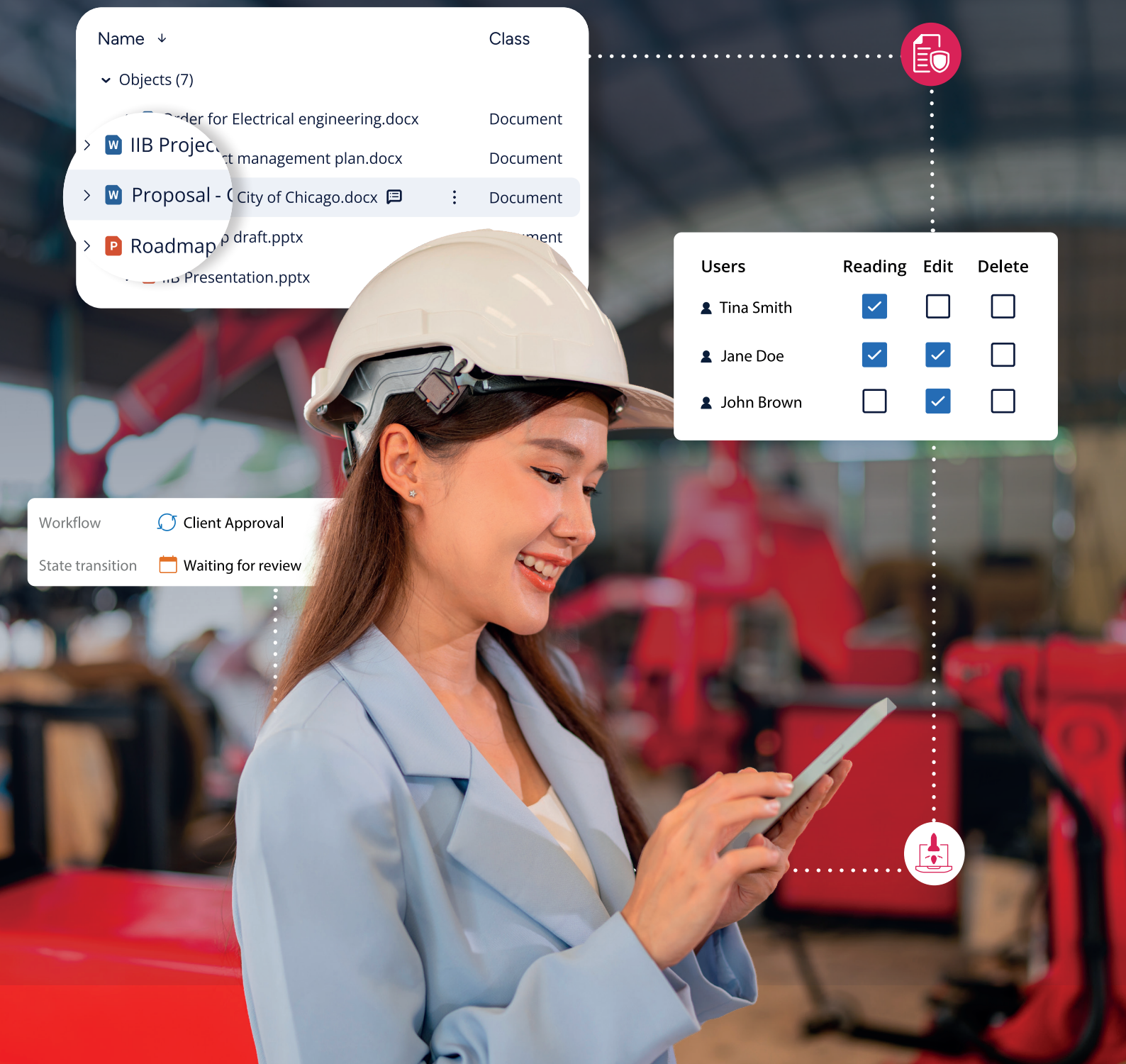
M-Files
The Smarter Way to Work.

Achieve Operational Excellence in Manufacturing *with Knowledge Work Automation and AI*



OVERVIEW

In today's competitive manufacturing landscape, achieving operational excellence is paramount for driving growth and profitability. However, manufacturers often face significant challenges such as inefficient manual processes, fragmented information management, and limited quality and compliance controls.

Digital transformation, particularly through the integration of knowledge work automation and artificial intelligence (AI), can address these challenges.

By leveraging advanced technologies, manufacturers can streamline workflows, optimize resources, and make data-driven decisions, ultimately enhancing productivity, reducing costs, and improving quality control.

This comprehensive approach highlights the importance of digital transformation, the role of AI, and the benefits of automating knowledge work, offering a roadmap for manufacturers to achieve organizational excellence.

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The Importance of Digital Transformation

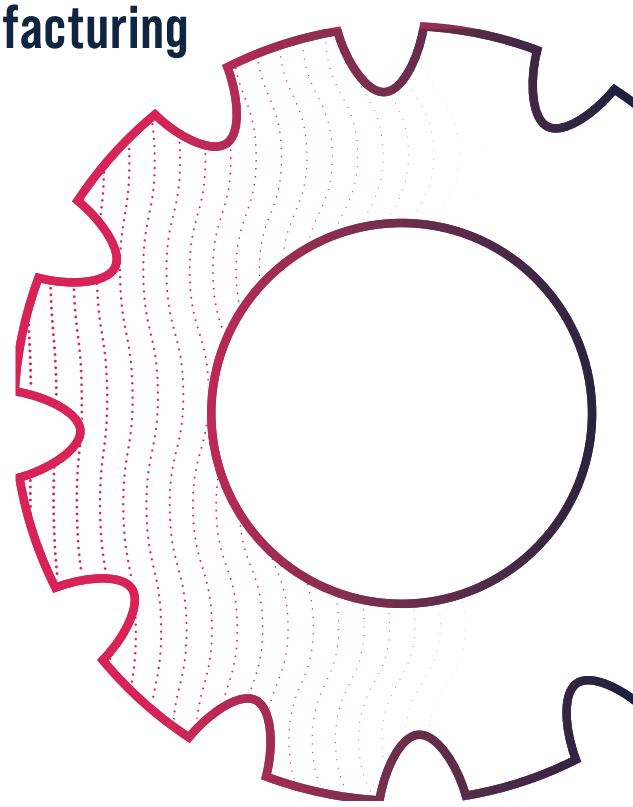
> "Digital transformation in the manufacturing industry is essential for enhancing productivity, reducing costs, and improving quality control."

Digital transformation is the integration of digital technology into all areas of a business, fundamentally changing how companies operate and deliver value to customers.

In manufacturing, this includes the adoption of technologies such as the Internet of Things (IoT), artificial intelligence (AI), and machine learning (ML) to automate knowledge work, streamline workflows, optimize resources, and make data-driven decisions. This transformation also enhances supply chain efficiency, enables quick adaptation to market changes, and fosters better collaboration across departments. Overall, digital transformation creates a more agile, efficient, and competitive manufacturing environment.

Introducing Digital Transformation in Manufacturing

Increasing growth and profitability in competitive markets requires solid execution of plans and strategies. That execution, however, is often hindered by inefficient manual processes, fragmented information management, and limited ability to enforce quality and compliance controls. **To achieve operational excellence, manufacturers need to establish a digital backbone spanning across departments, systems, and processes.** Full transparency and control over data enables systematic improvement of end-to-end processes leading to increased flow, and reduced response times, errors, and risks. The challenge can be overcome with an end-to-end knowledge work automation platform.



CHALLENGE 1

Information is scattered between systems and departments

- End-to-end processes involve multiple departments, each organizing their own data.
- Employees get lost in multiple systems and lack holistic structure.
- Access control issues, duplicates, and version confusion add to the information chaos.

DID YOU KNOW?

Workers complain about finding information.

SOLUTION 1

Eliminate information chaos via enterprise search and automation

- Unify visibility to enterprise data by connecting and structuring business documents and information across systems.
- Manage filing, classification, and organization of documents and permissions.
- Automate enterprise-level search and personalized views for all stakeholders.

CHALLENGE 2

Slow and error-prone manual processes reduce operational effectiveness

- Most processes, from document creation and approval to completing checklists, are manual.
- People re-invent the wheel; ball gets dropped, and overall performance is hindered.
- Interacting with customers, partners, and suppliers is cumbersome.

How often do your processes get stuck when employees forget to pass the ball?

SOLUTION 2

Improve process efficiency and accuracy with automated workflows

- Automate workflows to increase information accuracy and timely completion of tasks.
- Use templates, assignments, and notifications to assist and guide daily work.
- Integrate external collaboration as a natural part of your workflows.

CHALLENGE 3

Quality and compliance measures rely on individual diligence

- Document access and sharing rules are applied manually.
- Quality and compliance controls are based on manually following procedures and checklists.
- Audit trails break down when crossing system or organizational boundaries.

Do you get nervous when an audit draws closer?

SOLUTION 3

Reduce business risk with automated controls and audit trail

- Automate permissions based on document type, process phase, or any other business criteria.
- Include quality and compliance controls as part of daily workflows with an automated audit trail.
- Establish a single source of truth, regardless of where information is accessed from.

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The Role of AI in Manufacturing

AI agents are set to revolutionize manufacturing by optimizing processes and reducing downtime through predictive maintenance and autonomous decision-making. These intelligent systems are reshaping the industry, enhancing efficiency, precision, and adaptability. By leveraging advanced data analytics, AI agents enable manufacturers to improve product quality and streamline operations.

As the technological landscape evolves, embracing AI-driven innovations is crucial for manufacturers to stay competitive and meet the demands of a dynamic market.

Adapting to these advancements ensures operational excellence and paves the way for sustainable growth and innovation in the manufacturing sector. **AI technologies, including machine learning and generative AI, are being integrated into manufacturing systems to provide data-driven insights and identify previously undetectable patterns.** This integration allows for real-time monitoring and adjustments, ensuring continuous optimization of manufacturing processes. Predictive models and algorithms help in forecasting equipment health and scheduling maintenance before failures occur, thus reducing downtime and boosting overall productivity.

AI Integration in Manufacturing Digital Transformation Efforts

The integration of advanced technologies like IoT, AI, and automation into existing systems will remain a significant challenge in digital transformation for manufacturing companies. Currently, we find ourselves in the upward phase of the AI hype cycle, where expectations may be running ahead of practical reality. In the year ahead, businesses will come to realize the importance of strengthening foundational systems and integrations, as these will support AI agents in the same way they empower human workers.

AI solutions will play a pivotal role in enhancing overall operational efficiency and driving innovation within the manufacturing sector. To successfully integrate AI technologies, manufacturers must prioritize the development of robust data infrastructure and cybersecurity measures. Ensuring the integrity and security of manufacturing data is critical for the effective deployment of AI systems. Additionally, manufacturers should invest in training programs to equip their workforce with the skills needed to manage and operate AI-driven technologies. By fostering a culture of continuous learning and innovation, manufacturers can stay ahead of the curve and capitalize on the benefits of AI adoption.

> "While routine task automation will free employees to **focus on more strategic work**, we can also expect substantial advancements in AI capabilities, bringing about real, transformative change."

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The Essentials to Understanding Knowledge Work Automation

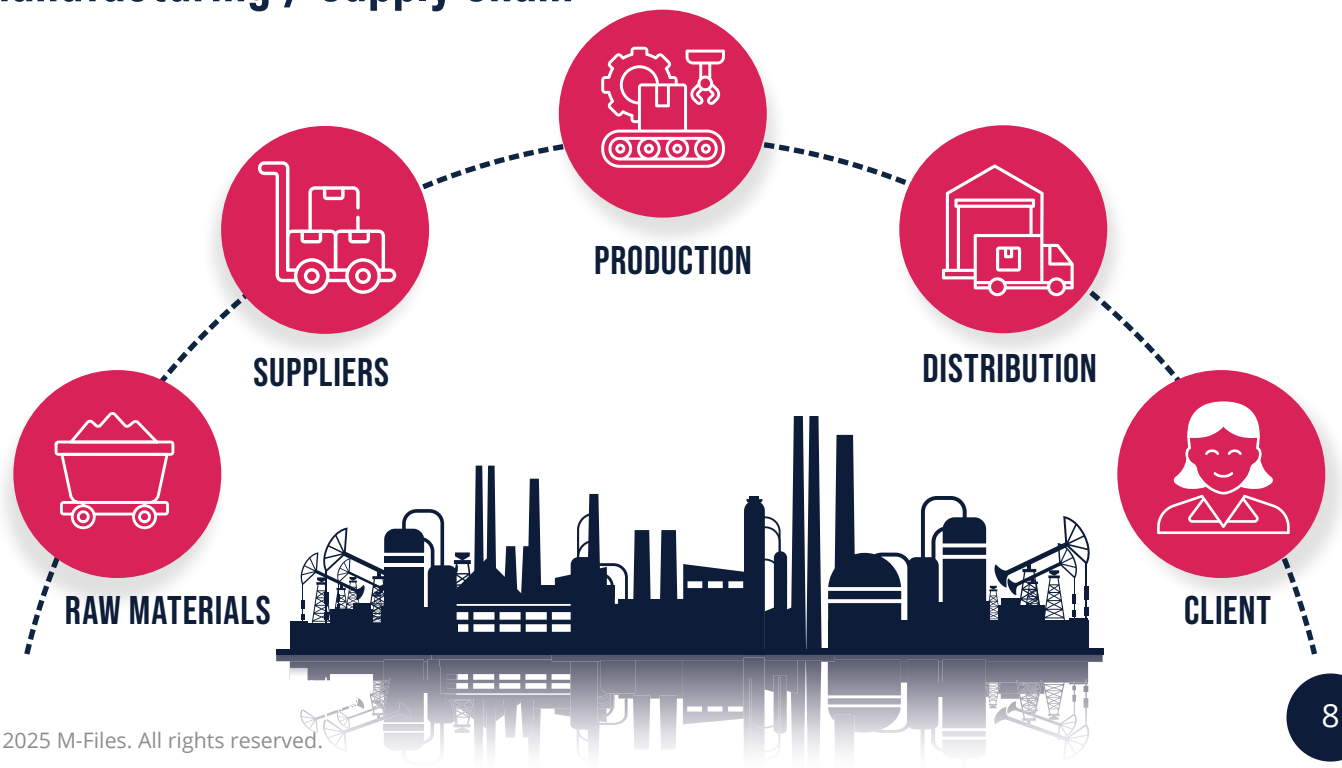
Who are Knowledge Workers and What is Knowledge Work Automation?

Knowledge workers in manufacturing are individuals who primarily deal with information, data, and intellectual tasks rather than manual labor. They use their expertise and analytical skills to solve complex problems, improve processes, and drive innovation. Examples of knowledge workers in the manufacturing sector include engineers, data analysts, quality control specialists, IT professionals, research and development scientists, and supply chain managers.

Knowledge Work Automation (KWA) refers to the automation of manual tasks in knowledge work, allowing professionals to focus on value-adding activities.

It leverages technology, such as AI, to automate processes and improve efficiency and quality of work. Knowledge work automation in manufacturing companies involves the use of advanced technologies to automate tasks that require human knowledge and decision-making.
This includes processes such as data analysis, decision support, and the management of information and documentation. The goal is to enhance efficiency, reduce errors, and improve overall productivity.

Manufacturing / Supply Chain



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R&D / DESIGN

The product is researched and designed, and an estimate of the costs is done.

PROCESS DEVELOPMENT

The different stages of production are drafted and planned.

PROCUREMENT

All the parts and materials needed for the product are sourced.

PRODUCTION PREPARATION

Parts and materials are placed on the shop floor to maximize productivity. Machinery is prepared.

PRODUCTION

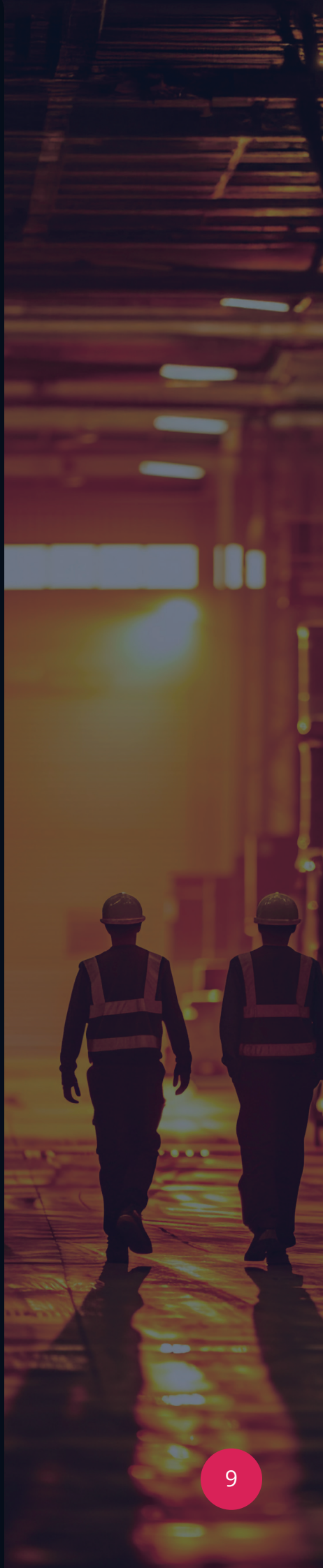
The production line starts, the product is being produced.

QUALITY MANAGEMENT

The product is tested and controlled against quality standards.

SHIPPING

When the product is ready, it gets shipped to warehouses for storage or final delivery to clients.



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Examples of Knowledge Work Automation Across Different Manufacturing Environments

Discrete vs. Process Manufacturing Environments

Manufacturing companies can be broadly categorized into discrete and process manufacturing. **Discrete manufacturing involves the production of distinct items that can be easily counted, touched, and seen.** This type of manufacturing is common in industries such as automotive, electronics, and machinery, where products are assembled from individual components and can be disassembled if necessary.

On the other hand, **process manufacturing involves the production of goods by combining raw materials and ingredients through chemical, thermal, or mechanical processes.** This method is prevalent in industries such as food and beverage, pharmaceuticals, and chemicals, where products are created in bulk and cannot be disassembled into their original components.

Relevant Subsector Environments

The manufacturing industry encompasses a wide range of subsectors, each with its unique characteristics and requirements. Some of the key subsectors include:

- **Machinery Manufacturing:** Involves the production of industrial and commercial machinery.
- **Chemical Manufacturing:** Focuses on the production of chemicals and related products.
- **Paper Manufacturing:** Involves the production of paper and paper products.
- **Fabricated Metal Product Manufacturing:** Includes the production of metal products through various fabrication processes.
- **Electrical Equipment, Appliance, and Component Manufacturing:** Involves the production of electrical equipment and components.
- **Transportation Equipment Manufacturing:** Involves the production of transportation equipment such as vehicles and aircraft.

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Differences and Similarities in Knowledge Work Automation

Similarities in Automating Knowledge Work

Both types of manufacturing benefit from automating knowledge work processes such as document and information management, quality management, and workflow automation.

Automation helps in streamlining operations, reducing errors, and ensuring compliance with industry standards.

For instance, automating the management of quality manuals, inspection records, and non-conformance reports is crucial in both discrete and process manufacturing to maintain high-quality standards and meet regulatory requirements.

Differences in Automating Knowledge Work

The primary differences lie in the specific requirements and workflows of each manufacturing type. In discrete manufacturing, automation often focuses on managing complex bills of materials (BOMs), tracking individual components, and ensuring precise assembly processes. This requires robust systems for managing detailed product specifications and assembly instructions. In contrast, process manufacturing relies heavily on managing formulas or recipes, batch production records, and ensuring consistent quality control throughout the production process. Automation in this context involves managing large volumes of data related to raw materials, production parameters, and batch tracking.

Overall, while the core principles of knowledge work automation apply to both discrete and process manufacturing, the specific implementation and focus areas differ based on the unique requirements of each manufacturing type.

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Game-Changing Features of Knowledge Work Automation

Integration with Existing Systems

Integrating new automation tools with existing systems can be challenging. It is important to choose solutions that are compatible with current technologies and can be easily integrated.

M-Files' easy integration with master data sources like ERP and CRM systems centralizes information management, ensuring data consistency and accuracy across different systems. This integration streamlines workflows, enhances decision-making, and boosts productivity by reducing the time spent searching for information. It also improves collaboration between departments, supports compliance with industry regulations, and leads to significant cost savings by automating processes and reducing manual intervention, and most importantly, provides a 360-degree view to your business.

Change Management

Implementing automation requires changes to existing processes and workflows. It is important to manage this change effectively to ensure that employees are on board and that the transition is smooth.

Document and Information Management

Manufacturing is a document-heavy industry, with a wide range of documents such as assembly drawings, batch manufacturing records, bills of materials, and quality control reports. Automating the management of these documents ensures that they are easily accessible, up-to-date, and compliant with industry standards.

Managing access to information is crucial for maintaining security, compliance, and operational efficiency. Automating permissions ensures that the right people have access to the right information at the right time, without the need for manual intervention. Also, in case of personnel changes, automation will take care of updates to permissions, instead of relying on manual changes.

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Audit Trail

In the manufacturing industry, maintaining a robust audit trail is crucial for ensuring compliance, quality control, and operational efficiency. **M-Files provides a comprehensive audit trail feature that automatically records every action taken on a document or piece of information.** This includes who accessed it, what changes were made, and when these actions occurred.

M-Files ensures that all interactions are tracked and documented, providing a clear and detailed history of each document's lifecycle. This not only helps in meeting regulatory requirements but also enhances transparency and accountability within the organization. With M-Files, manufacturers can easily retrieve audit trails during inspections or audits, ensuring that they are always prepared and compliant with industry standards.

Workflow Automation

Workflow automation in M-Files refers to managing processes by automatically passing tasks, information, or documents from one person to another based on specific rules. This minimizes manual work, speeds up processes, and ensures they are done consistently and accurately. This also accumulates the audit trail automatically.

Quality Management

Automating quality management processes helps ensure that products meet regulatory requirements and customer expectations. This includes automating the creation and management of quality manuals, inspection records, and non-conformance reports.

Asset Information Management

Asset information management involves the systematic governance of information related to physical assets throughout their lifecycle. Automation in this area helps improve decision-making, operational efficiency, and compliance by ensuring that all asset-related information is accurate and easily accessible.

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Sales and Delivery Information Management

Automating the management of sales and delivery information ensures that customer orders are processed efficiently and accurately. This includes automating workflows for order processing, delivery tracking, and customer communication, potentially using a web-based hub for streamlined communication with the customer, and easier collaboration.

M-Files Hubshare workspaces are called hubs. Hubs consist of modules, such as Dashboard, Project, and Social, that provide innovative and easy-to-use features that make your and your colleagues' daily work easier.

Hubs are centralized workspaces that make it easy to access relevant documents and other information while metadata-driven navigation further simplifies locating information quickly and efficiently.

"You can enable seamless two-way **integration between M-Files and M-Files Hubshare to access information** in M-Files and add new documents and other information to M-Files via M-Files Hubshare."

Why Should You Implement Knowledge Work Automation?

Increased Efficiency

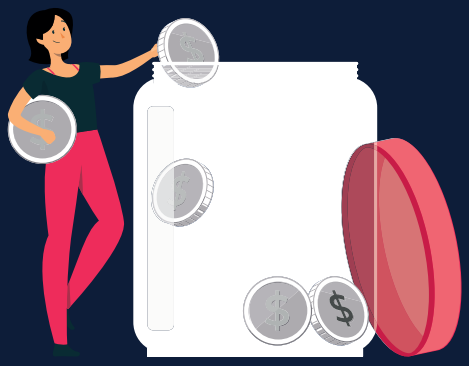
Automation reduces the time and effort required to complete tasks, allowing employees to focus on more strategic activities. This leads to faster decision-making and improved productivity.

Improved Accuracy

Automating knowledge work reduces the risk of human error, ensuring that information is accurate and up-to-date. This is particularly important in areas such as quality management and compliance.

Enhanced Collaboration

Automation tools facilitate better communication and collaboration between departments and with external partners. This ensures that everyone has access to the information they need, when they need it.



Cost Savings

By streamlining processes and reducing the need for manual intervention, automation can lead to significant cost savings. This includes savings from reduced errors, improved efficiency, and better resource utilization.

Better Compliance

Automating compliance-related tasks ensures that all regulatory requirements are met, and that documentation is always up-to-date and easily accessible. This reduces the risk of non-compliance and associated penalties.

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The Main Use Cases in Manufacturing

The manufacturing industry is diverse, encompassing various subsectors such as machinery, chemical, paper, and food manufacturing. Each subsector has unique requirements and processes, but they all share common goals of efficiency, quality, and compliance. This guide will explore typical use cases in the manufacturing industry, detailing the processes, documents involved, and the roles of different operations and people.

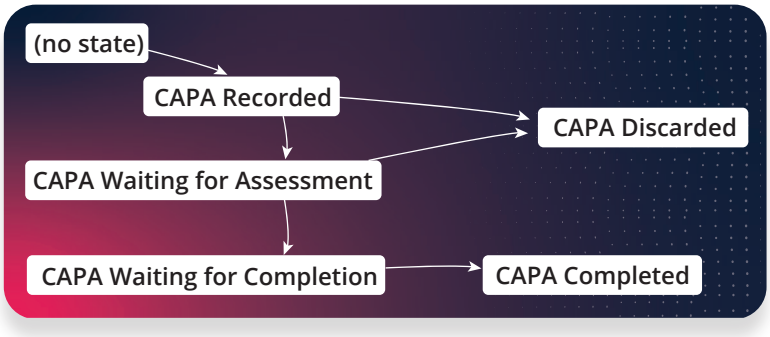
Quality Management

Quality management ensures that products meet regulatory requirements and customer expectations. It involves implementing and maintaining quality processes, conducting audits, and managing non-conformance reports (NCRs).

Processes:

- **DOCUMENT MANAGEMENT:**
  Managing quality manuals, inspection records, and NCRs.
- **WORKFLOW AUTOMATION:**
  Automating review and approval processes for quality documents.
- **TRAINING MANAGEMENT:**
  Tracking learning requirements and qualifications.

CAPA Processing Workflow



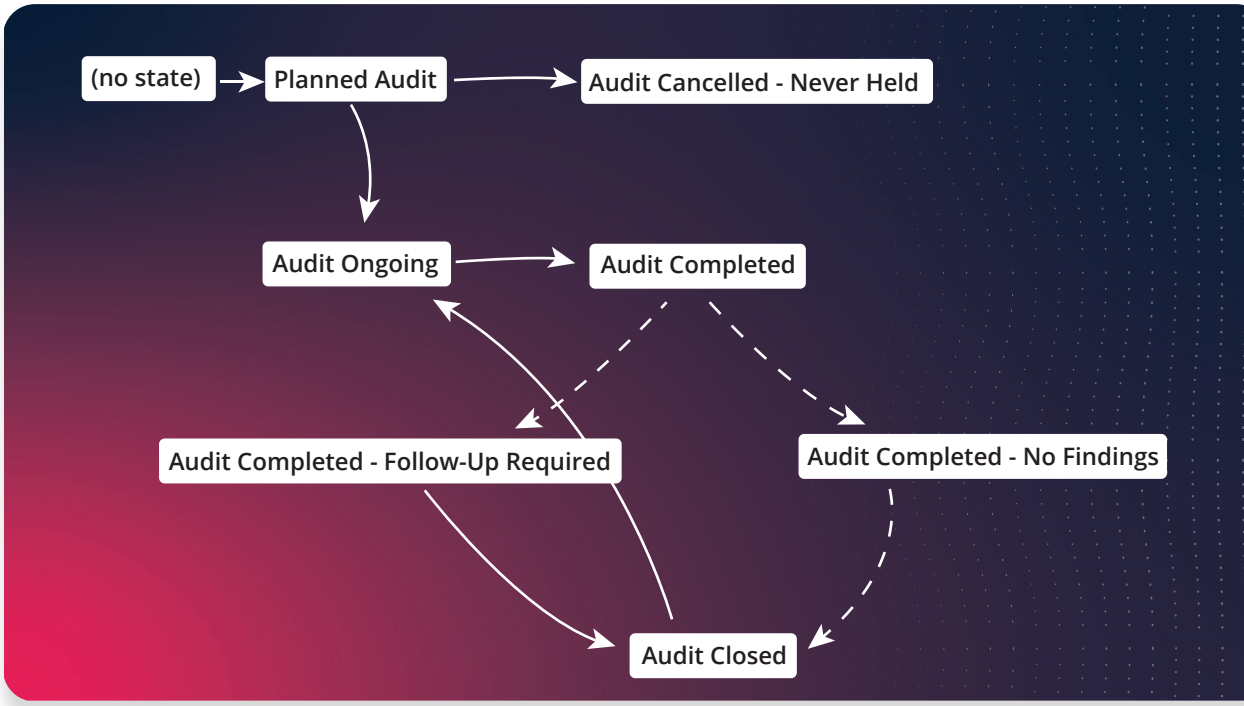
Documents Involved:

- **QUALITY MANUALS**
- **INSPECTION RECORDS**
- **NON-CONFORMANCE REPORTS (NCRS)**
- **CORRECTIVE ACTIONS AND PREVENTATIVE ACTIONS (CAPAS)**

Operations and People:

- **QUALITY ASSURANCE TEAMS:**
  Responsible for conducting inspections and audits.
- **PRODUCTION TEAMS:**
  Ensure that products meet quality standards.
- **COMPLIANCE OFFICERS:**
  Oversee adherence to regulatory requirements.

Audit Lifecycle



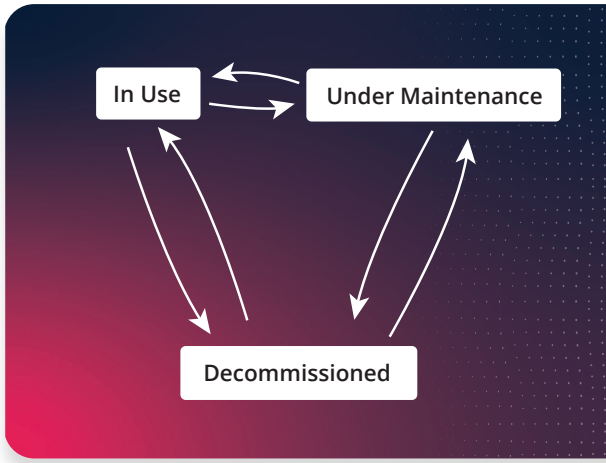
Asset Information Management

Asset information management involves the systematic governance of information related to physical assets throughout their lifecycle. This includes maintenance records, equipment specifications, and compliance documentation.

Processes:

- **DOCUMENT MANAGEMENT:**
  Centralizing asset-related documents.
- **WORKFLOW AUTOMATION:**
  Streamlining maintenance schedules and updates.
  Assets may be either In Use, Under Maintenance or Decommissioned
- **INTEGRATION:**
  Bridging gaps between different systems for a unified view of asset information.

Asset Status Workflow



Documents Involved:

- **MAINTENANCE RECORDS**
- **EQUIPMENT SPECIFICATIONS**
- **COMPLIANCE DOCUMENTATION**
- **WARRANTIES**

Operations and People:

- **MAINTENANCE TEAMS:**
  Perform regular maintenance and updates.
- **OPERATIONS MANAGERS:**
  Oversee asset utilization and performance.
- **IT TEAMS:**
  Ensure integration and accessibility of asset information.

Sales and Delivery Information Management

This use case focuses on managing information-related to customer orders, from delivery requests to completion. It ensures efficient order processing and delivery, enhancing customer satisfaction.

Processes:

- **ORDER PROCESSING:**
  Managing customer orders and delivery schedules.
- **WORKFLOW AUTOMATION:**
  Automating order approvals and tracking.
- **CUSTOMER COMMUNICATION:**
  Ensuring timely updates and responses to customer inquiries.

Documents Involved:

- **SALES ORDERS**
- **DELIVERY NOTES**
- **INVOICES**
- **CUSTOMER COMMUNICATION RECORDS**

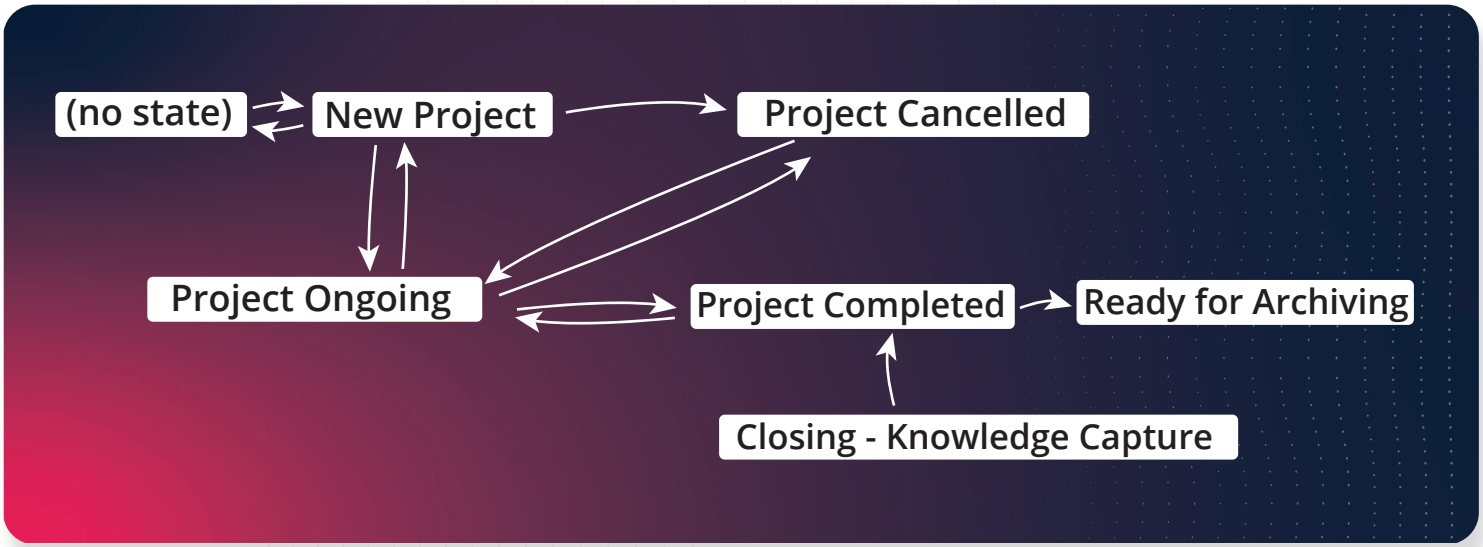
Operations and People:

- **SALES TEAMS:**
  Handle customer orders and communication.
- **LOGISTICS TEAMS:**
  Manage delivery schedules and transportation.
- **CUSTOMER SERVICE TEAMS:**
  Address customer inquiries and issues.

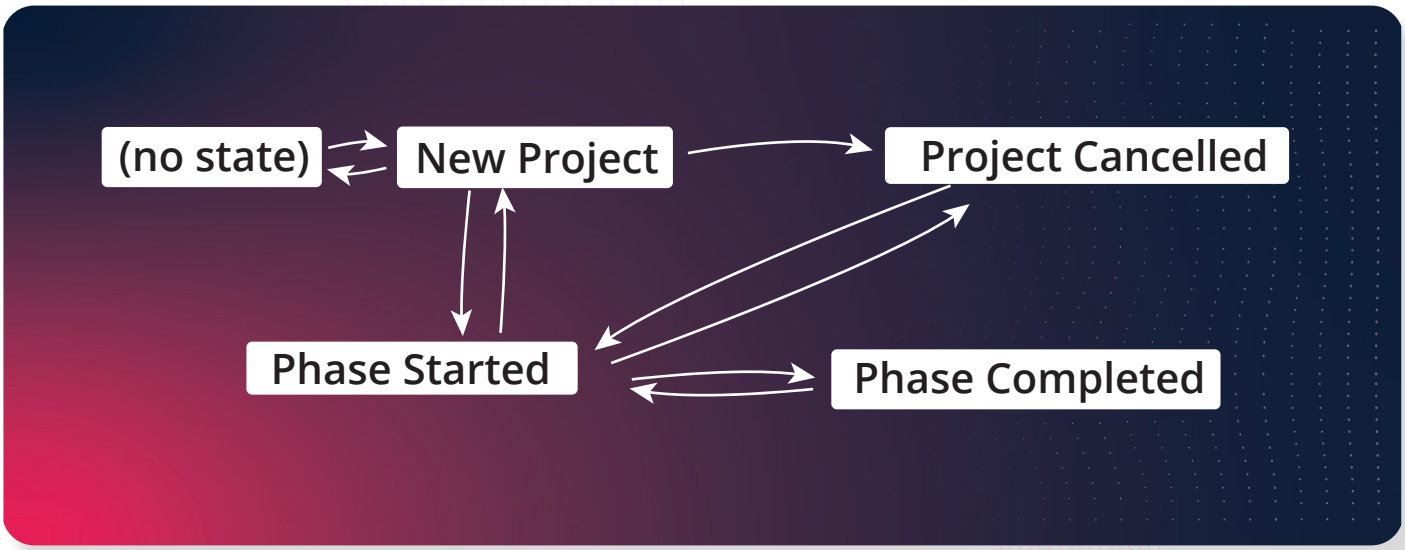
Project Information Management

Project information management involves handling all project-related information, including documents, schedules, and communications. It ensures that projects are completed on time and within budget.

Project Workflow Lifecycle



Phase Workflow Lifecycle



Processes:

- **DOCUMENT MANAGEMENT:**
  Centralizing project documents and schedules.
- **WORKFLOW AUTOMATION:**
  Streamlining project approvals and updates.
- **COLLABORATION:**
  Facilitating communication between project stakeholders.

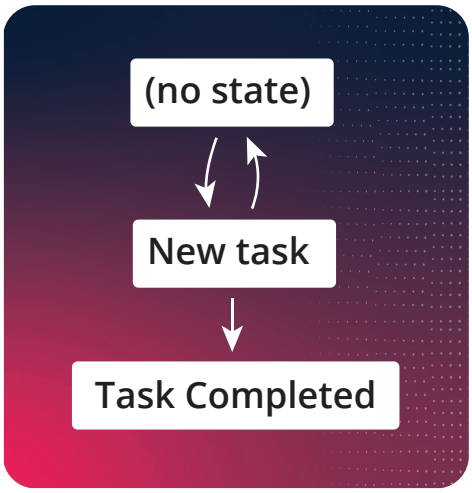
Documents Involved:

- **PROJECT PLANS**
- **SCHEDULES**
- **MEETING MINUTES**
- **PROGRESS REPORTS**

Operations and People:

- **PROJECT MANAGERS:**
  Oversee project execution and coordination.
- **TEAM MEMBERS:**
  Contribute to project tasks and updates.
- **STAKEHOLDERS:**
  Provide input and approvals for project milestones

Task Workflow Lifecycle



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How Can M-Files Help Manufacturing Firms Achieve Organizational Excellence?

M-Files is a knowledge work automation platform that offers document management, automated workflows, and robust permission management. It integrates business objects and connects with ERP and CRM systems, eliminating information chaos and enhancing process accuracy.
By unifying enterprise data and providing personalized views, M-Files streamlines information management, reduces errors, and boosts operational efficiency, making it a powerful tool for modern manufacturing organizations.

M-Files delivers significant value to manufacturing companies by providing intelligent information management solutions. It offers a centralized platform for document management, version control, and secure archiving, resulting in increased efficiency, productivity, and quality. **M-Files streamlines processes, automates workflows, and improves collaboration, leading to improved business agility and scalability.** This knowledge work automation solution enhances transparency, control, and access to information, reducing errors and delays. M-Files facilitates compliance with industry standards and regulations, ensuring governance and minimizing risks. It enables companies to digitize and streamline their operations, reducing reliance on manual and paper-based processes.

Overall, M-Files empowers manufacturing companies to optimize their information management, enhance productivity, and drive business growth.

"With M-Files, manufacturing companies can achieve **better customer service, faster response times, and improved decision-making."**

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How Generative AI is Transforming Manufacturing

Generative AI is revolutionizing the manufacturing industry by addressing key challenges and driving efficiency.
The transformative impact of AI agents is evident as they streamline industrial operations, necessitating manufacturers to adapt to the rapidly evolving technological landscape.

With labor shortages, rising costs, and changing customer demands, AI-driven, near-autonomous systems have become essential. AI agents, both virtual and embodied, play crucial roles in enhancing operational efficiency and flexibility. Adopting a value-driven approach to technology is vital, supported by strong organizational foundations.

Embracing frontier technologies like M-Files Aino, an AI-powered assistant integrated into the M-Files platform, ensures manufacturers secure a competitive advantage in the future. M-Files Aino uses AI to automate tasks, improves process efficiency, and ensures data security.

M-Files Hubshare provides customizable workspaces for seamless collaboration and centralized information access, which boosts productivity and innovation.

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Overcoming Key Challenges in Manufacturing With M-Files

In today's competitive market, growth and profitability hinge on flawless execution. However, many manufacturers face significant challenges:

1

CHALLENGE

Information Fragmentation: Information scattered across various systems and departments leads to inefficiencies. Employees struggle to find the right information, deal with access control issues, and face confusion due to duplicates and inconsistent folder structures.

SOLUTION

Eliminate information chaos with enterprise search and automation. By unifying visibility to enterprise data, automating document management, and providing personalized views, you can streamline information management processes.

2

CHALLENGE

Manual Processes:
Reliance on slow, error-prone manual processes reduces operational effectiveness.

SOLUTION

Improve efficiency and accuracy with automated workflows. Automating workflows ensures timely task completion, increases information accuracy, and integrates external collaboration seamlessly.

3

CHALLENGE

Quality and Compliance:
Manual application of document access and sharing rules can lead to breakdowns in audit trails.

SOLUTION

Reduce business risk with automated controls and audit trails. Automate permissions based on document type or process phase, include quality and compliance controls in daily workflows, and establish a single source of truth.

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Key Trends in Manufacturing and How M-Files Solves Manufacturing Inefficiencies

The manufacturing sector faces several challenges, including supply chain disruptions, the rise of smart factories, a growing emphasis on sustainability, and talent obstacles.

1

CHALLENGE

Supply Chain Disruptions:
Prolonged lead times for critical production materials necessitate robust solutions for operational continuity.

SOLUTION

M-Files supports digital transformation by integrating intelligent information management into workflows, optimizing logistics, and streamlining tasks for greater efficiency and agility.

2

CHALLENGE

Smart Factories:
Digital transformation is essential for efficient and agile production processes.

SOLUTION

M-Files supports digital transformation by integrating intelligent information management into workflows, optimizing logistics, and streamlining tasks for greater efficiency and agility.

3

CHALLENGE

Sustainability:
Manufacturers strive to reduce their environmental impact while maintaining profitability, requiring meticulous documentation and compliance.

SOLUTION

M-Files promotes sustainability through paperless operations and meticulous documentation, ensuring compliance with environmental regulations and reducing the environmental footprint.

4

CHALLENGE

Talent Obstacles:
Attracting and retaining skilled workers is crucial as technology advances.

SOLUTION

M-Files enhances the work environment by automating manual processes, improving productivity, and providing robust training and onboarding capabilities to attract and retain skilled workers.

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Efficiency Unleashed: HL Technology's Transformation with M-Files, a Customer Success Story

What were the company challenges before adopting M-Files?

HL Technology faced several challenges before adopting M-Files. These challenges included:

- Transmitting non-conformities took 1 to 2 days, but after adopting M-Files, it was reduced to **1 second.**
- Managing requests for modification and change (DCM) took 1 week, but after adopting M-Files, it was **reduced to 24 hours.**

Achieving process conformity of

98%

How Did M-Files Solve the Company Challenges?

M-Files solved these challenges by providing a centralized and customizable information management system. It allowed HL Technology to automate various processes, including production, quality, human resources, and more.

With M-Files, the company experienced significant improvements, such as reducing the time to transmit non-conformities from 1-2 days to 1 second, reducing the time for managing change requests from 1 week to 24 hours, and achieving 98% process compliance.

M-Files also facilitated the digitalization of the company's quality system, eliminating the need for paper-based consultations and improving access to information for audits and supplier evaluations. Overall, M-Files helped HL Technology streamline its information management, enhance compliance, reduce errors and delays, and contribute to its environmental sustainability goals.

What Value Does M-Files Deliver to This Company?

M-Files delivers the value of simplifying the company's information management by providing a single tool for production, quality, billing, human resources, and other areas.

M-Files allows for automation of processes, reduces time for managing non-conformities and change requests, and ensures a high level of process compliance. It also facilitates the company's digital transformation and helps in achieving environmental goals by reducing paper usage.

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INTRODUCTION TO DOCUMENT MANAGEMENT SYSTEMS

In the quest for manufacturing excellence, leveraging Knowledge Work Automation (KWA) and AI is crucial. M-Files stands out as a comprehensive solution, addressing key challenges such as information fragmentation, manual processes, and compliance issues.

By centralizing data, automating workflows, and ensuring robust permission management, M-Files enhances operational efficiency and accuracy. Additionally, it supports digital transformation, promotes sustainability, and helps attract and retain skilled talent.

As manufacturers navigate supply chain disruptions, the rise of smart factories, and the growing emphasis on sustainability, M-Files provides the digital backbone needed to achieve operational excellence and drive growth and profitability in competitive markets.

Statistics Highlighting the Need for Automation

Employees spend up to

30% of their week finding the right data.

51% of organizations reported non-compliance with data regulations in the past 12 months, with an average total cost of **$1.03 million.**

76% of workers spend **1-3 hours a day** moving data.