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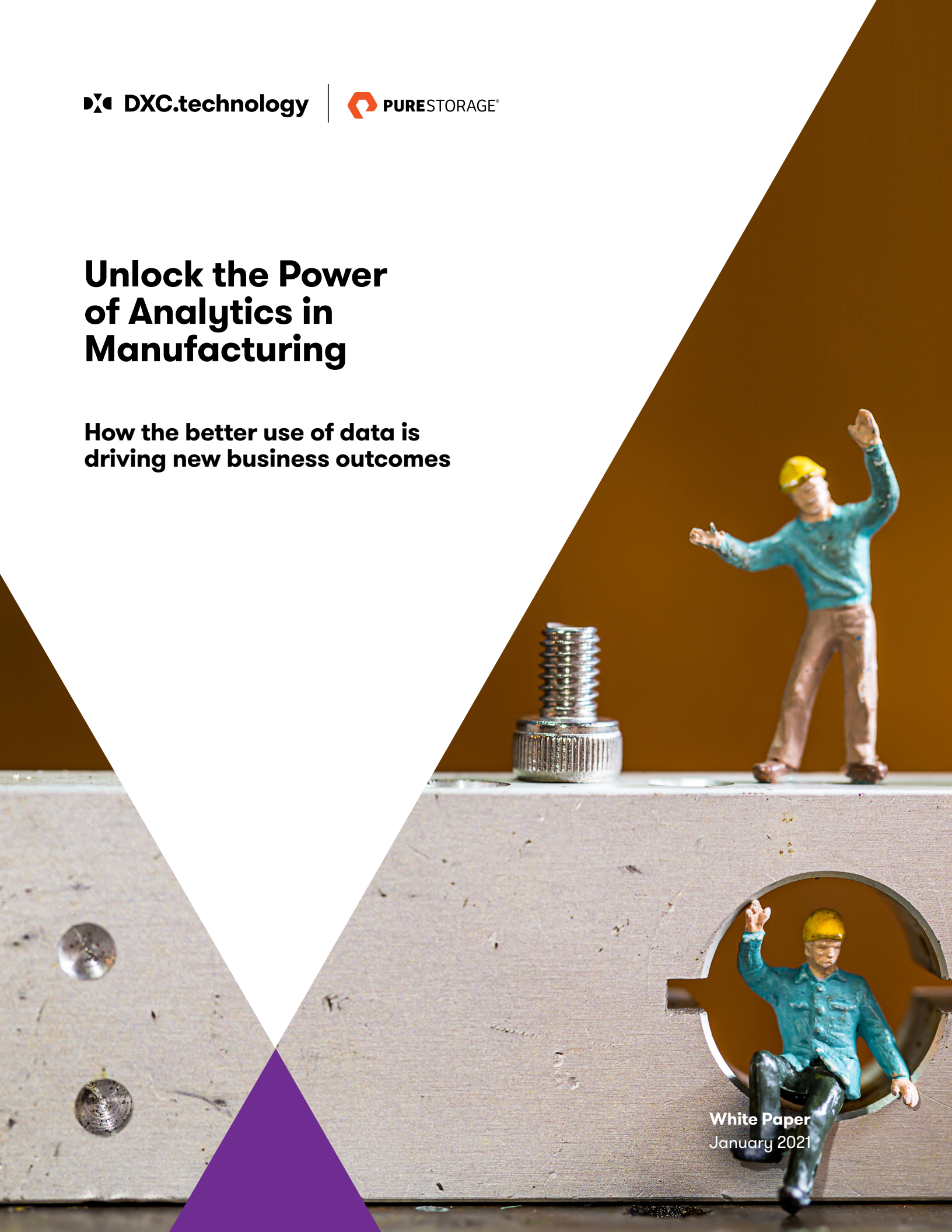
Unlock the Power of Analytics in Manufacturing

How the better use of data is driving new business outcomes



White Paper
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Introduction

In a world driven by data, transforming insights into actions is the most effective way for manufacturing plants to boost efficiency, reduce costs, improve quality, and more importantly, increase production.

The current manufacturing paradigm, Industry 4.0, focuses on the digitization of assets and integration of data into digital ecosystems. Traditional manufacturing practices are being disrupted by data and automation fueled by the Internet of Things (IoT), artificial intelligence (AI), and machine learning (ML).

Knowing exactly how operations are running and where they can be improved is essential to improving a plant's bottom line and that of its parent organization. In this paper, we explore the key business outcomes that plant operators and corporate data scientists can achieve across multiple plants through the better use of data analytics.

Optimize production costs and reduce overhead

Improving efficiency in a manufacturing plant has far-reaching benefits beyond cost control. Productivity, quality control, and operating profits can also get a boost. And although automated production lines are now standard practice, there's still huge potential for data to help improve line speed, quality, and safety. IoT sensors are central to this, providing plant managers with a granularity of data never possible before.

Many manufacturers have also started to use AI and ML to identify opportunities to improve processes, reduce waste, and decrease indirect costs such as IT, HR, and finance that typically remain fixed even in times of lower demand. According to a recent study[1] by McKinsey, 24 industrial companies were able to cut indirect costs by as much as 15-20% in 12-18 months.

Plant managers should also be aware of valuable space currently taken up by on-site technology infrastructure. The right all-flash storage array, for example, can replace multiple racks of conventional spinning-disk storage to reduce footprint, power consumption, and HVAC.

Efficiency gains

A manufacturing plant seeking to improve efficiency installed an AI-driven process optimizer to monitor and adjust the performance of its vertical mill and kiln in real time. After just eight months, the company now runs its production operations in autopilot mode, improving its feed rate by 11.6% per hour over manual mode and 9.6% over advanced process controls without AI.[2]

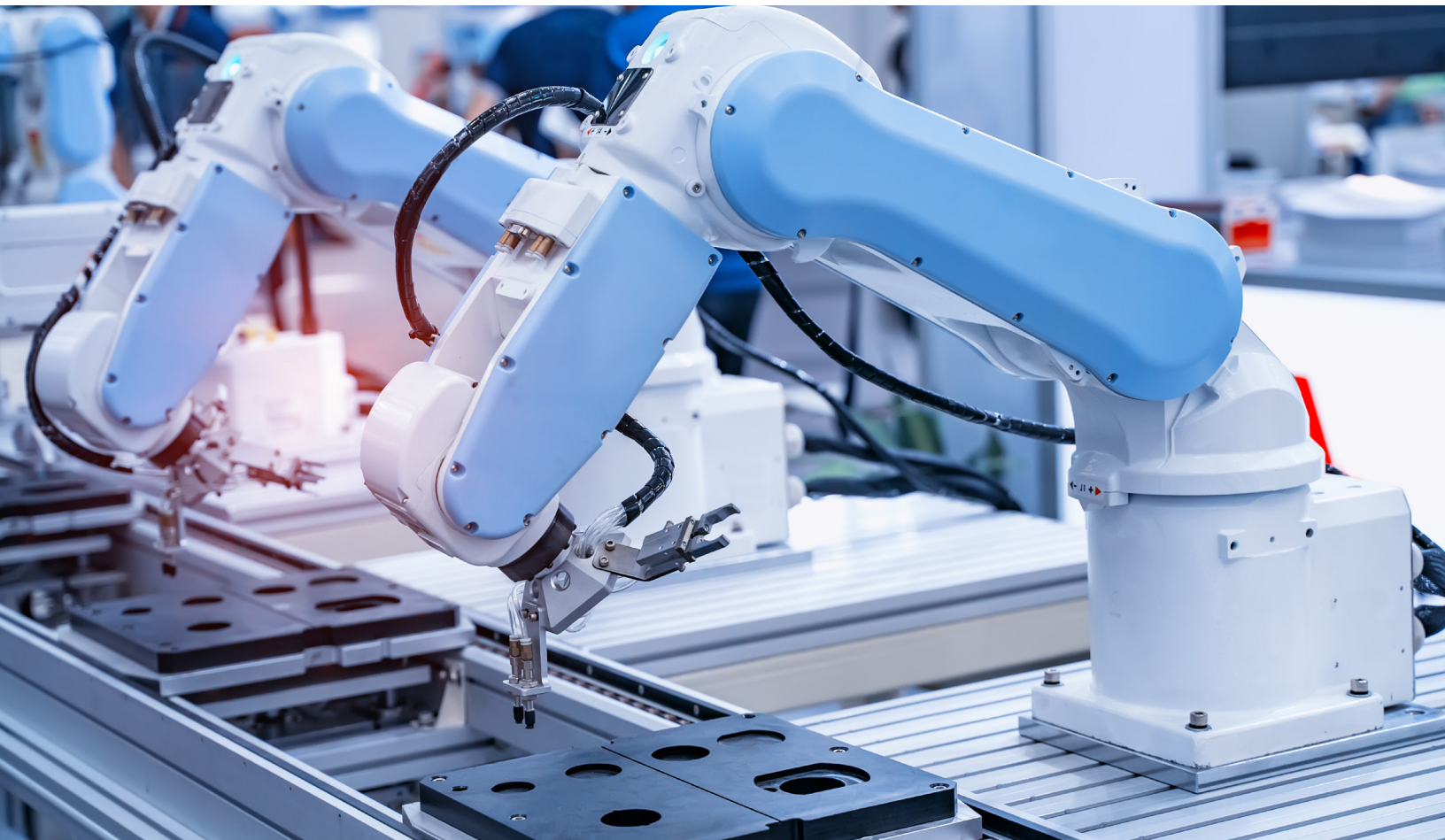
[1] McKinsey, How Industrial Companies Can Cut Their Indirect Costs—Fast
[2] McKinsey, AI in Production: A Game Changer for Manufacturers with Heavy Assets

Reduce risk and improve forecasts

Being able to more accurately predict future demand is key to running an efficient operation. Traditionally, forecasting has been based on the analysis of historical sales data, with adjustments for key events like product launches, seasonality, and expected market variations.

But today, IoT is giving manufacturers a significant advantage. They can not only better track consumption rates in real time but also fulfil forecasted orders with the lowest possible overhead. They also can track the location of tools, parts, and inventory in real-time to minimize disruption and delays.

Plus, with an increasing focus on build-to-order products, some manufacturers are combining this with machine learning to develop customized configurations and streamline the configure-price-quote (CPQ) workflow. Applying AI and ML to data from past projects also allows manufacturers to determine which configuration best meets their customers' specific needs.



Save money through predictive maintenance

Any disruption to production will impact the bottom line. Particularly when it is unexpected. Recent reports estimate that unplanned downtime costs industrial manufacturers $50 billion each year[3]. Even scheduled maintenance, if not planned efficiently, can reduce production capacity by 5-20%.

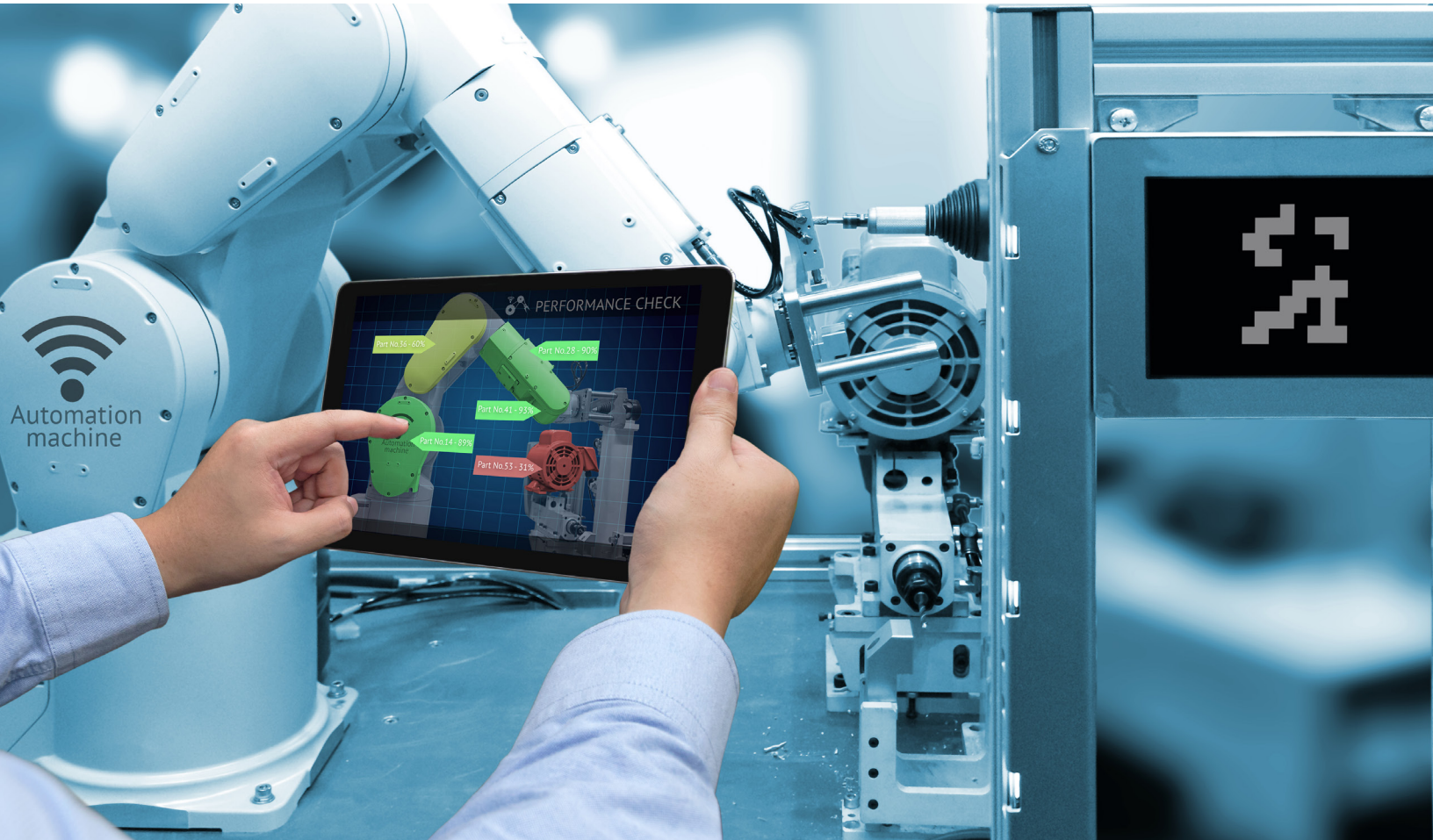
Maintenance within manufacturing plants is typically scheduled at predetermined intervals based on historical rates of wear or equipment failure. But IoT sensors can now help manufacturers identify signs of degradation, such as anomalies in temperature, vibrations, or conductivity, well before they impact production.

This not only enables manufacturers to get the longest possible life out of their equipment but also prevents unnecessary downtime. And as maintenance requirements can be identified earlier, and with much greater accuracy, repairs can be scheduled with minimal disruption to production.

Leading the way

Rolls-Royce uses advanced analytics to manage and service engines remotely. Sensors built into aircraft engines gather 70 million data points each year via AI and ML. They're now able to identify and correct potential performance issues in record time and simulate engine designs and production processes for rapid testing and iteration.[4]

[3] Deloitte, Making Maintenance Smarter: Predictive Maintenance and the Digital Supply Network
[4] Informatica, Using Big Data in Manufacturing to Drive Value in 2020 and Beyond



Accelerate time to insight

In many manufacturing plants, data from IoT devices, inventory management systems, software-as-a service (SaaS) solutions, and ERP systems is often held in silos, spanning multiple storage locations. Valuable time and resources may be required to transfer and consolidate that data for analysis. Whether to maintain compliance, identify anomalies, or review cost efficiencies, one thing is clear: The faster you can access insights, the faster you can take action.

A good solution is to set up a data hub to orchestrate data flow from all your IT systems to a centralized store for ease of analysis. Pure Storage® all-flash arrays are lightning fast and designed for this purpose.

Another benefit of this setup is the significant time and cost savings that it can enable by storing application data typically licensed per CPU—such as Oracle and SAP—in the data hub. In fact, according to a report by IDC[5], enterprises that transitioned their SAP SE workloads to a Pure Storage data hub could on average anticipate a 472% return on investment over three years. This was due not only to the reduction in license costs but also the savings in data reduction and management time.

[5] IDC, All-Flash with Pure Storage Enabling Organizations to Generate More Value with SAP While Reducing Cost of Storage

Determine feasibility and accelerate learning

A digital twin is a digital image of a physical object or process that helps to optimize business performance. Plant managers use them to determine the feasibility of a product before investing in it or to accelerate learning. In the automotive industry, digital twins are used in the production of autonomous vehicles to avoid road test time. By creating a simulation, the manufacturer can see whether it's efficient enough and compress learning cycles.

Another closely related concept is the digital thread, which is a data-based string of information about the life cycle of an asset or product, from design to build to in-the-field usage. Like blockchain, the digital thread can be used to assure its lineage. For consumer packaged goods (CPG), for example, it may help to identify fraudulent raw materials or finished goods. The digital thread also provides the digital twin with the data it needs to perform analyses.

While both of these concepts have been around for decades, the technology that powers them is only just emerging—for example, the integration of augmented reality (AR). There's no limit to the possibilities they offer, and AR is likely to become increasingly important.

Mitigate cyber-security risks

As manufacturing plants digitize, they face an increased risk of security threats. Systems that were once isolated are now connected to a broader IT landscape. These connections can expose manufacturers not only to cyber threats such as malware and bad actors but also to the greater likelihood of inadvertent errors as a wider pool of people require access to their systems.

The need for mature, in-depth security practices is paramount to ensure that only permitted users can access sensitive data and also to protect it in the event of a breach.

Having up-to-date technology (hardware, software, and processes) is critical. This includes provisions for least privilege access, access reviews, log collection, and analysis.

Data-protection practices, including regular snapshots and backups, are also required to protect against the pervasive threat of ransomware. Pure SafeMode snapshots store immutable copies of backup files which can only be accessed by Pure's Support team. In the event of an attack, an authorized user can contact Support through a secure channel to request a copy of the files for rapid restore.

Final thoughts

There's no denying that manufacturing is the world's economic engine, and data analytics has emerged as the key to keeping that engine ticking. With it, manufacturers can continuously uncover fresh insights and make informed decisions to help them remain competitive, develop agility, and accelerate time to market.

Ultimately, by adopting a comprehensive data strategy, organizations can rest assured that their data is in the right place, secure, and performing efficiently. It also enables them to realize the full potential of their data throughout its life cycle.

Pure Storage and DXC Technology are helping manufacturers modernize their infrastructure and capitalize on the full power of their data. We've enabled organizations all over the world to adopt next-generation technologies such as AI and ML to optimize business operations and reduce data infrastructure costs by an average of 30-50% and lower TCO by 50-60%.

Want to know more?
Contact your local DXC or Pure Storage representative.

About Pure Storage

Pure is redefining the storage experience and empowering innovators by simplifying how people consume and interact with their data. Pure's as-a-service model helps organizations to embrace the future of cloud and data flexibility with greater ease. Today, Pure is one of the fastest growing enterprise IT companies in history and boasts a Net Promotor Score of 83.5% – one of the highest in the IT sector.

About DXC Technology

DXC Technology (NYSE: DXC) helps global companies run their mission critical systems and operations while modernizing IT, optimizing data architectures, and ensuring security and scalability across public, private and hybrid clouds. With decades of driving innovation, the world's largest companies trust DXC to deploy our enterprise technology stack to deliver new levels of performance, competitiveness and customer experiences. Learn more about the DXC story and our focus on people, customers and operational execution at **www.dxc.technology**.

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