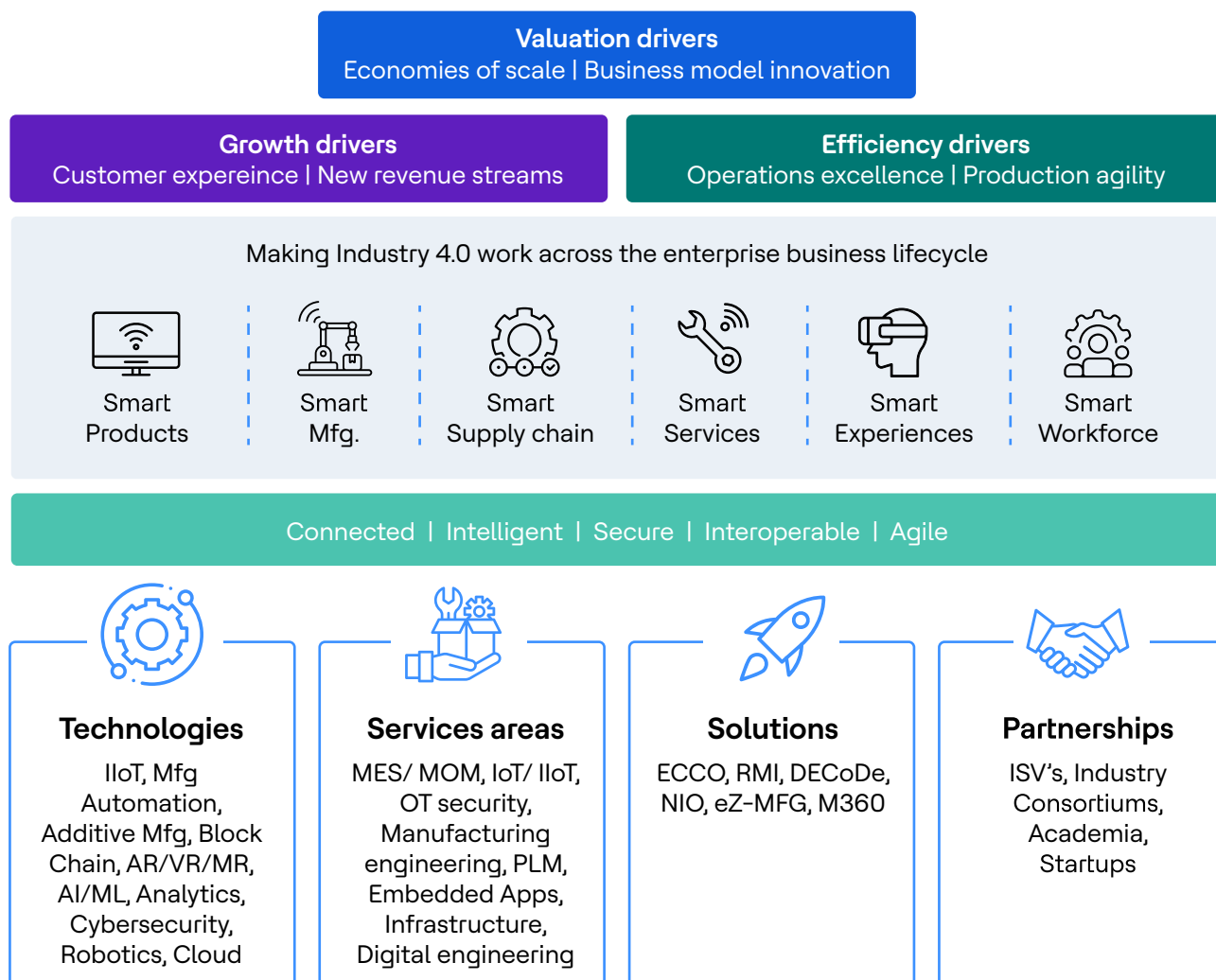# HCLTech | Supercharging Progress™

Digital Manufacturing

Industry 4.0 and Smart Manufacturing are some of the most important trends shaping the manufacturing industry today. The ever-growing requirements of improving "Customer Experience", "Personalization" and "Operational Efficiency" are driving companies to integrate real time data and production processes with technology acting as a digital thread to glue internal and external supply chain together. HCLTech's Digital Manufacturing & Industry 4.0 practice helps companies understand and address opportunities to apply Industry 4.0 technologies to achieve their business objectives. Our insights into smart manufacturing building blocks (MES/MOM, Industrial IoT, engineering and manufacturing applications) and supporting technologies (Analytics, Machine Learning, Additive Manufacturing and Augmented Reality etc.) enables us to help organizations create a roadmap for the Industry 4.0.

HCLTech's Industry 4.0 / Smart Manufacturing practice overview

HCLTech's Industry 4.0 and Smart Manufacturing practice has evolved out of a 23 year legacy in PLM, MES and Digital Engineering. For more than two decades, HCLTech has helped manufacturing customers in their digital transformation initiatives. Our Industry 4.0 offerings across smart products, smart mfg, smart supply chain and smart experiences are built on cutting edge technologies and platforms as shown in the figure alongside.

Valuation drivers
Economies of scale | Business model innovation

Growth drivers
Customer expereince | New revenue streams

Efficiency drivers
Operations excellence | Production agility

Making Industry 4.0 work across the enterprise business lifecycle

Smart Products | Smart Mfg. | Smart Supply chain | Smart Services | Smart Experiences | Smart Workforce

Connected | Intelligent | Secure | Interoperable | Agile

Technologies
IIoT, Mfg Automation, Additive Mfg, Block Chain, AR/VR/MR, AI/ML, Analytics, Cybersecurity, Robotics, Cloud

Services areas
MES/ MOM, IoT/ IIoT, OT security, Manufacturing engineering, PLM, Embedded Apps, Infrastructure, Digital engineering

Solutions
ECCO, RMI, DECoDe, NIO, eZ-MFG, M360

Partnerships
ISV's, Industry Consortiums, Academia, Startups

HCLTech smart manufacturing solutions are built around targeting smooth flow of information and connected by digital thread

Across the product lifecycle connecting product/ process engineering, manufacturing planning and supply chain to core manufacturing operations.

Vertical integration from shop-floor to top-floor, integrating data from business systems, shop-floor systems, machines and devices to provide real time information leverage data analytics and machine learning to predict events before they happen to assist in decision making.

Standardization of processes and platforms aligned to Industry 4.0 principles.

Delivering transformational experiences with Augmented Reality, Additive Manufacturing and Robotics.

HCLTech solutions for connected factory enablement

Smart Maintenance using Augmented Reality

HCLTech Smart Maintenance solution improves worker experience through in-context availability of asset information. This solution provides up-to-date asset information to maintenance worker by transforming equipment maintenance activities from conventional approach to a mobile & web based interface using Augmented Reality. The solution helps realize savings due to quick and accurate maintenance of machines, and improved maintenance engineer efficiency.

"e-Pick-to-Light" solution for smart operations

"e-Pick-to-Light" based on Augmented Reality is a cost effective error proofing solution used in manufacturing operations especially in kitting process. It helps to reduce errors and defects in production process through scan of a bar code/ QR code. It helps to optimize parts selection in operating station, warehouse etc. It eliminates need of industrial hardware, PLC and beacons etc.

Etherless Integration

Etherless Integration (EI) allows connection of disparate/ legacy equipment through video processing and eliminates manual recording of events. EI also has Artificial Neural Network (ANN) along with heuristics used for recognition. With this solution, alarms and data is recognized through video processing/ imaging techniques to trigger alerts and to control equipment.

Value: Eliminate 100% manual effort for data collection and get true OEE metrics and KPI's
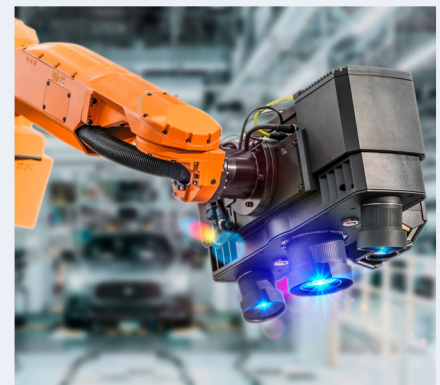
MES/MOM implementation

Helping customers select and implement cost effective and right sized solution to fit plant requirements based on commercial off the shelf platforms or custom developed on leading platforms and aligned to industry standards. Our manufacturing application maintenance and support services ensure high availability and continuous enhancements of manufacturing applications helping customer focus on real production issues and improvements.

Digital quality solution

HCLTech computer vision based solutions for quality management helps in automating end of the line inspection, WIP inspection to detect quality issues at source and enable error proofing in assembly and kitting operations.

IPs & frameworks

Plant-in-a-box

HCLTech methodology to accelerate multi-plant roll out of MES/ MOM solution using template based approach to reduce implementation costs and schedule

DevOps & Test Automation Framework

Developed specifically for MES/MOM to automate testing and deployment to reduce manual efforts and cost

ROST

'Real-time Online Supply chain Tracking' improves supply chain performance by improving visibility into supplier production status and risk mitigation by forecasting potential delays in advance

Plant Data Acquisition Framework

Data Acquisition Framework integrates machines, robots, AGVs, devices at shop floor to MOM using OPC / OPC-UA protocols.

Success stories

Global manufacturer of White goods

Multi-plant implementation and roll out of smart factory solution to help improve plant metrics (production through-put, OEE etc.) and leading KPIs in Production, Quality, Factory Logistics, Packaging & Inventory control
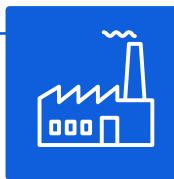
Global manufacturer of consumer electronics products

Multi-site deployment of MES solution integrated to shop-floor and business systems. Cloud enablement and machine learning for KPI visibility and comparison. Process and technology standardization across plants and ability to predict outcomes.

Battery Plant for Global electric vehicle OEM

Plant assessment, technology recommendation and implementation to improve operations efficiency, material control and transform from reactive to preventative asset maintenance
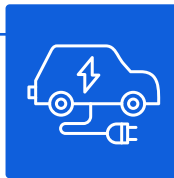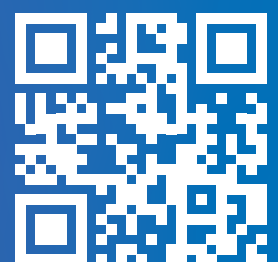
Oil and Gas supermajor

Refinery and laboratory applications modernization, enhancements and maintenance support for plants globally.