

# Transform your factory with Google's Manufacturing Data Engine (MDE)



Monitor machines, improve performance, and leverage artificial-intelligence-fueled decision-making in real-time.

Manufacturers generate vast amounts of data from a variety of shop floor processes. But, collecting, analyzing, and gaining actionable insights from this data can be challenging. Combining **Deloitte's transformational and technical expertise for Smart Factories** with **Google's state-of-the-art MDE** can leverage these challenges. The MDE ingests data from disparate sources in a structured fashion, benefiting from easy-to-implement data contextualization to accelerate successful implementation. The MDE also allows manufacturers to leverage Google's cutting edge AI/ML services to create new solutions on the shop floor for a leg up on the competition. The pairing of Deloitte's Smart Manufacturing Analytics with Lean Manufacturing 4.0 creates a **positive impact** measurable **within weeks**.



## Operational Excellence with AI decision-making

**Smart Manufacturing Analytics**

Gain real-time visibility of your manufacturing processes. Collect data from people, machines, and sensors throughout your operations. Visualize your data on dashboards and receive alerts to allow for real-time decision-making.

- Connect any machine
- Production monitoring dashboard
- Optimize your processes
- ML based parameter optimization
- Resolve production bottlenecks
- Alert notifications

**Lean Manufacturing 4.0**

Digitize your lean manufacturing practices, collect & analyze data in real-time, and boost your manufacturing continuous improvement cycles to achieve overall operational excellence.

- Digital Andon system
- Real-time AI based Muda Analysis
- Real-time value stream mapping
- Heijunka (production levelling)
- AI based root-cause analysis
- Total predictive maintenance

**Quality Management 4.0**

Ensure quality at each step of your production. Increase the efficiency and frequency of quality checks and ensure only high-quality materials and parts to move downstream.

- Real-time quality monitoring
- AI based in-line quality control
- Real-time statistical process control
- NLP based voice of customer
- Real-time design of experiments (DOE)
- Integrated Six Sigma methodology

**Drive Smart Factory transformation**

Deliver real-time, edge-to-cloud data access for manufacturing IIOT system implementation.

**Enhanced ease-of-use**

End-to-end solution deployment with low code/ no code environment.

**Machine-level anomaly detection**

Identify anomalies with real-time **machine and sensor data** such as vibration, or temperature.

**Root-Cause Analysis**

Identify root causes of quality fluctuations and defects in order to **increase quality and performance**.

**Predictive Maintenance**

Anticipating asset's need for service, helping **reduce downtime and maintenance cost**.

**Visual Inspection AI**

Train and deploy **AI models** to automatically detect visual production defects in **high-precision manufacturing**

**30 days**

ROI through cost savings, improved efficiency, and increased productivity.

# Making it real: Production Monitoring



**CHALLENGE**

**LACK OF VISIBILITY**

Unlocking accurate, real-time production data is difficult. Most manufacturers manually collect data from their shop floors and enter it into management systems. This is time-intensive and leads to delayed, inaccurate production data that is not actionable.

- Massive inefficiencies
- No process improvements
- Unjustified capital expenditures
- Machine downtime and production losses

**SOLUTION**

**REAL-TIME VISIBILITY**

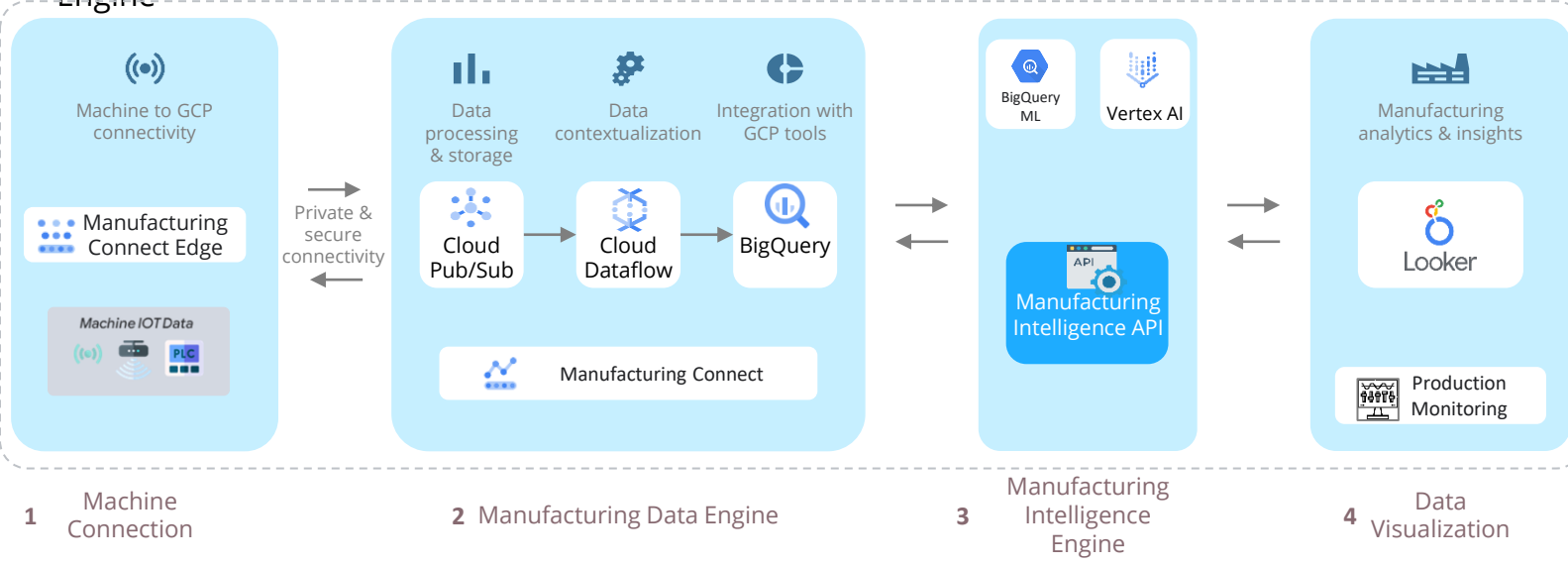
Continuous improvement in manufacturing starts with capturing data from your operations - specifically your machine assets. Deloitte's Google MDE features automated machine-data collection to deliver data-driven insights in a matter of minutes.

- Drive operational excellence
- Gain immediate actionable insights
- Enable better and faster decisions
- Drive digital transformation

- PLUG-AND-PLAY**  
Out-of-the box implementation of a production monitoring platform with our pre-built data contextualization models, Looker dashboards, and Manufacturing Intelligence Engine.
- POWERFUL ANALYTICS**  
Make informed decisions with real-time data and know exactly what is happening on the shop floor, down to each individual part, parameter, and work order.

- VISUALIZE PRODUCTION**  
Empower operators to meet production goals by visualizing performance and identifying production issues in real-time.
- MACHINE LEARNING & PREDICTIVE ANALYTICS**  
State-of-the art pre-built both cloud and edge native machine learning algorithms for machine-level anomaly detection, root-cause analysis, and predictive maintenance.

## Reference Architecture: Manufacturing Data Engine with Deloitte Manufacturing Intelligence Engine



## Start the conversation

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