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Digital Assessment: the starting point of a Digital EnterpriseTransformation

Our customers have to overcome challenges in all industry sectors

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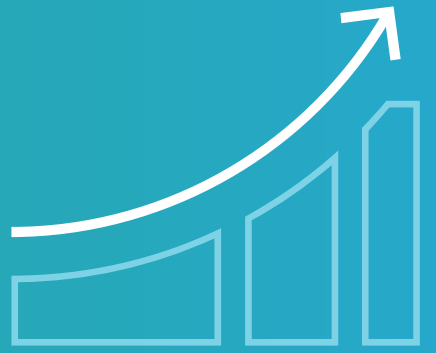
Speed

Flexibility

Quality

Efficiency



Security

We want to guide you on your digitalization journey

Digitalization as a tool to make you more competitive

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Identify **improvement** areas and gaps

Sharing digital **possibilities**

Building a **roadmap** together for digitalization

Future Challenges that you may will face

Real use cases, real data, real impact for electronics manufacturing

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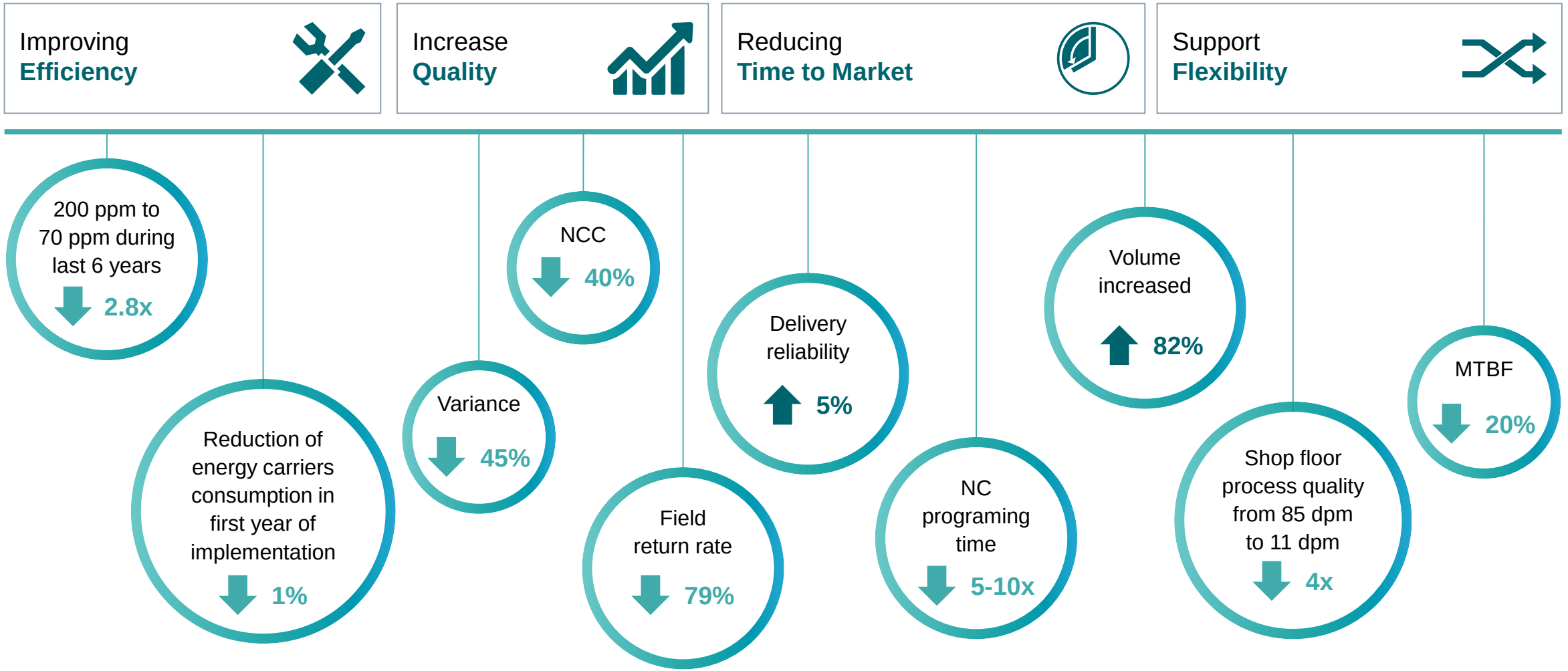

Over 10 years digitalization journey

Final project deliverable is a prioritized digitalization roadmap

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Example of a project goals

Increase productivity, efficiency and quality

Reduce cost

Maximize efficiency of capital allocation

Establish a highly integrated value chain

The portfolio for the Digital Enterprise with efficient interoperability of all automation components

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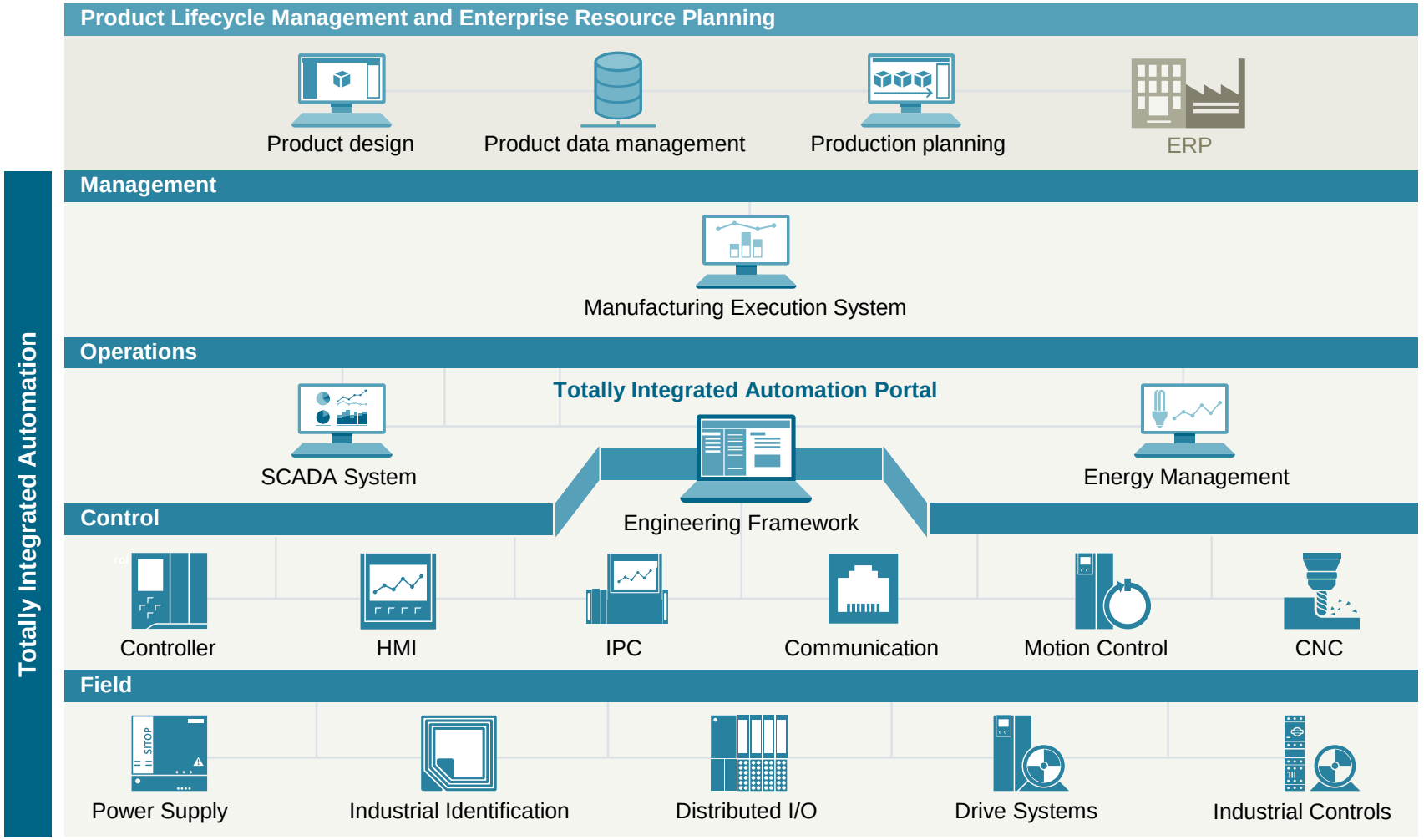

Added value in all automation tasks

- Integrated Engineering
- Industrial Data Management
- Industrial Communication
- Industrial Security
- Safety Integrated

In order to remain competitive in the future, the value chain must be integrated and digitalized

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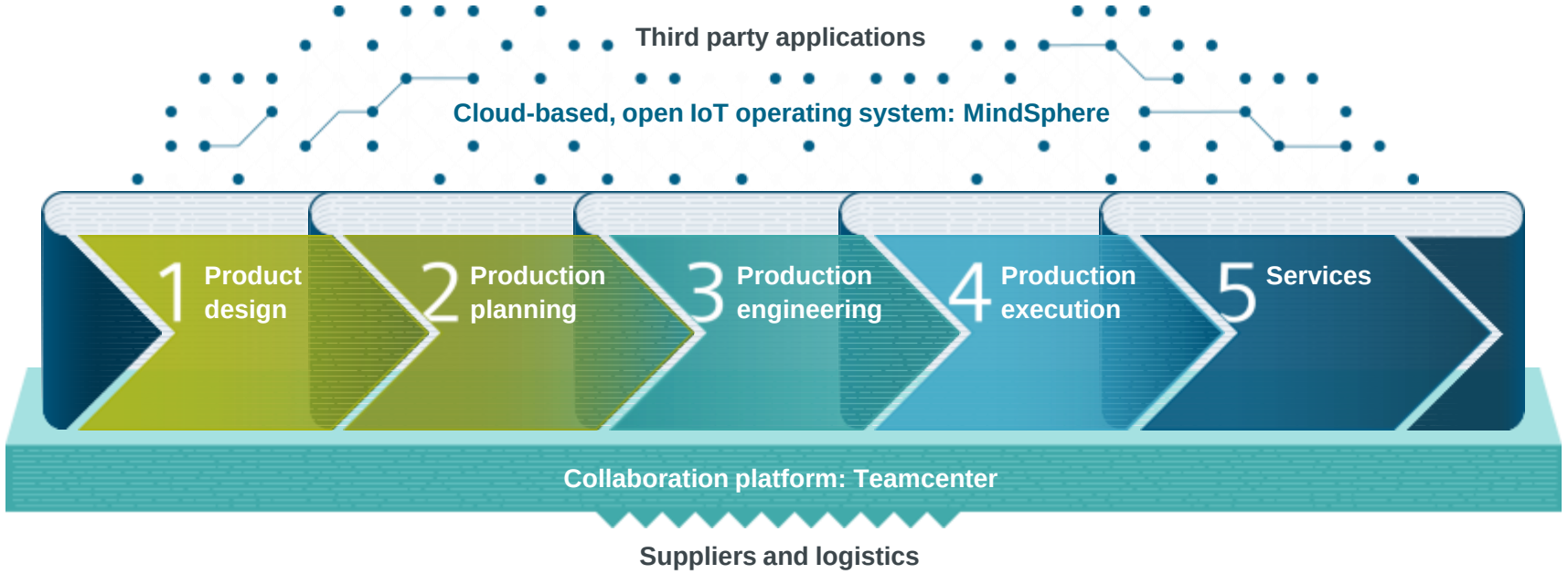

Creating a Digital Twin of the entire value chain

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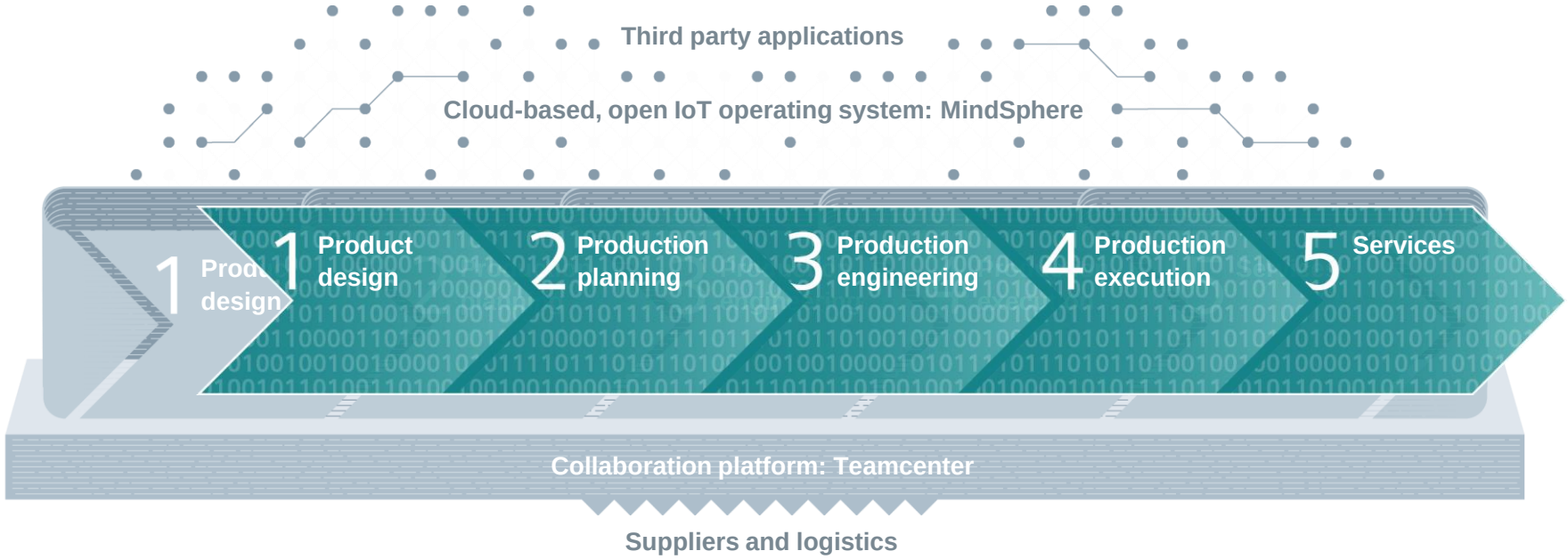

A team of experts will guide you to capture value out of digitalization

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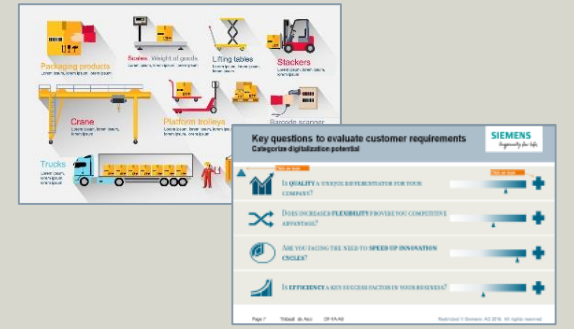
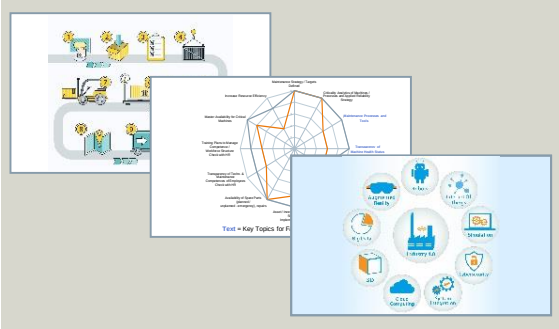
Understanding	Maturity Assessment	Technical and financial feasibility	Digital Enterprise Implementation Roadmap
• Define the scope of work based on the company strategy, capabilities, and technologies • Identify Key Success Factors/ business drivers • Align deliverables and expectations	• Prioritize the opportunities • Conduct interviews to understand the challenges and processes • Detailed analysis of the "As-Is" value chain • Define the "To Be" • Identify potential initiatives	• Gap analysis • Refine the "To Be" processes • Align the action plan to the "To Be" target customers • Investment prioritization (NPV, ROI)	• Management decision for the roadmap





Digitalization from the field to the PLM and ERP

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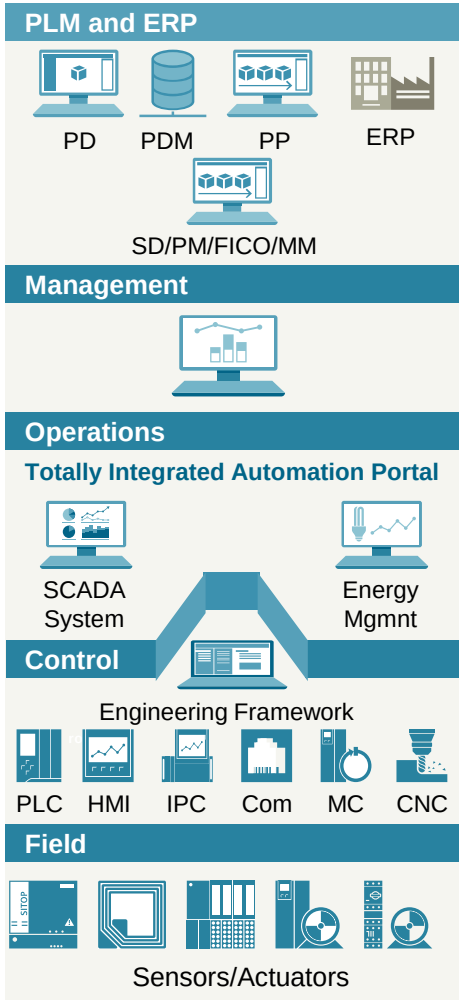
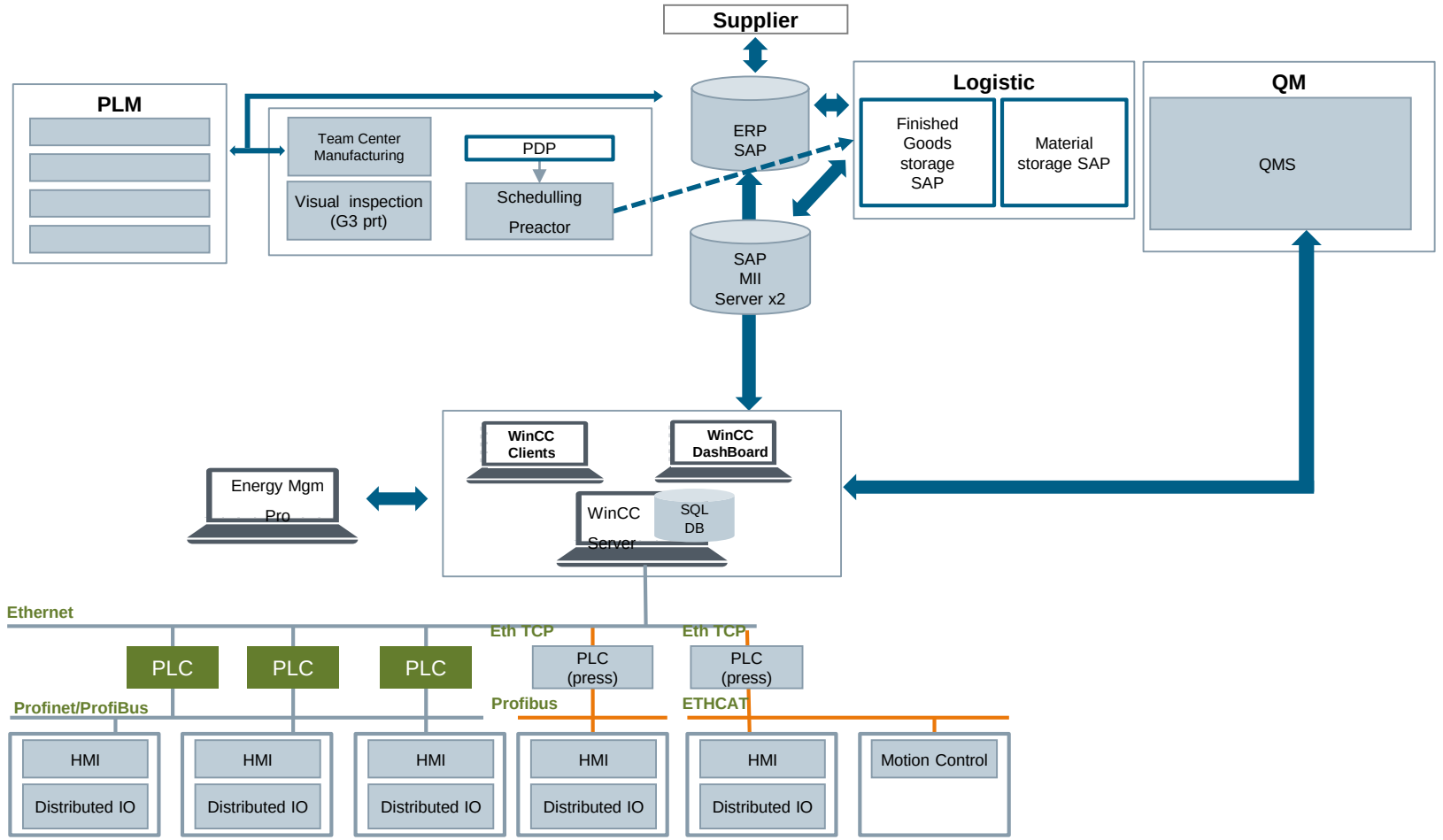
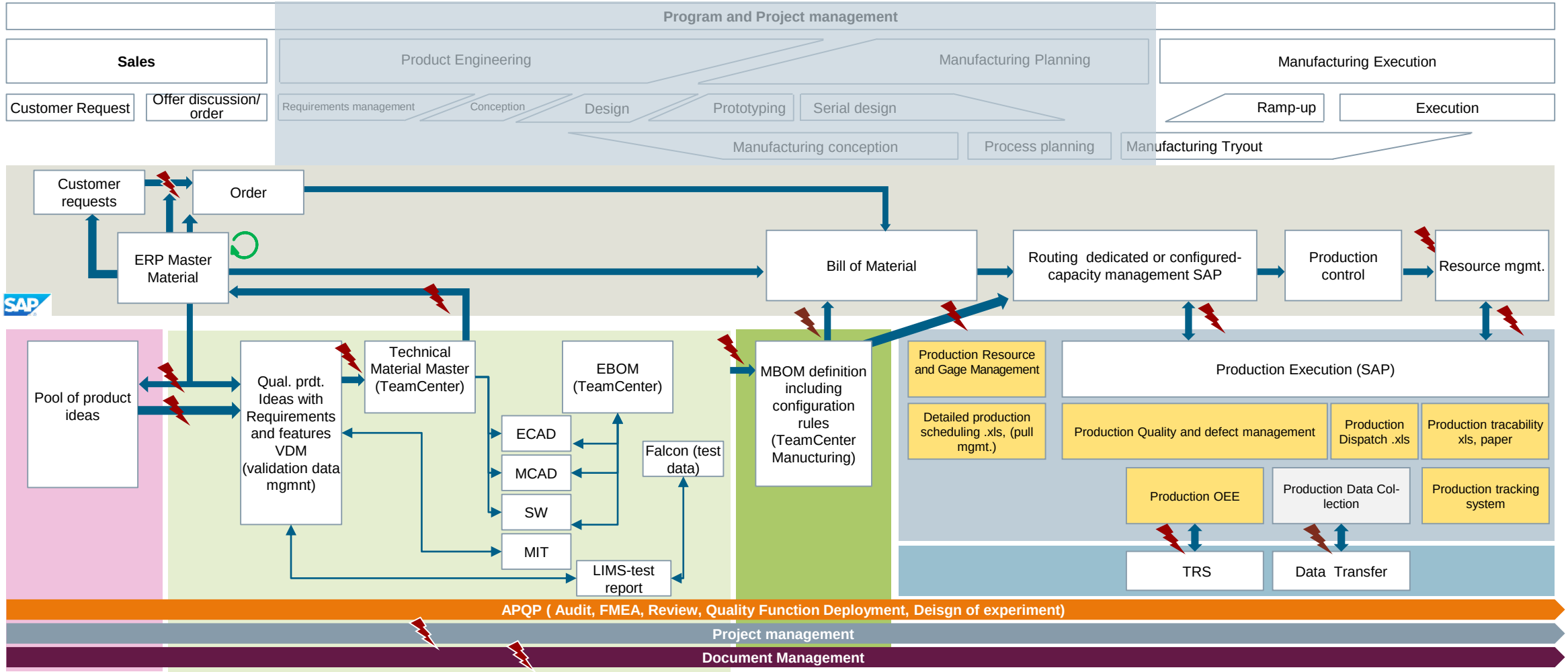




AS-is data flow framework- for an existing product



CUSTOMER Digital Maturity: Assessment

Summary and example

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Current Situation Impacts		Proposed Solution Benefits
• Manual data collection • Error on production counting and weighting	**Automation**	• Reliable data from online and integrated data collection • Online machine monitoring • Automatic production counting and scrap monitoring accuracy
• High planning efforts • Days required to replan in case of unplanned event	**IntraLogistics**	• Reduced efforts by seamless planning • Multi-scenarios simulation • Increase of efficiency by plant simulation
• Overall OEE: 60%-70% • € 350k/year – Compressor is working with leakage	**Efficiency**	• OEE improved by online machine condition monitoring, reducing ramp up time and increasing flexibility on assembly lines • Reduce energy consumption by energy management program
• € 400k/year – Deviation on inventory • € 1.8Mi/year – Wrong allocation of stock	**Production**	• Accurate inventory using barcodes and automatic labeling and reading machines • Reduce WIP by optimizing material & assembly flow
• ~20% Line Inspector Wasted Time w/ Filling Paper • Duplicate inputs and inconsistency between systems • € 1.2Mi/year losses on scraps	**Quality**	• Reduce efforts and increase quality data reliability by online and centralized data collection • Reduce scrap losses using quality management systems to identify root causes
• Risk of taking wrong decision due to lack of real-time information • Days are required to answer Customer Claims due to limited traceability (20 Claims/month)	**Integration**	• High transparency and support for decisions using online monitoring dashboards & KIPs • Increase customer relationship by a transparency track & trace system for the complete production flow

Production Execution

Exhibit 5: Digitalization maturity chart for production execution

€ 400k/year – *Deviation on inventory*

€ 1.8Mi/year – *Wrong allocation of stock*

50+ potential solutions to help CUSTOMER to improve productivity

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25+ Pain Points Identified

50+ Ideas/Solution Identified

	Ideas/solutions									
Main Pain Points	ShopFloor Automation Network	Integrated Central DataBase [1)]	Shopfloor Monitoring (Machine and Lines) and Management Dashboard	Digital Process Traceability [2)] at each process step	Energy Management	Material Flow Optimization	Seamless Planning	People Development (i.e., SAP, WinCC)	Workplace Optimization (i.e., Robots, Automated Handling System, paperless production)	Condition monitoring
Need of *Standardization*	✓	✓	✓	✓	✓					
Need of *Transparency*	✓	✓	✓	✓	✓		✓			✓
Need of *Traceability*	✓	✓		✓		✓				
• Customer Claims		✓								
• Connectivity of machine	✓									
Need of *Digi Culture*								✓		
Need of *Efficiency*			✓	✓	✓	✓	✓		✓	
• Stock Reduction/WIP Optimization						✓	✓			
• Energy					✓					
• OEE improvement						✓			✓	

1) Production Counting, Quality, Alerts, Reliability, Energy Consumption, Maintenance

2) Wireless scanners, automatic labeling, Smart Glove, Automatic Reader Machine, GPS localization, weighting

Proposal Outcomes – Digitalization projects

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Project Overview

Project Name

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Project Overview

Project Name

PLM Backbone

Product Life Cycle Phase

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Project Overview

Project Name

Predictive Maintenance System

Product Life Cycle Phase

☒ Enterprise Integration	☐ Production Planning	☐ Production Execution
☐ Product Design	☐ Production Engineering	☒ Service for Production

Classification

Medium	Investment	High	Complexity
Medium	Schedule duration	High	Impact on Business

Digitalization Trend

☒ Technology	☒ Manufacturing	☐ People and Organization

Current Situation

Glico has the concept of "My machine" which means that one team is responsible for the machine and this team has expertise on the machine (e.g.: how to operate, maintenance, etc.). For each line there are operators who perform the maintenance check list, including preventive and minor corrective tasks. For the package lines the maintenance done by operator is very limited. When a problem occurs in the secondary process such as an abnormality within the sensors, sometimes it is hard to find out the origin of the problem. Also, when it is necessary change the PLC program code, not everyone has the knowledge for that which results in support from the supplier which, from the Manufacturing perspective, increases the downtime.

All downtime incidents are registered on a spreadsheet so they can calculate the overall downtime of the factory. A separate spreadsheet is used for the details of the incident and downtime (location, description). Each process has a different target for downtime for every fiscal year.

Currently, Glico is currently **not** executing a structured predictive maintenance.

Current KPI in Chiba factory: Downtime Ratio (target 0.75%, current value 1.06%, accumulated 0.8%).

Pain Point and GAP´s

- No predictive maintenance implemented
- It is difficult to keep track of downtime and OEE of each machine. It is also difficult to search for similar issues on the past and there is no traceability over loss opportunity and money over downtime.
- Downtime ratio above target in Chiba factory.

Project Scope

Predictive Maintenance with Condition Monitoring allows the customer to predict failures before they occur. By monitoring in real time critical equipment areas it is possible to identify deviations in machine functions that could result in machine stops or breakdowns.

The project consists in:

- Define a strategy for a predictive maintenance program at Glico (e.g.: OEM specialized solutions for the line, tailor-made solution, etc.)
- Define which machines are critical for the factories production and prioritize the ones that should be considered first over the other machinery.
- Identify which data should be monitored for each machine prioritized and evaluate whether it is already being monitored.
- Define the system for predictive maintenance and the architecture to support the system (e.g.: cloud based).
- If high quality is available, data science methods can be used to find correlations.

Expected Benefits / Return

- Reduced unplanned downtime (increase availability)
- Reduce the number of packs that went to waste every day
- Efficiently manage the failures and optimize the lines usage based on machine/parts' predicted time to breakdown
- Savings for maintenance spare parts
- Savings for maintenance costs
- Reduced plant maintenance time
- Learning effect for optimized equipment in the future

How Siemens can support

☒ Consulting	☒ Product Portfolio CMS / X-tools	☒ Implementation

Schedule Plan

Duration	01 year

Roadmap: Most of the actions with the best return of investment need 3 months of implementation

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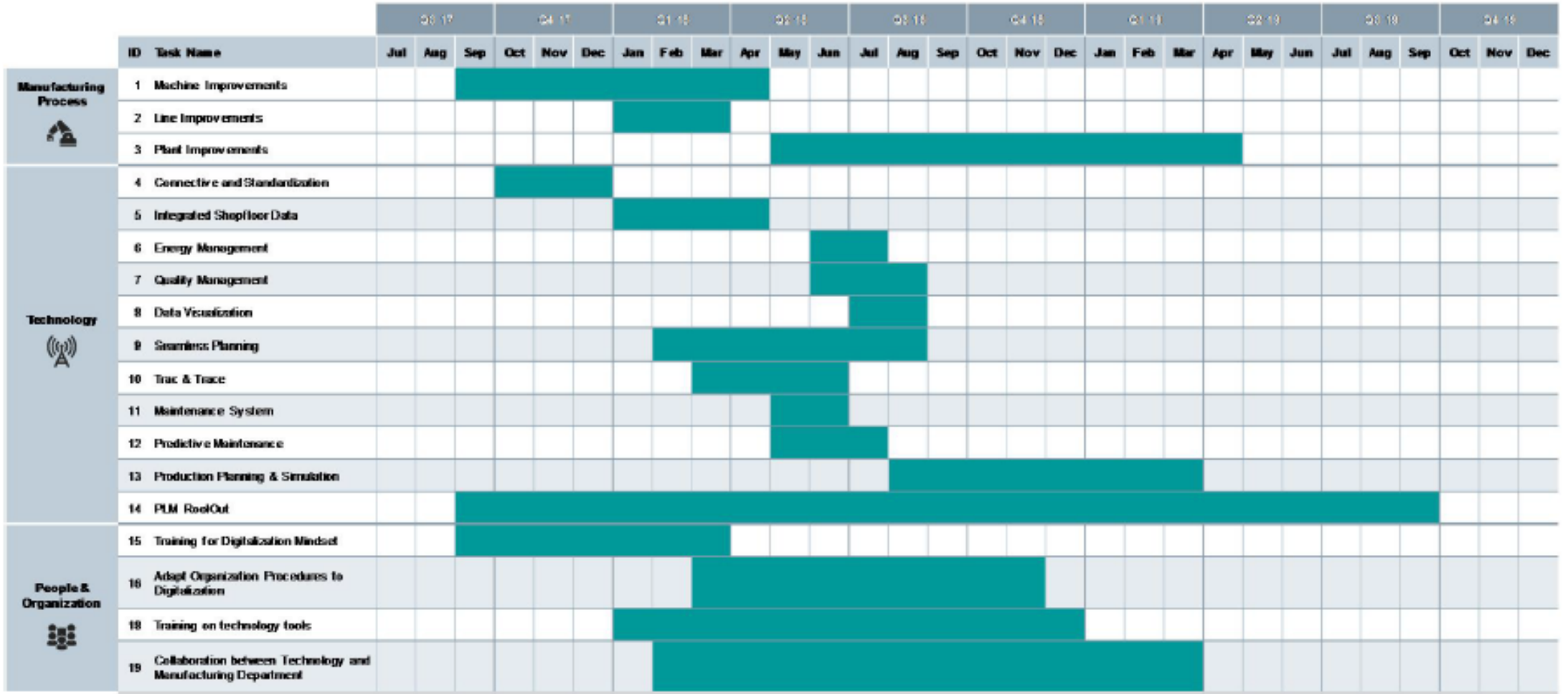
Exhibit 1: Digitalization projects roadmap



Driving the Digital Enterprise - Make the future yours!

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