IT MAKING AI WORK

AI is transforming every industry, but many companies are starting their journey without an IT-led strategy. The result is silos of innovation that can't scale efficiently. The right AI infrastructure strategy attracts talent, consolidates resources, and drives innovation.

AI at scale puts unprecedented demands on your data center. Powering your company's business transformation with machine and deep learning requires infrastructure that's optimized for the unique demands of AI.

RACK DESIGN
Optimized for dense compute clusters running close to operational limits, requiring advanced cooling technology.

NETWORKING
High-bandwidth, low-latency fabrics based on NVIDIA Mellanox HDR InfiniBand.

STORAGE
Support for very large datasets with millions of objects, requiring very high input/output operations per second (IOPS) to keep GPUs "fed."

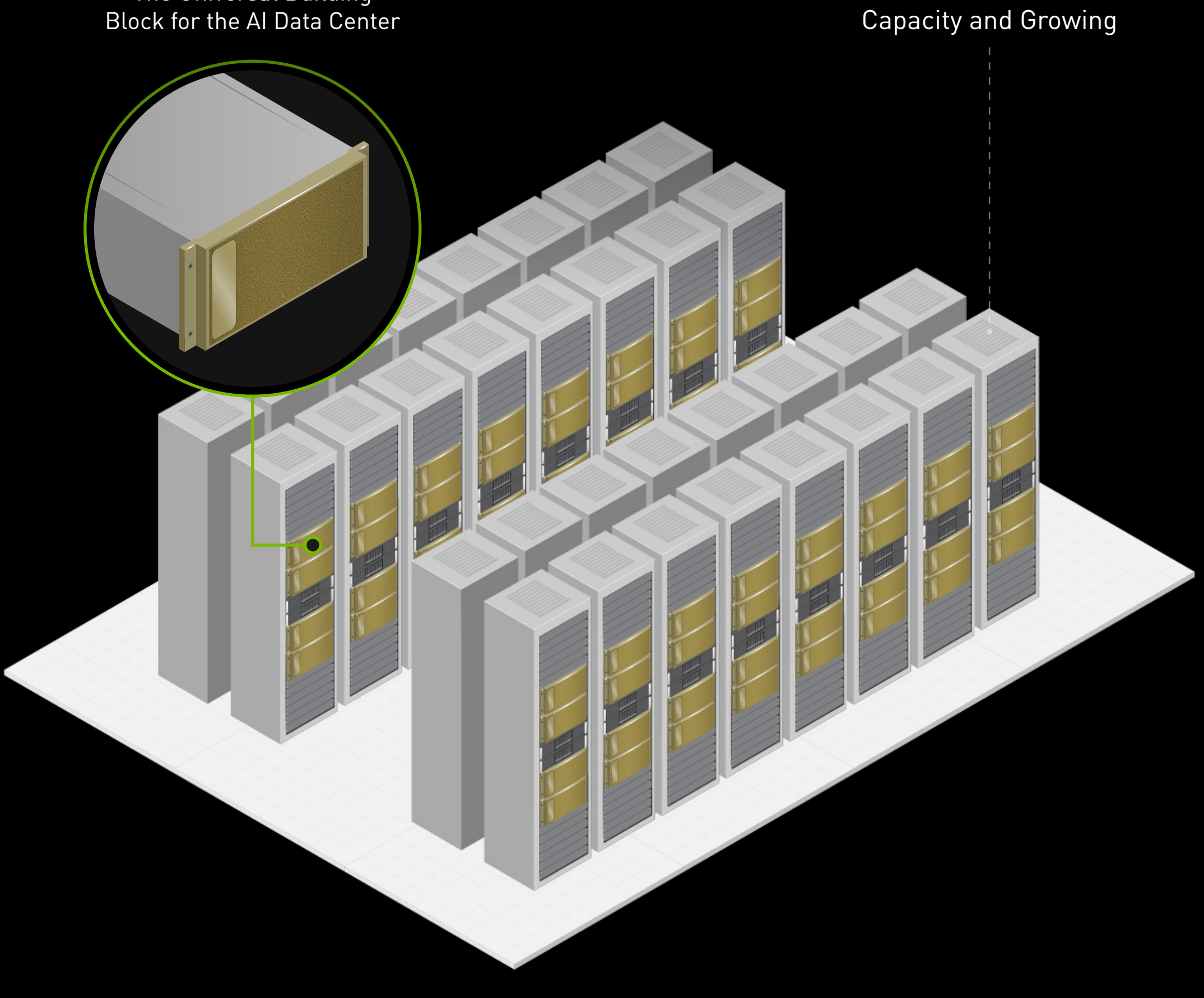
FACILITIES
Assume higher watts per rack but gain much greater floating-point operations per second (FLOPS) per watt with reduced footprint.

SOFTWARE
Performance at scale requires "cluster-aware" software and management.

We've already built the world's most advanced AI infrastructure. We call it SATURNV and it represents all that we've learned designing and deploying scalable AI in the world's largest data centers.

NVIDIA DGX™ A100
The Universal Building Block for the AI Data Center

4.6 ExaFLOPS Total Capacity and Growing



NVIDIA SELENE RESEARCH CLUSTER WITHIN SATURNV
No. 2 on the Green500 list for supercomputers at 20.5 gigaflops per watt
No. 7 in the TOP500 of supercomputers at 27.5 petaFLOPS on the LINPACK Benchmark

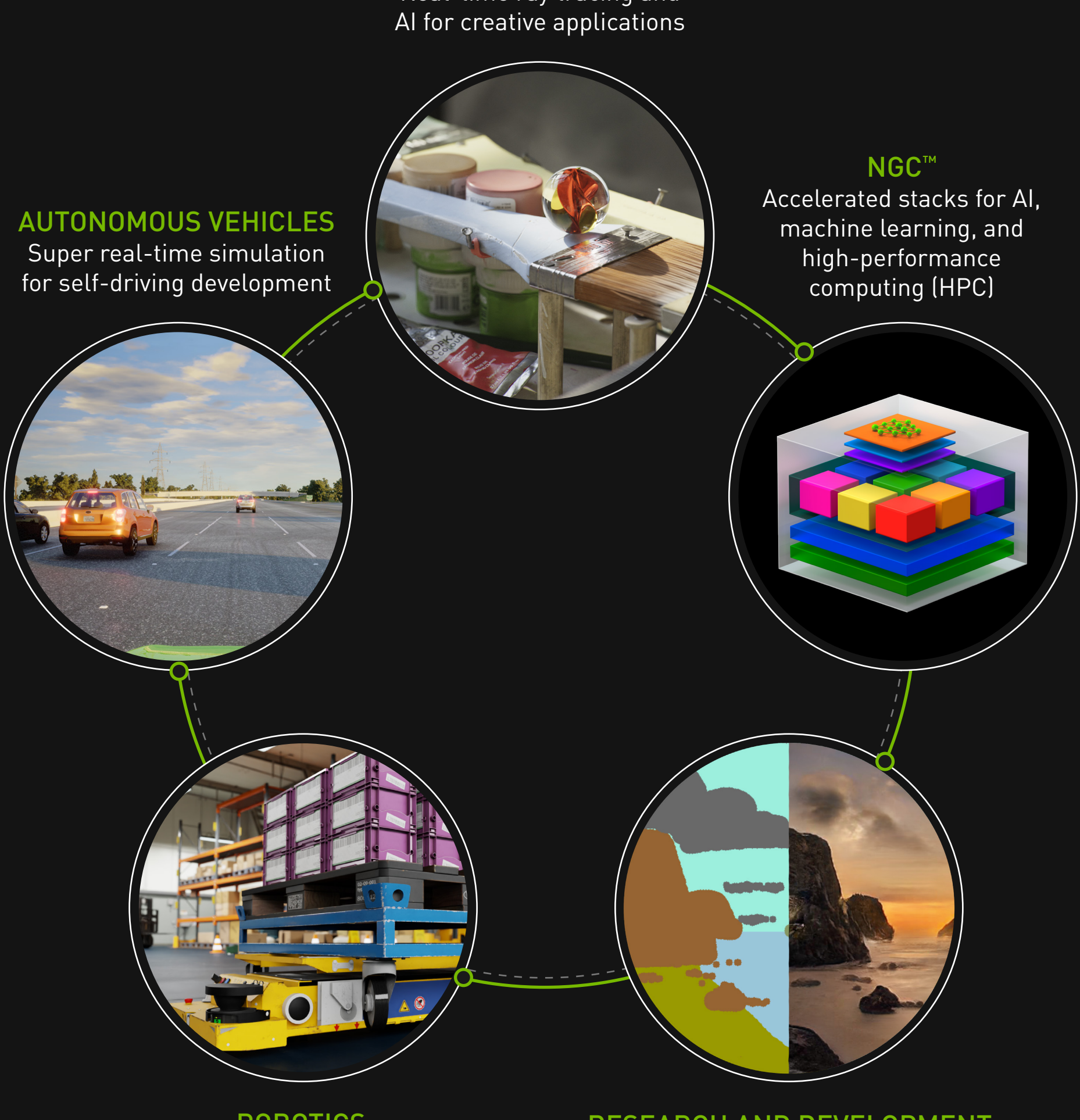
SCALABLE AI AT WORK

At NVIDIA, IT infrastructure built on NVIDIA DGX, powers the most important NVIDIA work; NVIDIA DGX infrastructure and revolutionary performance drives the AI behind rapid advancements across industries from self-driving cars, to maximizing product quality and increasing customer satisfaction and driving the next breakthroughs in AI research. Every day, NVIDIA's developers, operations, and customers benefit from its revolutionary performance, effortless productivity, and pervasive reach across our business.

NVIDIA RTX™ GRAPHICS
Real-time ray tracing and AI for creative applications

AUTONOMOUS VEHICLES
Super real-time simulation for self-driving development

NGC™
Accelerated stacks for AI, machine learning, and high-performance computing (HPC)



ROBOTICS
Simulation of the real world to train robots

RESEARCH AND DEVELOPMENT
Catapulting the graphics industry "into the era of AI"

RECORD-SETTING PERFORMANCE

In MLPerf v0.7 training, the leading benchmark suite for AI performance, NVIDIA DGX SuperPOD and DGX systems set world records in all 8 of the at scale benchmarks for commercially available systems. This winning infrastructure solution was built following the DGX SuperPOD reference architecture and was assembled in under 1 month.

RECOMMENDATION (DLRM)
3.33 mins
Delivers personalized results in user-facing services such as social media or e-commerce websites by understanding interactions between users and service items, like products or ads.

NATURAL LANGUAGE PROCESSING (BERT)
0.81 mins
Understands text by using the relationship between different words in a block of text. Allows for question answering, sentence paraphrasing, and many other language-related use cases.

REINFORCEMENT LEARNING (MINIGO)
17.07 mins
Evaluates different possible actions to maximize reward using the strategy game Go played on a 19x19 grid.

TRANSLATION (NON-RECURRENT) TRANSFORMER
0.62 min
Translates text from one language to another using a feed-forward neural network.

TRANSLATION RECURRENT (GNMT)
0.71 min
Translates text from one language to another using a recurrent neural network (RNN).

OBJECT DETECTION
10.46 mins
(heavy weight) Mask R-CNN
0.82 min
(light weight) SSD
Finds instances of real-world objects such as faces, bicycles, and buildings in images or videos and specifies bounding box around each.

IMAGE CLASSIFICATION (RESNET-50 V1.5)
0.76 min
Assigns a label from a fixed set of categories to an input image, i.e. applies to computer vision problems such as autonomous vehicles.

Test Platform: NVIDIA DGX SuperPod, multi-node cluster built with NVIDIA DGX A100. DGX A100 configuration: Dual socket Epyc 7742, 1TB System memory, Mellanox ConnectX-6 VPI HDR InfiniBand/Ethernet, and 8x NVIDIA A100 Tensor Core GPU

Max Scale: All results from MLPerf v0.7 using NVIDIA DGX A100 (8xA100s). MLPerf ID Max Scale: ResNet50 v1.5: 0.7-37, Mask R-CNN: 0.7-28, SSD: 0.7-33, GNMT: 0.7-34, Transformer: 0.7-30, MiniGo: 0.7-36, BERT: 0.7-38, DLRM: 0.7-17.

MLPerf name and logo are trademarks. See www.mlperf.org for more information.

BUILD YOUR OWN WORLD-CLASS AI INFRASTRUCTURE

Leverage NVIDIA's modular reference architecture, NVIDIA DGX SuperPOD™, based on insights from SATURNV and powered by DGX A100 systems and our ecosystem of trusted IT solutions providers.

LEAD YOUR OWN AI TRANSFORMATION

We can help you develop and execute an AI infrastructure strategy. CIOs have the opportunity to enable success for their AI businesses by developing and executing a GPU-accelerated AI infrastructure strategy — one that will make IT the trusted partner in achieving transformational outcomes now and in the future.