



HYBRID WORK SOLUTIONS FOR MANUFACTURING AND PRODUCT DEVELOPMENT



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As the pandemic has accelerated the global transition to hybrid work, product development professionals in the manufacturing industry are facing some of their greatest business challenges while striving to bring the next generation of products to the world. Delivering innovative new solutions while accelerating time to market is crucial for maintaining a competitive advantage and driving growth in the market. Design teams now face increased pressure to collaborate within their organization and with their suppliers and require high-performance computing (HPC) to innovate, iterate, and solve problems at the speed of light.

Manufacturing companies—from aerospace and aviation to automotive, electronics, medical devices, and industrial machinery—are adopting technologies to establish a hybrid workplace that enables their distributed teams to collaborate on designing and producing a wide range of products. However, the size and complexity of models and assemblies required for their work, combined with workstation performance and network limitations, can inhibit productivity, increasing the risk of delayed product launches, cost overruns, and supply chain pitfalls.

Engineers and designers also require the flexibility to work away from their physical workstations, accessing the applications and data they need on any device, at any location. With a virtualization strategy as a critical business priority, geographically-dispersed teams can secure files and centralize data in the data center or cloud, enabling teams to work and collaborate from anywhere.

Manufacturing organizations must also provide superior graphics performance to designers and engineers, with the same responsive experience they expect from a physical workstation. The ability to view and work with massive engineering datasets and graphics intensive applications, without lag or delay, translates to increased efficiency and productivity, ultimately helping manufacturers bring better products to market faster.



Image courtesy of Alberto Luque Marta

NVIDIA SOLUTIONS: PERFORMANCE FROM ANYWHERE

Engineers and designers can now work untethered from their physical workstations, regardless of their location. Using thin clients—or any device of their choice—NVIDIA delivers the performance and data access they need to run computer-aided design (CAD), computer aided manufacturing (CAM), computer-aided engineering (CAE), rendering/visualization or product lifecycle management (PLM) applications. NVIDIA's hybrid work solutions provide remote workers the same responsive experience as a physical workstation. **NVIDIA® RTX® laptops**, **NVIDIA virtual GPU (vGPU) technology**, and **NVIDIA Omniverse**. Enterprise deliver superior CAD graphics performance and acceleration for CAE simulation software. With NVIDIA vGPU, engineers can work from anywhere, use any device to access 3D-capable virtual workstations, and maintain their productivity

as a hybrid workforce. Companies can onboard new contractors in minutes versus days, while ensuring the security of intellectual property. Additionally, businesses can centralize Product Lifecycle Management (PLM) solutions in the data center for greater consistency, consolidation of data and oversight for design changes.

NVIDIA vGPU software brings the power of NVIDIA GPUs to virtual desktops, apps, and workstations, accelerating virtual desktop infrastructure (VDI) performance, graphics, and computing. With data stored securely in the data center, NVIDIA solutions give engineers and designers access to virtual workspaces from anywhere, on any device, with a native PC-like user experience, for graphics-intensive applications, such as CAD, rendering, and CAE.

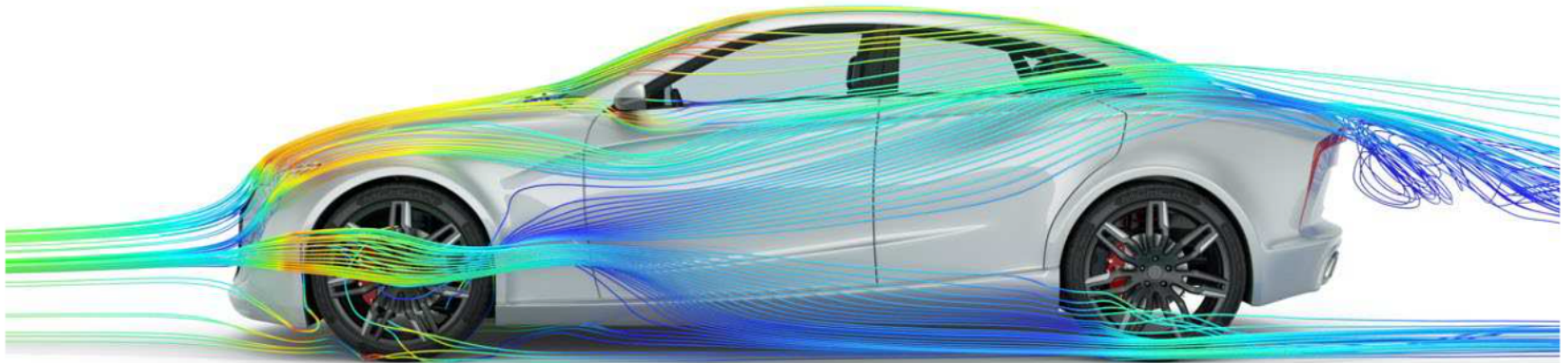


Image courtesy of Altair.

HYBRID WORK WITH NVIDIA: SOLUTIONS OVERVIEW

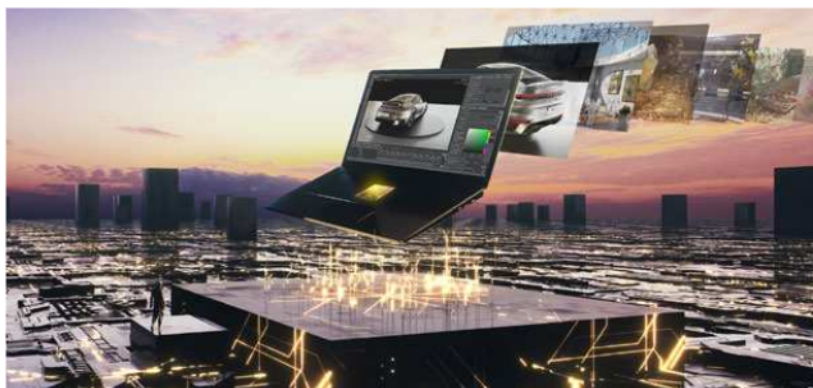
NVIDIA hybrid work solutions are optimized for designers and engineers. From laptops and desktops to workstations, servers, and the cloud, GPUs provide users with enhanced mobility, flexibility, and performance for graphics and visualizations, with improved security and IT management.

NVIDIA RTX Professional Laptops

NVIDIA RTX GPU-powered laptops and mobile workstations, accelerate workflows for all phases of product design. Boost productivity, speed up time to insight, and lower the cost of projects with the flexibility and mobility of a laptop.

NVIDIA Virtual PC (vPC) and Virtual Apps (vApps)

NVIDIA vPC and vApps for general-purpose VDI run Microsoft Windows and modern productivity applications, streaming CAD, CAE or rendering apps, interactive learning platforms and teleconferencing.

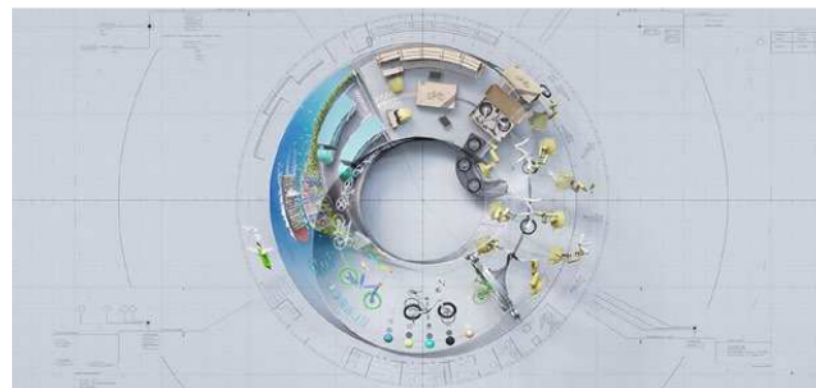


NVIDIA RTX Virtual Workstation (vWS)

NVIDIA RTX Virtual Workstation (vWS) software delivers the most powerful virtual workstation imaginable with the same graphics and compute performance in a virtualized environment as a desktop workstation. Virtualization improves productivity, collaboration, security of intellectual property, and remote access for design and engineering teams.

NVIDIA Omniverse

NVIDIA Omniverse is a cloud-native, multi-GPU enabled open platform for virtual collaboration and real-time photorealistic simulation. Individual users accelerate design workflows with one-click interoperability between leading software tools, while hybrid work teams seamlessly collaborate in an interactive, simulated world—even when using multiple software tools. Omniverse is currently in open beta and available for free [download](#).



HYBRID WORK WITH NVIDIA: SOLUTIONS OVERVIEW

NVIDIA RTX Virtual Workstations (vWS) in the Cloud

Designers can leverage the simplicity and flexibility of AWS, Google Cloud, and Azure Cloud with instances of NVIDIA vWS available in the public cloud. Desktop-as-a-service (DaaS) solutions like Windows Virtual Desktop and Horizon Cloud ease manageability allowing new users to be supported quickly and instances to be deprovisioned just as quickly, so manufacturing companies only pay for what they need. With support for the latest NVIDIA GPUs by global cloud service providers, users can run graphics intensive applications, such as CAD, simulation, and rendering in the cloud.

Accelerated Computing for Professional Visualization

NVIDIA-Certified Systems™, for Professional Visualization is a highly flexible reference design for servers running NVIDIA GPUs with the option of NVIDIA vWS software. Designers and engineers leverage the performance of high-performance GPUs to increase interactivity and visual quality, while centralizing GPU resources. NVIDIA RTX-accelerated virtual desktops cater to production specific requirements—leveraging vWS software to reallocate GPUs to different users easily, whether they're creating product designs virtually, running simulations, or rendering massive datasets..



NVIDIA Data Science Workstations

Researchers can achieve a performance boost and transform massive amounts of data into insights with NVIDIA-powered data science workstations. Built on NVIDIA RTX GPUs with accelerated CUDA-X AI™ data science software, these technologies deliver a new breed of fully integrated desktop and mobile workstations for data science. With support for leading data processing and machine learning libraries, researchers can speed up data preparation, model training, and data visualization.

NVIDIA vCS

NVIDIA Virtual Compute Server (vCS) is ideal for data scientists and analysts running computationally-intensive workloads—including artificial intelligence (AI), data science, and high-performance computing (HPC) applications.



CUSTOMER USE CASES WITH VIRTUALIZED WORKLOADS



DENSO
Crafting the Core

GRIMME

BELL TEXTRON

Bell Textron is an aerospace company that specializes in the manufacture of military and commercial helicopters. Headquartered in Fort Worth, Texas, the company has teams across North America, Canada, Europe, and Asia. Several years ago, Bell Textron deployed NVIDIA GPU-powered virtual workstations to speed up graphics-intensive applications for remote teams. Recently, it upgraded to more powerful NVIDIA GPU technology improving performance and reducing costs.

DENSO

DENSO, a top tier automotive supplier, faced challenges with managing the physical workstations of six different environments to accommodate multiple customer projects simultaneously. The team wanted to consolidate these environments so engineers could work efficiently and desktop management was more streamlined. With NVIDIA vWS, DENSO's IT team delivered virtual workstations that performed just like physical workstations when dealing with large datasets and graphics-intensive software. Users are so satisfied with the new virtual workstation environment that DENSO has seen a 250 percent uptick in usage for the VDI environment.

GRIMME

GRIMME is a global leader in the development and manufacturing of sophisticated farming equipment. To reduce costs, the company replaced CAD workstations with thin clients powered by NVIDIA vGPU technology. Realizing significant cost savings of more than 40 percent, GRIMME decided to roll out a virtualized environment powered by NVIDIA GPUs to its entire staff. Today, engineers, shop floor technicians, field service mechanics, and executive staff all have anytime-anywhere access to CAD software and data, as well as all associated engineering and production applications.



HITACHI
Inspire the Next

Hitachi Construction Machinery

Hitachi Construction Machinery (HCM), a leading manufacturer of construction and transportation machinery, has been designing construction machines for nearly 50 years. HCM was one of the industry's first to introduce NVIDIA vWS software at Tsuchiura Works, one of the company's core factories. With the NVIDIA vWS environment, HCM built VDI that uses NVIDIA vGPU technology to improve the design and development of construction equipment and reduce management costs. Introducing VDI also allowed HCM to upgrade their operating system (OS) and applications, which had previously taken a long time, with a small team in a short period of time. Based on the success of the virtualized 3D CAD environment, HCM introduced NVIDIA vPC across the company to virtualize their 2D advanced CAD software. Going forward, HCM also plans to use NVIDIA vGPU for collaboration with its domestic and overseas group companies.

HONDA

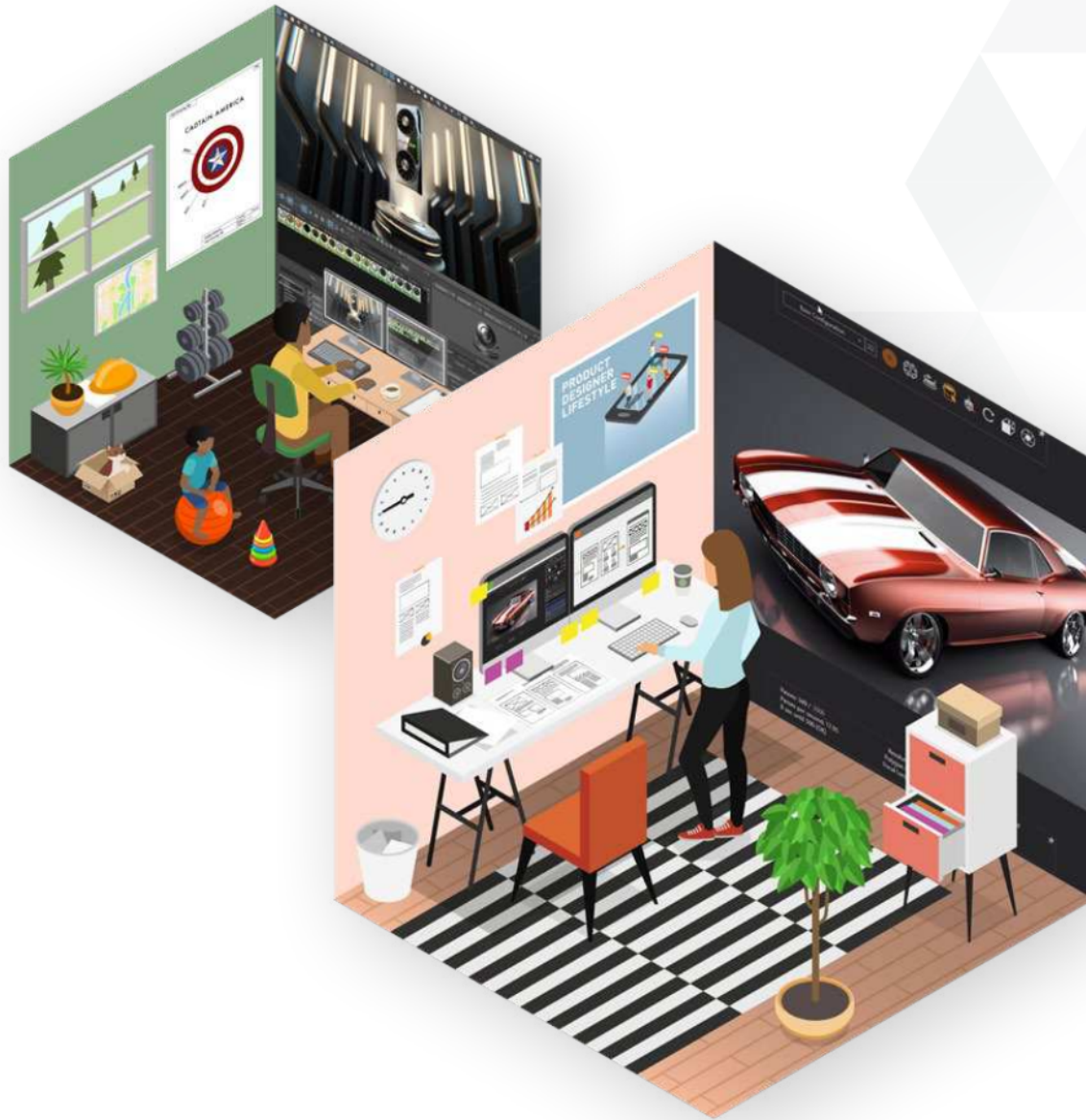
Honda

Honda R&D Co. Ltd. is the research and development organization for a global transport action equipment manufacturer, Honda Motor Co. Ltd. Honda R&D introduced VDI-based on VMware Horizon, NVIDIA vWS, and NVIDIA GPUs to its automobile research and development center. With NVIDIA vGPU technology, Honda R&D has increased productivity and performance in research and development.



Mitsubishi Motors

Mitsubishi Motors adopted NVIDIA vWS for its compatibility with over 200 design-related applications. To provide unique products and services, the Engineering IT Department of the Global IT Division introduced NVIDIA vGPU technology into the Automotive Development and Production Technology Departments. By virtualizing the design environment where tools, such as Dassault Systèmes CATIA, a high-end 3D CAD software used on high-performance workstations, were used, the department transformed their flexible work styles and operational management.



WORK FROM ANYWHERE WITH NVIDIA

NVIDIA hybrid work solutions enable **manufacturing** companies to keep their engineers productive with the compute power of GPUs, while working from home or at the office.

Learn more about NVIDIA's remote working solutions at: nvidia.com/remote-work

