Rockwell Automation | Fiix

The Business Leader's Guide to Digital Transformation in Maintenance →

How industrial companies can use maintenance as a competitive advantage

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Digital transformation in under a minute

1

Companies rely on technology to run and be profitable, as do business units. Maintenance is no different. Integrating it into your digital ecosystem can mean big gains.

- Human Resources
- Maintenance
- Production
- Finance
- Marketing

2

Digital transformation is getting the right technology in place to solve your biggest problems.

- Digital Solution

3

When maintenance participates in digital transformation, it can lead to fundamental improvements.

- Productivity
- Safety
- Flexibility
- Efficiency

4

This opens the door to achieving tangible results with maintenance.

- Fewer costs
- Waste reduction
- Higher output
- More data
- Less risk

These gains can then be reinvested in the entire company.

02

The two sides of digital transformation

History is full of stories about digital transformation gone wrong. A perfect example is the newspaper industry.

News organizations moved their publications online as millions flocked to the internet. Then this happened:

The number of newspapers in the US dropped by 25% from 2004 to 2021

More than 2,200 newspapers went out of business

Readership (online and print) shrank by 31%

The number of newspaper journalists was cut in half

Bankruptcies of massive media companies skyrocketed

The move to a digital space went disastrously wrong for newspapers. But why?

Because media companies attempted to operate in a digital world the same way they operated in an analog world. The same content. The same revenue models. The same way of thinking.

The mixture of old thinking and new ways of doing business was combustible. New technology alone couldn't pull newspapers into a modern world.

Compare that to the stars of digital transformation, like Uber or Netflix. They transformed industries by thinking differently and using technology to support that seismic shift. Uber kickstarted the gig economy and put power in the hands of riders. Netflix built a media empire using a subscription model and original content.

This ebook will help you follow the paths laid out by the likes of Netflix and Uber. It guides leaders of industrial businesses through the ins and outs of digital transformation, starting with maintenance. You'll learn what digital transformation is, why maintenance should be at the heart of it, and how to build a plan for digital transformation at your company.

03

What is digital transformation?

Digital transformation is the process of adopting technology to drive and support new ways of thinking, doing, and achieving.

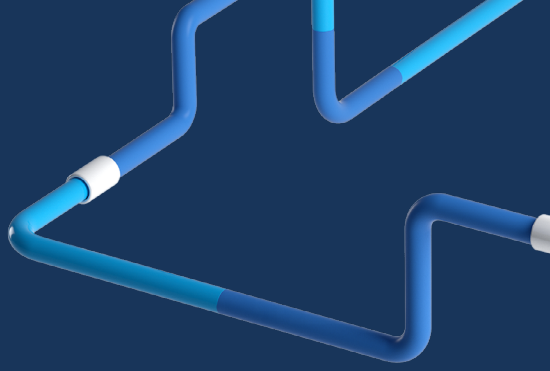
- **Thinking**: High-level strategies that guide the way a business operates long-term, like business models, positioning, and organizational structure
- **Doing**: Tactical strategies that guide the way a business operates day-to-day, like processes, policies, and budgets
- **Achieving**: The way a business measures and tracks goals and progress toward goals

> **Clearly, the thing that's transforming is not the technology — the technology is transforming you.**
>
> - Jeanne W. Ross, MIT Sloan's Center for Information Systems Research

It's also just as important to define what digital transformation *is not*.

- **It's not just about technology.** It's about the people and processes you need to be successful, and how to equip them with the right systems.
- **It's not a single piece of software or technology.** It's a constant process of assessing, building, optimizing, and scaling your business's digital toolset.
- **It's not the same for everyone.** Each business starts its digital transformation journey from a different place. This difference determines the technology you adopt, how quickly you adopt it, and what you do with it.
- **It's not a project that ends.** Digital transformation embeds technology in every part of your company, so it's always growing and changing with your business.
- **It's not confined to one department or level.** Digital transformation includes every part of your business and is actively embraced by every level of the organization, starting at the top.

> **Think of digital transformation less as a technology project to be finished than as a state of perpetual agility, always ready to evolve for whatever customers want next, and you'll be pointed down the right path.**
>
> - Amit Zavery, VP and Head of Platform, Google Cloud



A short case study: What digital transformation looks like in manufacturing

The goal

California-based fruit producer Prima Frutta wanted to transform their operation into a model of speed and efficiency.[1]

The process

The company prioritized automated data collection and availability across the business. This data would be used to cut the time it took to identify trends (both good and bad) and make decisions based on them.

The technology

Prima Frutta installed production systems and industrial controls that automatically collected, sorted, and pushed second-by-second updates to the company's 900 employees. This allowed the business to collect accurate, actionable data without the day-to-day disruption of getting it manually. It also helped employees uncover ways to better maintain and run equipment so it could produce more.

The result

A year after implementing this change, Prima Frutta increased production by 50% and became the largest cherry producer in the world without a single new hire.

04

Why digital transformation is essential for industrial companies

The everyday problems your company faces are stalling growth. The technology you use today is part of what's holding you back. No matter how well these old systems have worked in the past, they can't evolve with your business. That's why finding the right technology is essential for shedding your biggest pains and growing your business.

Here are some of the biggest pains that industrial companies face today and how digital transformation can help businesses face them:

1. Rising costs

Nearly 90% of companies said the cost of doing business has increased substantially in the last year, according to a Federal Reserve survey of 1,104 CFOs. These results came as manufacturing costs increased at the sharpest rate seen in a decade.

One way to cope with rising costs is to eliminate waste across your business. Outdated technology is at the root of many broken processes that cause inefficiency, scrap, and underperforming assets. Finding and connecting digital solutions is one way to fix these processes and limit the impact of rising costs.

For example, one mining company put new technology in place to compare production data and understand the best operating context for its assets. It was able to discover the environment that produced the best yield, which boosted profit by $10 million annually.

2. Supply chain disruptions and uncertainty

Over 35% of manufacturers say they're facing supply chain disruptions according to a survey by the National Association of Manufacturers. These issues are having a huge impact on the bottom line, with 55% of CFOs reporting lost or delayed sales.

A chaotic supply chain often can't be anticipated or controlled. But creating predictability and flexibility within your operation can limit risk. Digital tools can help you create repeatable processes, automate data collection, forecast resourcing needs, and store information in one place. You'll always know what you need, what you don't, and where to find these details.

One global CPG company introduced a system to get real-time visibility into its supply chain. The system analyzes the equivalent of 100,000 Excel spreadsheets a day, allowing the company to see where its supply chain works well, where it doesn't, and what to do about it. The company increased on-time, in-full service levels to 95% in just three months with this solution.

3. Increased competition

Manufacturing accounted for 70% of research and development spending in the US in 2020. It's clear manufacturers are investing in ways to one-up competitors. Industry CEOs ranked talent, cost, and workforce productivity as three main areas of competition in a global Deloitte survey.

Technology has the potential to be a game-changer in this race to the top. It allows manufacturers to collect accurate data faster and make it more accessible. Decisions can be made quicker and with confidence, so companies can take advantage of opportunities or limit risk. Having one source of truth is also the most effective way to standardize processes and repeat them across the business.

Investments in technology, specifically predictive analytics, are helping manufacturers strengthen their customer base. Companies that use these digital tools for production have improved the customer experience by 60%, according to this 2019 Deloitte survey.

4. An expanding skills gap and labor shortage

If it seems hard to get and retain labor now, we have bad news—it's about to get worse. There will be 2.1 million manufacturing jobs unfilled by 2030, according to a report by The Manufacturing Institute. Losing this expertise, and the cost of getting it back, could impact a company's efficiency and productivity for years to come.

> **"Old-school, hands-on, mechanical skills are dying. We're going to see a massive exit of skilled maintenance workers, and not enough companies have thought about what's needed to fill that gap.** – Stuart Fergusson, Director of Solutions Engineering, Fiix

Technology is not a silver bullet for the skills gap and labor shortage. But it can reduce the sting. Digital tools collect information and standardize tasks so knowledge can be shared and passed down. It also empowers workers by allowing them to do jobs and make decisions with less risk and a greater understanding of the impact. The result is higher retention of both information and talent.

5. Growing security concerns

Data loss and cyber attacks spiked between 2020 and 2021. Alarmingly, 80% of companies lack confidence in their cybersecurity systems. With the average data breach costing $3.86 million, it's critical for manufacturers to be protected.

Outdated systems are like a welcome sign to cybercriminals. Unfortunately, many manufacturers rely on legacy systems to store data. One of the best ways to build secure data infrastructure is to upgrade to cloud-based software. Only 22% of reported breaches in 2019 involved cloud software compared to 71% for on-premise systems. The cloud owes its vault-like security to is its ability to be updated frequently so it can combat evolving threats.

05

Why maintenance should be at the epicenter of digital transformation

Digital transformation requires an investment of time, money, and social capital. So why spend it on maintenance?

Every industrial business relies on the health and performance of its assets. If they stop, the business stops. If they're reliable, the business becomes reliable. The maintenance team enables assets to perform at their best, and digital transformation enables that team with technology.

> **Companies are starting to realize that maintenance plays a role in the ultimate user experience for the customer.** -Kevin Permenter, Research Manager, IDC

A company's digital ecosystem is incomplete if it fails to integrate maintenance and leaders will lack the visibility needed to make better decisions. You can map the benefits between investing in digitizing maintenance and company-wide growth in three key areas:

Lower risk and increased flexibility

A solid maintenance program is essential for adapting to sudden shifts in everything from consumer habits to supply chains. That all starts with having predictable output and fewer disruptions. A proactive maintenance program allows you to forecast maintenance costs, asset productivity, and capital expenditures with confidence. You can ditch surprise losses from unplanned downtime and stop using guesswork to patch the gaps in your data.

Over 50 billion is lost by manufacturers annually due to unplanned downtime[2]

Fewer costs and more productivity

A strong maintenance program can increase profit and lower costs across the company. The best programs predict when maintenance is needed on an asset to keep costs as low as possible and production as high as possible. Maintenance is also key to extending the life of equipment so you can limit large capital expenditures. Not only do assets run better, but they run for longer. Maintenance data is also key to allocating resources and budget effectively.

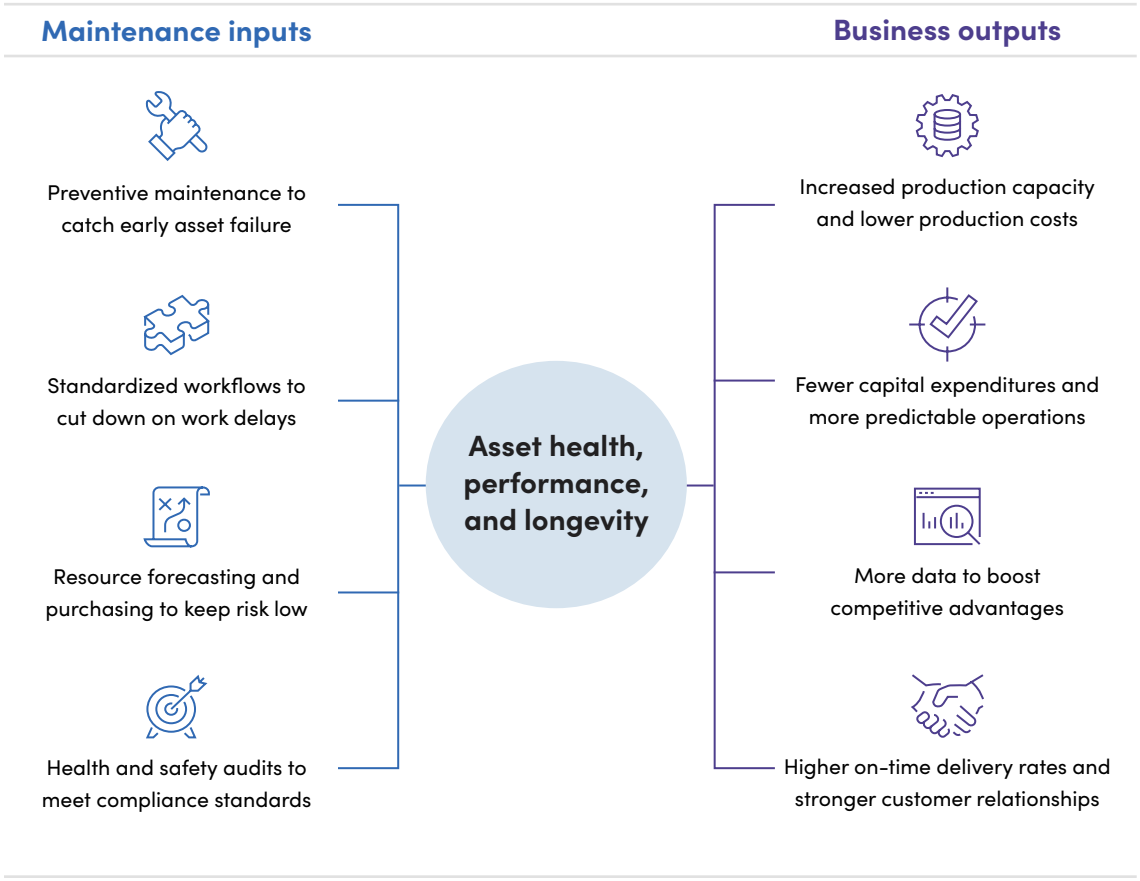
63% of manufacturers improved overall equipment effectiveness after adopting preventive maintenance (2017 survey by Plant Engineering survey)

> **If you want to be making more, you need to get rid of downtime or you need to increase capacity. But buying a new line is a lot more expensive than running the one you have 15% better. Where are you getting that 15%? Maintenance. Do good maintenance.**
>
> -Stuart Fergusson, Director of Solutions Engineering, Fiix

Greater efficiency and higher quality outcomes

A proactive maintenance program improves asset efficiency, so equipment can produce higher-quality products at a faster rate. Maintenance processes also dictate the productivity of your workforce on the shop floor. Everything from parts availability to health and safety tie back to maintenance. If maintenance is standardized and streamlined, equipment will have higher levels of availability and produce less waste, while exposing workers to less risk.

Preventive maintenance programs help cut manufacturing costs over 18%[3]



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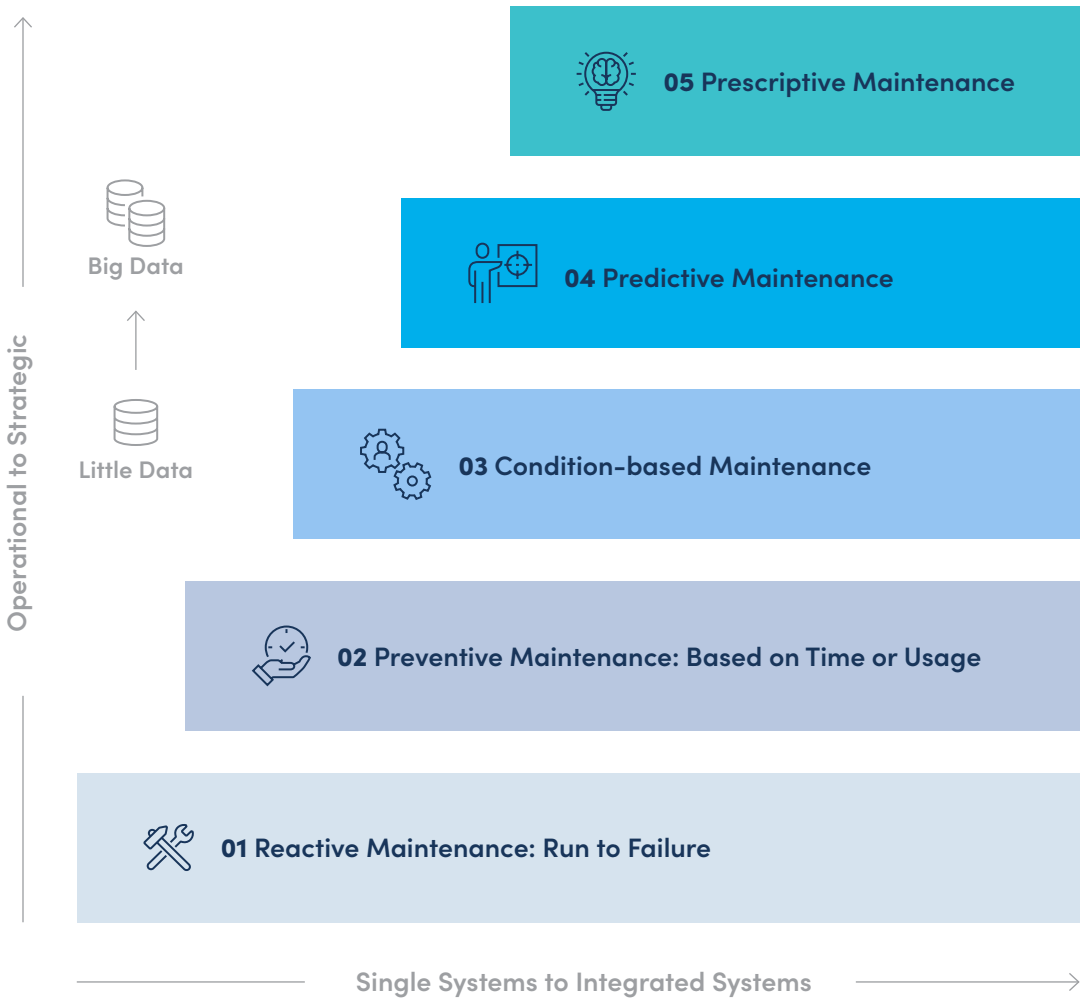
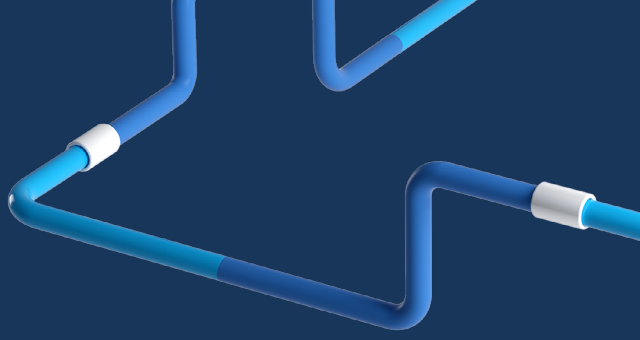
What digital transformation looks like in maintenance

There's no one path to digital maintenance maturity. But the most common route for evolving a maintenance program and integrating it into a digital ecosystem comes in these five stages:



Stage of maintenance maturity	What the program looks like	What the technology looks like
Reactive maintenance	• Maintenance is done only when failure occurs • Maintenance has very little to no strategic value	• Maintenance operates on a single, basic system or no system • Systems are not integrated
Preventive maintenance	• Maintenance is planned on time or asset usage (ie. every two weeks) • Maintenance is a service for production	• Maintenance operates on a single comprehensive system (ie. a CMMS) • The system is used for work management and scheduling • Systems are not integrated
Condition-based maintenance	• Maintenance is planned on asset condition (ie. vibration) • Maintenance is a strategic pillar to boost asset performance	• Maintenance operates on a single system • The system is used to trigger and optimize workflows and purchasing, and track basic data • Maintenance system may be integrated with production systems (ie. MES software)
Predictive maintenance	• Maintenance is planned on data-based forecasts • Maintenance is a strategic pillar to improve productivity and reduce operational risk	• Maintenance operates on a single system with AI and/or machine learning capabilities • The system is used to optimize resource management using models, trends, and reports • Maintenance is fully integrated with production and business systems (ie. ERP software)
Prescriptive maintenance	• Maintenance is prescribed based on advanced forecasting models • Maintenance is a strategic pillar to improve operational reliability and inform long-term initiatives	• Maintenance operates on a single system with AI and/or machine learning capabilities • The system is used to automate workflows, purchasing, and decision-making through advanced data analytics • Maintenance is fully integrated with the company-wide digital ecosystem



A short case study: What digital transformation in maintenance looks like

The company

Perth County Ingredients, a global supplier of dried egg products located in Ontario, Canada.

Where they started

All of the company's maintenance work was reactive. The team also had little insight into the performance of its people or equipment. This led to lots of wasted time and money on everything from after-hours call-ins, to emergency parts purchases, and more.

The first step forward

The company implemented a building automation system (BAS) and a computerized maintenance management system (CMMS) at one site over a three-year span. The CMMS was used to organize assets, create preventive maintenance schedules, collect data, and create reports

The results

This initial step in the company's digital transformation journey led to a 54% drop in reactive maintenance and a 47% reduction in after-hours call-ins. This translated to lower maintenance costs and less unplanned downtime.

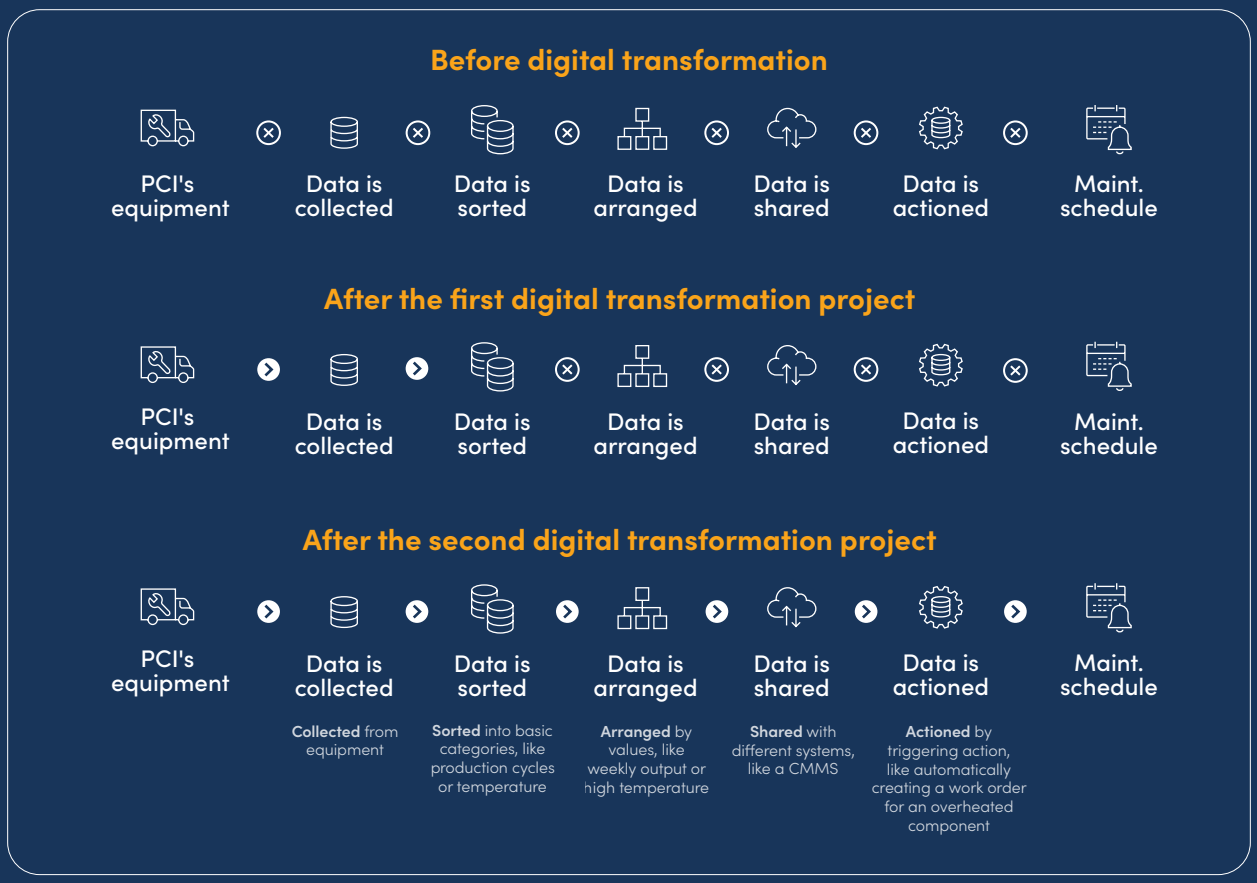
The next step forward

The company implemented the same maintenance software at seven other facilities. The CMMS was used to automate maintenance operations from one location. But maintenance was still being scheduled on time-based triggers. This created unnecessary downtime and cost the company production time and money.

The company integrated its CMMS and production systems. This allowed it to automatically collect real-time data from equipment and schedule maintenance based on asset condition.

The results

The maintenance team cut costs by $40,000 in just nine months by decreasing breakdowns and cutting unnecessary jobs from its to-do list. This was a 300% return on the original investment. It's also helped the company harness maintenance data to make smarter CapEx decisions.



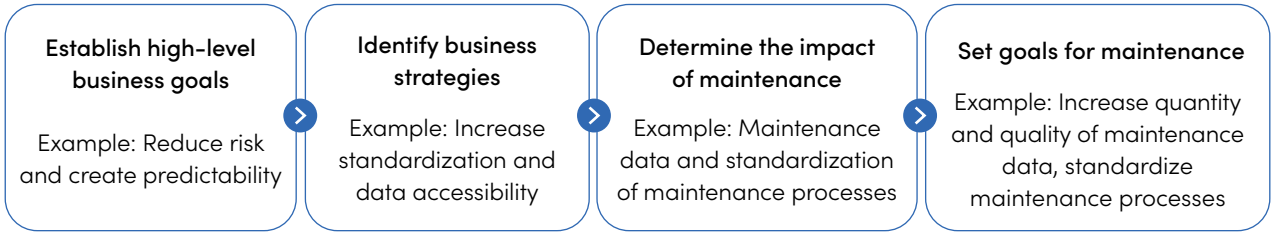
07

A nine-step roadmap for digital transformation in maintenance

The nine steps below are the building blocks for digitally transforming your maintenance operations. They offer a framework for directing your time, money, and resources so that investment pays off in the short and long-term.

1. Determine goals

More than 44% of projects fail due to a lack of alignment between business and project objectives. That's why everything begins with connecting your business targets to your maintenance maturity efforts. There are four steps in this process:



2. Assess current and end state

The maintenance technology you choose depends on what's needed to bridge the gap between your current state and your maintenance goals.

It's essential to talk with maintenance and operations leaders at this stage to understand where they see potential for maintenance to impact business goals and how to best create that impact.

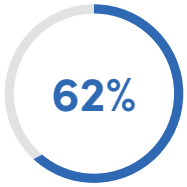
Goal #1: Increase quantity and quality of maintenance data

Current state	End state	Strategy
• Manual data collection • Inaccessible data • Infrequent reporting cycles • Lack of useful maintenance metrics	• Automated data collection • Centralized, accessible data • Consistent reporting cycles • Maintenance metrics incorporated into decision-making	• Set up a system to centralize and automate data collection • Automatically generate and share reports on a weekly basis • Create a dashboard of shared metrics for maintenance and operations

3. Create a project team

It's time to gather the people who can put your plan into action. This team will drive change in their functional areas and determine the most effective way to move from present state to future state.

They also act as critical advocates of the project, a key part of making digital transformation efforts sustainable.



62% of successful projects have actively supportive sponsors

Ask yourself these five questions to identify your project team:

- Who is responsible for or has the ability to impact different parts of your strategy?
- What processes and systems will be impacted? Who is responsible for them?
- What skills or knowledge gaps exist in your maintenance organization? Who can fill those gaps internally?
- How can you compensate for skill or knowledge gaps externally?
- Is everyone who will be affected by these changes represented in some way?

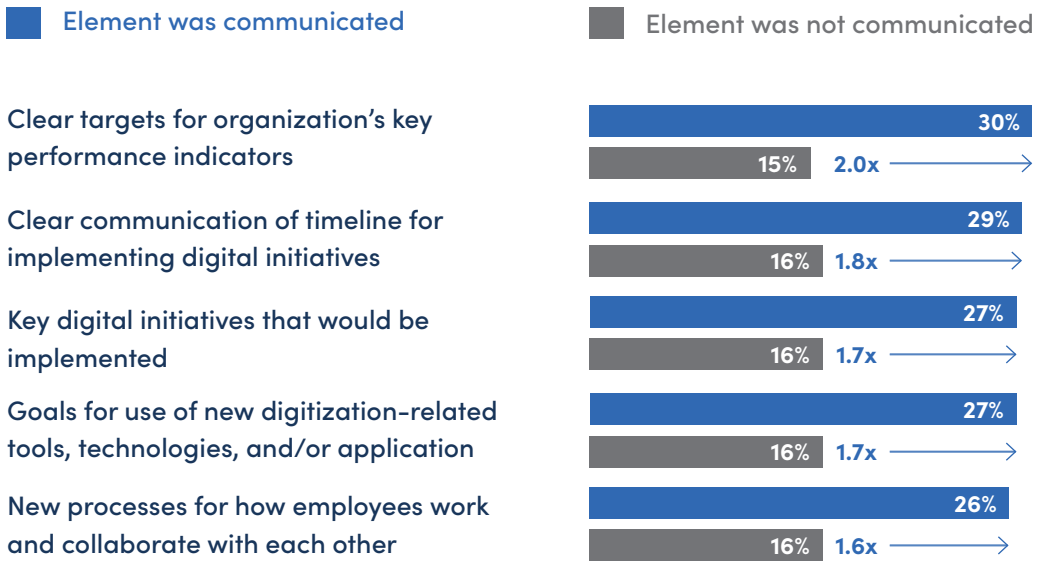
4. Plan for change

The success of digital transformation often hinges on the adoption of new processes and systems. In fact, 28% of digital initiatives fail because of low adoption from bad change management.

Here are some change management techniques to help your teams embrace change from the start and throughout digital transformation:

- Include stakeholders in decisions: This includes everything from surveys to user testing of new technology. It educates stakeholders about the purpose of the project, empowers them, and allows you to select the right systems for employees.
- Provide regular updates: Fear often fills the void left by a lack of communication. Create regular check-ins, whether that's a quarterly email or an in-person meeting. Share updates, timelines, progress, goals, new processes, and success stories.
- Minimize disruption: Digital transformation is change and change is painful. Make the transition to new processes and systems as smooth as possible. That might mean taking it slow and communicating why disruptions are necessary.
- Provide training and everboarding: Ignorance is not bliss with digital transformation. It's anxiety and apathy. Stakeholders should not only be trained on new systems and processes, but have continual access to resources that help them navigate change.

Success rate of change management elements



Source: Axiom Groupe

5. Create milestones and measurements

Digital transformation is made up of several big initiatives and smaller, associated projects. Break your plan into manageable milestones and track progress toward your overall goal. This allows you to communicate clearly, maintain focus, and accurately assess progress. It also empowers you to pivot quickly without sinking too many resources in a wrong turn.

Digital transformation roadmap

Phase 1			Phase 2			Phase 3		
Project A	Project B	Project C	Project A	Project B	Project C	Project A	Project B	Project C

There are three stages to measuring success with digital transformation initiatives: Adoption, visibility, and optimization.

1. Adoption: Measure how people are using new processes and systems, and if they're using them effectively.

2. Visibility: Set up and track inputs and outputs. Make these measurements visible to ensure they're accurate and establish baselines.

3. Optimization: Combine data and action to assess the high-level impact of the project. Identify where metrics could be better and tweak your approach to improve.

Adoption KPIs	Visibility KPIs	Optimization KPIs
• System adoption • Task completion/compliance • Data accuracy	• Costs • Waste • Productivity	• Impact on reactive work • Impact on uptime, throughout, and output • Impact on quality and costs

6. Build a people plan

The first part of executing your digital transformation initiatives is to enable your workforce. Look at your strategy and identify:

- The skills needed to execute each step and what employees have those skills. If those skills don't exist internally, develop them through training or additional hiring.
- The roles and responsibilities for each member of the team. The RACI model is an effective model to follow. It outlines who is responsible (does the work), accountable (in charge), consulted (has a say), and informed (kept in the loop) for each step of a project.

Project A	C	A	I	R
Project B	R	I	C	A

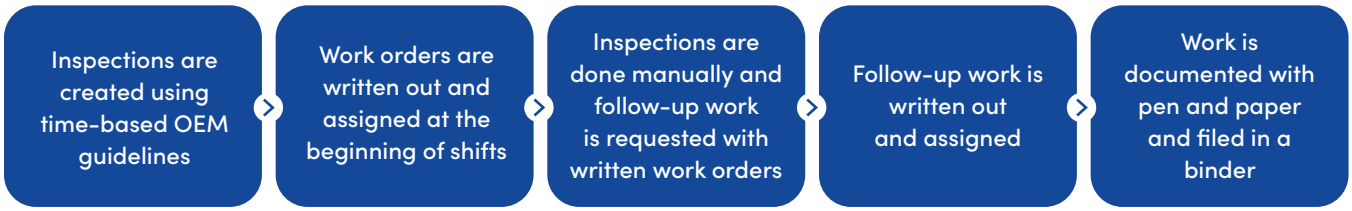
- Who your project champions are. These are the early adopters of a new system or process, and advocate for the project to their peers.
- What training is needed: Figure out what resources will help your team adjust to new processes and systems. Invest in the ongoing education and enablement of your people to increase adoption and minimize risk.

7. Map your processes

Processes are the bridge between strategy and execution. They're a framework for applying digital transformation to everyday maintenance operations. Map your current and ideal processes. Compare the two and note what's necessary to move closer to your ideal state.

Mapping the process for scheduled maintenance

Current process



Ideal process

8. Choose your systems

It's finally time for technology to enter the picture. Keep these seven considerations in mind as you evaluate systems:

Stakeholders: Their input is essential to choosing a system with high adoption rates

Processes: The features of the system should enable the process changes identified

Costs: Different pricing models have pros and cons

Long-term fit with your digital ecosystem: The systems you choose needs to work together and with other systems implemented in the future

Security: Don't let maintenance systems be the weak link in your company's security

Time to value: Understand how long it takes to set up, adopt, and recognize value from a system

Vendor partnership: The support and expertise from your vendor is a critical ROI

9. Implement, assess, and evolve

All that's left to do is execute. As each project progresses, keep tabs on these areas:

- **Your success metrics**: Look for red flags, investigate their cause, and adjust your plan accordingly. Don't forget to celebrate the good numbers too.
- **Your milestones**: When you hit a milestone in a project or phase, look back and determine what can be duplicated in future digital transformation projects and what can be improved.
- **System outputs**: Understand how new technology affects your business and its goals. Common outputs include data, standard operating procedures, and communication channels.
- **Next steps**: Digital transformation is a constant march forward. As you finish one phase, look forward to the next one to avoid slipping back or behind.

08

Four challenges of digital transformation in maintenance and solutions

Digital transformation is not without its challenges. But the bumps in the road are easier to navigate when you can see them coming and plan ahead.

	How it can be a roadblock	What you can do about it
Data monitoring and evaluation	• A lack of resources and expertise for monitoring, evaluating, and acting on data • Not having assets compatible with systems that capture data	• Identify personnel who have the required data • Establish systems to store, organize, and share this knowledge • Use these systems when transitioning to a digital solution • Find technology with open systems that allow you to integrate with legacy equipment • Implement change slowly and evolve gradually from simple to complex data analysis

Cost and availability of technology	• New technology and/or upgrading equipment can be costly • Adapting to advanced systems requires time, patience and both human and financial capital	• Identify opportunities for short and long-term growth in ROI from digital transformation in maintenance • Establish a pilot program to implement and scale digital transformation with low risk
Expertise, training and workplace culture	• Developing a team with the skills and knowledge to run new systems takes time and money • Receiving buy-in from all members of the business can be challenging	• Keep stakeholders informed • Get input from stakeholders and be clear about possible changes • Communicate the benefits of digital transformation and invest in continuous training
Security	• Safeguarding access and adopting proactive cybersecurity strategies requires time, skill, effort, and financial resources	• Create a strategy for cybersecurity and build a plan for implementation • Use existing security processes to form a framework for maintenance systems • Assess and understand potential threats and safeguards

More resources

Explore other tools, templates, and resources on digital transformation in maintenance:

- The Skeptic's Guide to Cloud Maintenance Software
- A Guide to Getting Started with Maintenance Software Integrations
- The Short Guide to Buying the Right Maintenance Software
- Four big reasons maintenance software implementations fail
- A case study on how to successfully drive digital transformation in maintenance
- A framework for implementing digital transformation in maintenance
- The future of maintenance: A practical guide to Industry 4.0