Industrial internet and Lean DigitalSM: Generating “Machine to P&LSM” impact
The industrial internet brings great promise for re-architecting legacy processes and technologies—but only for companies that can effectively derive the most value from their machines, systems, and data. Too often, digital and analytics transformation initiatives are not integrated with core operations, with the result that there is no actual impact. Instead, the solution framework must start with the business problems that industrial machinery organizations are trying to solve. Genpact’s Lean Digital\textsuperscript{SM} approach for IIoT establishes a pragmatic model to harness value by applying a domain lens to re-imagine the outcome and deliver “Machine to P&L\textsuperscript{SM}” impact.
According to recent research, almost 81% of manufacturing organizations believe successful adoption of Industrial Internet of Things (IIoT) is critical to future success, but strikingly, only 25% have clear IIoT strategy—and of those, just 1 in 4 are actually happy with its execution.

Data security and privacy, insufficient skills among technology staff, the existence of legacy systems, and the need for timely, high-quality data are the top challenges constraining manufacturing enterprises from realizing the potential of IIoT. Yet, the experience of leading adopters of IIoT technology proves that, at root, these challenges are not necessarily technical in nature. Digital technologies allow for the storage and processing of vast amounts of structured and unstructured data, but the resulting overload of data in large legacy environments with operational silos makes it hard to generate actionable insights.

The real challenge with all new technologies is interoperability with established operations and systems, particularly where technologies use big data; the challenge is to make operations “intelligent”—that is, able to sense, act, and learn, at scale.
A deliberately narrow thread of the right data tightly aligned to business outcomes enables data-to-insight-to-action.

**Asset data**
Specific data delivered via Industrial Internet platforms

**Engineering**
Asset data gets aligned to respect business process, analyzed in context and integrated within business operations, closing the Data-to-Insight loop.

**Operations**

*Figure 1*
Start with the end in mind, not just with the technology

The solution framework for determining IIoT’s “what” and “how” for a company must start with the business problems that industrial machinery organizations are trying to solve, and work backward from there to the actions, people, and—finally—data required. Particularly because piecemeal digitization of new product development, sales and order management, manufacturing, supply chain and aftermarket services is often counterproductive, a Lean DigitalSM approach that harnesses digital technology and analytics through a business-domain lens helps identify solutions that are practical and effective to implement (see figure 2). Lean management practices help overcome the inertia of legacy, change management and transformation cost, while human-centered design-thinking principles ensure that reimagined processes and digital interventions are aligned with business outcomes as well as customer- and user-experience expectations.

**The practical way - Lean DigitalSM for IOT**

- **Digital process-centric technologies**
  - Fit for purpose, nimble technology portfolio extending across devices, communication networks, infrastructure, platforms, application, mobility and security

- **Design thinking methods focused on the end customer**
  - Iterative outcome centric process that are analytics aware and self healing to deliver meaningful impact such as new business models new revenue streams

- **Lean principles that focus on agility**
  - Built to adapt. Maximize machine data and analytics driven insights across stakeholder value chain. Adopt Fast Works and lean sigma.

- **Underpinned by domain expertise**
  - Redefined outcome and redesigned digital processes are implemented in new age technology with a domain and context aware model

*Figure 2*
Fusing data, processes and machines to transform industrial enterprises

The convergence of Information Technology (IT) and Operations Technology (OT) systems connecting networks of connected machines to other enterprise and IT systems allows information flows and physical flows to be merged into a seamless “digital thread.” Tapping these flows for big data analytics, and reimagining manufacturing and related operations with those insights, can result in an intelligent operating model that enables:

**Smart services**

The health and performance of IIoT-enabled assets is automatically managed and optimized through remote monitoring, diagnostics, and prognostics. Actionable insights for proactive maintenance of mission-critical assets, scheduling of field engineer visits, timely spare parts order and dispatch, and better pricing of service contracts all help reduce unplanned downtime and cut maintenance cost.

**Intelligent manufacturing**

Fully integrated data-to-product flows allow real-time optimization of manufacturing by connecting demand sensing, materials management, manufacturing shops, logistics, aftermarket services, and product design to automatically sense, act and respond to changes in the operating environment, such as fluctuations in customer demand.

**Connected supply chain**

Information and decisions flow through the supply chain and organization quickly, enabling immediate responses to market demands. The result is better control, reduction of excess inventory, lower logistics costs, increased responsiveness to customer needs or sudden changes in demand, accelerated order-to-cash cycles, and a value chain aligned with customer-experience expectations.

Genpact designs and optimizes the full Data-to-Insight-to-Action loop, (see figure 3) allowing continuous learning and feedback from operations to be crystallized into powerful analytical platforms. Our unique methodology leverages Smart Enterprise Processes (SEP™)—a proprietary framework that uses granular data analysis, benchmarks, and metrics to identify digitization opportunities that will have the maximum impact on reimagined business outcomes. The machine, systems, and external data points are captured and ingested using best-fit sensor and communication technologies, Systems of Engagement™, and advanced analytics platforms.
An end-to-end solution for digital twin, digital thread and digital enterprise

- Define business outcomes
- Redesign business process
- Identify data sources
- Capture and ingest data
- Analyze
- Implement process and system change
- Ongoing process and systems adaptation
- Monitor
- Change

Process, data and systems assessment (SEP℠)

Growth
Efficiency
Agility
Compliance

Figure 3
Impact: Getting IIoT to work faster

Genpact helps build and sustain an IIoT Data-to-Insight-to-Action strategy by orchestrating, industrializing, and supporting analytics-based processes to generate growth, cost efficiency, and business agility. **Genpact’s accelerators and tools help reduce time and effort by 15%-30%, and costs by up to 25%, enabling enterprises to derive greater value and accelerated business impact, such as:**

- **Increased revenue by up to 15%** with proactive parts replacement, better installation base coverage, and new business models
- **Greater cost-efficiencies** via centralized field service and contact center operations, while smarter inventory management and returns processes can **lower costs by up to 10 percent**
- **Improved profit margins by up to 15%** with streamlined operations and large-scale automation
- **Effective risk management** with remote monitoring and reliability-based failure forecasting
- **Enhanced customer experience** with greater insights from data, and better-performing products and services

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![Figure 4](image-url)

**Our solutions and enablers**

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Power generation
35% working capital and inventory cost reduction, $16 million annual lost revenue risk reduction on 1200 turbines for a power generation company by implementing reliability based prognostics solution

Airline
Engine downtime reduction by 15% for an airline resulting in $50MM+ of cost saving through machine learning based solution which accurately forecasts the critical spare part need proactively

Aircraft Engine OEM
$22Mn of margin improvement (14% cost reduction) by identifying cost out opportunities through cost analytics for a global aircraft engine OEM

Aviation
40% reduction in the cost of fleet support operations of an aviation company, through master data management and analytics, resulting in $14 million profit/year

Energy
$4Mn of cost saving per quarter by improving the efficiency of the Oil Well Bore drilling process by establishing a machine learning based decision support system to recommend on the drilling course real time

Aircraft Engine OEM
$22Mn of margin improvement (14% cost reduction) by identifying cost out opportunities through cost analytics for a global aircraft engine OEM
Why Genpact

As a neutral third-party to manufacturers and operators, our unbiased Lean Digital™ approach focuses on what works for digitally enabled transformation for the industrial enterprise, rather than just focusing on technology. We bring the right insight and best-fit solutions, leveraging our ecosystem of leading-edge analytics, technology, and machine-to-machine connectivity partners.

Our unique genome—derived from GE—guides our original operational excellence orientation and our understanding of industrial enterprises and their ecosystem. As one of the earliest adopters of pioneering industrial internet technologies, we offer a fully integrated delivery model that drives greater business impact.

- Over 170 clients across industries such as energy, utilities, oil and gas, heavy manufacturing, automotive, healthcare, life sciences, consumer goods, transportation and logistics and automotive

- A large pool of technical and functional experts with experience building Predix-based solutions for multiple industrial use cases and test-beds

- 6,500+ analysts and data scientists—many of whom have manufacturing backgrounds—to capture the right data, make sense of the data, and apply it to operations

- Deep industrial machinery operational support expertise spanning equipment monitoring, data collection, predictive maintenance support, service parts inventory, field services, and commercial simulation for revenue optimization

- Monitor 40,000+ critical equipment, 50TB of data points analyzed, deliver 300+ complex interface integrations, $38n of parts inventory, forecast failure of 30,000+ critical parts, manage over $1.6B service parts inventory, 5,000 deal scenarios priced, and 1000+ service contracts managed
About Genpact

Genpact (NYSE: G) is a global professional services firm that makes business transformation real. We drive digital-led innovation and digitally-enabled intelligent operations for our clients, guided by our experience running thousands of processes for hundreds of Global Fortune 500 companies. We think with design, dream in digital, and solve problems with data and analytics. We obsess over operations and focus on the details – all 78,000+ of us. From New York to New Delhi and more than 20 countries in between, Genpact has the end-to-end expertise to connect every dot, reimagine every process, and reinvent companies' ways of working. We know that rethinking each step from start to finish will create better business outcomes. Whatever it is, we’ll be there with you – putting data and digital to work to create bold, lasting results – because transformation happens here, at Genpact.com.

For additional information, contact industrial.manufacturing@genpact.com and visit www.genpact.com/what-we-do/industries/industrial-manufacturing/industrial-internet-iiot.

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