COPIA

2025

1ST ANNUAL

State of Industrial DevOps **Workforce**

People, Process, and the AI-Powered Future

Welcome to the 1st Annual State of the Industrial DevOps Workforce Report

As we move into 2025, the manufacturing technology landscape continues its rapid evolution. This year's report, "The 1st Annual State of the Industrial DevOps Workforce," provides a critical lens through which to view these changes, emphasizing that success hinges on a holistic approach encompassing people, process, and technology.

The potential of the Industrial DevOps workforce is immense. By embracing modern tools and fostering a culture of collaboration, companies can unlock unprecedented levels of productivity and innovation. Realizing this potential, however, requires more than just adopting new technology. It demands a thoughtful strategy that recognizes the critical interplay between empowering your people, streamlining your processes, and providing them with cutting-edge tools.

This report highlights the successes of companies that prioritized their workforce along their industrial transformation journey. These organizations improved their operational efficiency and became employers of choice, attracting and retaining top talent in a competitive market. They achieved this by fostering collaborative environments where talent thrives.

Investing in your people, streamlining your processes, and providing modern tools are crucial steps to building a strong foundation for the future. This report will illuminate how the right partnerships and tools can help your organization become a magnet for the best minds in the industry. I invite you to explore these insights and consider how a holistic approach to people, process, and technology can position your company for leadership in the years to come.

Sincerely,
Adam Gluck
Founder & CEO, Copia Automation

TABLE OF CONTENTS

EXECUTIVE SUMMARY

THE AUTOMATION IMPASSE

Over the past five decades, automation has transformed the manufacturing industry. From the introduction of programmable logic controllers (PLCs) in the 1970s to the rise of robotics and computer-aided manufacturing in the 1980s and 1990s, technology has continuously reshaped production processes.

- **1970s:** PLCs revolutionized industrial automation, enabling real-time control and increased efficiency.
- **1980s - 1990s:** Robotics and computer-aided manufacturing transformed production processes, leading to higher precision and flexibility.
- **2000s - Present:** AI, machine learning, and IoT are driving automation but industrial production has stalled.

FROM GAP TO GORGE

The manufacturing workforce is undergoing a significant shift. A projected 3.8 million new employees will be needed by 2033 to meet growing demand and replace retiring workers. However, attracting and retaining talent is a major challenge due to a skills gap and competition from other sectors.

- **Labor Shortage:** A significant number of manufacturing jobs could remain unfilled due to a lack of skilled workers.
- **Skills Gap:** Workers need a combination of technical, digital, and soft skills to succeed in the evolving manufacturing landscape.
- **Attracting and Retaining Talent:** Manufacturers must adapt to the needs of the modern workforce by offering competitive wages, benefits, and opportunities for growth and development.

LET DATA LIGHT THE WAY

While 99% of respondents have a code review process in place, there is room for improvement. Respondents dedicate an average of 45 hours to debugging. This highlights the need for modernization and adherence to industry best practices, such as using version control systems like Git and complying with cybersecurity regulations like NIS2.

- **Code Review Optimization:** Streamlining code review processes can improve code quality and reduce debugging time.
- **Modernization:** Adopting best-in-class tools and technologies can enhance efficiency and attract skilled workers.
- **Cybersecurity Compliance:** Adhering to regulations like NIS2 is crucial for protecting critical infrastructure and ensuring operational resilience.

INTRODUCTION

This industry report from Copia Automation, in association with Sapio Research, is focused on the growth of the Industrial DevOps Workforce across industrials, retail, and distribution organizations. We believe that these segments have reached an inflection point and launched this report to benchmark and build upon the findings of "The State of Industrial DevOps Report" published in 2024.

The data set used to build this report includes **200 executive respondents** with the titles of (or equivalent to) C-Suite, SVP, VP, Head of Department, Director, and Manager. **Forty-two percent** of respondents identified as C-Suite.

REVENUE

- $20M - 299M: 14%
- $15B+: 30%
- $300M - 999M: 28%
- $1B - 15B: 28%

SENIORITY

- Manager: 20%
- C-level Executive: 42%
- Director to SVP: 38%

INDUSTRY

- Hi-Tech, Electronics, and Semiconductor: 21%
- Retail: 19%
- Automotive: 18%

> " Industrial DevOps is the application of Lean, Agile, and DevOps principles to the planning, development, manufacturing, deployment, and serviceability of significant cyber-physical systems.
>
> Suzette Johnson, Robin Yeman
> What is Industrial DevOps? - IT Revolution

View all survey demographics

INDUSTRIAL PRODUCTION SINCE 1980 AND THE ADVANCEMENT OF AUTOMATION

5 DECADES OF AUTOMATION & INDUSTRIAL PRODUCTION

Dramatic Shifts In Manufacturing and Distribution Automation

Technology: We've moved from rudimentary relay logic and early computers to sophisticated robotics, AI-powered vision systems, and the Industrial Internet of Things (IIoT). This enables real-time data analysis, predictive maintenance, and highly flexible automation.

Processes: Lean manufacturing, Six Sigma, and Agile methodologies have replaced mass production, focusing on waste reduction, continuous improvement, and rapid response to change. With software eating the world, demand for industrial code management has risen and accelerated the introduction of Industrial DevOps.

Workforce: The rise of automation has reduced the need for manual tasks, while increasing demand for skilled technicians, engineers, and data analysts. This necessitates upskilling and reskilling initiatives to prepare the workforce for new challenges. Globalization has also impacted the workforce through offshoring, nearshoring, and more recently, reshoring trends, driven by factors like labor costs, political considerations, and the desire for greater supply chain resilience.

While there's been 5 decades of change, has there been progress?

1 Process
2 Automation
3 Continuous Improvement
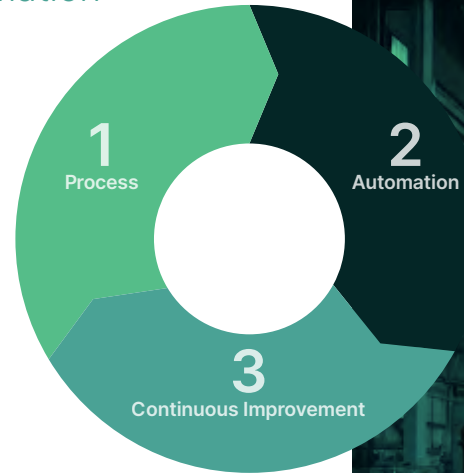
1980 - 1989: INDUSTRIAL PRODUCTION

The Rise of Programmable Logic Controllers (PLCs) and Computer-Aided Manufacturing (CAM)

- **Early 1980s:** PLCs became more sophisticated, allowing for more complex automation tasks and greater flexibility in manufacturing. This replaced older, hard-wired relay logic systems, making reprogramming and retooling much faster. Around the same time, SCADA (Supervisory Control and Data Acquisition) systems began to emerge, providing a centralized way to monitor and control industrial processes across large facilities or geographically dispersed locations.

- **Mid-1980s:** CAM software started to gain traction, enabling manufacturers to design products and generate CNC (Computer Numerical Control) machining instructions digitally. This improved precision, reduced errors, and sped up production. Meanwhile, DCS (Distributed Control Systems) were gaining prominence in process industries like oil and gas, chemicals, and pharmaceuticals. DCS provided more granular control and higher reliability for complex, continuous processes.

Source: https://fred.stlouisfed.org/graph/?g=1CGF3

1990 - 1999: INDUSTRIAL PRODUCTION

The Emergence of Industrial Networks and the Internet

- **Early-mid 1990s:** Industrial networking technology like Ethernet/IP and Profibus started connecting devices and systems on the factory floor, enabling data exchange and centralized control. This laid the groundwork for more integrated and intelligent automation systems. This period also saw the rise of "Wintel" – the dominant combination of Windows operating systems running on Intel processors. This brought the power and affordability of personal computing to the industrial world, enabling more sophisticated HMI (Human Machine Interface) applications, data analysis, and manufacturing execution systems (MES).

- **Late 1990s:** The rise of the internet and its increasing accessibility in industrial settings opened up new possibilities for remote monitoring, data analysis, and global collaboration. Simultaneously, Lean Manufacturing principles, with their focus on waste reduction and continuous improvement, began to take hold in global manufacturing. This drove a shift towards more efficient production processes, optimized workflows, and a greater emphasis on quality.

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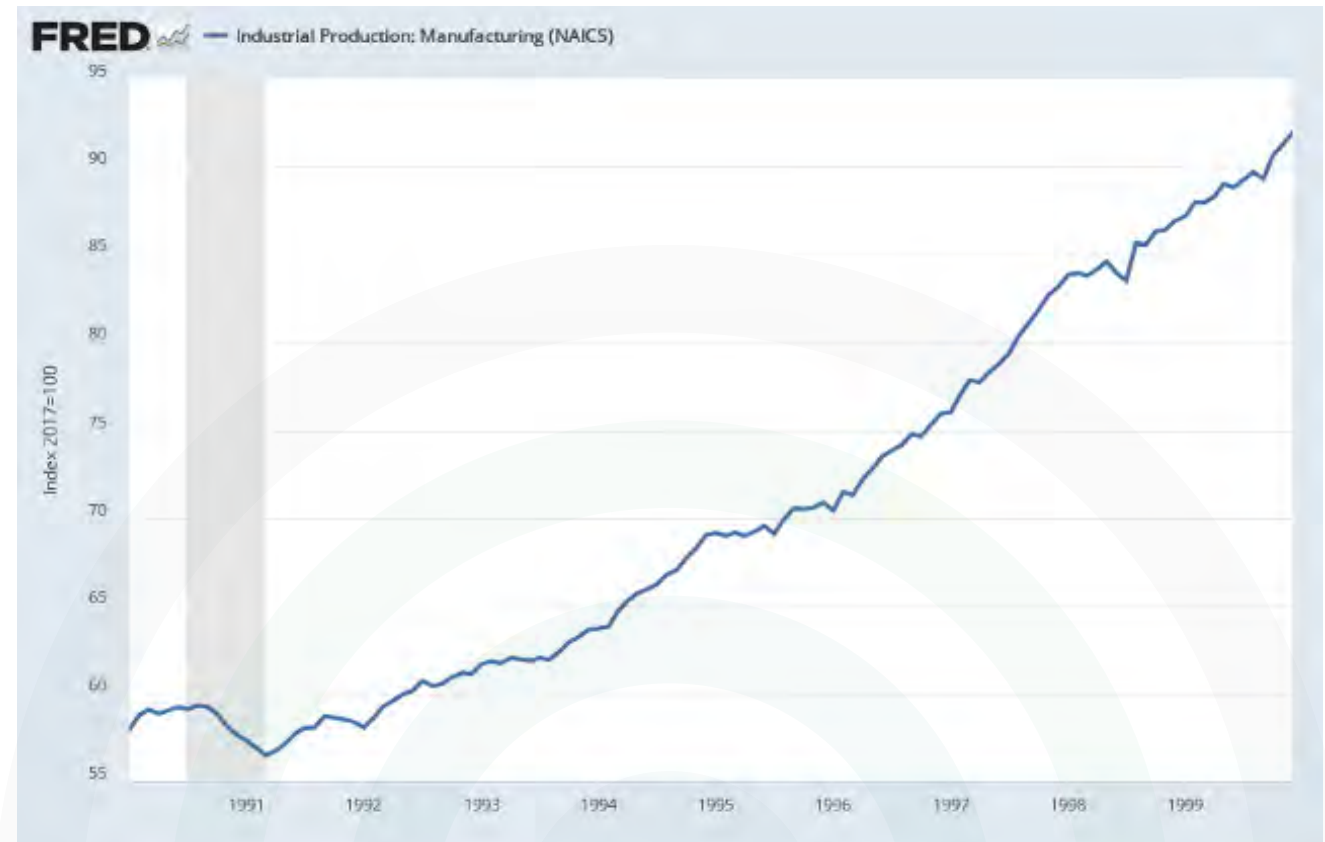
2000 - 2009: INDUSTRIAL PRODUCTION

Advanced Robotics and the Dawn of Industry 4.0

- **Early 2000s:** Robots became more advanced, with improved sensing, dexterity, and safety features. This allowed them to take on more complex tasks and collaborate more effectively with human workers. Furthermore, the adoption of simulation software grew, allowing manufacturers to model and optimize production processes virtually before implementing them on the factory floor. This reduced the risk of costly errors and downtime.

- **Mid-late 2000s:** The concept of Industry 4.0 emerged, emphasizing the integration of cyber-physical systems, the Internet of Things (IoT), and data analytics in manufacturing. This paved the way for smart factories with increased automation, data-driven decision-making, and greater adaptability. Cloud computing started to gain traction, offering scalable and cost-effective solutions for data storage, processing, and software deployment. This enabled manufacturers to access powerful computing resources and collaborate more effectively.

Source: https://fred.stlouisfed.org/graph/?g=1CGFa
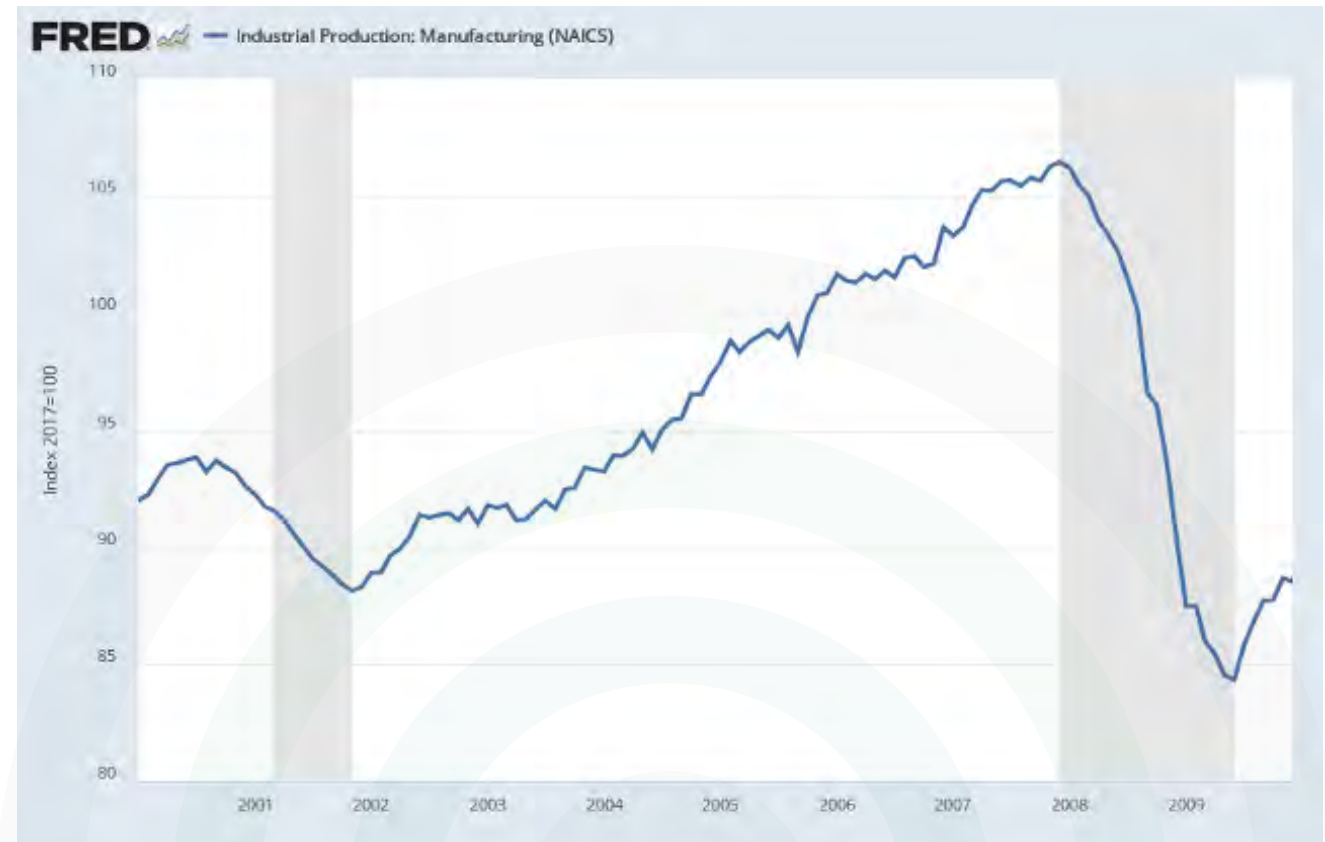
2010 - 2019: INDUSTRIAL PRODUCTION

The Rise of AI, Cloud Computing, and Collaborative Robots (Cobots)

- **Early 2010s:** Cloud computing started to play a bigger role in manufacturing, enabling greater scalability, data storage, and remote access to applications. The Industrial Internet of Things (IIoT) began to take shape, connecting a vast array of devices, sensors, and machines on the factory floor. This enabled real-time data collection, analysis, and improved visibility across the entire production process.

- **Mid 2010s:** Artificial intelligence (AI) and machine learning (ML) began to be applied in manufacturing for tasks like predictive maintenance, quality control, and process optimization. This was further fueled by the growth of IIoT, which provided the massive datasets needed to train and deploy effective AI/ML models.

- **Late 2010s:** Cobots, designed to work safely alongside humans, became more prevalent, further blurring the lines between human and machine tasks in manufacturing. The increasing adoption of IIoT platforms facilitated better human-robot collaboration by enabling seamless data exchange and coordination between cobots and other systems.

Source: https://fred.stlouisfed.org/graph/?g=1CGFp
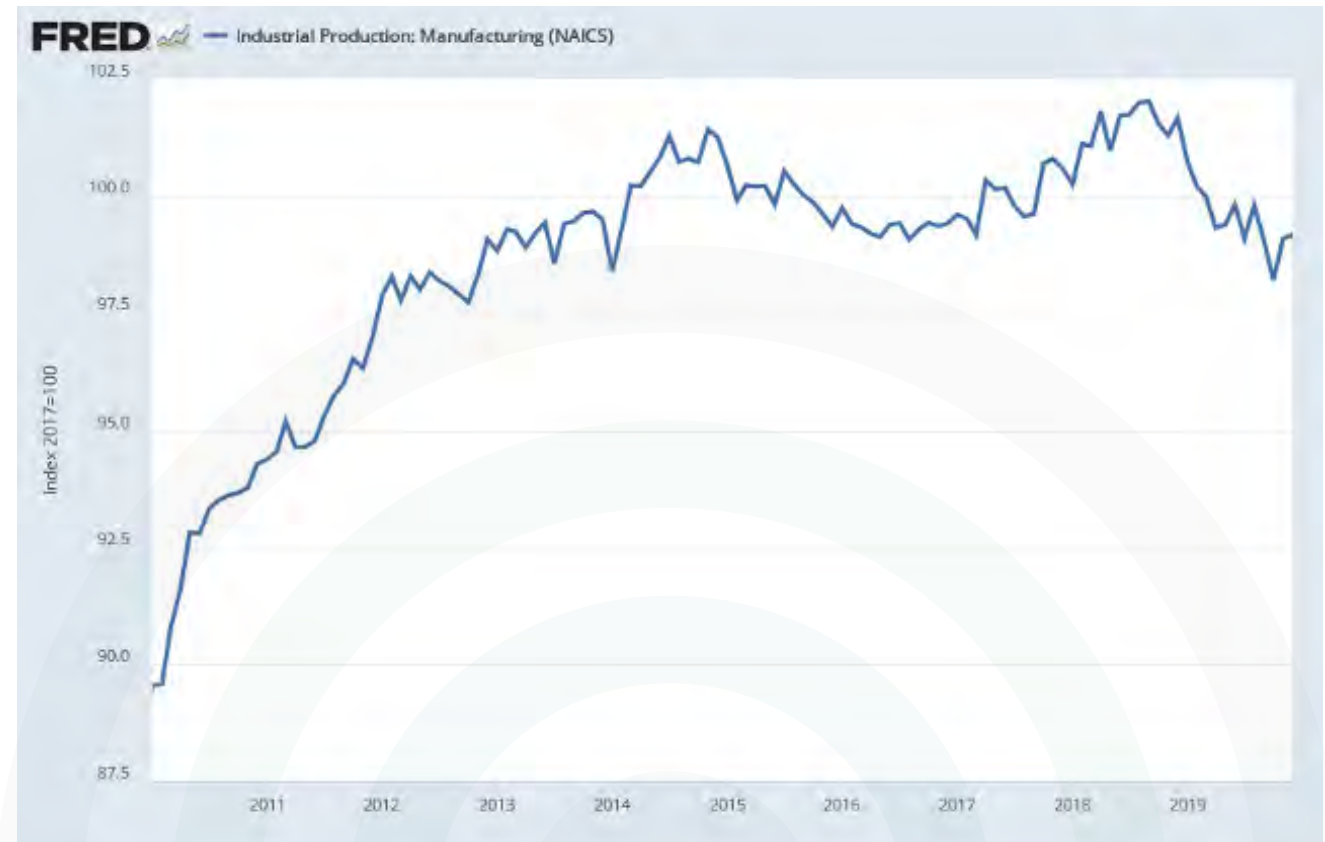
Focus on Digital Twins, Edge Computing, Sustainability, and Industrial DevOps

- **Early 2020s:** Digital twins, virtual representations of physical assets and processes, are increasingly used for simulation, optimization, and predictive analysis. The rise of 5G and other advanced wireless communication technologies further accelerated the development and deployment of digital twins by enabling faster data transfer and lower latency.

- **Current:** Edge computing is gaining traction, bringing computation closer to the data source on the factory floor and enabling faster response times. This trend is driven by the need for real-time decision-making in increasingly complex automated systems, as well as concerns about data security and bandwidth limitations.

- **Emerging Trend:** Sustainability is becoming a major driver in automation, with a focus on energy efficiency, waste reduction, and environmentally friendly practices. Manufacturers are increasingly adopting technologies and strategies to minimize their environmental footprint, driven by both regulatory pressures and consumer demand.

- **Mid-2020s:** Industrial DevOps begins to gain traction, bridging the gap between development and operations teams in industrial automation. This approach emphasizes collaboration, automation, and continuous improvement throughout the software lifecycle, enabling faster deployment of new applications and updates while ensuring system reliability and security.

Source: https://fred.stlouisfed.org/graph/?g=1CGFv
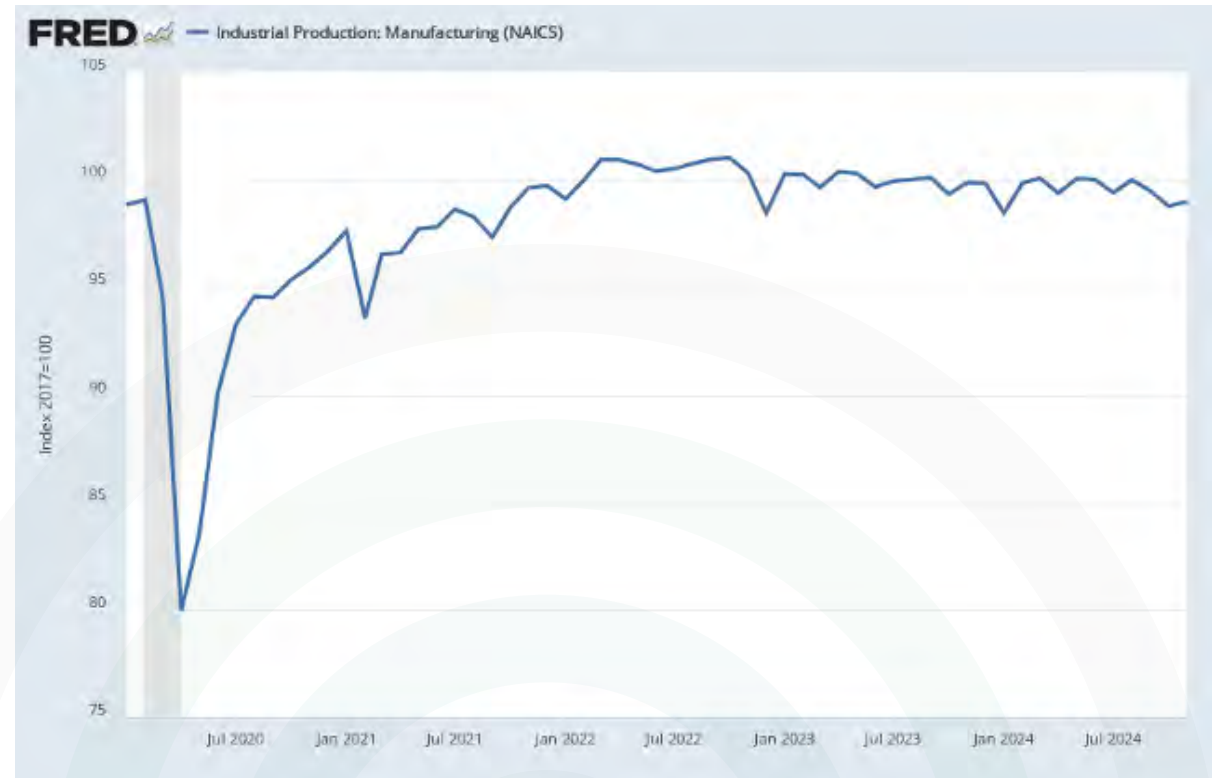
WHY HAS AUTOMATION AND INDUSTRIAL PRODUCTION PROGRESS STALLED OUT?

The manufacturing and distribution sectors are facing a paradox. While technological advancements like AI, IIoT, and advanced automation promise to revolutionize productivity and efficiency, a confluence of factors are stalling progress and hindering widespread adoption. This "automation impasse" stems from a combination of technological, economic, and cultural challenges:

Key Challenges Hindering Automation Adoption:

- **Integration Challenges**: Ironically, the complexity of new technologies often complicates their integration. This is exacerbated by outdated technology (legacy systems) and fragmented data sources (data silos) that create compatibility issues and hinder the seamless flow of information.

- **Skills Gap:** The rapid pace of innovation has outstripped the development of necessary skills, leading to a growing skills gap. Companies struggle to find and retain talent with the expertise to implement, manage, and maintain new technologies.

- **Cybersecurity Concerns:** Increased connectivity and data reliance amplify cybersecurity risks. Manufacturers are increasingly wary of potential breaches, data leaks, and operational disruptions, creating hesitancy to adopt new technologies.

- **Economic Uncertainty:** Geopolitical instability and economic volatility fuel uncertainty and make long-term investment decisions difficult. Companies are hesitant to commit significant resources to automation upgrades in an unpredictable economic climate.

- **Culture of Resistance:** Risk aversion, entrenched practices, and resistance to change in many organizations lead to short-term financial thinking, a focus on immediate cost savings over automation investments, and a fear of scaling successful pilot projects.

02

BY THE NUMBERS: WORKFORCE, SKILLS GAPS, KNOWLEDGE RETENTION, AND THE GREAT RESIGNATION

GENERATIONAL TURNOVER AND KNOWLEDGE LOSS

This demographic shift has significant implications for the manufacturing and distribution sectors, exacerbating the challenges already hindering automation adoption. As the workforce ages, the existing skills gap will widen further, making it even harder to find and retain qualified personnel to implement and manage advanced technologies. Additionally, an aging workforce may be less adaptable to the rapid changes brought about by automation, potentially increasing resistance to new technologies and hindering cultural shifts needed for successful implementation.

Furthermore, this demographic trend underscores the urgency for increased automation. As the workforce shrinks and labor costs rise, manufacturers will need to rely more heavily on automation to maintain productivity and competitiveness. Overcoming the barriers to automation adoption will be crucial for ensuring the long-term viability and sustainability of the industry in the face of this demographic shift.

10,000 turn 65 every day

"
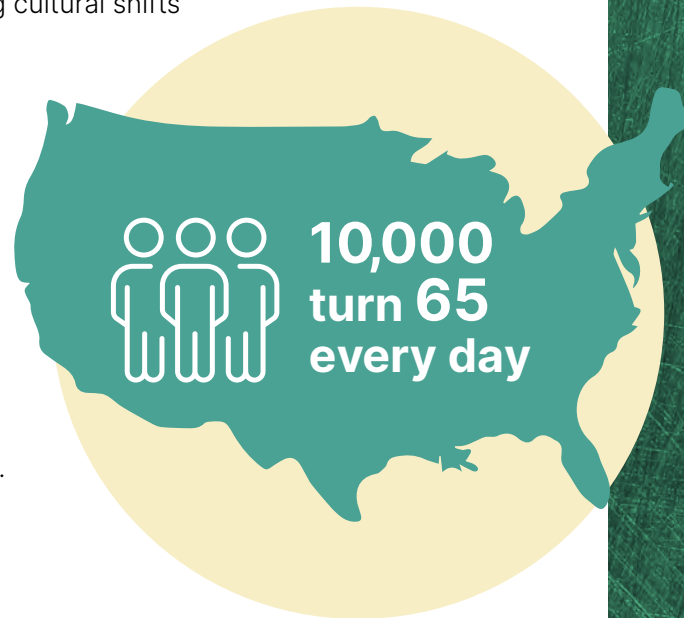
Every day in the United States, 10,000 people turn 65, and the number of older adults will more than double over the next several decades and represent over **20 percent** of the population by 2050.

Source: UN Population Division / AARP

A WIDENING GAP THAT WILL NEED CREATIVE SOLUTIONS

The U.S. manufacturing sector is experiencing a resurgence, driven by factors such as increased investment, supply chain diversification, and government initiatives like the Infrastructure Investment and Jobs Act (IIJA), the Inflation Reduction Act (IRA), and the Creating Helpful Incentives to Produce Semiconductors (CHIPS) Act. This growth translates into a substantial need for new workers in the coming decade. In fact, **attracting and retaining talent is a primary business challenge for 65% of manufacturers.**

Deloitte and The Manufacturing Institute project that the U.S. manufacturing industry could require as many as 3.8 million new employees between 2024 and 2033. This surge in demand stems from a need to fill an estimated 2.8 million job openings due to retirement, coupled with industry growth and the creation of new jobs spurred by recent legislative and regulatory actions.
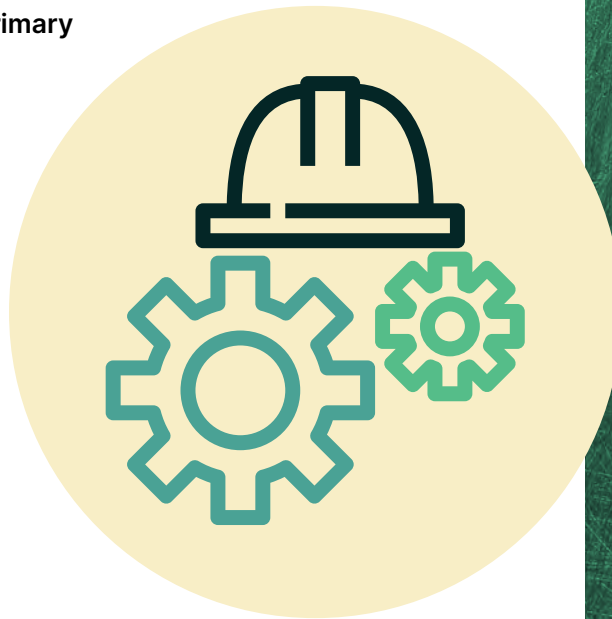
Source: Supporting US manufacturing growth | Deloitte

US Manufacturing Could Need as Many as **3.8 Million New Employees by 2033**, According to Deloitte and The Manufacturing Institute.

Source: US Manufacturing Could Need as Many as 3.8 Million New Employees by 2033, According to Deloitte and The Manufacturing Institute

THE GREAT RESHUFFLE: MANUFACTURING AND DISTRIBUTION ARE NOT ALONE

The U.S. is experiencing a labor shortage across many industries, with "The Great Reshuffle" leading workers to seek better opportunities. This impacts all sectors, including manufacturing and distribution, as businesses compete for talent. To attract and retain workers, these industries must adapt by offering competitive wages, benefits, and opportunities for upskilling and reskilling.

All industries currently have job openings, with each actively seeking new hires. The rate of hiring varies significantly from one industry to another, with certain sectors bringing in a larger number of new employees at a more rapid rate compared to others.*

U.S. Chamber of commerce

Labor force shortage by industry

November 2024

● Available workers   ● Unfiled job openings

Source: U.S. Chamber Analysis, Bureau of Labor Statistics Data

	20%	40%	60%	80%	100%
Durable goods manufacturing					
Wholesale and retail trade					
Financial activities					
Professional and business services					
Leisure and hospitality					
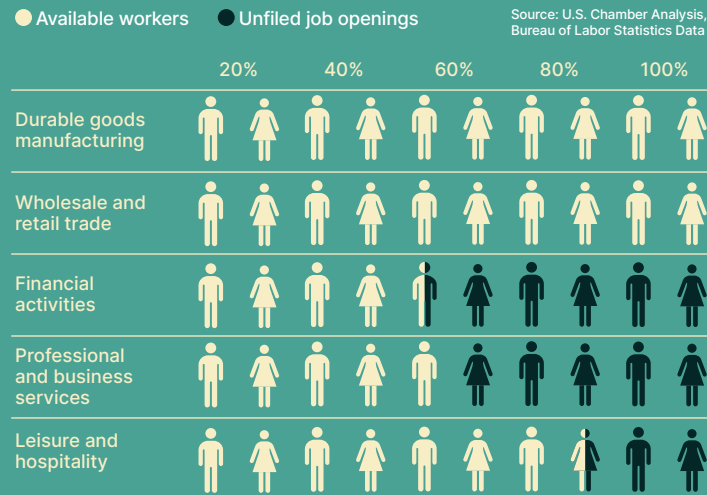
While durable goods manufacturing has seen a more substantial recovery compared to nondurable goods manufacturing, **as of January 2024, a gap persists, with 622,000 total manufacturing job openings yet to be filled.***

*Source: Understanding America's Labor Shortage: The Most Impacted Industries | U.S. Chamber of Commerce

UNDERSTANDING WHAT PROSPECTIVE EMPLOYEES WANT

To attract and retain younger workers, manufacturing and distribution organizations must prioritize employee well-being and cultivate a collaborative work environment. Gen Z and Millennials, who now dominate the workforce, seek opportunities for growth, development, and strong workplace connections.

Investing in technology and upskilling initiatives, while fostering a culture of support through collaborative tools and mentorship programs can help address the labor shortage, facilitate knowledge transfer, and ensure a smooth transition as older employees retire and new generations enter the workforce. This approach not only attracts talent but also creates a more engaged and productive workforce, ultimately contributing to the sector's long-term success.

Young Milennials & Gen Z: 1989-2001 & **Older Milennials: 1980-1989**

1. The organization cares about employees' wellbeing.

2. The organization's leadership is ethical.

3. The organization is diverse and inclusive of all people.

Gen X: 1965-1979 & **Baby Boomers: 1946-1964**

1. The organization's leadership is ethical.

2. The organization cares about employees' wellbeing.

3. The organization's financial stability.

Source: Gallup study. www.gallup.com/workplace/336275/things-gen-millennials-expect-workplace.aspx)

> " To develop the next generation of organizational leaders, every employer needs to be asking: What do our younger workers want from the workplace?

Source: 4 Things Gen Z and Millennials Expect From Their Workplace

03

MANUFACTURING AND DISTRIBUTION LEADERS REVEAL HOW THEY ARE ADAPTING TO WORKFORCE TRENDS IN THE OT SPACE

EMPLOYERS

The following section looks at data driving employer hiring decisions, expertise balance in the organization, and support for skill building and training.

WHAT SKILLS ARE ORGANIZATIONS RECRUITING FOR?

03

When recruiting PLC programmers, respondents prioritized these top skills: troubleshooting, adaptability, curiosity, and a strong foundation in industrial automation and control systems.

These skills are essential for success in this evolving field and were highlighted as the most important skills for this role.

How are these key areas of concern for employers being addressed in your organization?

Skill	%
PLC Programming Languages & Expertise	34%
Troubleshooting & Problem-Solving	34%
Adaptability & Flexibility	29%
Industrial Automation & Control Systems	28%
Continuous Learning & Development	28%
Time & Project Management	27%
Communication & Teamwork	27%
Work Ethic & Initiative	21%
Attention to Detail	19%
Electrical & Mechanical Knowledge	17%
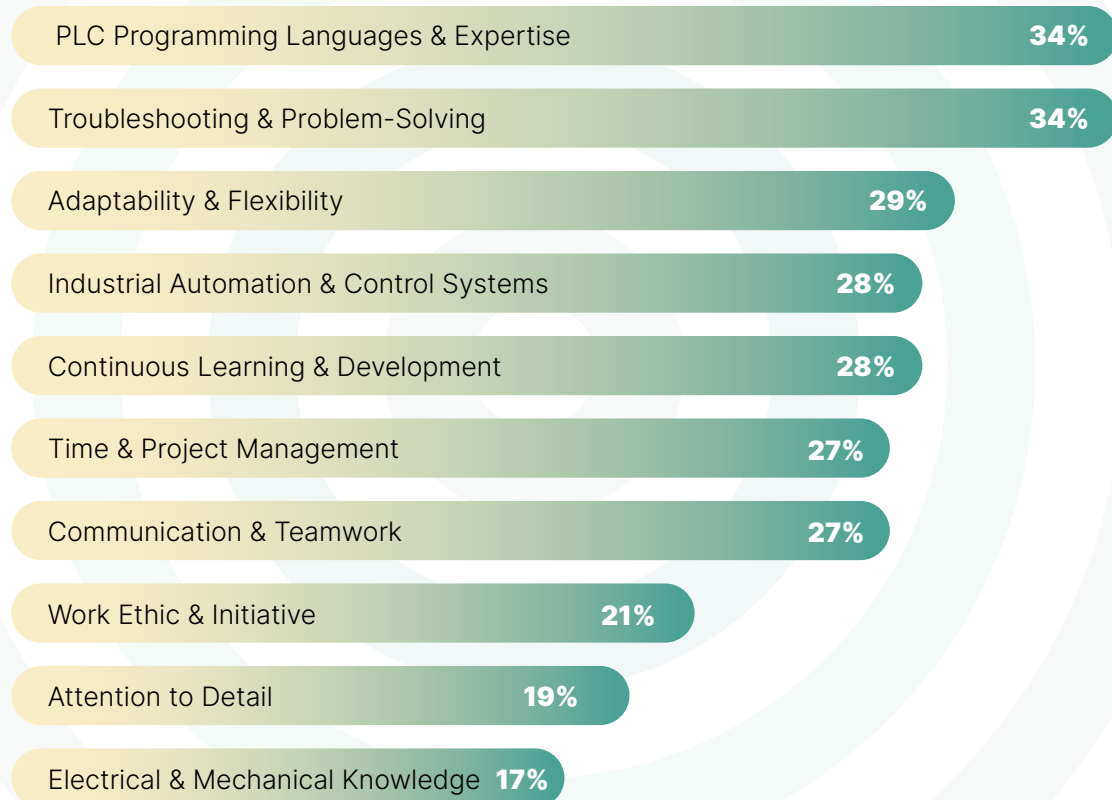
Q. What are the most important skills when recruiting Engineers or Technicians that program PLCs? Select up to three. Base: 200

HOW TO ADDRESS AN IMBALANCE IN INDUSTRIAL CODING EXPERTISE

03

63% of decision makers say the average level of industrial coding / PLC programming **expertise** within engineering and maintenance teams is **advanced**.

Does this perception align with reality?

With a severe minority of beginners within industrial controls, space is available to hire for skills like troubleshooting, adaptability, and curiosity. By following this approach, especially during digital transformation initiatives, employees can learn together and a culture of shared learning and adaptability can evolve.

To maintain your company's collective memory, **create a process for safeguarding mission-critical information**, promote a culture of continuous knowledge transfer and reward employees who help execute this initiative.*

CODING EXPERTISE

35% Intermediate

Beginner 3%

62% Advanced
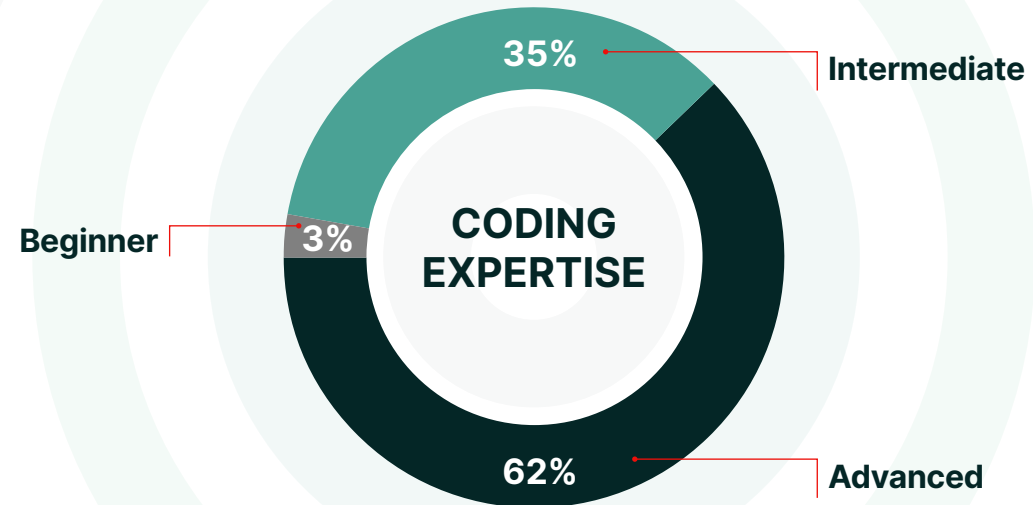
Q. What is the average level of industrial coding/PLC programming expertise within your engineering and maintenance teams? Select one. Base: 200

* Source: Gartner: Institutional Knowledge: How to Safeguard it When Employees Leave

BENEFITS OF CULTURE, SHARED RESPONSIBILITY

Ad hoc fixes to industrial code are very or somewhat common for **78%** of organizations. This increases to **94%** for those that are spending the least on technology. This reactive approach, aimed at minimizing downtime, can have far reaching consequences, like negatively impacting a company's competitiveness and ability to recruit and retain talent by **creating a culture of stress.**

Employees that learn together build trust, which also drives a **culture of shared responsibility** that could potentially improve this rate of ad hoc fixes and the ultimate follow-through to repair the source of the problem.*

78% Very / somewhat common

32% Very Common

46% Somewhat common

13% Neither common nor uncommon

9% Somewhat uncommon

10%
Somewhat / Very Uncommon

1% Very uncommon

1% Don't know
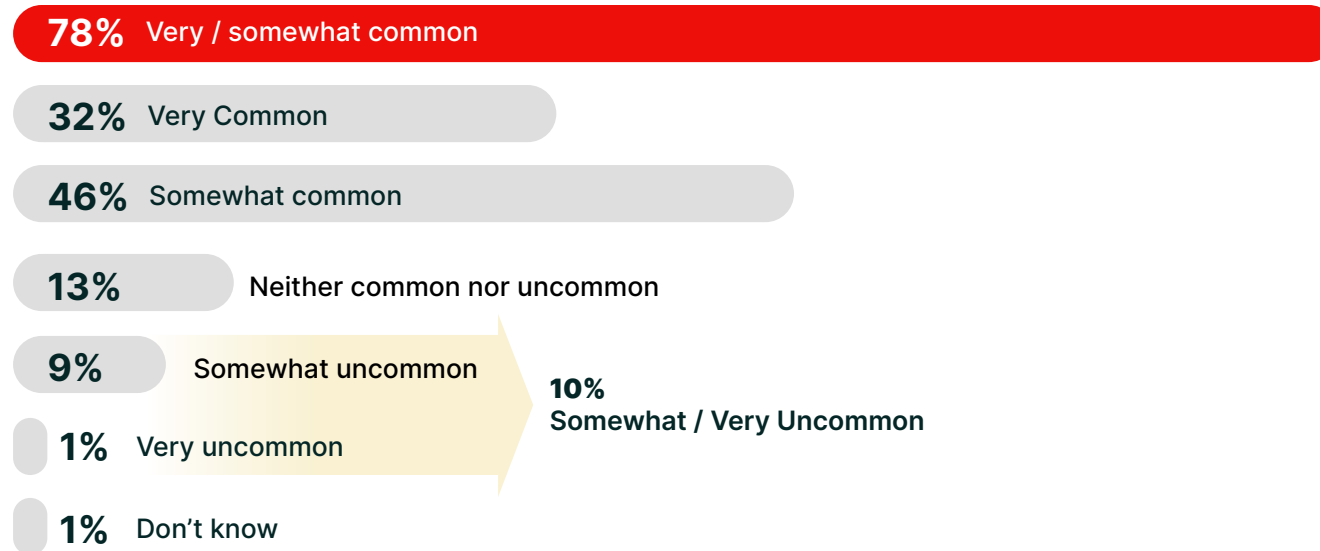
Q. In your estimation, how common are ad hoc fixes to industrial code on the factory floor that are aimed at minimizing downtime? Select one. Base: 200
* Source: How High-Performing Teams Build Trust

EMPLOYERS
INSTILL A CULTURE OF CONTINUOUS IMPROVEMENT

92% of organizations invest in some type of training courses to improve industrial coding / PLC programming skills.

Over half offer training budget for attending industry events / educational series (**57%**) and vendor-supported training programs (**56%**).

Tying back to the reports shared in Section 2 of this report, this investment in employee development is **the type of action that prospective and current employees are seeking.**

Training budget for attending industry events / educational series	**57%**
Vendor-supported training programs (free)	**56%**
Training budget for online courses on Udemy, Coursera, or similar platform	**51%**
Vendor-supported training programs (paid)	**47%**
Education reimbursement for courses at local community or technical colleges	**3%**
No training	**8%**

92%
Organizations that invest in training courses

Q. What training programs or resources do you offer to your workforce to improve their industrial coding/PLC programming skills? Select all that apply. Base: 200

INVEST TO AMPLIFY EMPLOYEE CAPABILITIES AND IMPACT WITH INDUSTRIAL AI

03

Manufacturing and distribution organizations are investing in AI to drive efficiency and empower their workforce. They're prioritizing **quality control (40%)** and **robotics integration (40%)** to increase productivity and upskill employees.

Investments in **real-time analytics (39%)** and **AI platforms (39%)** provide data-driven insights for better decision-making.

To optimize operations and connect people, processes, and technology, companies are focusing on **Industrial DevOps (34%), Process Optimization (36%)**, and **AI expertise (37%).**

These strategic investments highlight how AI investment creates a more agile, efficient, and fulfilling work environment.

40% Quality Control Automation

40% Robotics and Automation Integration

39% Real-Time Monitoring and Analytics

39% AI platforms and tools

37% AI expertise

36% Process Optimization

34% Industrial DevOps

34% Predictive Maintenance

32% Supply Chain Optimization
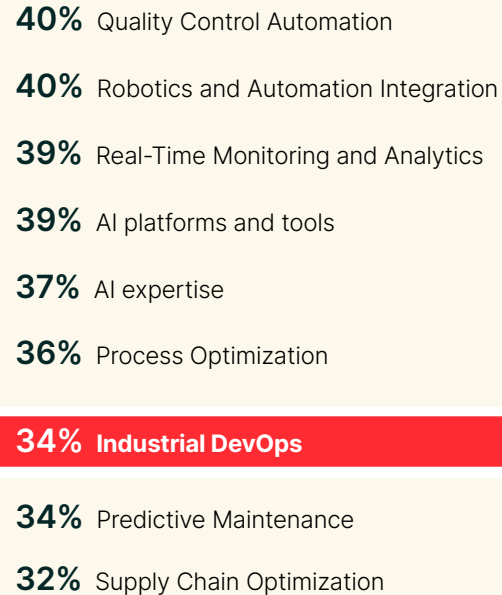
> " Industrial AI is the key transformation agent shaping the future of manufacturing; its adoption is crucial for thriving in today's competitive industrial landscape.

Sebastián Trolli, Growth Expert & Research Manager and Global Head of Industrial Automation Frost & Sullivan

Report: Unlock Strategies to Lead in a Digitally Connected, AI-Driven, And Sustainable Industrial Ecosystem

Q. Where do you plan to invest in artificial intelligence for your automation operations this year? Select all that apply. Base: 200

EMPLOYEES

The following section looks at data driving employee decision making when seeking a new employer.

IMPORTANT FACTORS TO EMPLOYEES

03

In today's competitive labor market, employees are seeking more than just a paycheck. To attract and retain top talent, manufacturing and distribution organizations must prioritize work-life balance and offer competitive benefits. Furthermore, creating a culture that values innovation, continuous improvement, and teamwork is essential, especially for younger generations who prioritize collaboration and personal growth.

Investing in automation and technology not only improves efficiency but also demonstrates a commitment to employee well-being by providing opportunities for upskilling and a more engaging workforce environment. By addressing these priorities, manufacturers can position themselves for success.

How are these key areas of concern for employees being treated in your organization?

Factor	
Work-Life Balance & Benefits	33%
Innovation & Continuous Improvement Culture	29%
Investment in Automation & Technology	29%
Financial Stability & Growth Potential	29%
Teamwork & Collaboration	28%
Industry Reputation & Recognition	27%
Career Advancement Paths	25%
Corporate Social Responsibility	24%
Safety Record & Commitment	23%
Modern Facilities & Equipment	22%
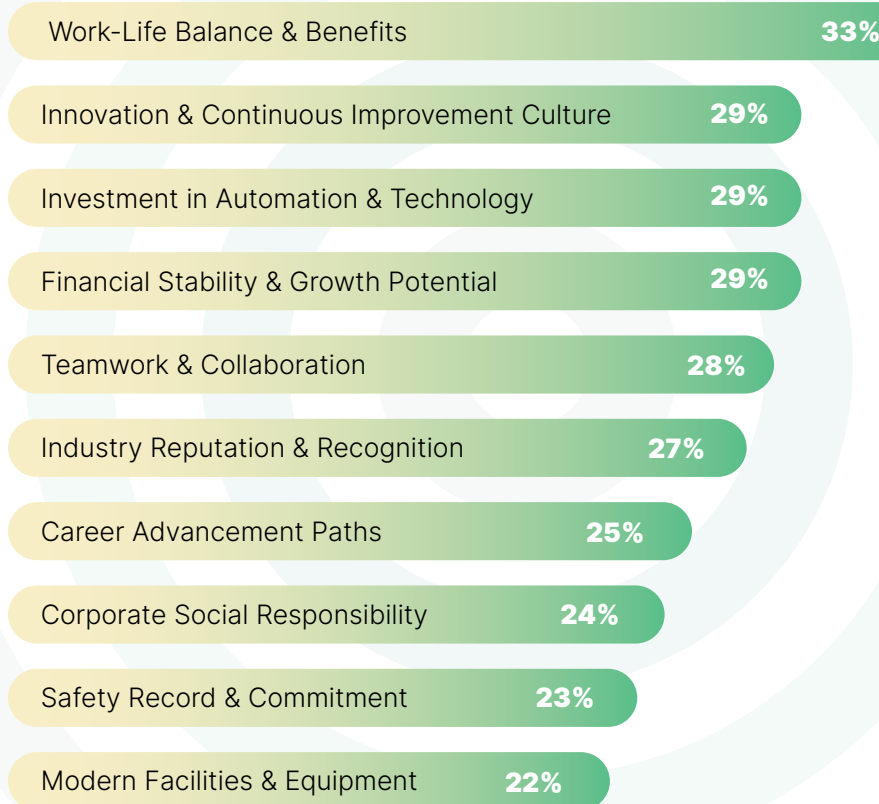
Q. What do you think are the most important things that prospective employees look for when assessing a potential employer? Select up to three. Base: 200

ALLEVIATE PRESSURE ON THE WORKFORCE THROUGH CYBER INVESTMENT
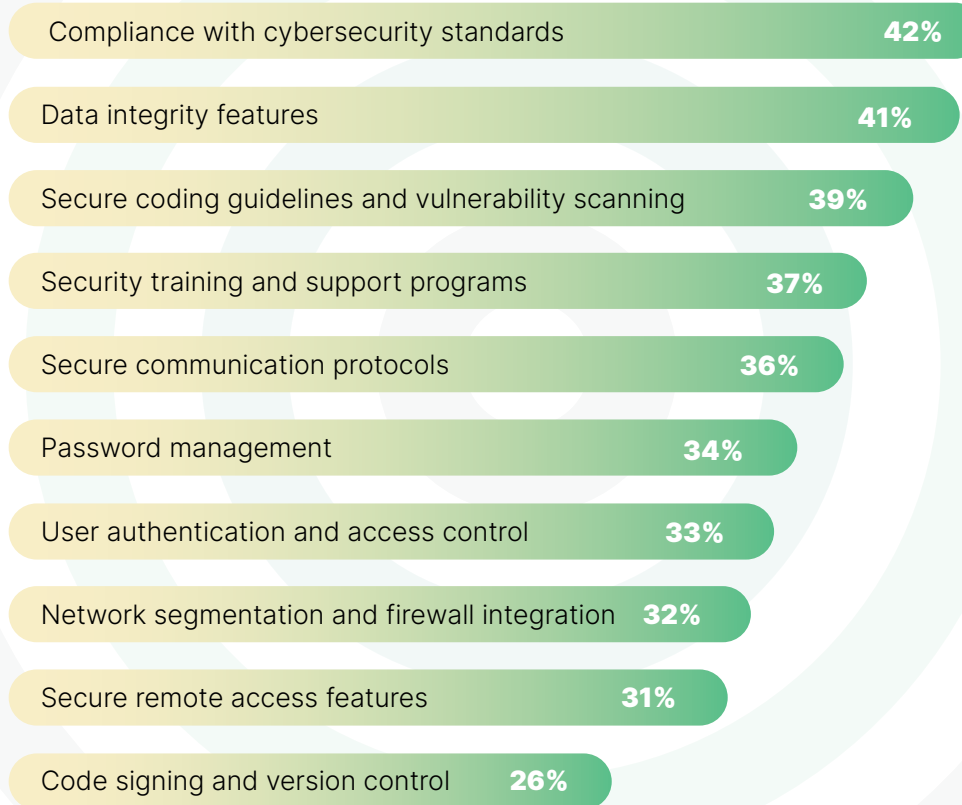
03

Industrial organizations are increasingly **prioritizing cybersecurity measures within their code / PLC programming software** to mitigate operational risks, protect critical infrastructure, and adhere to increasing regulations.

To the right is a list of responses that show how organizations believe that industrial code management software can help mitigate cybersecurity risks.

This investment in cybersecurity not only protects valuable assets but also **empowers employees with valuable skills and knowledge**, creating a more resilient and secure operational environment.

Response	%
Compliance with cybersecurity standards	42%
Data integrity features	41%
Secure coding guidelines and vulnerability scanning	39%
Security training and support programs	37%
Secure communication protocols	36%
Password management	34%
User authentication and access control	33%
Network segmentation and firewall integration	32%
Secure remote access features	31%
Code signing and version control	26%

Q. How can industrial code/PLC programming software help mitigate cybersecurity risks? Select all that apply. Base: 200
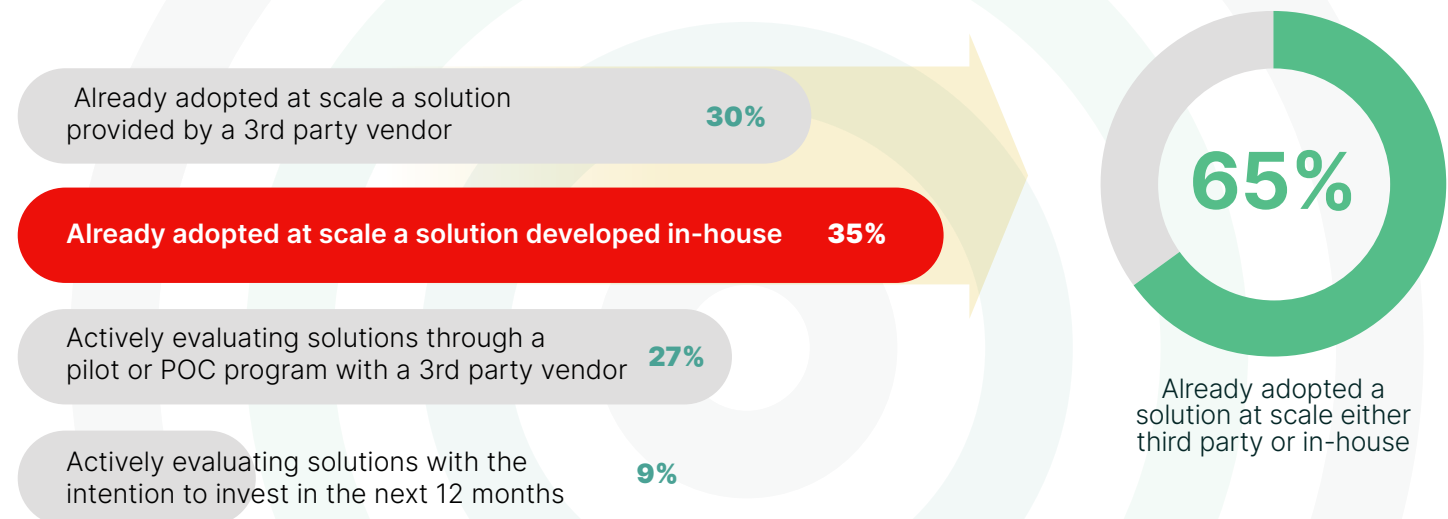
INDUSTRIAL CODE MANAGEMENT: TECHNOLOGY ADOPTION TRENDS

03

While some manufacturers and distributors have already adopted technology to manage industrial code / PLC programming at scale, many are still in the evaluation phase or have yet to implement a solution. This suggests an opportunity for these sectors to embrace technological advancements that can enhance productivity, collaboration, and knowledge transfer, ultimately contributing to attracting and retaining skilled workers in this competitive labor market.

In-House Solutions

Relying on in-house solutions for managing industrial code can create challenges for your workforce. These solutions may **become outdated, lack proper documentation, and pose risks to knowledge transfer** if developers leave. This can lead to increased maintenance costs, security vulnerabilities, and difficulty adapting to evolving industry needs.

Already adopted at scale a solution provided by a 3rd party vendor — **30%**

Already adopted at scale a solution developed in-house — **35%**

Actively evaluating solutions through a pilot or POC program with a 3rd party vendor — **27%**

Actively evaluating solutions with the intention to invest in the next 12 months — **9%**

65%

Already adopted a solution at scale either third party or in-house

Q. To what extent has your organization adopted technology to manage industrial code/PLC programming? Select one. Base: 200
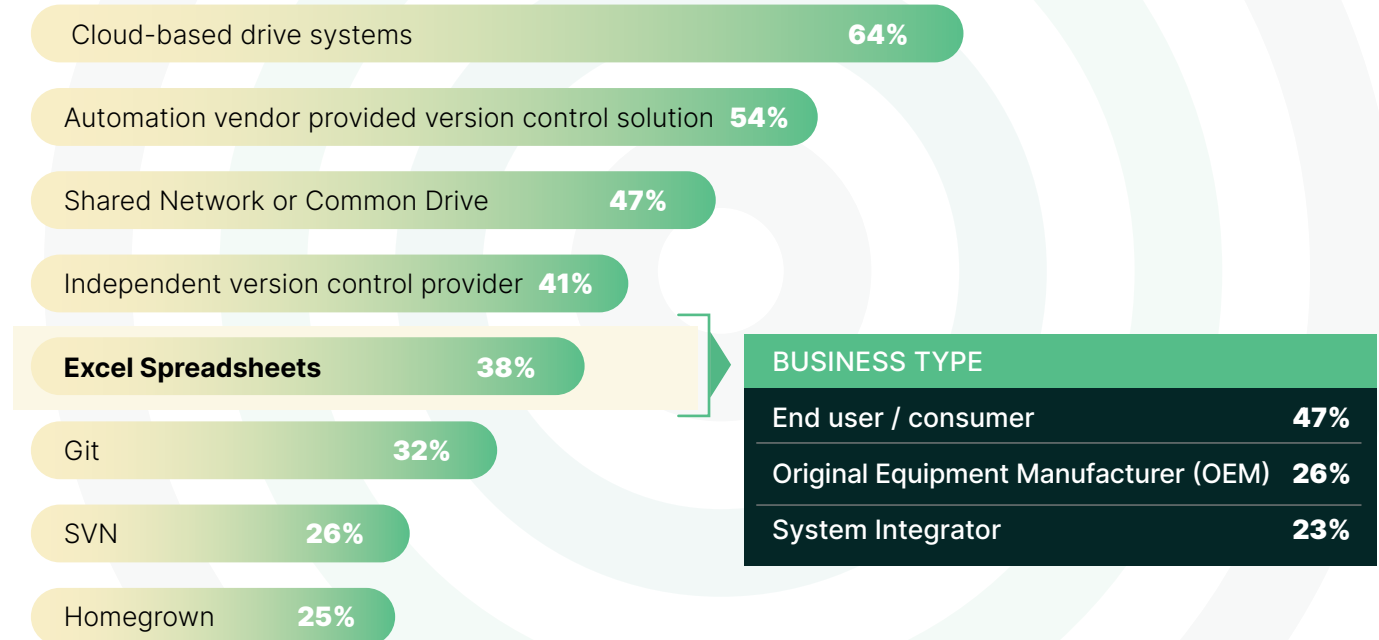
THE RIGHT TOOL FOR THE RIGHT JOB

03

64% of respondents manage version control and configuration for industrial code through cloud-based drive systems. Of end-user respondents, **almost half (47%) are using excel spreadsheets.**

Moving from something that "works" to best-in-class

Git is widely considered a best-in-class tool for version control and code configuration management. Its distributed model allows developers to track changes locally and collaborate effectively, while features like branching and merging facilitate efficient code management.

Git's popularity and open-source nature also ensure strong community support and a wealth of resources for users, making it an ideal choice when planning for the future of your workforce retention and recruitment.

Cloud-based drive systems	64%
Automation vendor provided version control solution	54%
Shared Network or Common Drive	47%
Independent version control provider	41%
Excel Spreadsheets	**38%**
Git	32%
SVN	26%
Homegrown	25%

BUSINESS TYPE	
End user / consumer	47%
Original Equipment Manufacturer (OEM)	26%
System Integrator	23%

Q. How do you manage version control and configuration management for your industrial code/PLC programming? Select all that apply. Base: 200

EMPLOYEES
SETTING EMPLOYEES UP FOR SUCCESS THROUGH PROCESS

With **99%** of respondents having a code review process, it's crucial to ensure these processes are optimized for efficiency and meet modern cybersecurity standards. While **81%** spend less than 4 hours monthly on code review, all respondents dedicate an average of **45 hours** to debugging. This highlights the need for robust code management practices that minimize errors and rework.

By adhering to industry best practices and complying with regulations like NIS2 and the SEC's cybersecurity rules, manufacturers and distributors can improve code quality, reduce debugging time, and create a more secure and efficient work environment. This not only benefits the organization but also attracts and retains skilled employees by offering a fulfilling and productive work experience.

99%
Have a code
review process
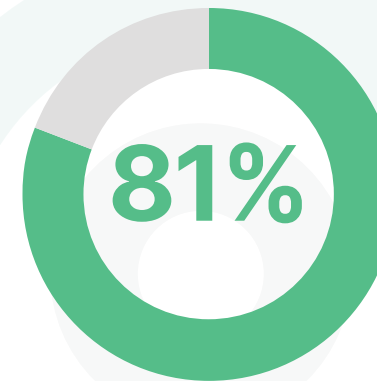
81%
Spend 4 hr or
less a month
reviewing code

45 HRS
Number of hours
spent on debugging
code per month

Source: Copia Resources | The State of Industrial DevOps 2024

Q. Does your organization have an industrial code/PLC programming review and approval process before integrating or deploying code? Select one. Base: 200
Q. On average, how much of your team's time is spent on industrial code/PLC programming code review and approval? Select one. Base: 200
Q. On average, how much time do you estimate that you and your team spend debugging code per month? Select one. Base: 200

04

HOW CAN ORGANIZATIONS ACCELERATE GROWTH AND BECOME AN EMPLOYER OF CHOICE?

LOOKING AHEAD IN 2025, AND BEYOND

Manufacturing and Distribution stand at a critical juncture, poised for transformative growth driven by technological advancements and a renewed focus on employee well-being.

By embracing innovation, prioritizing cybersecurity, and fostering a culture of collaboration and continuous learning, these organizations can overcome the challenges of the modern workforce and unlock the full potential of Industry 4.0.

Unlocking this potential will be the difference between leaders and laggards, as the **leaders drive efficiency, attract and retain talent, and build competitive advantage** through margin growth, driving profitability.

Key Financial Metrics
2017–2023 Median Performance

	Revenue Growth	Operating Margin Growth	Free Cash Flow Growth	Market Cap Growth
Productivity Pathfinders	33.2%	33.0%	44.21%	55.8%
All Others	33.0%	-2.4%	26.8%	18.6%

Source: LNS Research

> What's the number one way to drive profitable growth in 2025?
>
> Grow industrial productivity. The most surprising finding from analyzing the LNS Research Productivity Pathfinders is that even though they had the same revenue growth — they crushed the competition in operating margin growth.
>
> So as you evaluate initiatives and new technology, especially Industrial AI, don't just look for cost savings, find real productivity growth.
>
> The growth in margin and valuation dwarfs any other benefits.

-Matthew Littlefield, President LNS Research (Link to Post)

ALIGNING ON VALUES, MISSION WITH TECHNOLOGY VENDORS

This report has illuminated key trends and offered success strategies for manufacturing and distribution leaders as they launch into a future of change and uncertainty.

Organizations poised to thrive in this environment will be those with strong foundations built upon strategic technology partnerships. An example of this is the successful collaboration between TARGAN and Copia, which exemplifies an aligned mission and culture. Disruptors in their respective spaces, both companies are rethinking both the problem and solution facing their customers.

This shared commitment to innovation, growth, and organizational best practices empowered TARGAN to navigate market unpredictability and solidify its leadership position.

By embracing a future-proof foundation, companies can weather uncertainty and achieve lasting success.

> Trying to be a tech leader in our area, the product we've developed is unique. No one else is doing it. We're using computer vision and AI to determine the gender of chicks. If we didn't have a strong team like Brian's using solid tools like yours, we wouldn't be able to be a tech leader in our area. We look to partner with tech leaders in their respective areas, like Copia.

-Sean McCartney, Senior Manager, Corporate IT at TARGAN, a pioneering technology company revolutionizing global food supply with its AI-powered solutions

CASE STUDY

Tech Leaders Unite: TARGAN leveraging Copia's Industrial DevOps Platform to Drive Innovation and Cross-Functional Collaboration

TARGAN

See the full Targan case study here ▶

AN INVESTMENT IN PEOPLE IS AN INVESTMENT IN GROWTH

Investing in people and technology is crucial for manufacturers to thrive in the ever-evolving industrial landscape. Toby Varland, VP at Varland Plating, highlights how Copia empowers his team by providing immediate improvements and enhanced managerial capabilities.

This aligns with the findings in this report that emphasize the importance of employee well-being, upskilling, and collaboration to attract and retain talent in the face of a growing skills gap.

According to Gartner, "73% of CEOs expect a shortage of workers or skills to disrupt their business." **Be part of the 27% that is an employer of choice and can focus more on workforce collaboration rather than attrition.**

By adopting tools like Copia's Industrial DevOps Platform, manufacturers and distributors can empower their workforce, optimize processes, and drive continuous improvement.

> We talk about all this technology stuff and automation...and I don't want it to get lost that nothing's more important than the people, and Copia is **one of those tools that makes my people better, and it made them better immediately.** It makes me a better manager by giving me abilities that I just didn't have before.

-Toby Varland, Vice President at Varland Plating
Video interview: LinkedIn

CASE STUDY

Varland Plating Embraces Copia to Maintain Technological Advantage

See the full Varaland case study here ▶

FROM SCALE TO HYPERSCALE: REEXAMINING THE APPROACH TO OPERATIONAL TECHNOLOGY

Amazon, a leader in technology and automation, recognizes the value of robust code management in achieving operational excellence. Their partnership with Copia highlights the importance of selecting **the right technology partner to both modernize and scale OT, while also empowering employees.**

By leveraging Copia's Git-based source control and cloud backup system, Amazon enhances collaboration, reduces downtime, and improves code quality.

This partnership exemplifies how aligning company cultures and investing in modern technology can attract and retain skilled workers by providing them with valuable tools and opportunities for growth in the evolving manufacturing landscape.

> This solution helps manufacturers manage disaster recovery, code rollbacks, and remote collaboration with vendors or experts...Amazon deployed Copia at 13 warehouses, connected 500 PLCs to back-up to the AWS cloud, and expects to reduce 80% of unexpected downtime due to PLC code errors.
>
> -Amazon Case Study

amazon

Amazon Uses Copia to Connect 500+ PLCs and Cut PLC-Driven Downtime by 80%

Amazon also expects to improve high severity response time by 25%.

See the full Amazon case study here ▶

AI IN 2025: BECOME AN EMPLOYER OF CHOICE

[LNS Research](#) shows that leading organizations are increasing margins to drive profitable growth by embracing industrial transformation. In 2025, this transformation will accelerate, fueled by the rise of artificial intelligence (AI).

AI is poised to reshape **the relationship between people, processes, and technology** in manufacturing and distribution, driving unprecedented efficiency, productivity, and innovation.

This evolution is evident in the emergence of powerful AI-driven tools. These tools amplify the human impact on the factory floor by:

- **Accelerating onboarding:** New employees can get up to speed faster and contribute more quickly.

- **Automating knowledge transfer:** Critical expertise is captured and easily shared, preventing knowledge loss and empowering the workforce.

- **Fostering collaboration:** Teams can work together more effectively, breaking down silos and driving a culture of shared success.

> "
>
> A modernization strategy that improves interoperability of data systems between engineering and design and the factory, and between operational technology (OT) and information technology (IT), is a sound priority.
>
> [Taking AI to the next level in manufacturing | MIT Technology Review](#)

DRIVE MARGIN GROWTH BY ELEVATING PEOPLE, PROCESS, AND TECHNOLOGY

The **1st Annual State of the Industrial DevOps Workforce Report** illuminates the path to margin growth in today's dynamic landscape, where AI is increasingly influential.

Elevating your people, processes, and technology is no longer just a competitive advantage, but the foundation for success. Embrace modern DevOps practices, amplified by AI's capabilities, to unlock workforce potential, streamline workflows, and foster innovation.

Strategic investments in user-friendly, AI-enhanced tools and collaborative platforms are key to attracting top talent. Become an employer of choice by prioritizing your team's needs and embracing AI as a powerful partner.

Heed the call to transform, empower your workforce, and secure your future. Now is the time to **invest in a human-centric, AI-powered approach** for long-term success.

Take the Next Step in Your Journey

Learn more about how Copia is empowering the workforce through their Industrial DevOps Platform and the recently launched Copia Copilot by clicking here.

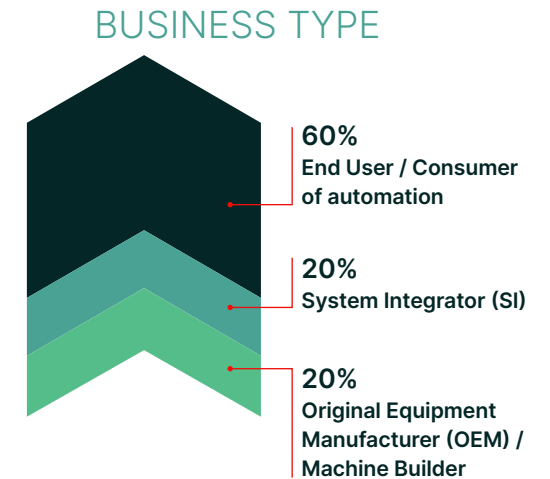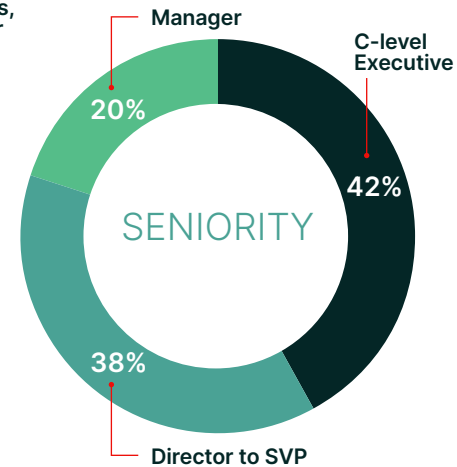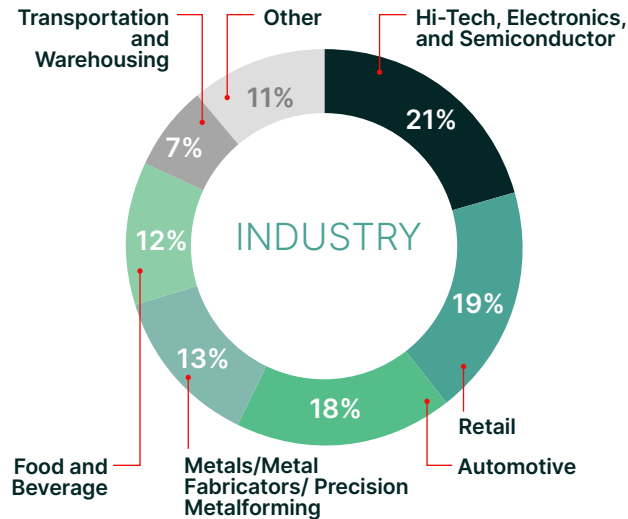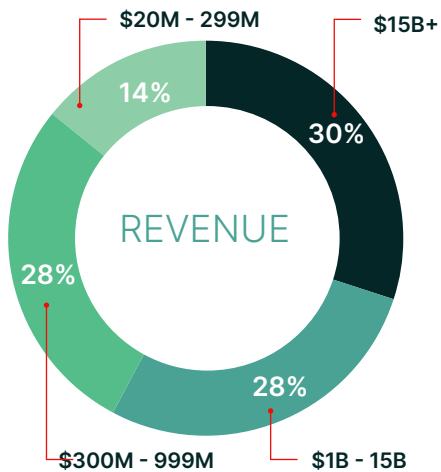You can also reach out directly by emailing contact@copia.io.

> "
>
> Just as DevOps transformed IT, **Industrial DevOps is now reshaping cyber-physical environments.**
>
> Driven by this momentum, we are expanding our AI capabilities to solve critical industry challenges, deliver greater organizational value, and ultimately, empower the global workforce to achieve its full potential.
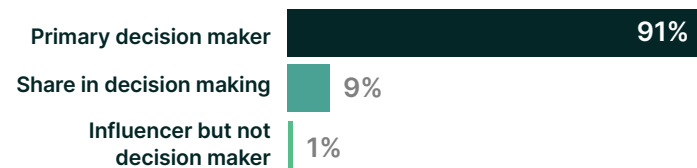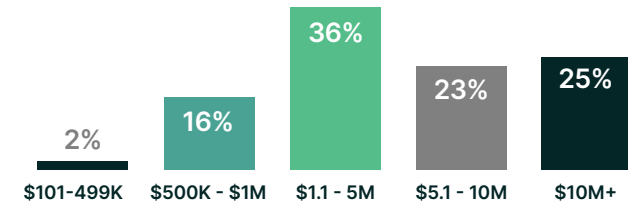>
> - Adam Gluck, Copia Founder & CEO

DEMOGRAPHICS / FIRMOGRAPHICS

200 RESPONDANTS (100%)

REVENUE

- $15B+ — 30%
- $1B - 15B — 28%
- $300M - 999M — 28%
- $20M - 299M — 14%

INDUSTRY

- Hi-Tech, Electronics, and Semiconductor — 21%
- Retail — 19%
- Automotive — 18%
- Metals/Metal Fabricators/ Precision Metalforming — 13%
- Food and Beverage — 12%
- Transportation and Warehousing — 7%
- Other — 11%

SENIORITY

- C-level Executive — 42%
- Director to SVP — 38%
- Manager — 20%

BUSINESS TYPE

- 60% End User / Consumer of automation
- 20% System Integrator (SI)
- 20% Original Equipment Manufacturer (OEM) / Machine Builder

DECISION MAKING ROLE

- Primary decision maker — 91%
- Share in decision making — 9%
- Influencer but not decision maker — 1%

ANNUAL BUDGET FOR OT

- $101-499K — 2%
- $500K - $1M — 16%
- $1.1 - 5M — 36%
- $5.1 - 10M — 23%
- $10M+ — 25%

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Copia Automation provides unparalleled visibility and control of industrial automation code across multi-vendor devices for continuous quality control, streamlined production, and preemptive crisis management.