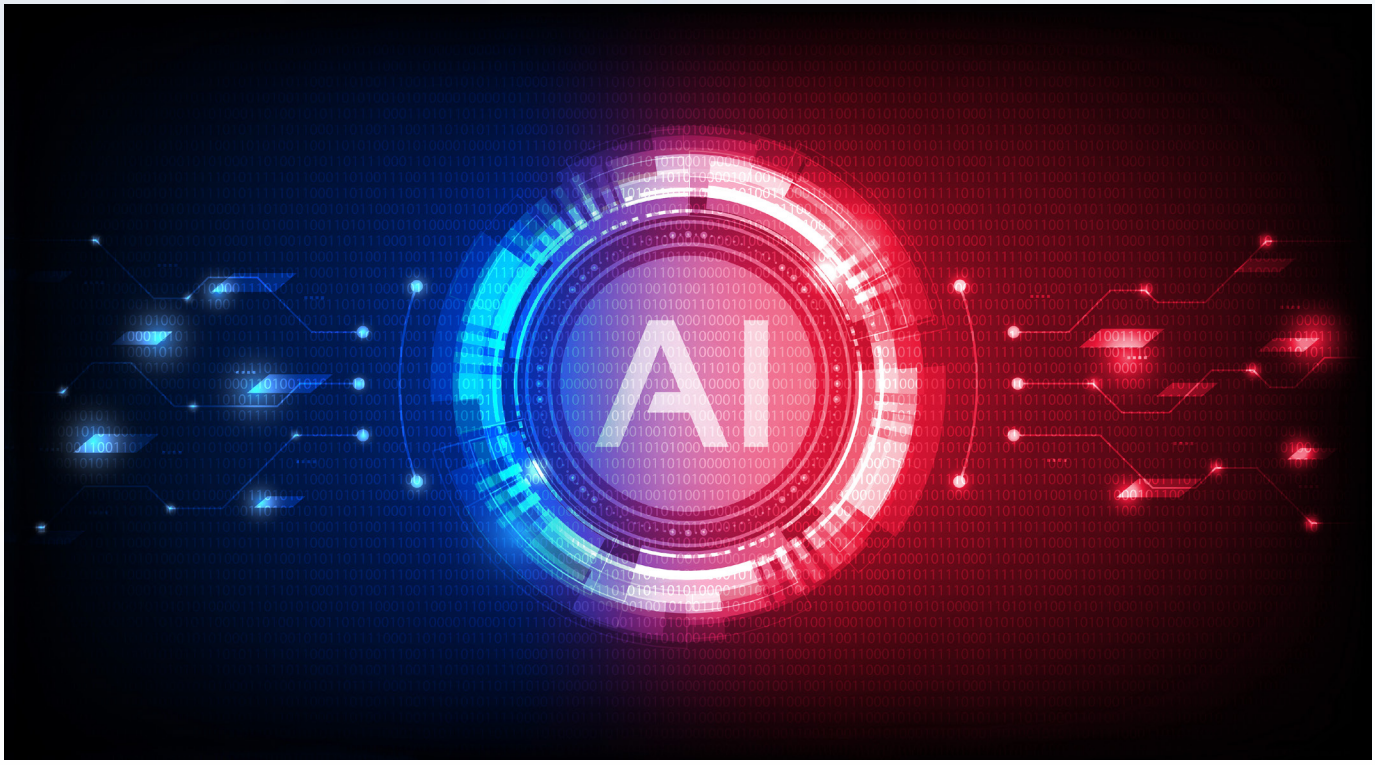

Using AI to Solve Manufacturing's Top 5 Data Implementation Challenges

MANUFACTURING NET

The use of artificial intelligence (AI) is far from new to the industrial sector. Manufacturers have been leveraging this technology for decades, applying machine learning strategies to automation, robotics and industrial control platforms.

However, the introduction of large language models like ChatGPT in the fall of 2022 expedited the desire to push this technology into everyday applications. Manufacturers were not immune to this wave of excitement and were soon seriously discussing how to best leverage these new technologies.

The challenge was not only identifying the right tools and applications, but the specific areas that could take the greatest advantage of generative AI (GenAI). One of the most intriguing options would not only allow for the widespread use of GenAI capabilities throughout the organization, but also solve one of manufacturing's legacy challenges — implementing new tools and technologies in an efficient manner.

As any user or provider of new industrial technology can attest, perhaps the biggest hurdle in accessing the inherent benefits of IT and OT upgrades is navigating implementation. Balancing the potential benefits with the unavoidable downtime has always required manufacturers to accept certain trade-offs.

However, leveraging GenAI's ability to save time, manage data and increase worker productivity minimizes many of these tradeoffs and pain points. When utilized correctly, it should help organizations modernize more efficiently, which will be key in quickly adjusting to an increasingly complex and competitive marketplace. What follows are the top five areas where AI can help address implementation challenges throughout the industrial enterprise.

1. Preserving Timelines and Budget

Return on investment (ROI) are three of the most powerful words in manufacturing. Understanding the value of demonstrating how a certain technological investment can save time and/or money will help you secure internal buy-in. But while creating an ROI statement might get you the initial funding, being able to consistently deliver on those projections is what will keep the cash flowing.

This means hitting those previously determined benchmarks, which are under constant attack from unforeseen scheduling delays and cost overruns. The ability to analyze your situation by comparing it to other internal projects, similar experiences from other companies, as well as data provided by key project stakeholders, can help create a project data lake from which AI tools can draw information.

Using this conglomeration of new and legacy data, AI can determine patterns and assess historical information to identify potential bottlenecks and propose approaches to hitting financial and scheduling benchmarks. These strategic guideposts will help you stay on budget, meet timelines, and smoothly integrate new technologies with your enterprise and people. Hitting those ROI metrics will go a long way in justifying continued technological investment.

AI can also play a key role in addressing some of the challenges associated with achieving strong ROI, such as:

- **High initial costs:** Investing in data infrastructure, analytics tools and skilled personnel can be expensive up front.
- **Difficulty linking initiatives to outcomes:** Proving a direct causal link between data projects and specific business outcomes can be challenging, especially when multiple factors are involved.
- **Inconsistent tracking:** Lack of clear documentation on data product usage and impact makes it hard to calculate ROI accurately.
- **Lack of standardization:** Different teams or departments may have varying definitions of value, making it difficult to compare and consolidate ROI across the organization.
- **Changing business environment:** External factors and market shifts can quickly impact the value of data analytics initiatives.
- **Security and compliance costs:** Investing in data security and ensuring compliance with evolving regulations can add to the costs and impact ROI.

Laserfiche is a leading provider of AI solutions, as well as enterprise content management systems that improve and automate business processes, and innovate traditional document management by easing compliance burden. The company also offers a unique solution via their Document Summarization offering.

AI can play a key role in addressing some of the challenges associated with achieving strong ROI.

Powered by generative AI, Laserfiche Document Summarization provides concise descriptions of documents, video, audio or presentation files. This allows for obtaining and sharing information that is essential to the user and the audience without spending the time and energy needed to scan through mountains of data and data sources. In many instances this not only helps save time, but reinforces the aforementioned ROI metrics.

2. Meshing Organic Knowledge with Best Practices

Manufacturing has been working to address challenges resulting from the exit of “machine whisperers” for nearly two decades. As these experienced maintenance and operations personnel retire or move on, these whisperers are taking volumes of technical knowledge and organic “know-how” with them that is unrivaled by even the most diligent of CMMS or ERP historian offerings. Similar skills gaps exist in key areas such as finance, supply chain, sales, and IT — making the implementation of new technology and processes more difficult.

The long-sought solution has been a way to merge the technical data that is readily available for meeting all the by-the-book aspects of these roles with the entrenched best practices that can only be learned from time on the job. Ideally, the end result would be processes and procedures that leverage the best of both worlds in creating implementation SOPs that work now, and could change as technology and enterprise demands evolve.

While tempting, it could be a misstep to rely exclusively on data analytics and dismiss the organic information embedded with an organization and its talented workforce. When tempted to go this route, consider the following.

- **Intangible benefits:** Many benefits of data analytics, such as improved decision-making agility, reduced risk, or increased agility, are intangible and difficult to quantify in financial terms.
- **Measurement challenges:** Accurately isolating the specific contribution of data analytics to broader business outcomes (e.g., increased customer satisfaction, optimized supply chains) can be difficult and skew ROI metrics.
- **Short-term focus.** Stakeholders often expect quick wins, but many data initiatives deliver value over time through cumulative improvements and long-term gains.
- **Data silos.** When data is stored in fragmented systems and inaccessible to relevant users, it hinders analysis and decision-making.

AI excels at consuming data, synthesizing it, and making it easy to access and understand. This makes it an ideal tool for meshing the legacy understanding of the machine whisperer with the data-driven methodologies of today's analytics prophet. Allowing AI to break down both data sources will lead to implementation strategies that leverage both inputs, and ensure the creation of higher quality processes that can be properly amended over time.

Laserfiche has also responded to these market dynamics in the form of its Smart Fields platform. It provides the ability to automatically capture specific data from a conglomeration of documents and data sources using natural language descriptions. Simple prompts allow for users to access, organize and analyze mass quantities of data from diverse sources faster in providing enhanced solutions without reinventing the wheel at every turn.

3. Bringing The Right Data to the Right People

Driving the implementation of many Industry 4.0 technologies is the desire to leverage all the data that can be created by these new platforms, and then share it throughout the organization. Ideally, getting more information on the screens of frontline workers not only empowers these individuals to make better decisions, but improves the overall efficiency of the enterprise.

The good and bad of all this shared data is that it can be difficult to sort and prioritize according to job functions or areas of responsibility. The information most critical for warehousing, logistics and supply chain management will differ from that desired by plant maintenance personnel. While access and visibility to all this inter-related data can be extremely helpful, it also carries the potential to create inefficient processes where less relevant data must be weeded out in obtaining the dashboards and reports that truly help stakeholders understand their situation and make timely decisions.

This information overload can lead to paralysis by over-analysis and increase implementation pain points. The use of AI platforms to examine data usage patterns, historical performance, and the types of decisions that need to be made by different roles within the enterprise can help streamline the manner in which data is shared right from the start. This will help preserve all those efficiency-focused dynamics that data integration was meant to help address, and ease the initial integration processes associated with access to new and legacy data.

To assist in this area of AI needs, Laserfiche has unveiled its Smart Chat offering. An intuitive interface allows users, via natural language prompts, to dive more deeply into a document's offerings in providing concise answers covering multiple areas of application. Smart Chat can even provide summaries and reference links to help validate the information being shared.

4. Managing Documentation and Technical Data

It turns out that the saying, "with great power comes great responsibility," applies to more than just superheroes. Artificial intelligence is an incredibly powerful tool that can serve manufacturers in a number of ways. However, realizing the true potential of AI demands an appreciation for where it can be best utilized.

Another implementation strategy that will have tremendous impact is leaning on AI's ability to organize, summarize and simplify technical and regulatory data. Drawings, specifications, and legal terminology can be daunting for even the most dedicated project management team to translate and implement accordingly.

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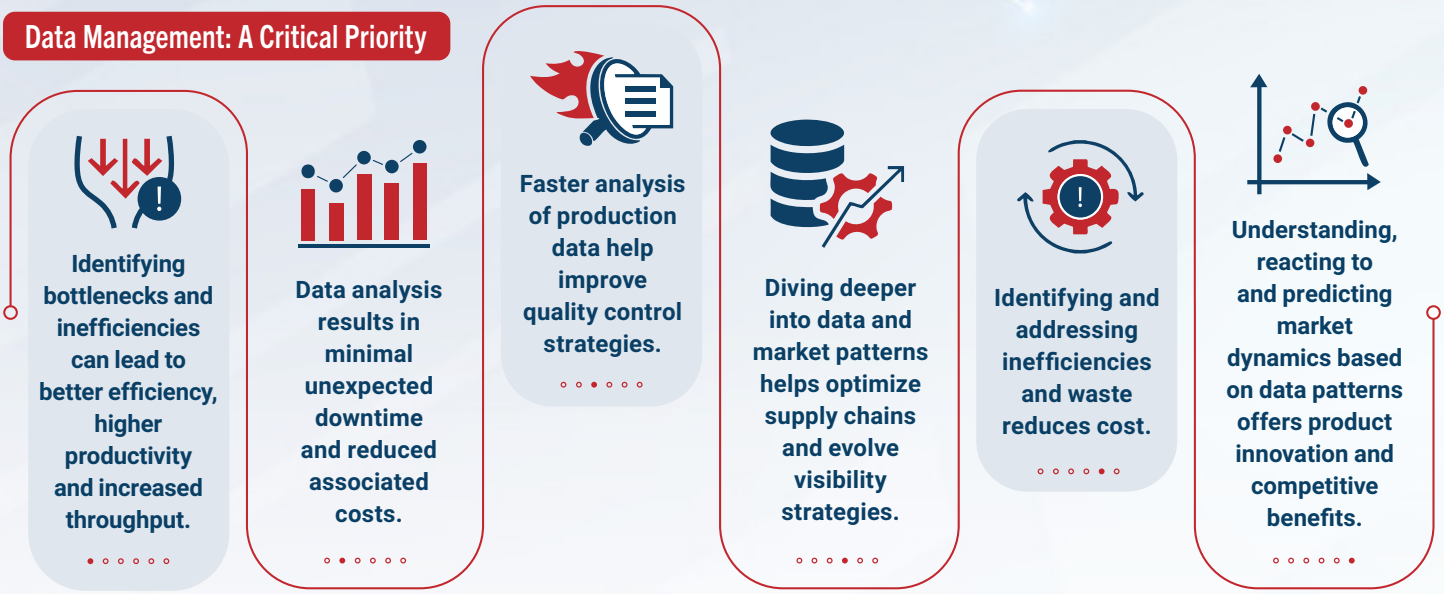
However, all of this data can be fed into an AI platform with the goal of creating documentation that shows an understanding of, and compliance with, regulatory guidelines, industry standards and/or supplier and customer audit information associated with manufacturing and product development. According to Laserfiche, customers average a 90% improvement in process time when navigating from manual document workflows to AI-powered process automation, which can include auto-extract and metadata population tools.

Technical data can also play a key role in creating and embedding simulation and safety testing processes, and results that can be utilized in implementing production standards and updating product applications.

Properly managing all of this data is crucial for a number of reasons:

- Identifying bottlenecks and inefficiencies in production processes can lead to better efficiency, higher productivity and increased throughput. Real-time data from machinery and sensors can stimulate the adjustments needed to maintain optimal performance.
- Data analysis supports the optimization of maintenance processes, including predictive maintenance strategies, by anticipating equipment failures. This results in minimal unexpected downtime and reduced associated costs.



- Faster analysis of production data help improve quality control strategies by quickly spotting defect patterns. This same analysis can then be used to create and implement corrective actions more quickly, leading to improved product quality and consistency.
- Diving deeper into data and market patterns helps optimize supply chains and evolve visibility strategies. The end results are better inventory management, more accurate demand forecasting, and more thorough supplier performance monitoring.
- Identifying and addressing inefficiencies and waste reduces cost, positive impacting resource allocation and overall financial performance.
- Understanding, reacting to and predicting market dynamics based on data patterns offers product innovation and competitive benefits. This supports more successful product development approaches and long-term success of the enterprise.

Just as more intensive, data-focused strategies help the enterprise, they also play a key role in helping leadership:

- Make more informed decisions based on facts and analysis, as opposed to intuition and guesswork.
- Improve workforce planning by assessing skillsets and skills gaps — critical data for developing training, as well as recruitment and retention plans.
- React quickly to changing market conditions, customer demands, and operational challenges, enhancing overall responsiveness and flexibility.
- Set clear objectives, develop strategic models, and invest in data management tools and platforms that support long-term goals.

5. Data Management Standard Operating Procedures (SOPs)

The importance of ensuring the right data finds the right people cannot be understated. And as manufacturing enterprises continue to evolve their application of Industry 4.0 technologies, this will continue to be a priority.

A vital tool in meeting this demand is the creation of fresh standard operating procedures, or SOPs, in managing all this new and legacy information.

Despite the use of even the most applicable and efficiently written SOPs, there is still a flood of data to properly distribute. This makes matching data with the correct management SOP an ongoing challenge. Failing to make this connection risks delays in the implementation of procedures and nullifies the investment in platforms that help generate and provide visibility of this data throughout the enterprise.

Again, AI's ability to organize information can be the solution. By plugging in all this data — from product development to purchasing to supply chain to production to distribution — AI can identify trends and patterns that help eliminate data flow problems and meet the efficiency goals fueling SOP development. This will allow faster implementation of these standard practices and higher levels of stakeholder buy-in.

Conclusion

Unlike other evolving technologies hitting the networks and plant floors of manufacturers around the world, there should be a high level of comfort with artificial intelligence. The logic and operational dynamics are not new, but recent developments mean that application shifts could present new opportunities.

From a data implementation perspective, this is exciting. AI's processing capabilities make it uniquely suited to handle manufacturing's simultaneous need to have all the data available, but filtering it depending on timing, task or changing situational dynamics.

The key is to not get overwhelmed by all the possibilities. Know your enterprise. Understand your data implementation challenges, and then use the concepts mentioned in this paper to identify the best places to embed AI's potential in your organization.

About Laserfiche

Laserfiche is a leading enterprise platform that helps organizations digitally transform operations and manage their content with AI-powered solutions. Through scalable workflows, customizable forms, no-code templates and AI-enabled capabilities, the Laserfiche document management platform accelerates how business gets done.

Laserfiche is a proven partner for the manufacturing industry, enabling organizations to innovate inefficient business processes. Manufacturing organizations can use Laserfiche to streamline process automation, drive data accuracy and productivity, support regulatory compliance and enhance real-time visibility across critical business processes organization-wide, all while supporting sustainability.

Headquartered in Long Beach, Calif., Laserfiche operates globally, with offices across North America, Europe and Asia.

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