on outcomes that matter, understand your options, and deploy real-world solutions that move your business forward.

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Food and beverage is ripe for digital transformation, with consumers increasingly seeking innovative, convenient products that are safe, sustainable, affordable, and differentiated. Producers, meanwhile, face new pressures, including supply chain complexities and ever-shorter production cycles.

SIG—a provider of packaging systems and solutions for food and beverage—deeply understands what’s at stake. The company’s customers fill more than 10,000 unique products into SIG packaging across 65 countries worldwide. In any given year, SIG produces tens of billions of carton packs for its customers.

To address business complexity, the company has taken a big transformation step with GE Digital’s Predix Asset Performance Management (Predix APM). SIG is now deploying the solutions across more than 400 customer factories worldwide—as part of an end-to-end platform that provides data-driven intelligence for better predicting, managing, and servicing the entire lifecycle of SIG filling lines.

The move is helping SIG and its customers go beyond traditional asset monitoring and predictive service models—to reimagine their supply chains, enhance quality control technologies, and evolve their portfolios.

**RESULTS**
- Improved supply chain efficiency
- Enhanced quality control
- Business Transformation
ACCELERATED TRANSFORMATION

Minor failures can lead to major costs for steel provider Gerdau, whose complex business spans 13 countries. When an asset fails, the company can lose thousands of dollars per hour in downtime.

With a goal of reducing overall maintenance costs by 20%, Gerdau launched an end-to-end digital program designed to help the company move from traditional predictive maintenance methods to a more proactive approach, driven by actual machine data and next-generation analytics.

As part of the program, Gerdau deployed a portfolio of Industrial Internet of Things (IIoT)—including GE Digital’s SmartSignal Classic and GE Digital’s Historian (part of the Asset Performance Management Classic suite)—across 47 mission-critical assets.

The digital transformation has allowed Gerdau to identify potential failures and issue alerts, identifying problems before they have a negative impact on equipment uptime, reliability, and efficiency. More than that, the program enabled the company to realize a complete ROI within 8 months—less than half the expected time—and save millions annually.

RESULTS

• Reduced equipment downtime
• Increased cost savings and supply chain efficiency
• Rapid ROI

Gerdau

Proactive asset maintenance—enabled from end to end
Procter & Gamble (P&G), one of the world’s largest manufacturers of consumer packaged goods (CPG), has been a long-time customer of GE Digital’s Plant Applications Manufacturing Execution System (MES). The company is now leveraging GE Digital’s Predix Manufacturing Data Cloud (MDC) capabilities, moving manufacturing data and running powerful analytics in the cloud.

Used in concert with a traditional MES, Predix MDC gives manufacturers operational analysis in the cloud and greater flexibility of deployment, helping reduce the size of on-premise systems and make them run more efficiently.

The solution gives users rich views into information captured at individual sites as well as the ability to run analytics and comparisons across various locations and data types, including manufacturing, enterprise, and asset data. Furthermore, moving and storing manufacturing data in the cloud provides an additional level of certainty around data retention, regulation, compliance, and auditing purposes.

Procter & Gamble has already gained a detailed, data-supported view into its manufacturing processes, providing insights that drive efficiencies. The new offering is helping the company meet data compliance regulations and significantly increase the speed of its on-premise MES.

**RESULTS**
- Insights that drive efficiencies and help improve uptime
- Increased speed of on-premise
- Help for meeting data compliance regulations
Polinter, a Venezuelan petrochemical company, was looking to streamline various data sources—to reduce costs, improve operational excellence, and remain competitive. The company recognized the need to adapt its quality management program into an asset performance management (APM) solution.

Certified with ISO 9000 for more than 21 years, Polinter also recognized the importance of the human factor and workplace culture in its transition to an APM-driven organization. For each process that the team implemented, Polinter included training in all methodologies and involved end users in every step of the project.

One critical part of merging Polinter’s quality management and APM programs together included incorporating a reliability process into existing quality management processes. It required input from the production, maintenance, technical, and reliability teams about recommendations for improvement.

As a result, Polinter developed four sub-processes: asset definition and classification, asset strategy management, asset performance evaluation, and recommendation management. These processes are driven by APM from GE Digital and support a continuous loop of improvement.

Developing a single APM program incorporating both quality and asset management helped Polinter drive multiple benefits—including improving the mechanical availability in two out of three of its plants.

**RESULTS**
- Reduced corrective maintenance actions by 14%
- Increased preventive maintenance by 25%
- Increased client satisfaction and efficient use of resources
THREE STEPS FOR DRIVING VALUE IN YOUR DIGITAL JOURNEY

Digital twins, artificial intelligence (AI), machine learning, predictive maintenance, cybersecurity. These are just a handful of the opportunities, challenges and technological tools that currently exist in market and it’s enough to make a manufacturer’s head spin.

These aren’t just buzzwords, though. These concepts and technologies represent the possibility for real and new value for manufacturers. The potential is huge, and many industry leaders are seeing demonstrable value from them already as they connect machines to the IIoT.

Cost savings, improved productivity, reduced waste, optimized maintenance processes, new business models and improved customer service are all in the mix when it comes. So how do you get from here to there? The path to unlocking new value typically includes three key steps:

1. Connect and digitize for purpose-driven productivity. This step allows you to develop real-time visibility into asset performance across devices. With a thoroughly connected and digital-oriented enterprise, you can begin to capture more data and make it actionable.

2. Optimize operations and market engagement. Now you can use your data as a differentiator—leveraging relevant real-time insights to reduce delivery time and increase throughput, for example. It’s about getting visibility into plant operations, boosting productivity, enabling flexibility, accelerating time to market, and meeting customers' needs.

3. Innovate and scale new business models. Take things to the next level with machine learning and AI, allowing you to enable value-based service differentiation and pricing. One example: Leveraging advanced technology to optimize maintenance schedules and anticipate potential downtime before it happens.

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https://www.ge.com/digital/applications/hmi-scada
https://www.ge.com/digital/applications/manufacturing-execution-systems
TAKING A SECOND LOOK AT THE POTENTIAL OF DIGITAL TWINS

Digital twin technology is more complex and valuable than many might imagine, extending beyond just the asset level. Depending on an organization’s maturity, there are different types of digital twins, with different levels of sophistication.

THE FOUR TYPES OF DIGITAL TWINS

• Component twins
• Asset twins
• System or unit twins
• Process twins

For example, a motor (a component) might be part of a packing machine (an asset), which is part of an assembly line (a system) in a specific factory (covering a process). Put multiple types of twins together and you can amplify the impact—with twins building on and learning from one another in a network of twins, providing much more accurate and informed insights on which you can act. And this concept crosses industries—power generation, transportation, healthcare, and more.

THE FOUR TYPES OF DIGITAL TWINS

• DETECT, PREVENT, PREDICT, OPTIMIZE

Digital twins can fall anywhere on a maturity curve that includes four key points. Organizations can use digital twins to detect (e.g., threshold alerting), to prevent (e.g., defined strategies), to predict (using data mining and modeling capabilities, for example), and to optimize (which can involve machine learning and artificial intelligence).

Because your organization could have assets all along the curve, it’s important to provide digital twins from low-tech (maturity) to high-tech (maturity). Whether you are trying to improve the efficiency of a single asset or you are trying to optimize an entire plant’s processes, a single digital twin or a collection of them can function at various levels of maturity and complexity to answer the questions your organization is trying to solve.

Overwhelmed by the possibilities? Remember: You don’t have to do it all at once. The key is to start where it makes the most sense for your organization.

LEARN MORE
https://www.ge.com/digital/applications/digital-twin
As smart and IoT-enabled technologies become more prevalent throughout manufacturing sectors, the growth of data presents a flurry of challenges among both information technology (IT) and operations technology (OT) professionals. While IT professionals oversee information processing, hardware, and software installation and monitoring and data collection, OT professionals understand the factory floor, the sequences of events during production, the nuances of each machine, and the overall structure of the physical facility.

**MEND THE GAP**

As the Industrial Internet of Things becomes more commonplace, IT and OT are beginning to overlap. Many organizations understand the potential and challenges of big data, but there is an added layer of complexity when it comes to making data beneficial for both IT and OT professionals. Often, the challenge is as simple as IT and OT not speaking the same language—each often operating with a different set of guiding principles and goals. When the left hand doesn’t know what the right hand is doing, inefficiencies and confusion can emerge.

Software products, such as those developed by GE Digital, can help mend this gap by aggregating data to ensure that both IT and OT professionals have it available at their fingertips throughout the factory floor and within their network of facilities—with no need to wade through impossibly large data pools.

**NEW POTENTIAL**

Today’s software and storage solutions can organize data, output automated reports, and create digital twins to support IT and OT needs alike. By standardizing data capture, analysis, and output, you can provide greater transparency and understanding among peer sets—making information more manageable and more easily available. And that’s just the beginning. As you deploy new solutions and progress along your digital transformation journey, the potential for true IT/OT convergence, streamlined business operations, and optimized production increases.

[LEARN MORE](https://www.ge.com/digital/blog/rise-hybrid-manufacturing-execution-systems)
Artificial intelligence remains a hot topic when it comes to digital transformation—encompassing a broad set of technologies and applications, including machine learning.

Integral to how many leading industrial organizations operate today, machine learning allows computers to learn and improve without being explicitly programmed. It leverages data to intelligently automate processes and decisions, learning from past outcomes and optimizing activities through a “closed loop” approach—with feedback driving continuous self-learning.

Incorporating machine learning tools can be a game-changer—helping you efficiently automate repetitive events, free up human time, save costs, identify issues sooner, and improve operations overall. Start with these insights for leveraging machine learning more effectively.

1. Get your data ecosystem in order first. Having clean, sufficient, trustable data is crucial. The better your data, the better the model you can build. You likely have tons of data archived or sitting idle as a “byproduct”—data you can use.
2. People are still important. Data scientists, analysts, and others will guide your intelligent automation strategy, manage data, and support the model.
3. You can build your own tools or buy them. Time-to-value should drive your decision-making. (Do you have the resources and time to build your own capabilities?)
4. You can start small—for example, machine learning for just one component process. But see the bigger picture. Have an end-state vision of where things could go.
5. Find ways to show value quickly—to gain internal buy-in and to learn important lessons.
6. Use machine learning to move the needle—not to generate obvious observations or recommendations. So do your homework. Quantify the potential value. And when making the business case, bake in the impact of continuously improving results.

LEARN MORE
https://www.ge.com/digital/iiot-platform/machine-learning-analytics
Transformation Solutions from GE Digital
PUTTING THE INDUSTRIAL INTERNET TO WORK: GE DIGITAL’S SOFTWARE PORTFOLIO

Historian
Optimize data collection & compliance
10–20% Production Throughput
15% Data Storage Reduction Costs

HMI/SCADA
Improve process & operator efficiency
10–20% Employee Efficiency Increase
5–30% Decrease in Energy Usage

MES
Increase enterprise visibility & product quality
15% Production Efficiency Increase
3x Increase in Throughput

APM
Predict & prevent equipment issues
2% Improved Availability
30% Reduced Maintenance Costs

OPM
Increase revenue & margins
10–20% Production Throughput
10–20% Revenue Growth

We didn’t just invent the Industrial Internet—we’re redefining it through the work we do with industrial organizations everyday.
Move Forward with Confidence

What are the outcomes that matter for your organization? What will your next step be? These are big questions for any organization operating in today’s rapidly changing environment.

Regardless of where you are in your digital transformation journey, GE Digital can help you take that next step with confidence, delivering solutions supported by our deep industrial expertise, a 30-year legacy of digital transformation, the full family of GE businesses, and a focus on best practices that go beyond technology—extending to people and processes, too.

The next step is an important one. But you don’t have to take it alone. Contact us to learn more about GE Digital solutions and services that can help you build a more connected and responsive enterprise—and make transformation a reality every day.