Digital Transformation of Manufacturing:
Opportunities, Challenges, and Lessons Learned

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Digital Transformation | **Opportunities for Manufacturers**

Transform daily operations…

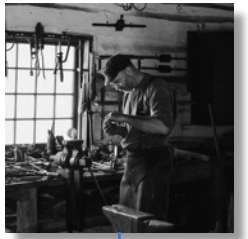
FROM:		TO:
Reactive	➡	Predictive & Controlled
Siloed & Fragmented	➡	Aggregated & Integrated
Historical Knowledge	➡	Forward-looking Insights
Guessing	➡	Knowing
Fixed Constraints	➡	High Flexibility
Culture of Adaptation	➡	Culture of Innovation

…to improve performance!

1. Availability (Uptime, Efficient Maintenance)
2. Quality (RTY, DPM, CoPQ, Shipped Quality)
3. Speed (Takt Time, Changeover Time, TTM)
4. Throughput (Flow, Capacity, Utilization)
5. Agility (Respond to Changing Demands)
6. Sustainability (Energy, Waste)

Through a combination of quick wins, well-targeted use cases, and a 10-year roadmap, digitalization (intelligent systems) can create major value to manufacturing operations.

Transforming the Nature of Industrial Work



1st Industrial Revolution

Specialized Work
(Craftsmen)

2nd Industrial Revolution

Standardized Work
(Taylorism, Fordism)

3rd Industrial Revolution

Autonomous Work
(Toyota System)

4th Industrial Revolution

Knowledge Work
(???)

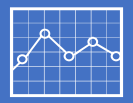
1750 1800 1850 1900 1950 2000 2050 2100

Digital Transformation | **Key Challenges for Manufacturers**

- Focusing on problems to solve (not solutions!)
- Data acquisition, asset connectivity, missing sensors
- Data cleansing, labelling, managing, maintaining

- Roadmap (vision, scope, targets, sequence, CSFs)
- Architecture and technology choices/constraints
- Program and project management (new methods!)

- Management engagement and alignment (x-function)
- Genba engagement and participation
- Resource constraints and skills limitations



- Benefits realization (short-term & long-term ROI)
- Integration with operations, extension, expansion
- Learning… and changing the workplace culture

Digital Transformation | **Lessons Learned**

1. Integrate your OpEx and DX Programs.
2. Early Engagement of People at the Genba.
3. Stakeholder Alignment. Governance model.
4. Minimum Viable Dataset.
5. Data Dictionary.
6. Design Thinking. Agile Engineering.
7. Encourage Creativity & Experiments. Allow Failures.
8. Stay Curious. Seek ideas especially outside Your Industry.

Thank You

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