

WHITE PAPER DIGITAL TRANSFORMATION

Maximizing Digital Transformation Investments
in the Manufacturing & Processing Industry
– a Roadmap to Success.

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INTRODUCTION

In today's rapidly evolving manufacturing landscape, digital transformation is not an option but a necessity. Competition from low-labor-cost countries or high-tech operators means it's no longer enough to sit on the fence, implementing small-scale digital projects for marginal gains. Investments need to deliver a competitive advantage and a considerable ROI.

However, according to a [2024 Gartner survey](#) over half of digital initiatives fail to meet their business outcome targets. Despite this, the majority of CIOs expect to increase funding in tech moving forward. How then, do you ensure you succeed with digital transformation?

As digital transformation is vast, with touchpoints across the organization, in this white paper, we will be focusing on digitalizing production processes, providing a guide to help ensure your initiatives succeed and deliver continuous value.

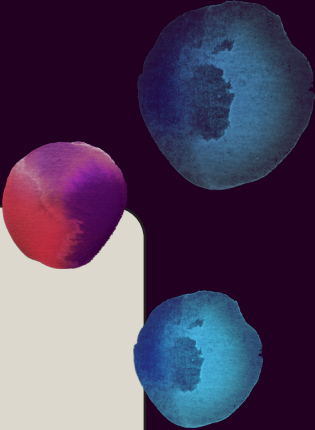
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FEASIBILITY STUDY:

IDENTIFY DRIVERS AND
VALUE CREATION



Your feasibility study is a critical step in evaluating the potential value of digital transformation initiatives. It focuses on identifying key drivers for change, understanding organizational readiness, and assessing how transformation efforts align with business goals. By addressing the foundational pillars of people, processes, and technology, the study provides a structured approach to determine where investments will deliver the most significant impact.

PEOPLE, PROCESSES, TECHNOLOGY

As a general rule, all transformation initiatives should be considered an iterative process that will help drive the future of your organization and its operations.

Similarly, digitalization cannot be done in isolation; its changes will be far reaching, impacting three key building blocks: **the people, processes, and technology** in your organization. Keeping these in focus as part of change management, taking a long-term and agile approach, and having a digital roadmap to support and guide your journey, will greatly increase your chances of success.



THE THREE BUILDING BLOCKS OF TRANSFORMATION

The three building blocks of transformation are essential for ensuring success. They serve as foundational elements in planning and development and must be central to your roadmap strategy.

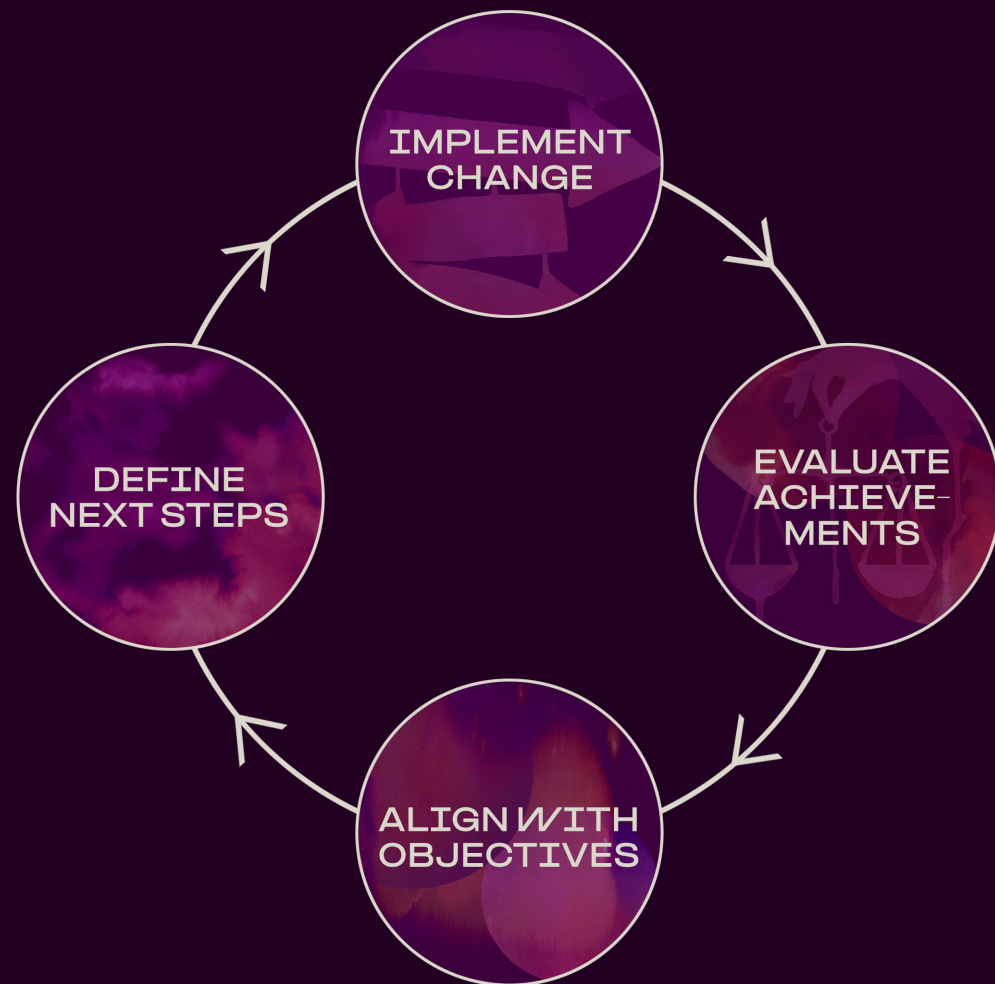
People: Digital transformation is as much about cultural change as it is about technology. Effective change management is critical to address resistance, foster collaboration, and build trust. Clearly communicate the purpose and benefits of the transformation, emphasizing shared goals and the collective creation of value across the organization. Cross-functional collaboration and aligning operational needs across departments further enhance success, driving greater business impact.

Processes: A deep understanding of your processes is vital for successful digitalization. Streamlining, standardizing, and supporting key processes allows for smoother technology integration and greater efficiency. Once digital solutions are implemented, real-time data and insights enable continuous improvements, optimizing production workflows, quality management, inventory control, and more.

Technology: The choice of technology should align with your company's specific needs and long-term goals. Opt for scalable, flexible, and modular solutions that can grow with your business. Integration with existing systems (e.g., ERP) is key to creating a future-proof platform capable of supporting your organization's evolving requirements.

DIGITALIZATION: NOT A ONE-TIME PROJECT

Digitalization isn't a project, it's an ongoing process that will define the future of your organization and its operations. Far too many organizations fail in their digital transformation journeys because they haven't fully embraced this way of thinking. Starting (or restarting) a journey is dependent on taking a long-term approach as part of a continuous cycle of improvement.



WHY'S AND WHAT FORS

Successful digital transformation begins with answering the key questions of why you need to transform. What are the challenges being faced, and what are the potential opportunities that transformation can deliver.

Typical factors that drive transformation within the manufacturing and process industry include Quality, Efficiency and Operational Excellence, Sustainability, and Traceability.

Within these drivers you will identify key objectives and opportunities.

Quality

- Improving quality to meet new regulations and avoid hefty fines.
- Improving quality control to limit wastage, meet changing customer demands or enter a new market.

Sustainability

- Decreasing waste and introducing circular production processes and business models.
- Meeting new regulations and customer demands.

Efficiency & Operational Excellence

- Increasing efficiency to lower the cost of production.
- Modernizing operations to streamline processes and attract new employees.

Traceability

- Increasing traceability to meet customer requirements.
- Integrating data into a digitalized process and utilize to act faster.

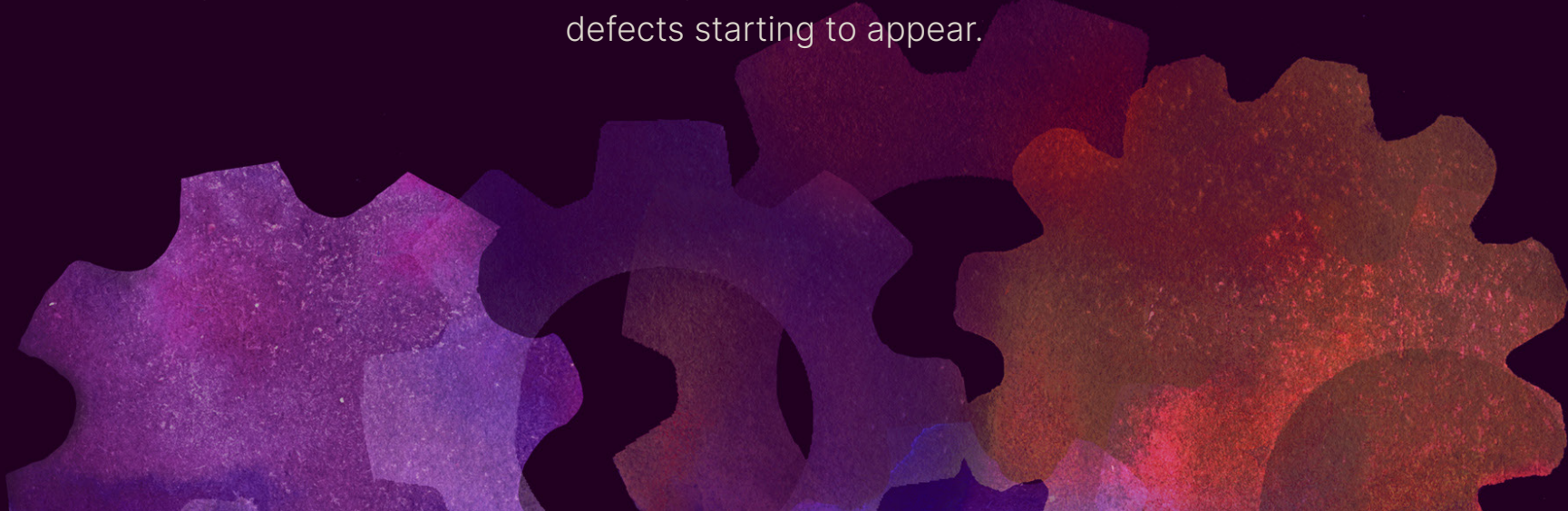
MANAGING CHALLENGES

Whatever the drivers and objectives, any initiatives also come with challenges.

From people, resistance to change is always a key consideration, whether from staff hesitant to adopt new technologies and workflows or from those concerned about disruptions to production during the transformation.

Process wise, challenges with limited capacity may arise and changes such as integrating new production lines and equipment can result in increased capacity. However, it can also add challenges, such as quality issues and defects starting to appear.

From a tech perspective the digital maturity in terms of available data and equipment, will dictate the time it will take to implement change and the benefits it can offer.



SUMMING UP

When creating a comprehensive and actionable roadmap, include a feasibility study to explore critical factors like;

- Avoiding common pitfalls
- Understanding the purpose and drivers behind each initiative
- Effectively communicating the value the digital transformation changes will generate.

Together, these components provide a solid foundation for successful and sustainable digital transformation.



DEVELOP YOUR DIGITAL ROADMAP



At the heart of any initiative is the digital roadmap. It will be impacted by many factors such as transformation drivers, digital maturity, potential business opportunities, the three building blocks, and much more. Developing a successful roadmap should follow five key steps.

- 1 Assess current digital maturity
- 2 Define and align drivers and goals to support business objectives
- 3 Develop a digital roadmap based on goals, maturity and gaps
- 4 Define KPIs and milestones for each roadmap phase
- 5 Maintain agility through continuous improvement

ASSESS CURRENT DIGITAL MATURITY

1

To effectively prioritize digital transformation efforts, it is essential to assess the current maturity of key dimensions across your organization and establish a baseline.

Identify maturity levels for each key dimension

Conduct a digital maturity assessment to evaluate your organization's maturity across the critical pillars of people, processes and technology:

People (leadership & workforce): Evaluate organizational maturity within each area. Understanding the skills, knowledge, and readiness of your workforce is essential for prioritizing digital transformation efforts. A clear picture of your organization's maturity

helps pinpoint areas where transformation can drive the most significant benefits.

Processes: Assess the maturity of each process or manufacturing area (e.g., Quality, Inventory, Production, Maintenance). Determine how well-developed and optimized these areas are to identify where improvements are needed.

Technology: Assess the maturity of your technology landscape by examining the level of digitalization in processes, system interoperability, and the value delivered by current solutions.

Map current strengths and improvement areas

Document both strengths and areas needing improvement:

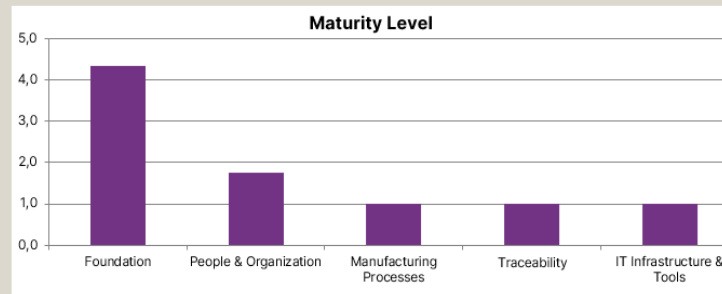
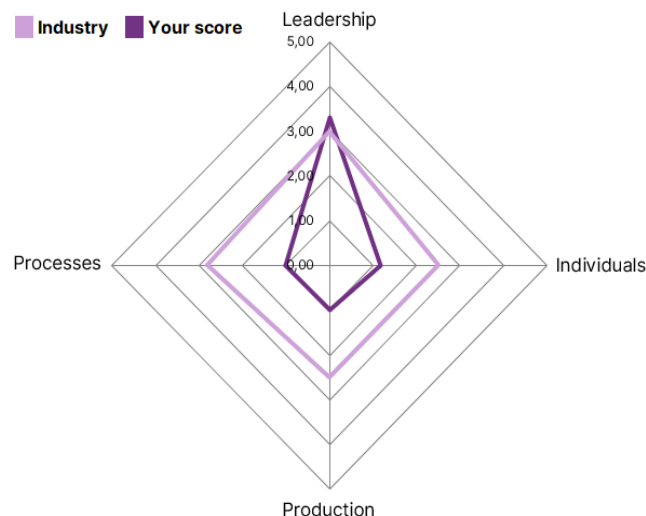
Strengths: For example, high automation levels or strong process ownership in production.

Improvement Areas: Issues like limited real-time operator guidance, organizational challenges in change management, or manual processes still handled via Excel.

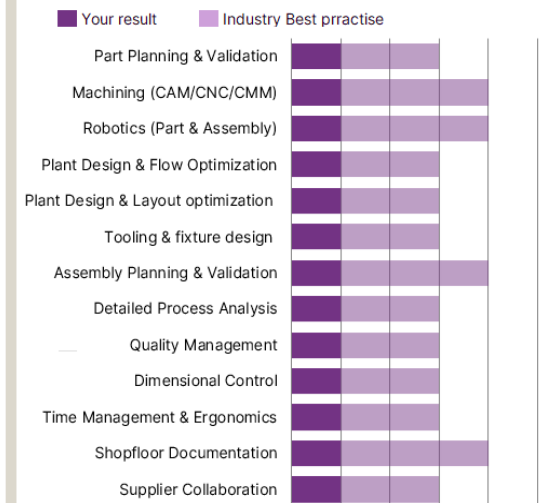
This baseline of maturity levels, strengths and improvements provides a clear picture of your current state and sets the foundation for your transformation roadmap.

DM Maturity Assessment

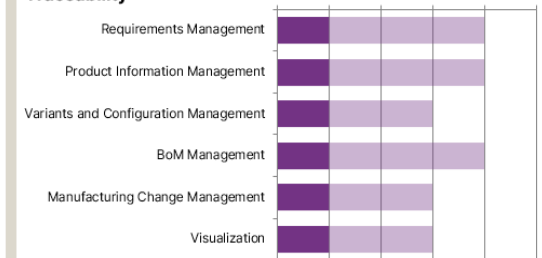
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Manufacturing processes



Traceability



Understanding your maturity baseline from a holistic perspective helps identify strengths and gaps, creating a clear picture of your current maturity level. This will help form the foundation for a roadmap with key prioritization areas.

DEFINE AND ALIGN DRIVERS & GOALS TO SUPPORT BUSINESS OBJECTIVES

2

To ensure digital transformation aligns with business objectives, it's crucial to connect maturity gaps to specific goals. This step helps prioritize initiatives that will drive the most significant impact.

1) Link maturity levels to business objectives

For each area identified for improvement, align the maturity levels with concrete business objectives.

For example:

Quality Management: If quality processes are at an early stage, resulting in defects and reduced margins, the goal might be to reduce defect rates using digital tools like guided workflows and enhanced quality controls.

Inventory Management: If inventory processes are partially optimized, aim to improve accuracy and reduce holding costs by adopting real-time inventory management solutions.

2) Set digital priorities aligned with business drivers

Prioritize initiatives based on their potential impact and urgency. Focus on areas where the most immediate gains can be made, and where lessons can be learned for future efforts. Continuously evaluate and adjust priorities as you progress.

CASE FROM REALITY: NEXT-GENERATION TERMINAL MANAGEMENT SYSTEM AT OKQ8

Discover how we developed and implemented a next-gen Terminal Management System at OKQ8 to drive efficiencies across operations and improve collaboration and customer service.

OKQ8, one of Sweden's largest fuel providers, wanted to standardize and integrate data flows in production to improve operations. Siloed systems meant data was often sent in spreadsheets via email, leading to inefficiencies and unnecessary data duplication.

The goal was to transform their existing systems to ensure production data that can drive efficiencies across operations and improve customer service.

[READ FULL CASE HERE](#)



DEVELOP A DIGITAL ROADMAP BASED ON GOALS, MATURITY AND GAPS

3

There are four clear phases to formalizing a roadmap, developed to help ensure companies achieve successful outcomes.

For some initiatives, whether it's digitalizing a production process or a specific tool, you may have many of the foundations in place. In such instances, you can progress directly to phase three.

A typical example of this would be implementing AI for predictive maintenance, assuming that maintenance has already been digitalized (phase one and two) and can therefore take advantage of existing data.

THE FOUNDATION

Address basic gaps

INTEGRATION & INTEROPERABILITY

Create the architecture for a seamless digital landscape

LEVERAGE DATA

Create value from phases one and two

AUTONOMOUS OPERATIONS

Digitalize and automate operations

ROADMAP PHASE 1: THE FOUNDATION

In phase one, assess the conditions in place to support processes and people, production, quality, inventory, and maintenance.

The first phase addresses the basic gaps. Start by focusing on the important areas for achieving your business goals, where low maturity levels are hampering operational efficiency.

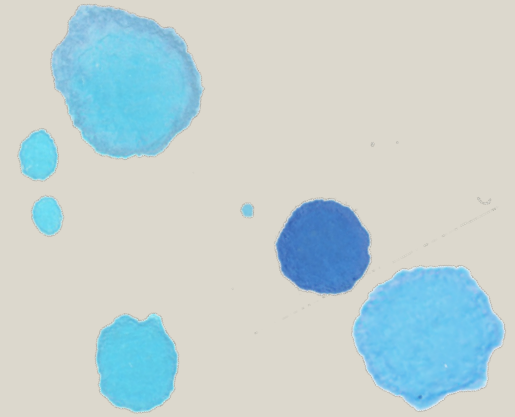
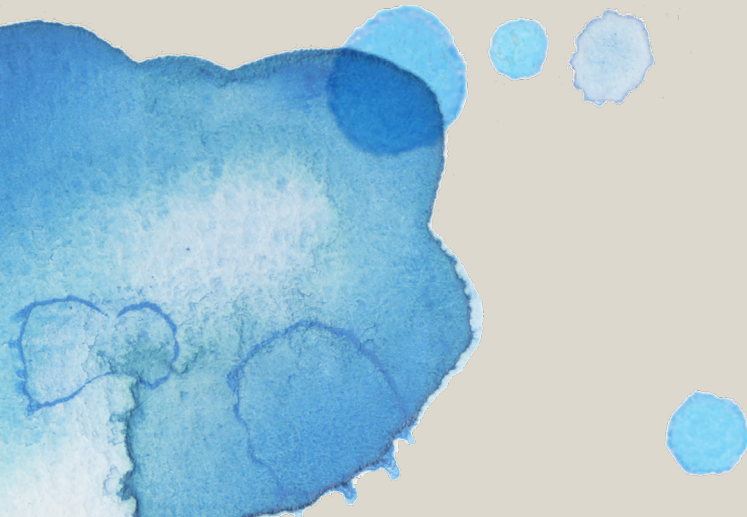
PHASE 1 ACTIVITIES

Establish a robust manufacturing operations management foundation

Address gaps in data integration, traceability, and the ability to act on real-time information. Implement a basic Manufacturing Execution System (MES) to streamline operations and provide digital work instructions for operators.

Initiate systematic data collection

Start gathering essential metrics such as machine uptime/downtime, loss events, and stop causes. This data will help in the measurement and improvement of quality, Overall Equipment Effectiveness (OEE), machine status, (such as wear and vibration) and predictive maintenance efforts.



ROADMAP PHASE 2: INTEGRATION & INTEROPERABILITY

Phase two is where you create the architecture supporting a seamless digital landscape.

This phase is crucial for unlocking value from digital solutions as it strengthens connectivity and enhances real-time data flows between systems which can significantly boost operational efficiency.

PHASE 2 ACTIVITIES

Develop a comprehensive architecture

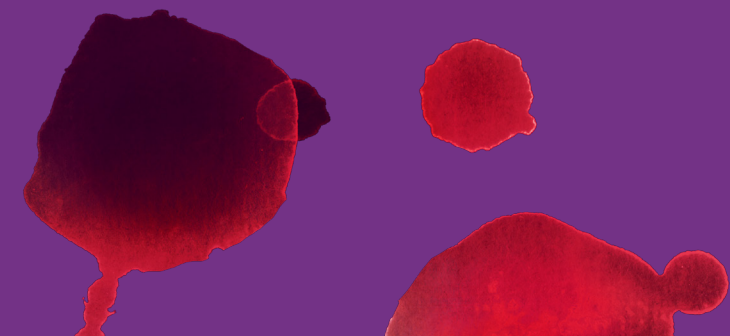
Design an end-to-end architecture that connects sensors to enterprise systems (ERP). This is a pivotal step, requiring careful consideration of scalability, compatibility, and security.

Enable real-time data collection

Integrate machine signals from production lines to capture real-time data and OEE measurements.

System integration

Seamlessly connect various systems, including ERP, laboratory information management systems, historical databases, planning and scheduling tools, maintenance systems, asset management systems, and data lakes, to gain new insights and support integrated operations.



ROADMAP PHASE 3: LEVERAGE DATA

In phase three you start creating value from phases one and two.

Phase three is the point at which companies reach an intermediate level of maturity. Here the focus is on incorporating predictive capabilities and advanced analytics to improve efficiency and deliver measurable value.

PHASE 3 ACTIVITIES

Enhance quality control with AI and machine learning

Implement AI- and Machine Learning-driven solutions for quality control that speed up and improve on human inspection methods, reducing quality losses and ensuring consistently high-quality products.

Optimize maintenance with predictive tools

Leverage AI and Machine Learning to enable predictive maintenance, minimizing downtime and lowering repair costs.

Implement advanced production analytics

Use techniques like multivariate analytics and statistical process control to minimize process deviations and improve production outcomes.

Introduce real-time dashboards

Deploy interactive dashboards for production performance monitoring, enabling data-driven improvements in processes and more effective inventory management.



ROADMAP PHASE 4: AUTONOMOUS OPERATIONS

In the forth phase the aim is to fully digitalize and automate operations to achieve advanced digital maturity.

This phase focuses on full digitalization and automation to achieve advanced efficiency. By leveraging digital twins, closed-loop production, and automated logistics, businesses can optimize performance and drive continuous improvement.

PHASE 4 ACTIVITIES

Digital twins for production

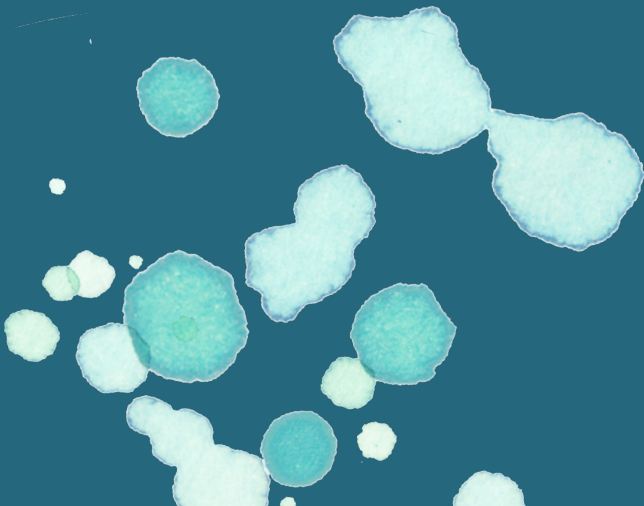
Develop digital twins to enable real-time simulations, monitor system performance, and drive continuous process optimization through predictive insights.

Implement closed-loop production systems

Utilize advanced analytics to automatically adjust production parameters in real-time, ensuring optimal efficiency and precision throughout the production cycle.

Automate logistics management

Deploy automated transport order systems to facilitate seamless inventory movement, reducing manual intervention and improving operational flow.



DEFINE KPIS AND MILESTONES FOR EACH ROADMAP PHASE

4

Defining clear Key Performance Indicators (KPIs) and milestones is essential to measure progress and ensure the success of each phase in your digital roadmap.

KPIs should align with the maturity level of each phase, starting with foundational improvements and advancing toward autonomous operations. Milestones act as checkpoints, enabling you to evaluate achievements and adjust strategies as needed.

Beginner to Intermediate KPIs

At this stage, focus on tracking foundational improvements such as data availability, automation levels, and accuracy of collected information. For example, increasing automation in inventory or maintenance tracking by 30% by the end of Phase two.

Intermediate to Advanced KPIs

As maturity increases, prioritize predictive capabilities, operational efficiency, and system integration to drive measurable value. For instance, reduce production downtime by 20% through the implementation of predictive maintenance tools by the end of Phase three.

Advanced KPIs

For advanced stages, target performance optimization, enhanced predictive capabilities, and a significant reduction in manual interventions. A KPI here could be to achieve fully autonomous quality control by the end of Phase four.



Find out how we helped an international pharmaceutical company streamline operations at their Packaging and Delivery department – saving them thousands of hours a year by developing an Information Hub in Microsoft Power BI.

[READ FULL CASE HERE](#)

MAINTAIN AGILITY THROUGH CONTINUOUS IMPROVEMENT

5

To ensure the success of your digital transformation, it's critical to remain flexible and responsive. A dynamic roadmap that evolves with emerging needs and regularly incorporates feedback will help to sustain progress and maximize value over time.

ESTABLISH A CONTINUOUS FEEDBACK LOOP WITH STAKEHOLDERS

Regularly reassess your organization's digital maturity to track progress, validate alignment with strategic goals, and identify areas requiring adjustments or renewed focus.

EVOLVE THE ROADMAP TO ADDRESS EMERGING NEEDS

As specific areas achieve higher maturity, adapt the roadmap by introducing advanced capabilities such as

AI-driven insights or expanding focus to new domains like energy efficiency, sustainability, or enhanced customer integration.

CONSISTENTLY DEMONSTRATE BUSINESS VALUE

Throughout your digitalization journey, ensure each step clearly highlights the value it delivers, through measurable outcomes, improved efficiency, or enhanced customer experiences.

MONITOR KEY PERFORMANCE INDICATORS (KPIs)

Define and track specific KPIs for each priority area to measure progress and assess impact. Examples include reductions in quality defect rates, improvements in inventory accuracy during cycle counts, and time savings in production scheduling.

CONCLUSION

The reality for most manufacturing and processing companies is that multiple solutions will be in development in parallel, with different launch dates. This makes the roadmap even more vital as it provides a timeline on how solutions should be released to provide maximum impact on your operations.

Often, technology itself is not the limiting factor; success depends on the seamless integration of a suitable technical solution with your business processes and a digital transformation strategy that prioritizes people and change management. By balancing the three building blocks of transformation — **people, processes and technology** — you can align your organiza-

tion around a shared vision and common goals. This approach ensures continuous improvement, supports the selection of technology that meets your operational needs, and provides a scalable foundation for future growth.

Equally important is the need to be agile. The changes you implement and their impacts must be evaluated against your objectives and the rapid tech, business, regulatory and industry changes taking place. This will require you to revisit and refine your roadmap on a regular basis – which again is why it is such a vital tool for your transformation – the guide that will keep the organization moving forward as part of a journey of continued success.

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We focus on helping clients create value and drive digital change. We combine industry knowledge and digitalisation with expertise and project excellence. Our clients improve their productivity and flexibility without compromising on quality and compliance.

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EMPLOYEES

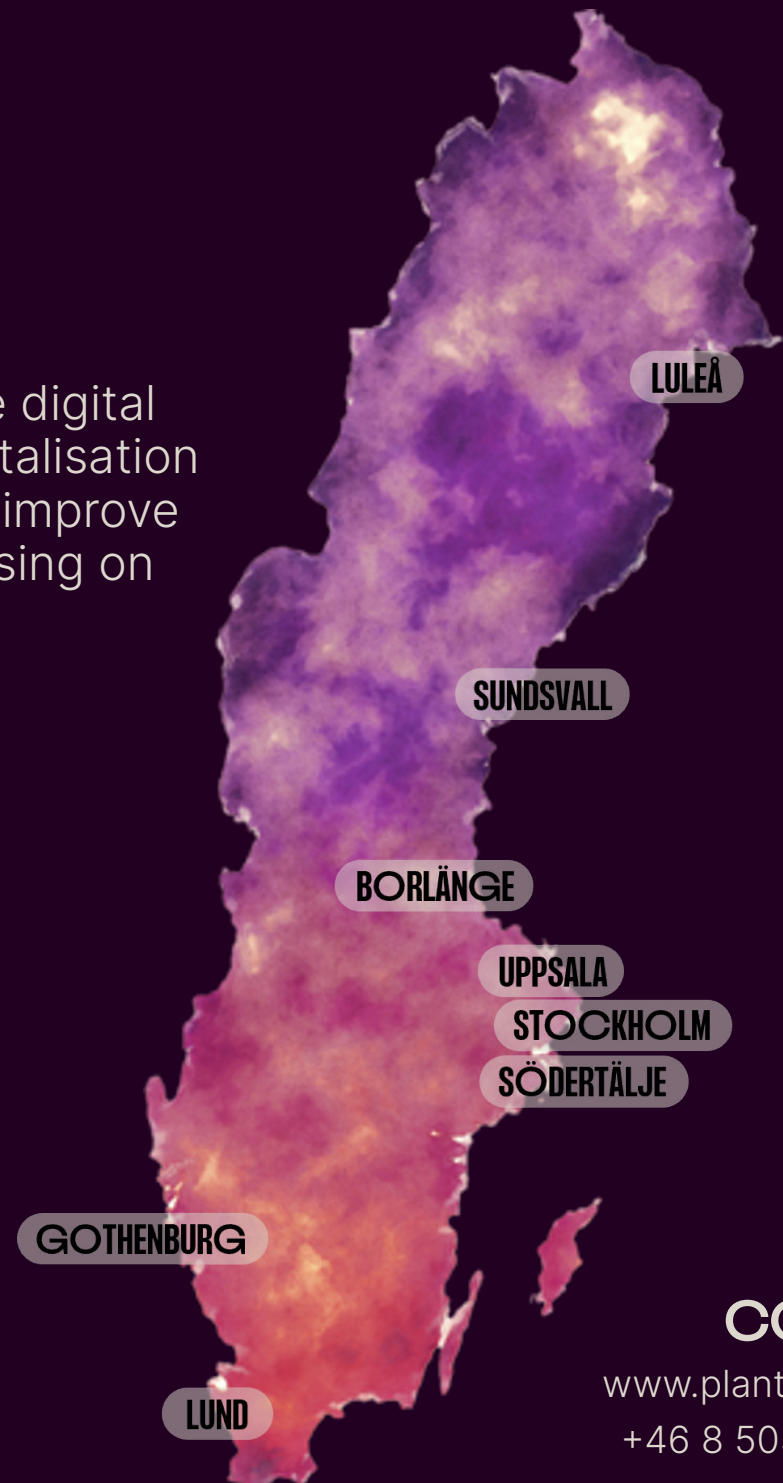
300+
TURNOVER

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