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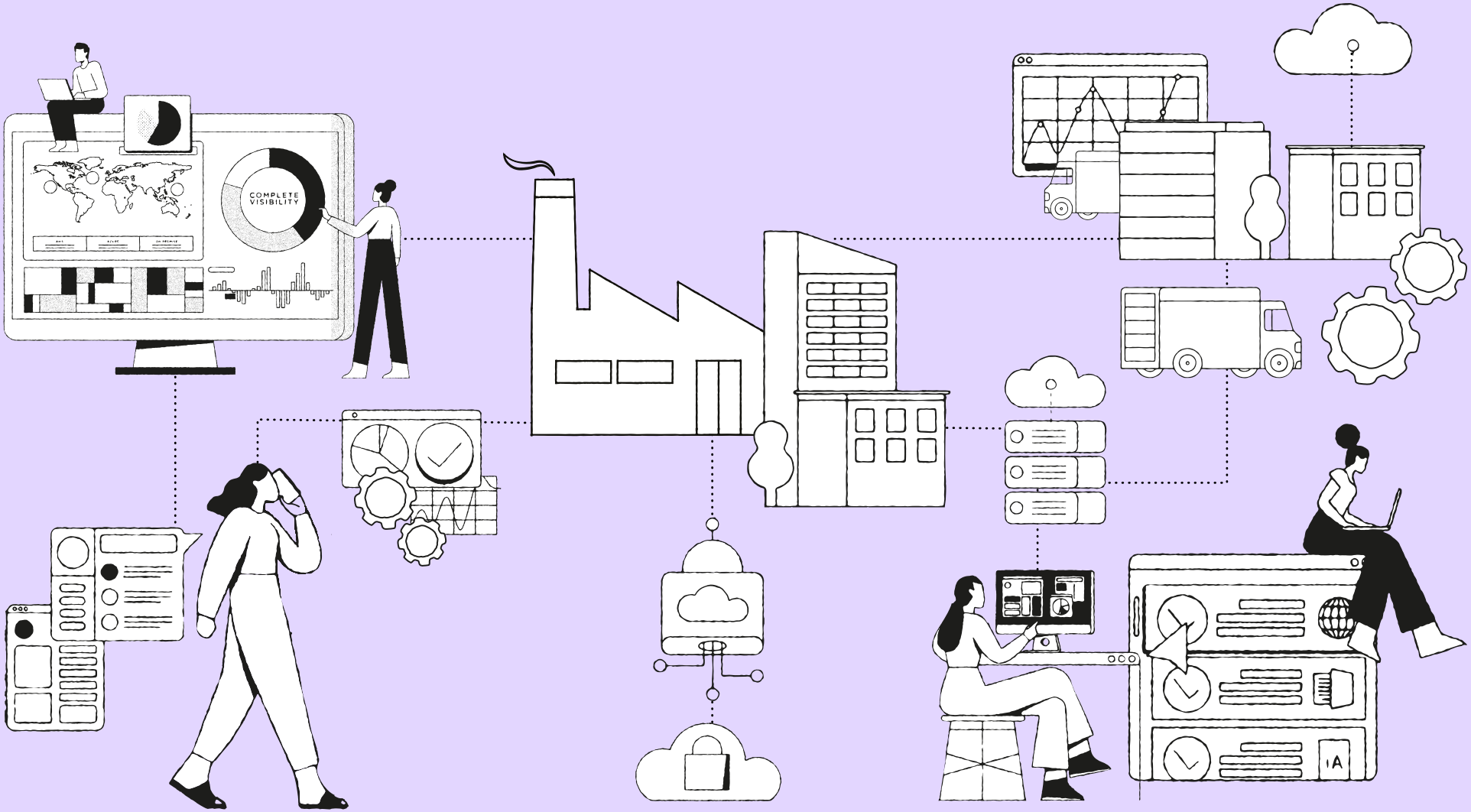


Digital First: Transforming Manufacturing for the Age of Agility

Introduction

Crossroads – or turning point?

Manufacturing is at a crossroads. Traditional manufacturing companies are now being challenged by tech companies and digital-born start-ups in the innovation race. The need to produce more, and faster has never been greater. Operational budgets are decreasing, despite increased investment in innovation; meanwhile productivity and quality targets continue to rise. And with disruption now an ever-present risk, manufacturers are being asked to do all of this while increasing resilience in their supply chains.

> **"The recent pandemic has affected every part of the value chain, from raw material sourcing to end customer. It is testing the commercial, operational, financial and organizational resilience of the majority of companies across the globe."**
>
> KPMG, 2022

> **"The manufacturing industry is facing a critical skills gap in the wake of the pandemic... Moving forward, the industry must make a concerted effort to address this skills gap and labour shortage, including using Industry 4.0 technology to do so."**
>
> Manufacturing Digital, 2022

> **"An expanding attack surface from the connection of operational technology (OT), information technology (IT), and external networks requires stringent controls"**
>
> Deloitte, 2022

Perhaps more so than any other industry, manufacturing is under constant pressure from contradictory factors: supply chain resilience versus sustainability; innovation versus time-to-market; cybersecurity versus global collaboration; productivity versus workforce shortages. Manufacturing leaders must navigate these icebergs by tuning their approach to people, process, and technology to achieve continued growth.

Introduction

A digital-first approach

Manufacturing leaders are accelerating the adoption of digital technologies, not only to maximize operational efficiencies, but also to create agile and intelligent manufacturing that can compete and succeed in today's age of agility.

But adopting digital technologies is a solution, not a strategy. True digital transformation is as much about organizational change as it is about technological change. It requires manufacturers to consider people, process, and technology holistically, to achieve strategic business objectives - whether that's faster time to market, higher labor or asset productivity, improved customer experience – or indeed all of the above.

And to do that, manufacturers must adopt a digital-first approach.

What is digital-first manufacturing?

It's agile

Joined-up, reliable and efficient processes, supported by cloud computing to enable visibility, traceability and speed.

It's innovative

An IT infrastructure with 'change' as a core competency, enabling the business to be more predictive and proactive.

It's connected

A collaborative environment with no organizational silos, and teams empowered with the tools to work better and smarter.

Introduction

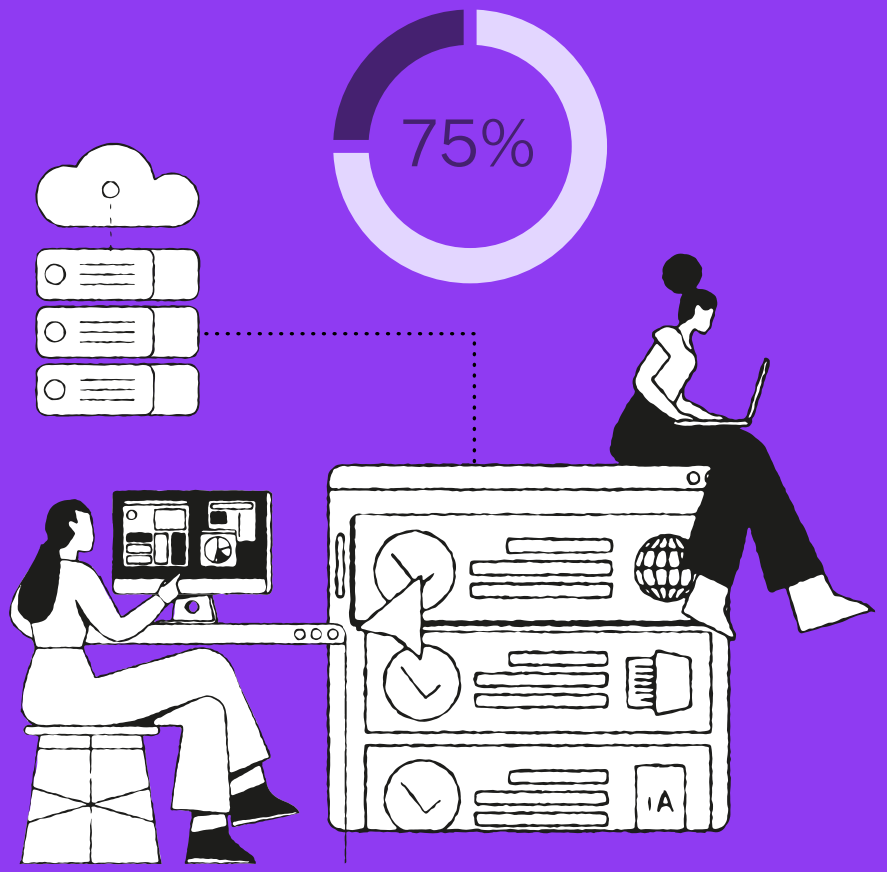
A digital-first approach

By rethinking traditional operating models and adopting a digital-first approach, manufacturing organizations can meet these three imperatives facing manufacturing leaders today:

- Simplify the supply chain while increasing agility, security and resilience
- Accelerate IT modernization to enable business growth and innovation
- Enable hybrid work to boost productivity and engagement

In the next section, we explore how a digital-first approach to these imperatives can yield tangible benefits – and how Citrix can help.

By 2025, driven by volatile global conditions, 75% of business leaders will leverage digital platforms and ecosystem capabilities to adapt their value chains to new markets, industries, and ecosystems. IDC



Imperative 1:
Simplify the supply chain while increasing agility, security and resilience

In the wake of the pandemic, shoring up and simplifying supply chains is still top of the agenda for the industry.

At the height of COVID-19 in March 2020, a survey by McKinsey revealed that 93% of senior supply chain executives intended to make their supply chains more flexible, agile and resilient. And while initially that meant onshoring, nearshoring or regionalization footprint strategies, ongoing disruptions caused by pandemic-related shutdowns in China and the Russia-Ukraine conflict are forcing manufacturers to employ a multi-faceted approach to supply chain agility and risk management. With digital-born start-ups now capitalizing on increasing levels of connectivity and digitalization within the industry, traditional manufacturers now have the opportunity to create new and innovative supply chain ecosystems - provided they have the right digital infrastructure in place to quickly and securely engage new partners and suppliers.

With a digital-first approach, manufacturers can:

Simplify the supply chain: By integrating IT and operational technology systems into a centrally managed digital supply chain network, manufacturers gain greater visibility and control over supply chain operations, from procurement data and inventory management to transportation and distribution

Reduce costs and optimize value: A recent PWC report predicts digitization of supply chains to bring significant economic benefits to both top and bottom lines. Companies with highly digitized supply chains and operations can expect efficiency gains of 4.1% annually, while boosting revenue by 2.9% a year.

Secure intellectual property: Adopt a zero-trust security model for all user types, every app, and on any device. This model focuses on securing the entire user rather than only their devices or endpoints, requiring authorized users to pass identity management protocols before granting access to the enterprise network. Learn more.

Accelerate onboarding and offboarding: Citrix enables rapid onboarding and offboarding of employees, partners and third parties by providing fast, secure access to content, applications, and desktops, allowing manufacturers to adapt their supplier ecosystem to respond to market changes with agility.

Provide device flexibility: Securely support Bring-Your-Own-Device (BYOD) and unmanaged devices, and provide access to IT sanctioned apps - without increasing risks. With Citrix, access is adapted based on device posture and risk factors. Because nothing is stored on the endpoint itself, there's far less risk if a BYOD device is lost, stolen, or infiltrated. Learn more.

Imperative 2:
Accelerate IT modernization to enable business growth and innovation

True digitization remains a challenge for an industry that has long relied on paper-based processes and legacy systems, within an IT landscape more disparate and more complex than many other industries.

But in an ever-more challenging global environment, the costs of maintaining and upgrading outdated equipment, software and hardware are invariably a false economy. Recent estimates put the proportion of IT budgets allocated to keeping out-of-date legacy systems running at 60-80% - and that number doesn't, of course, take into account the costs associated with security compromises or operational barriers attached to outdated or obsolete technologies. According to a report by McKinsey, manufacturers using digital technologies to develop new or enhanced ways to operate their business cited a 30-50% reduction in machine downtime, 15-30% improvements in labour productivity, 10-30% increases in throughput, and 10-20% decreases in the cost of quality. Those figures make the case for retaining legacy systems difficult to justify.

With a digital-first approach, manufacturers can:

Simplify the IT landscape: Centralize and streamline IT operations and infrastructure, by replacing legacy systems with cloud-based solutions, and consolidating or centralizing on-premise data centers.

Modernize applications: Proactively monitor and manage software lifecycles of traditional applications by deploying Software-as-a-Service (SaaS) like application management. In a recent use case, Citrix reduced app deployment for a manufacturing customer from 40 days to 4 days, compared to installation on endpoint devices. Read blog.

Accelerate supplier onboarding: Increase business agility and respond to market changes by enabling rapid supplier onboarding and offboarding. Suppliers can quickly and securely access content, apps and desktops via the cloud.

Support digital twin technology: Predict, detect and prevent failures, reduce downtime, and increase scaleability and productivity, by implementing digital twin technology. In a recent example, Citrix helped Red Bull Racing deliver digital twins to engineers, allowing them to work remotely with digital representations of physical elements. Read article.

Ensure business continuity: Reduce downtime, increase resilience and alleviate the many challenges associated with traditional desktop management via Desktop-as-a-Service (DaaS). Learn more.

Imperative 3:
Enable hybrid work to boost productivity and engagement

The future of work within manufacturing is rapidly evolving. There is a general consensus that adopting a hybrid strategy across operations - by automating key processes and enabling anywhere, anytime access to selected systems and data - can create competitive advantage.

In an industry facing unprecedented workforce shortages, enabling hybrid work is seen as a key priority in tackling the pressing challenge of talent acquisition. A recent joint survey by Manufacturers Alliance and AON, revealed that hybrid working (a mix of virtual and on-site) capabilities for manufacturing employees had increased by almost seven times, from 12% to 43%, with a predictive shift to 80% within 12 months. Providing flexible working opportunities will be critical to attracting and retaining new employees – and if nothing else, the pandemic has shown an industry traditionally reticent to a virtual shift, that a hybrid model can work.

With a digital-first approach, manufacturers can:

Address workforce shortages: In a recent survey of frontline manufacturing workers, more than half of respondents said the opportunity to work in a more modern, digital environment would be part of their decision to leave their current employee. With Citrix every employee is empowered with the freedom to choose how they want to work (device type) and from where.

Compete in the innovation race: The ability to quickly and securely engage global R&D talent is fast becoming a priority for senior executives – pushing the requirement for a robust and flexible IT infrastructure to the top of the agenda. With large and complex graphics commonplace in engineering R&D, Citrix enables organizations to facilitate secure and reliable collaboration for a global distributed workforce.

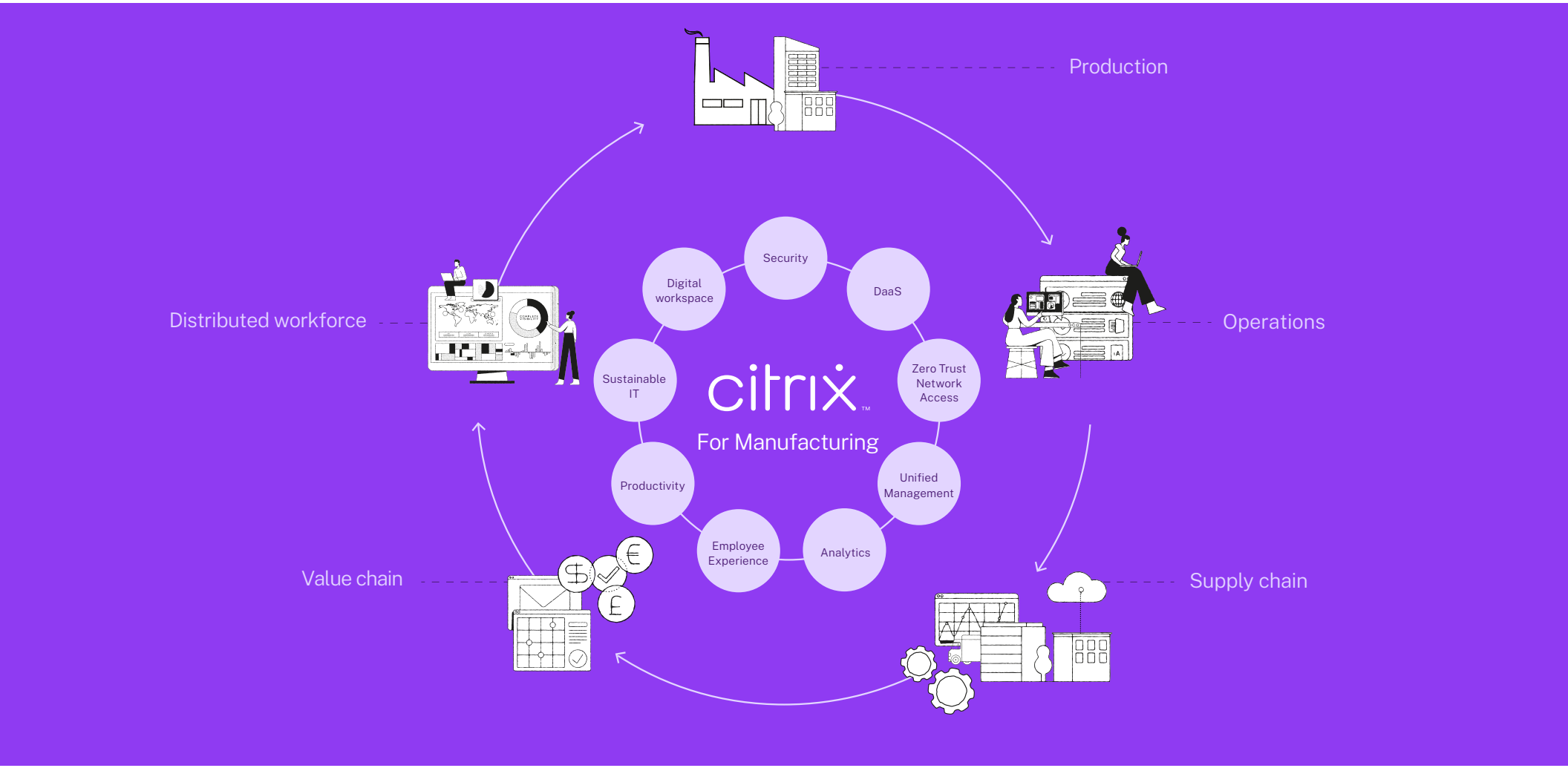
Enable remote work* to improve sustainability: Reducing transportation and commuting will play a role in helping manufacturers accelerate the global target of net-zero by 2050 – requiring organizations to deliver robust remote working capabilities. Citrix digital workspace solutions empower companies to securely deliver the apps and data people need to be as productive as possible—no matter where they work or which devices they use. Read more.

*in job roles where remote working is possible

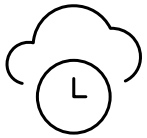
Citrix for manufacturing

Empowering digital-first manufacturing

Citrix solutions for manufacturing IT provide geographically dispersed R&D, plant floor and distribution teams with secure access to the resources required to bring products to the point of consumption faster – with no disruption to the supply chain.



With Citrix, manufacturers can:



Cloud-deliver real-time information to every point in the manufacturing process

Today's manufacturing IT leaders are expected to support innovative and strategic business initiatives like service delivery to globally distributed facilities or reducing plant downtime. However, most of your resources are spent implementing, updating and supporting core and legacy systems and expensive high-end workstations. Citrix solutions for manufacturing enable IT leaders to utilize technologies such as cloud computing and desktop virtualization to centralize and streamline IT operations and infrastructure. This leads to the reduced overhead and increased efficiency needed to cut manufacturing plant downtime, meet production schedules, enable workforce mobility, reduce time-to-market for product development, and quickly scale to changing business cycles.

Protect sensitive corporate data and intellectual property

Keeping intellectual property secure is a huge undertaking, especially since sensitive product information passes through many points in the lifecycle – including third parties. You face stringent NDA requirements from the organizations to which you supply goods. But your workforce – from designers to executives and even contractors – require timely, mobile access to information to accelerate product launches and minimize production delays. Citrix solutions empower you to address key security and compliance priorities by ensuring the right level of secure access for every individual and situation – without sacrificing individual workforce productivity or satisfaction.

Enhance productivity and enable mobility to increase profitability

Manufacturing business leaders are under intense pressure to take advantage of emerging markets and increase workforce productivity and mobility while meeting strict regulatory requirements. To remain competitive, manufacturing organizations need to build a flexible business model that scales with market demands and addresses the challenges associated with a dispersed global workforce. Citrix solutions for manufacturing enable your IT team to centrally deliver business critical as well as 3D applications and workstations to any facility, device or person. Since this happens in a matter of days rather than weeks or months, your organization can accelerate product launches and stay ahead of the competition.

Spotlight

Delivering speed, resilience and agility for **Red Bull Racing**

As the chief information officer of Red Bull Racing and four-times winner of the Formula One World Constructors' Championship, Matt Cadieux knows all about the need for speed, resilience and agility. An engineering and manufacturing specialist with 750 employees, Red Bull Racing has its headquarters in Milton Keynes, a separate state-of-the-art wind tunnel facility, and a race team attending events globally.

Cadieux's top priorities are the delivery of flawless communications and IT across these highly pressurized, time-sensitive environments and to an increasing number of employees who now find themselves working from home.

"We need to get data and applications to our employees no matter where they are and to deliver those with a friendly user experience," he explains. "By getting the tools and data to these people, it allows them to make decisions quickly, and improves people's productivity and mindset."

The team's ability to work remotely is made easier by a 'digital backbone' of hyper-converged IT that connects engineering, manufacturing and racing activities while leveraging real-time data from races and simulations. The result is an innovative ecosystem that enables continuous communication, monitoring and improvement.

"The business is always pushing us to provide more capacity as we use more simulation and analytics and as our models get bigger and bigger. However, we also have significant cost and resource constraints that we have to work within, and we work with our technology partners to do that," says Cadieux.

"Citrix gives us the ability to be able to react to data in real-time, enabling faster performance and increased agility. A lot of the data and applications that we need to deliver to stakeholders, wherever they're at, is hugely graphically intensive – we have an excellent wide area network (WAN) solution, but that on its own is not enough to satisfy user demands," Cadieux admits.

Citrix's work with Red Bull Racing focuses on delivering the benefits of centralization to its distributed workforce while creating greater efficiencies and resilience. This is primarily delivered through the Citrix Virtual Applications and Desktop service (CVADs).

"Red Bull Racing uses Citrix to deliver digital twins to engineers irrespective of where they are located, and this allows them to work with a digital representation of a physical object. This is a long-lasting trend that we see across all sectors of engineering and manufacturing. Engineers have always worked with a lot of graphic applications, but these are now becoming more complex and sophisticated, so we support them to increase the scalability and productivity," explains Citrix's Digital Strategy Director, Saša Petrović.

This streamlining of work practices and processes is particularly notable in Citrix's collaboration with Red Bull Racing's aerodynamicists, whose requirements are particularly exacting. One of the most important elements of the team's engineering effort, aerodynamic analysis is used to determine the shape of a car, which has a direct impact on its performance.

Citrix developed a unified and centralized solution, eliminating the dependency on endpoint operating systems while providing a seamless experience from a single workspace.

As Cadieux explains, "Citrix allows us to deliver that to somebody 2,000 miles away reliably and securely, while maintaining an optimal user experience: it allows us to use tools as if someone was sat in the design office in the UK, even though they may be working remotely."

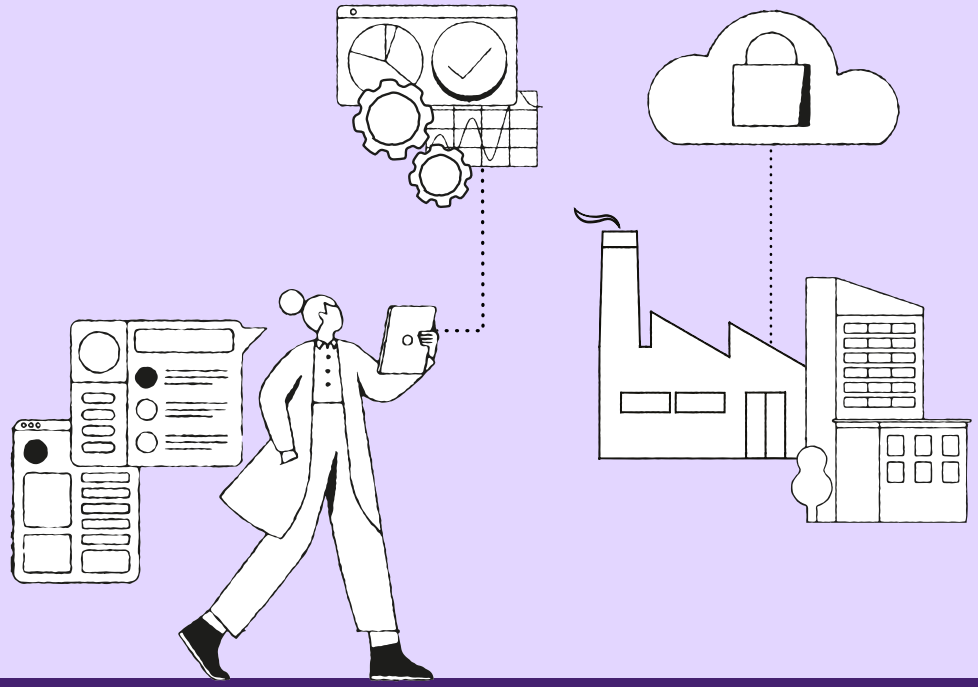
Read the full article

Are you ready to take the next step in your journey to Digital-first Manufacturing?

Take the next step in your digital transformation journey

Request a call

Find a partner



About Citrix

Citrix (NASDAQ: CTXS) builds the secure, unified digital workspace technology that helps organizations unlock human potential and deliver a consistent workspace experience wherever work needs to get done. With Citrix, users get a seamless work experience and IT has a unified platform to secure, manage, and monitor diverse technologies in complex cloud environments.