

Lenovo is Revolutionizing Productivity with AI by Driving Innovation with NVIDIA Omniverse for Digital Twins

Article

Organizations must embrace and adopt innovative technologies, such as Artificial Intelligence (AI) and digital twins, to seek a competitive advantage as they continue their Intelligent Transformation journey. [Accenture's Technology Trends 2022 report](#) shows that the worldwide digital twin platform market will grow from \$3.2 billion in 2020 to \$184.5 billion by 2030. The increasing adoption of the Internet of Things providing real-time data, advancements in AI and machine learning, and the growing demand for improved operational efficiency are key factors driving the growth of the digital twin market. Let's look closer at the purpose and importance of digital twins and explore why this solution might be right for you.

A digital twin is a fully simulated digital replica, or "twin," of a physical object or business process. Organizations can simulate, observe and optimize different scenarios to reduce costs, improve quality, and enhance customer satisfaction by creating a virtual twin of a physical object or process. Digital twin technology can be useful in many fields of work and applied to industries such as manufacturing, healthcare, automotive, energy, retail, etc. A digital twin can be a virtual replica of entire buildings, factories, distribution centers, retail stores, cities, or even the whole planet. Before companies deploy new products or offerings, they want to understand how they will behave in the physical, real-world environment. By using digital twins, they can create physically accurate representations of their real-world counterparts. Digital twin technology is increasingly combined with AI to create more sophisticated and intelligent systems and business processes automating insight and recommendations.

Here are some ways in which we see AI is being used to enhance digital twin technology:

1. **Predictive Maintenance:** Using AI algorithms to analyze real-time sensor data, digital twins can detect anomalies and predict when equipment will likely fail. This allows for more efficient maintenance and reduces downtime.
2. **Simulation and Optimization:** AI can adjust and optimize various simulated scenarios in a digital twin environment. For example, AI algorithms can apply different operating conditions, such as changing temperatures or humidity levels, to determine how the equipment will perform under those conditions. This capability helps optimize the equipment's performance and minimize energy consumption.
3. **Autonomous Systems:** Organizations can combine digital twin technology with AI to create autonomous systems that can make decisions and take actions on their own. For example, autonomous vehicles use digital twin technology to simulate their environment and AI algorithms to make decisions about driving behavior.
4. **Resource Allocation:** Organizations can combine digital twin technology with AI to optimize resource allocation. For example, in a manufacturing environment, AI algorithms can analyze data from digital twins to determine the most efficient way to allocate resources such as labor, materials, and equipment.

Digital Twins in Action

Digital twins continue to make inroads across many different types of industries and use cases. Retailers use digital twins to create better store layouts and designs that optimize the shopping experience for their customers. They are using digital twins to manage their inventory more efficiently and to help optimize energy usage throughout their stores to help reduce their carbon footprint. Automotive manufacturers use digital twins to optimize production processes, virtualize customer shopping experiences to offer their customers full customization options, and develop their autonomous vehicles. Also, Lenovo uses digital twins to simulate the design and performance of our products before they are built and to improve quality control in manufacturing.

Today, companies of all sizes use digital twins to simulate their operations, leveraging NVIDIA Omniverse, a platform for connecting and building custom 3D pipelines and metaverse applications. These simulations are visually accurate models of a customer's virtual world, allowing them to model their entire business operation. For example, [Predator Cycling](#) is a growing company that manufactures and designs high-end custom carbon fiber bicycles built for cycling enthusiasts and expert-level cyclists. Using the Lenovo ThinkStation and ThinkSystem portfolios, they are adopting [NVIDIA Omniverse Enterprise](#) to scale across diverse teams to create 1:1 digital twins of their products, significantly improving their workflows. Watch this [short video](#) to learn more.

Lenovo's gains momentum leveraging NVIDIA Omniverse digital twins

The following highlights Lenovo's pioneer collaboration with NVIDIA since last year's [GTC](#) (GPU Technology Conference) and our continued momentum:

- In a [March 2022 press release](#), Lenovo announced it is working with NVIDIA to develop data-center-scale solutions to power industrial digital twins.
- We jointly developed the Lenovo EveryScale OVX solution, a purpose-built NVIDIA Omniverse computing offering based on Lenovo Scalable Infrastructure (LeSI). This solution integrates Lenovo ThinkSystem servers designed to meet large-scale digital twins' demands from the data center. Lenovo Scalable Infrastructure is a framework for designing, manufacturing, integrating, and delivering data center solutions, focusing on high-performance computing, technical computing, and AI environments. The EveryScale OVX solutions from Lenovo offer customers a wide range of scalability to start small and scale up as needed.
- Lenovo announced new additions to the Lenovo Workstation portfolio, which are enabled with [NVIDIA RTX GPUs](#) to help deliver real-time virtual remote work capabilities into the hands of end-users.
- At [Tech World 2022](#), Yang Yuanqing, chairman and CEO of Lenovo, spoke about digital twins, virtual and physical workspaces, stating, "It's our evolution into the combination of virtual and physical worlds."

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Martin W Hiegl is the Director of HPC Customer Solutions at Lenovo, where he is responsible for the global High-Performance Computing (HPC) and Artificial Intelligence (AI) products and business line. Martin is based in Stuttgart, Germany – the home of the Lenovo HPC & AI Innovation Center. His organization of Product Managers, Solution Architects, and Application Engineers are dedicated to driving Lenovo's leadership position in HPC and AI, utilizing their extensive experience of technology, Supercomputer solution design and application performance.

Martin holds a degree in Business Informatics from Baden-Wuerttemberg Cooperative State University in Stuttgart and has more than 15 years of experience in the industry. After joining IBM as a member of the HPC Sales Team, he held various Sales Leadership positions before becoming a part of Lenovo in 2015 as part of the IBM System x acquisition. Martin is passionate about driving innovation in HPC technology and solutions, helping clients tackle humanities greatest challenges and making a positive impact on the world.

Related product families

Product families related to this document are the following:

- [Artificial Intelligence](#)
- [High Performance Computing](#)
- [ThinkSystem SR675 V3 Server](#)

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