



Predictive Maintenance Service Layer



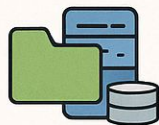
Dashboard and
visualization



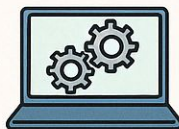
Alerts and
Notifications



Digital Twin Middleware Layer



Data
Integration



Simulation
Engine



Behavior Prediction
and/or Maintenance
Control

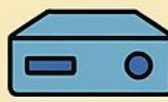
Data Acquisition and Communication Layer



Sensors / IoT Devices



Wireless Network

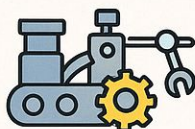


Edge
Computing
Infrastructure



Cloud Computing
Infrastructure

Physical Layer



Machines and
Equipment



Process Operator

Sustainability

Privacy, Security
ML, DL, LLM, VLM