American Manufacturing Pressure and Productivity Index

The pressures, challenges and opportunities facing U.S. manufacturers

Executive Summary

The pressure on American manufacturers is growing. Competition is intensifying. China and Mexico are rising as threats. Manufacturing growth is slowing, talent is getting harder to attract, and there's a constant push to digitally transform. This creates a difficult and high stakes landscape for manufacturers to navigate, especially amidst today's economic volatility.

CADDi's American Manufacturing Pressure and Productivity Index, based on a survey of over 330 U.S. manufacturing leaders, reveals manufacturers are missing out on key opportunities to reduce pressure and drive productivity gains. The research, which takes a deeper look at the inner workings of American manufacturers, shows that there are several key productivity killers that are inhibiting the output and success of even the highest performing teams.

This report explores the key findings, including manufacturers' current top priorities, which inefficiencies are hurting the most, and how manufacturers need to rethink their strategies amidst the growing pressure.
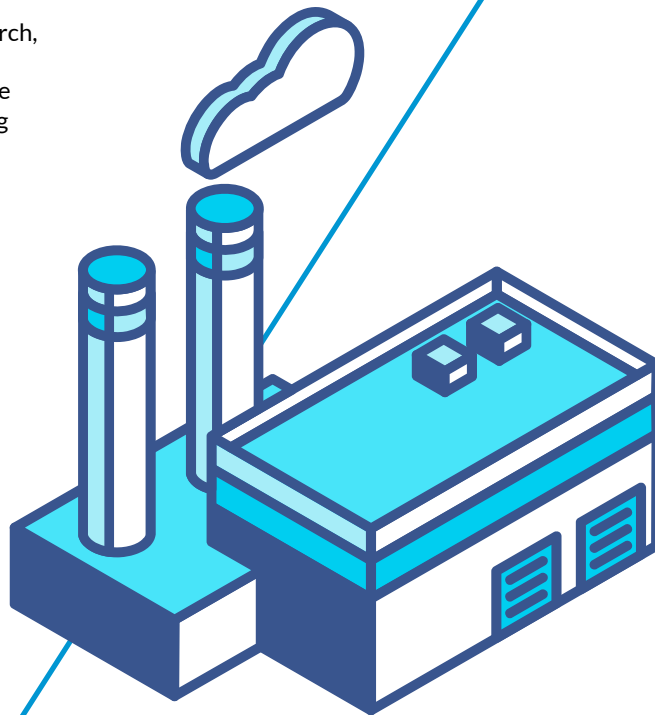
Data Gaps Exacerbate Economic Pressure

Only 11% of senior manufacturing leaders have a positive short- and medium-term outlook for the economy. Most (84%) respondents expect a recession to hit within the next two years. Forty-nine percent expect a recession to hit in 2025. This outlook isn't totally surprising given the ongoing global economic decline of the past few years. What is shocking, however, especially given the pressure manufacturers are under, is that most manufacturers are missing straight-forward opportunities to lower their costs and drive profitability. Cost reduction is important in any economy, but especially when preparing for and weathering a down market.

The culprit: A lack of access to historical data.

Sixty percent of procurement professionals say they've sourced a part at a higher cost than what they knew was possible because they didn't have access to sufficient supplier data to negotiate effectively. The same percentage of respondents said they have missed an opportunity to consolidate suppliers and/or negotiate a volume discount because they didn't have access to historical cost data associated with similar parts.

And it's not just procurement. Seventy-one percent of sales professionals have quoted or sold an unprofitable deal for their company because they didn't have access to the historical engineering and procurement data they needed, such as design, processing costs or supplier data.

That's an alarming percentage of people who are making financial decisions based on incomplete information.

> " *Our research reveals that a significant number of workers are unable to consistently perform their jobs to their fullest potential because they lack access to the critical data they need. This hurts profitability, hampers productivity, and prevents workers from making decisions that benefit the organization. In today's high pressure and competitive manufacturing landscape, equipping workers with the right data and tools to make informed and strategic decisions is paramount," said Yushiro Kato, CEO at CADDi.*

Manufacturers' data woes are systemic

Traditional manufacturing software systems like ERPs, PLM/PDM tools, CAD programs, quality management systems, or engineering document management products are all designed to serve specific functions within the broader manufacturing team. Consequently, they fall short in providing the comprehensive and timely information manufacturing teams need to drive their work forward. The data in each of these systems represents a portion of a manufacturer's historical record. Unfortunately, being housed across so many silos also leads to critical inconsistencies in categorization, naming conventions, units of measure and more. It's not uncommon for teams to rely on memorized part numbers, which is unsustainable, and for workers to lean on their colleagues with more experience to help decipher the information in these systems.

Manual data entry across these different systems creates a high risk of errors. By virtue of the fact that each tool is designed for a specific user group, these systems also don't service multiple departments well, which limits visibility and collaboration. For instance, engineering drawings contain a wealth of detailed product data and specifications that go unused in procurement processes simply because procurement lacks access. And engineering and sales teams can't easily obtain the information housed in procurement's systems that they need for quotations and design decisions.

The time it takes to track down the information needed to get work done adds up fast. Forty-one percent of procurement professionals, 50% of engineering professionals, and 54% of sales professionals say they spend 1-2 hours each day just on tracking down critical and/or historical information. Eighteen percent of procurement, 13% of engineering, and 21% of sales professionals spend more than four hours a day on these tasks. Additionally:

45%
of procurement practitioners say they spend 1-2 hours a day ensuring all information to make sourcing decisions is up to date and accessible.

27%
of engineers spend the same amount of time ensuring the accuracy and accessibility of the information they need to make design decisions.

54%
of sales professionals say they spend 1-2 hours a day ensuring quotes and documentation are complete and for future reference.

In short, tracking down and ensuring the accuracy of the information they need to do their jobs is essentially a part time job (~20 hours per week on the low end) for these professionals. And some spend double the time or more on these data activities before they can get real work done. IDC estimates that inefficiency costs companies 20-30% of their revenue every year.

The productivity killers lurking within U.S. manufacturers

Procurement

Procurement professionals spend the most time on clarifying ambiguous requirements.

Engineers

Engineers spend the most time on researching and selecting materials.

Sales

Sales people spend the most time on updating quotes based on supplier feedback and market fluctuations.

Manufacturing's Talent Challenge: The High Cost of Low Supply

Two of the top three pressure points currently facing manufacturers are:

1. A lack of access to skilled labor (56%)
2. Equipping current employees to step into strategic roles (50%)

Specifically, VP and C-level respondents say they're kept up at night by the struggle to secure skilled labor to advance business priorities (43%) and the ongoing need to ensure employee satisfaction and empowerment (30%).

The skilled labor gap is acute. As experienced workers retire and fewer young people enter the field, manufacturers are forced to operate with significantly fewer resources. An estimated 1.9 million open manufacturing positions could go unfilled by 2033, according to a report by Deloitte and the Manufacturing Institute. The cost of the talent shortage could reach $1 trillion annually by 2030. A lack of skilled workers also reduces productivity, delays R&D activities, and slows time to market.
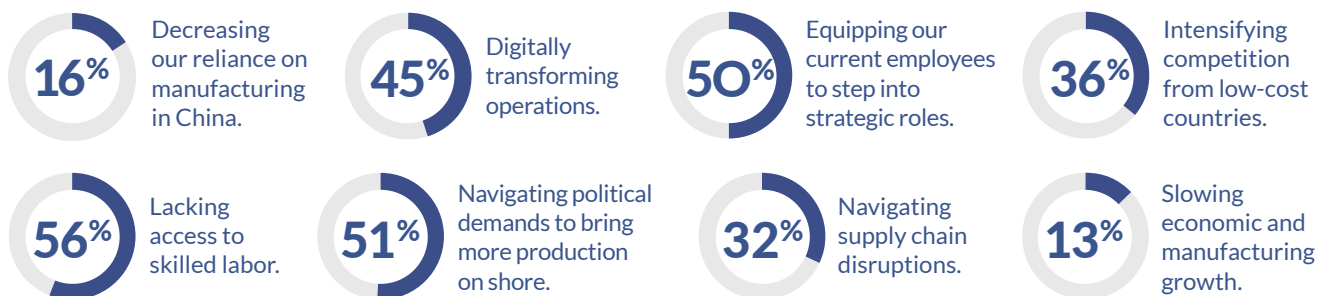
The worker shortage also inevitably puts a strain on existing employees who pick up the slack. Manufacturers can mitigate the impacts of the talent shortage by empowering their workforce and making them as efficient, productive and happy as possible in their roles.

Not solving the internal data challenge could create friction and talent satisfaction and retention risks for manufacturers and exacerbate the talent shortage. Procurement professionals cited their biggest frustrations as inadequate documentation, such as missing part numbers, dimensions, and material properties (73%). These professionals also cited a lack of knowledge and training to source specialized parts (64%) and poor or slow communication with other teams involved in production (59%), both of which likely stem from a lack of effectively documented know-how and centralized information from past projects.

Similarly, sales teams cite long quotation processes due to needing to track down relevant information (67%), poor collaboration and communication with procurement and engineering that lead to delays and misunderstandings (33%), and lack of integration between ERP, CRM, CAD systems, etc. that lead to data silos and inefficiencies (33%).

Moreover, failing to solve internal data challenges has the potential to greatly hamper management's attempts to leverage technology to offset some of the more acute pain related to the skilled labor crisis. Pain that's likely to be exacerbated by a push to onshore more manufacturing.

The biggest pressures on manufacturing strategy and performance

16% Decreasing our reliance on manufacturing in China.

45% Digitally transforming operations.

50% Equipping our current employees to step into strategic roles.

36% Intensifying competition from low-cost countries.

56% Lacking access to skilled labor.

51% Navigating political demands to bring more production on shore.

32% Navigating supply chain disruptions.

13% Slowing economic and manufacturing growth.

Growing Pressure to Onshore Manufacturing

Manufacturers have long outsourced production to low-cost countries to capture massive labor cost advantages. But the pressure to reduce reliance on foreign manufacturing and move these jobs – which are a cornerstone of the American economy – back to the U.S. is growing, especially as we get further into an election year and a potential recession looms. Navigating political demands to bring more production onshore (51%) was cited as a top three pressure point for manufacturers, likely because of the typical and significant trade-offs involved: either they keep production overseas and fail to contribute to American prosperity, or onshore production, absorb higher costs, and take a hit to the bottom line.

But manufacturers no longer need to make this choice. Driving efficiencies in how procurement, engineering and sales teams access and leverage data directly increases labor productivity, which counters the cost of paying a higher wage for U.S. workers. Manufacturers that tackle the data challenge head on can bring production onshore without a cost disadvantage and put their team in a better position to rapidly innovate. This couldn't come at a better time given labor productivity in manufacturing has been flat to negative for the last decade, signaling the failure of old technologies to uplift the performance of American manufacturing labor.[1]

The push to digitally transform

Forty-five percent of senior manufacturing leaders cite digitally transforming their operations as a top business pressure, with 27% worrying they aren't transforming fast enough to survive. Thirty-six percent of senior executives say the challenge to keep pace with rapid technology changes keeps them up at night.

These fears are well founded when you consider the competitive disadvantages that come with being a last mover and the fact that digital transformation is a long game. Companies that delay their digital transformation efforts may find themselves significantly outpaced by competitors who have already harnessed the power of automation and AI. It takes time to go through the transformation process and ensure your data environment is AI-ready to support advanced systems. And the clock is ticking. Each day manufacturers wait to get their data in order, they're falling farther and farther behind competitors and the harder it will be to catch up.

1 https://libertystreeteconomics.newyorkfed.org/2024/07/the-mysterious-slowdown-in-u-s-manufacturing-productivity/#:~:text=The%20change%20in%20the%20growth,3.9%20percentage%20points%20per%20year

Slow Speed to Market

U.S. manufacturers' biggest priorities going into 2025 are to achieve faster speed to market (23%), drive supply chain efficiencies (14%), and hire and retain skilled labor (18%).

Manufacturers are constantly in a race against time. The faster they can create innovative, high quality and price competitive parts and products, the sooner they can reap the revenue rewards. But their procurement and engineering teams aren't working fast enough because of siloed data and a lack of smooth interdepartmental collaboration.

Manufacturers' biggest priorities for 2025

23% Faster speed to market

18% Hiring and retaining enough skilled labo

14% Business growth (i.e. new business, market expansion, etc.)

14% Driving supply chain efficiencies

13% Increasing product quality and safety

6% Lowering our operating costs

5% Business continuity and resilience

5% Product innovation

2% Progressing on our digital transformation journey

CASE IN POINT: Seventy-seven percent of procurement professionals say they often – every few projects – have to find a new part, product, or supplier because the one they found initially didn't meet engineering's specifications. That is a major inefficiency that not only kills speed to market but massively eats at revenue.

Every time procurement has to re-source a part, it creates the opportunity for an expensive production stoppage. Across the Fortune Global 500, firms are losing an estimated $1.5 trillion each year to unplanned downtime, which equates to 11% of annual revenue.

Manufacturers that are serious about improving speed to market need to solve their internal data issues. Fifty-five percent of procurement professionals say that if they had access to every part in inventory along with all the associated historical data, they could collaborate with engineering easier and earlier to create better products faster, and 59% said they could reduce the risks of defects and faulty parts. Engineers could design products faster if they had:

- **Access to performance data** – stress tests, failure analysis, thermal analysis, field performance, etc. – from prior projects to ensure quality (67%)

- **Data to help understand** how design choices impact material and production costs (63%)

- **Access to historical specifications**, material and design data so they don't need to start from scratch (37%)

- **Digitized and centralized drawings** that make knowledge from past projects more accessible (17%)

Pressure poised to intensify

Most manufacturing leaders rate their current business pressure as moderate (a 3 out of 5). But the pressure is bound to rise as manufacturers struggle with institutional knowledge loss on top of existing talent and supply chain challenges.

Nearly three-quarters (73%) of senior executives at U.S. manufacturers expect to retire within the next decade. Sixty-eight percent believe at least half of their institutional knowledge will be lost forever when they retire. That leaves the rest of the organization without the critical insights it needs to succeed.

Most (83%) senior leaders believe they have taken adequate steps to document their institutional knowledge and express confidence (83%) their organization has effectively prepared the next generation of employees to take the reins. But upon looking deeper, there's a critical limitation in how the knowledge is stored and accessed.

While 74% of manufacturing professionals say they have a searchable database of engineering drawings and relevant parts and supply chain data, 54% of those with access to these tools can only search by part ID and part name. This means that critical historical data by material, surface, treatment and other metadata that teams need to effectively design, procure, sell, and collaborate still can't be easily accessed. Some companies may have this metadata available in a product lifecycle management (PLM) or similar solution, but if their teams can't easily search it and surface every piece of information they need in the moment they need it to do their jobs, then it doesn't go far enough. These technology limitations impede effective knowledge transfer and retention and threaten operational efficiency and continuity as senior leaders retire.
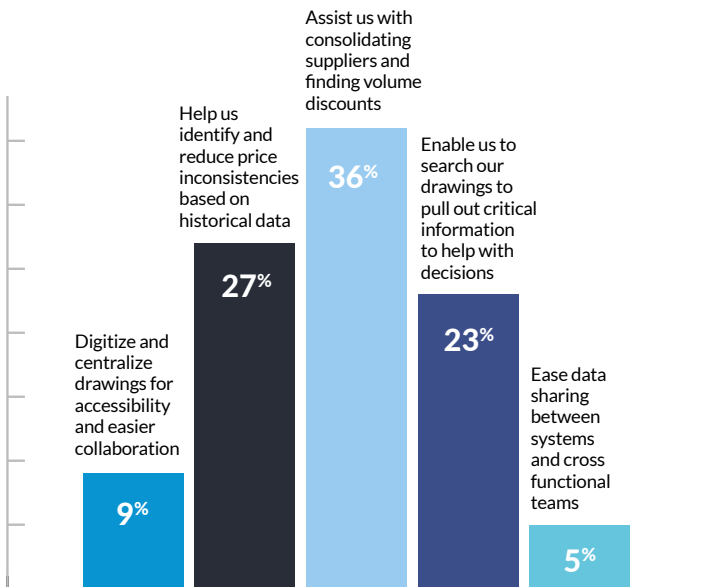
The confidence current employees have in their ability to step into leadership roles may also be overstated. Ninety-five percent of procurement professionals, 97% of engineering professionals and 75% of sales professionals say they could smoothly take the reins if senior members were to retire tomorrow. But the gap in knowledge documentation efforts indicates a false confidence and sense of security.
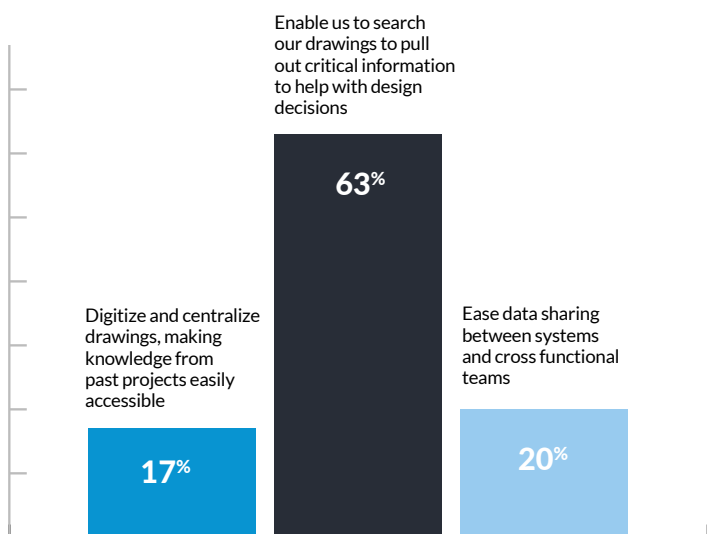
Technology and AI offers relief

Sixty-eight percent of procurement professionals said if each of their team members had access to every part in inventory along with all the associated historical data, they could better negotiate with suppliers to secure volume discounts. Thirty-six percent said AI would specifically be useful in assisting with consolidating suppliers and finding volume discounts. Twenty percent of engineers said AI would be most useful in easing data sharing between systems and cross functional teams.

The value of AI extends well beyond the immediate need for data centrality and accuracy. Over 60% of engineers say AI would be most beneficial in enabling them to search drawings to pull out critical information from past projects to help with design decisions. Fifty-eight percent of sales professionals said AI would be most useful in enabling them to automatically extract cost and pricing details from past work, so they don't need to calculate production costs from scratch. Twenty-seven percent of procurement teams said AI would help identify and reduce price inconsistencies based on historical data.
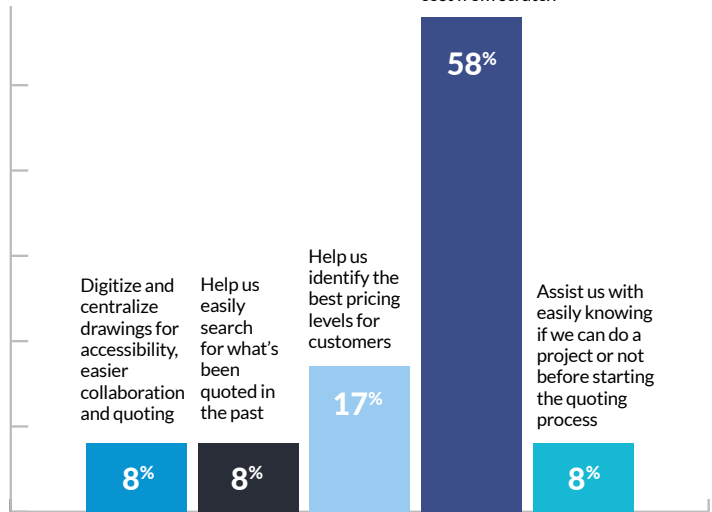
Procurement

- Digitize and centralize drawings for accessibility and easier collaboration — 9%
- Help us identify and reduce price inconsistencies based on historical data — 27%
- Assist us with consolidating suppliers and finding volume discounts — 36%
- Enable us to search our drawings to pull out critical information to help with decisions — 23%
- Ease data sharing between systems and cross functional teams — 5%

Engineering

- Digitize and centralize drawings, making knowledge from past projects easily accessible — 17%
- Enable us to search our drawings to pull out critical information to help with design decisions — 63%
- Ease data sharing between systems and cross functional teams — 20%

In today's operating environment, manufacturers can't afford for their people to waste time and make decisions that affect revenue and profitability based on incomplete information. Those that don't invest now to solve the data challenge will risk undermining the organization's competitiveness and long-term viability. Not empowering the workforce with centralized intelligence leads to slower production cycles and revenue growth, missed innovation opportunities, and delayed response to market changes.

Automatically extract cost and pricing details from past work so we don't need to calculate production cost from scratch

58%

Digitize and centralize drawings for accessibility, easier collaboration and quoting

Help us easily search for what's been quoted in the past

Help us identify the best pricing levels for customers

Assist us with easily knowing if we can do a project or not before starting the quoting process

8% **8%** **17%** **8%**

Sales

High pressure creates diamonds

U.S. manufacturers are under considerable pressure from all sides. While today's landscape is certainly challenging, these pressures also bring opportunity. Just as pressure can create diamonds, today's difficult market circumstances can forge stronger, more resilient manufacturers if the right strategies are implemented. By proactively getting the organization's procurement and engineering data under control and boosting productivity, manufacturers can position themselves to navigate today's pressures successfully and thrive in the future.

Here are four things to do today to put your team on the top of their game and empower them with the time and capacity to focus on what matters most:

- ✓ **Digitize and centralize** all your manufacturing drawings and insights into one system
- ✓ **Connect** all relevant supply chain, design and quotation data to associated drawings
- ✓ **Enable** your team to easily search drawings by shape, text, dimension, part names and more
- ✓ **Equip** your team to easily search for and locate similar, previously purchased parts with instant pricing and design details
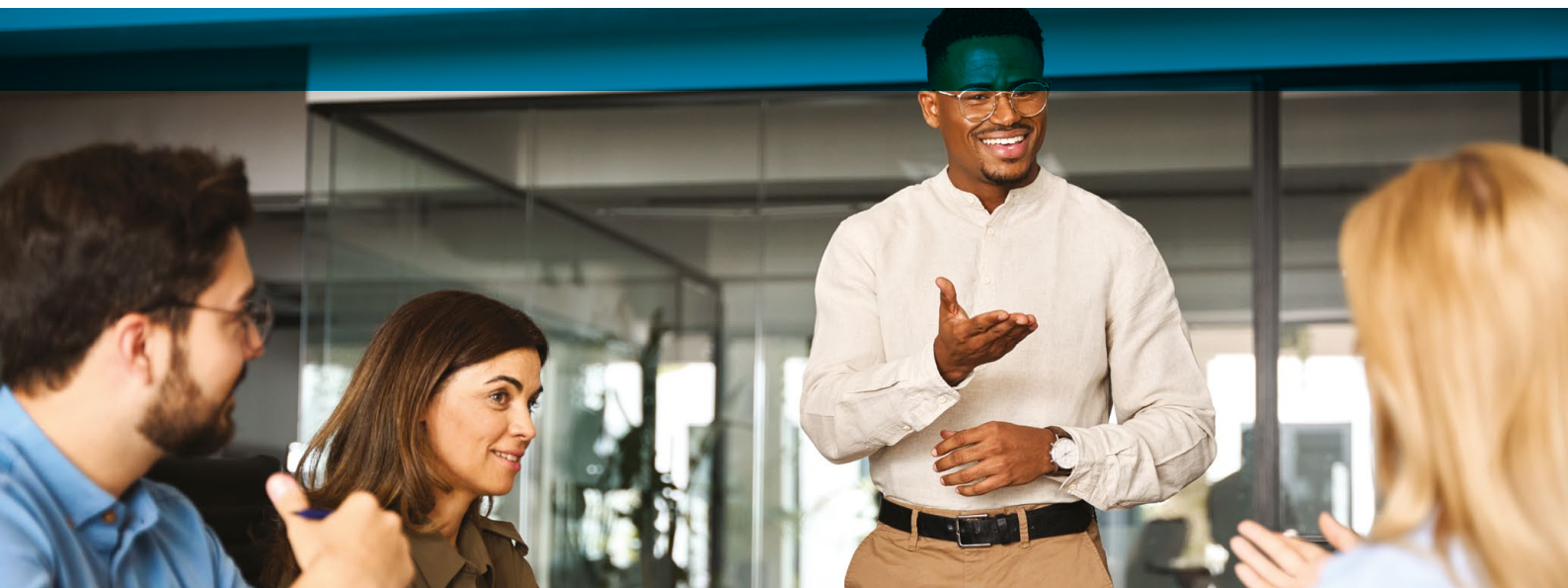
SURVEY DEMOGRAPHICS
CADDi surveyed over 330 U.S. manufacturing professionals including VP and C-level executives and professionals across procurement, engineering and sales roles.

About CADDi Inc

CADDi is a manufacturing intelligence software company on a mission to democratize your drawings and supply chain data. Our primary product offering in the United States, CADDi Drawer, leverages patented AI to aggregate, analyze and extract everything you need from your data to produce better products. In 2024, CADDi was the sole manufacturing SaaS company featured on Fast Company's Most Innovative Companies 2024 list and won Best Manufacturing Intelligence Software in the 2024 SaaS awards.