![PTC — Digital Transforms Physical]

Driving Quality with PLM and the Digital Thread

Unlock the Potential of Your Quality Initiatives

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Quality Detours and Speedbumps

The paramount importance of quality in manufacturing is indisputable. It is foundational to all aspects of a company's operations, from product development to customer satisfaction and reputation.

In industries like automotive and medical device, proving quality and showing quality capabilities have become requirements to compete in regulated markets. Successful execution of quality programs can increase profitability and sustain growth in today's global marketplace.

Given the importance of quality and the investments being made—why do so many organizations fail to reach the full potential of their quality initiatives?

Understanding the source of missed quality goals starts with recognizing systemic issues and capability gaps that result in poor quality. In a recent Pulse Report, they identified the three most common roadblocks to quality: siloed systems, manual processes, and complex products.

This is not to say that these roadblocks are going unaddressed by today's manufacturers. Many companies prioritize quality directives across departments, but these initiatives are often isolated by departments or teams. Even company-wide initiatives suffer as each department's efforts are confined to their own function. Outside of these initiatives, organizations may resort to quality management systems (QMS).

On their own, QMS have a singular focus when it comes to identifying the root causes of poor quality. But when paired with a strong PLM foundation, manufacturers can properly address these three roadblocks, through a comprehensive and systematic lens that enables quality best practices.

SILOED SYSTEMS
can create a lack of transparency, typically resulting in engineering delays and potentially leading to scrap, rework, and recalls.

MANUAL PROCESSES
moving data between systems invite errors, misinterpretations, or untimely actions.

PRODUCT COMPLEXITY
(using a greater number of components across multiple disciplines and involving various stakeholders) amplifies the scope of each quality concern, requiring attention from a broader array of stakeholders.

Road to Industry-Leading Quality

Despite the prevalence of these roadblocks, there is a comprehensive and wholistic way to overcome them: with PLM and the digital thread.

Start by addressing product complexity with part-centric product definitions. Ensuring each product is made to definition is the goal of quality, which means comprehensive product definitions is absolutely essential. With Windchill, part-centric product definitions detail when and how all the various components interact, simplifying change management, streamlining configuration management, and eliminating complexities.

The next step to improving quality overall is to replace manual processes and data transfers with digitized and automated workflows. Weaving processes into the digital thread (such as change management, configuration management, and eBOM to mBOM transformation) aligns with industry best practices and

ultimately enables organizations to leverage data across their ecosystem to operate more efficiently. Windchill empowers organizations to have a rigorous, standardized process for change management. Unlike other quality approaches, Windchill's part-centric, model-based solution involves all necessary stakeholders, enabling traceability and governance. Additionally, Windchill facilitates associativity between product definitions and manufacturing process plans for easy reference throughout the product lifecycle.

The last step to optimize quality across the enterprise is to break down system siloes. Increase transparency by connecting the digital workflows and collective data with systems and stakeholders downstream via PLM applications and manufacturing engineering capabilities. ThingWorx Navigate makes product data highly accessible through lightweight, role- and task-based applications that connect PLM data throughout the enterprise. By implementing PLM, you not only add new capabilities to your enterprise management toolbelt, but you can maximize the impact of the existing quality systems (like QMS).

In 2022, Gatepoint Research asked IT, engineering, and quality experts "What obstacles are preventing you from achieving a higher level of closed-loop quality?"

51% — SILOED SYSTEMS
46% — MANUAL PROCESSES
38% — PRODUCT COMPLEXITY

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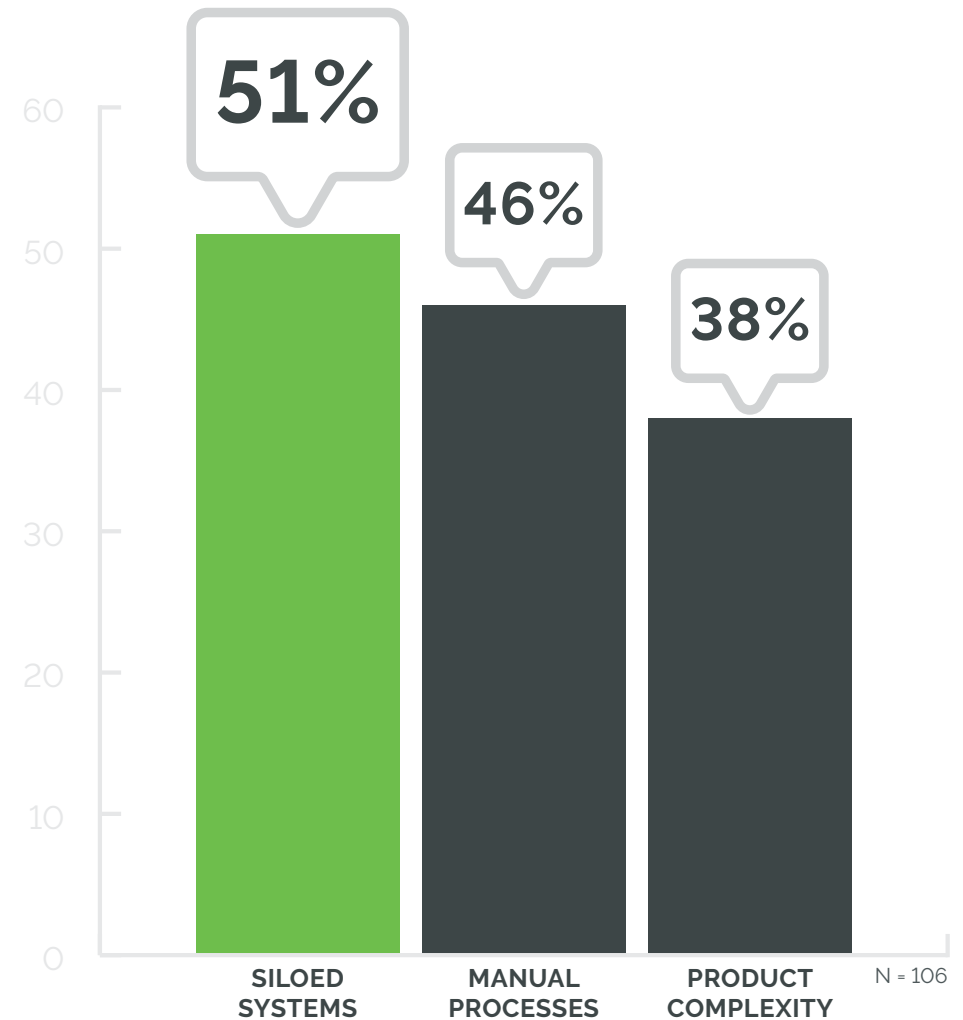
PLM and the Digital Thread

The best way to effectively enhance quality across your enterprise is through the combined power of PLM and the digital thread. Together they improve quality throughout the enterprise.

Simply put, a digital thread is the secure, automated, and rules-based flow of information across the organization. This smart, role-based delivery of actionable insights to people and systems addresses roadblocks by eliminating silos, automating processes, and using intelligent, model-based approaches to scalably solve for product complexity.

With streamlined communication and data sharing via PLM and the digital thread in engineering, teams can quickly identify and address quality issues. And by collaborating more efficiently, product development is accelerated without sacrificing quality. With Windchill, there is a well-defined and easily accessible product definition so all parties can develop and iterate with complete, up-to-date information.
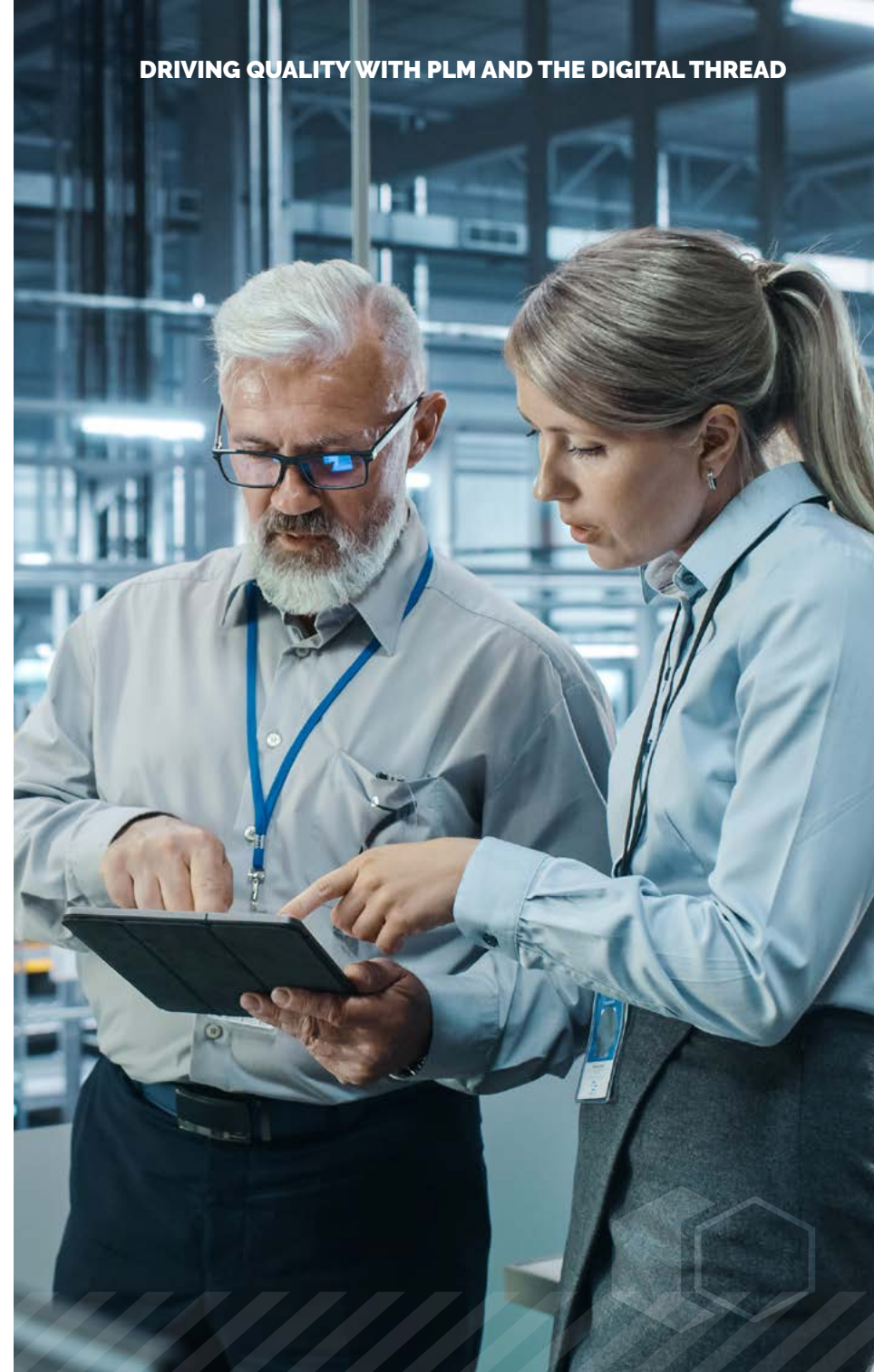
Manufacturing experiences improve quality conformance by consistently meeting quality standards and specifications, as well as reducing scrap, rework, and recurring Corrective & Preventative Actions (CAPAs). These solutions can also automate quality and regulatory reporting and audits, ensuring compliance with industry standards and regulations without the added burden of manual reporting.

The benefits of PLM and the digital thread extend to the field as well, decreasing the likelihood of expensive recalls, returns, and warrantees. By leveraging the combined power of PLM transparency and digital thread connectivity, the improved quality outcomes echo out towards increased customer satisfaction.

Utilizing a PLM solution in concert with QMS adds **substantial value** that that cannot be captured by relying on QMS alone. **More stakeholders** gain easy access to reliable product information, leading to **faster, more accurate decision-making.**

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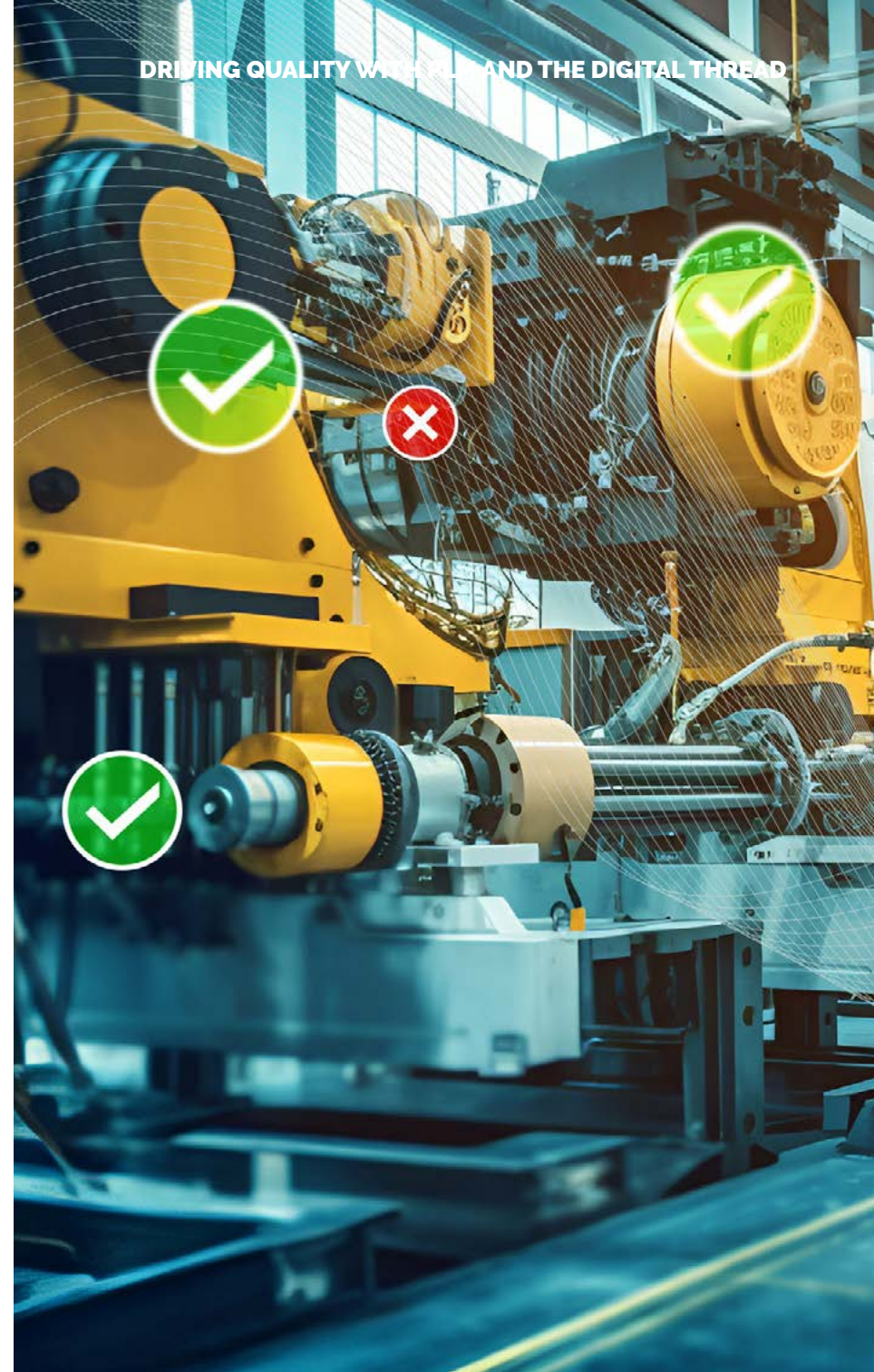
Quality Success Takes More Than QMS

Great quality starts with a solid PLM foundation, from any process that touches product data to reactive quality measures. Once you add your existing quality initiatives and QMS to quality-focused PLM and digital thread solutions, you will see how easily you can achieve best-in-class benchmarks.

Complete and thorough product definitions are critical to quality and to winning the market. **Learn how part-centric product definitions are changing the game for industry leaders.**

Today's manufacturing environments need modern tools and methodologies to connect every area of the enterprise. **See how far and fast your teams can go with the flexibility and accessibility of Windchill Manufacturing Process Management.**

Building and sharing data efficiently boosts teamwork and better enables shared quality goals initiatives. **Discover how seamless enterprise-wide collaboration can be with ThingWorx Navigate**

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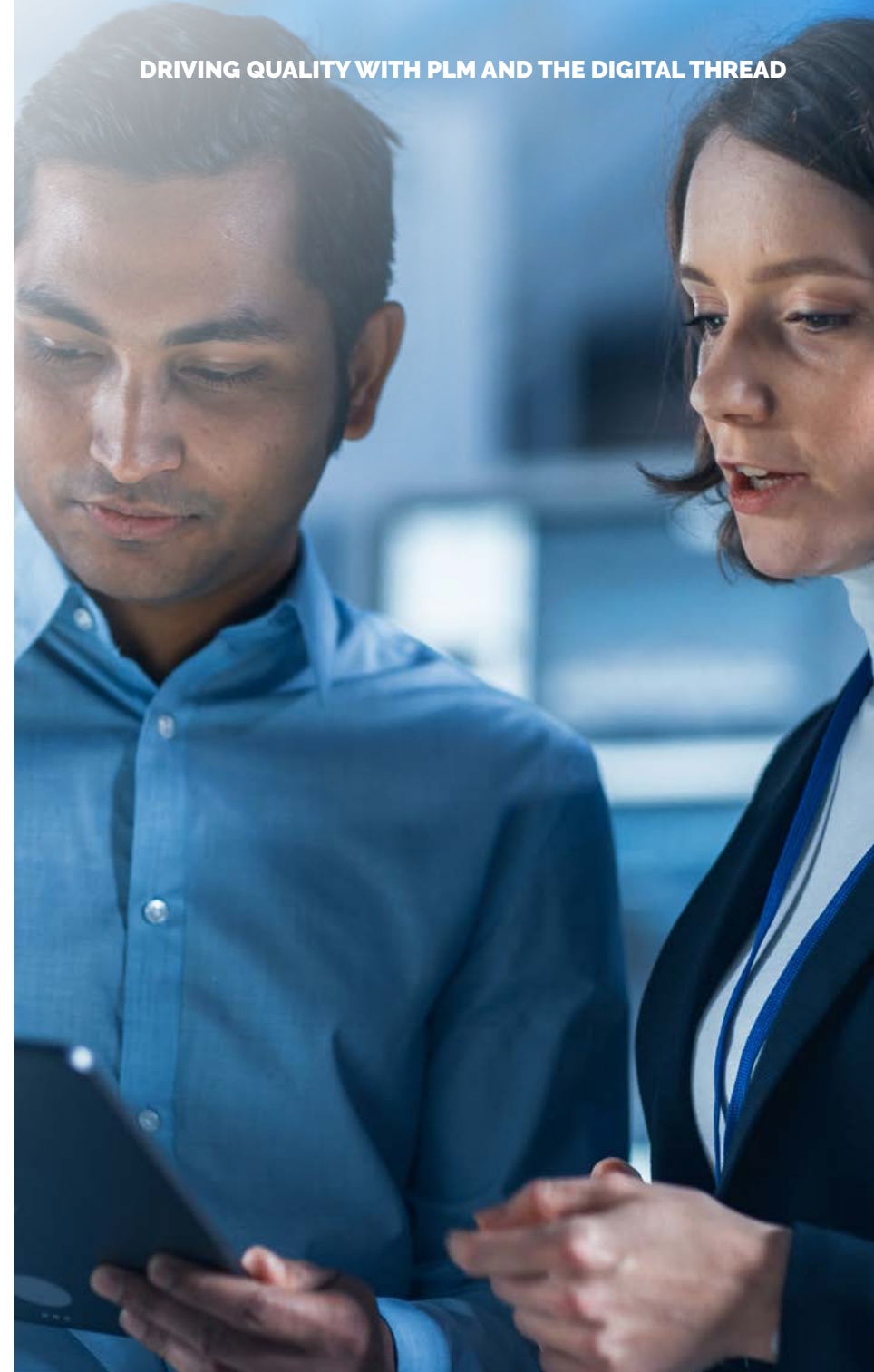
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