



# NVIDIA GTC – NOVEMBER 2021 **HIGHLIGHTS**



“NVIDIA has steadily put in place the pieces to create a platform that enables AI in a broad range of uses and to make it widely accessible to developers and enterprises. At the GTC conference this week, the company is continuing this steady drumbeat, showing how its offerings will enable AI in everything from robots and avatars to virtual worlds, supply chains and the emerging field of quantum computing.”

NEW STACK

# “NVIDIA FULLY DEMONSTRATES ITS STRENGTH AT GTC”

DTTIME

270,000

REGISTRATIONS

25,000,000

KEYNOTE VIEWS

3,500

PRESS ARTICLES

500

TALKS

100

TOP UNIVERSITIES

50

PARTNER SPONSORSHIPS

“AT GTC, NVIDIA GAVE ME HOPE FOR MY PREFERRED FUTURE”

COMPUTERWORLD



A Vision  
of the Metaverse  
Tim Sweeney, et al



Accelerate Computing  
with CUDA Python  
Mike McCarty



Deep Learning:  
What the Future Might Hold  
Ilya Sutskever



Advancing Scientific  
Discoveries with AI  
Bharatkumar Sharma



Accelerating the Path  
to Zero Collisions  
Ödgård Andersson



Can Neural Networks  
Learn to Reason?  
Samy Bengio



Imagineering  
the Metaverse  
Bei Yang

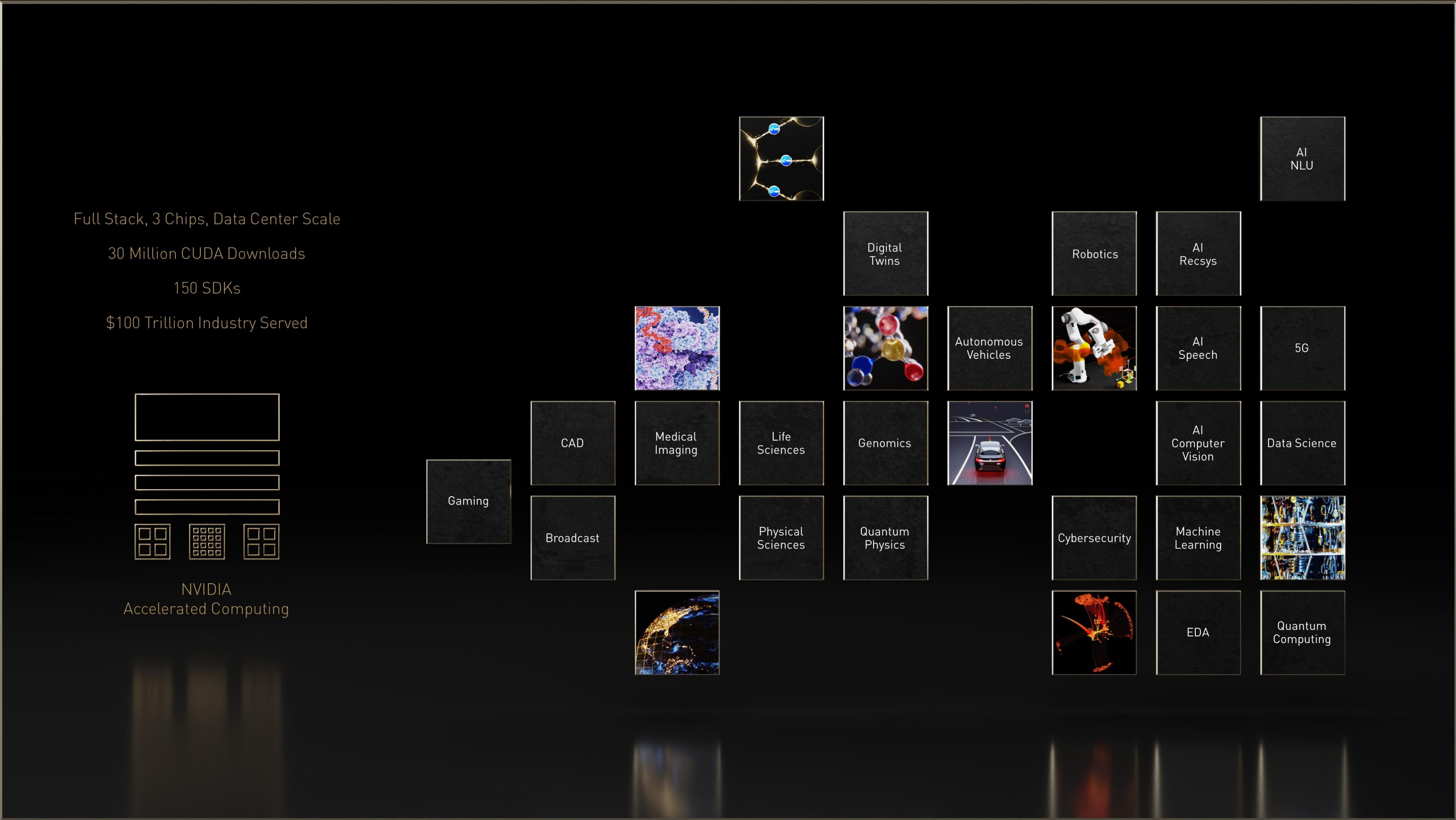


AI4Science  
Anima Anandkumar

“Nearly 3 million developers rely on on NVIDIA’s platform to do their life’s work. At GTC, we hosted 500 talks from the leading thinkers in AI, computer graphics, scientific computing, self-driving cars, robotics, and more.”

“THE MOST IMPORTANT THING TO UNDERSTAND ABOUT NVIDIA IS THAT IT IS NOT A HARDWARE COMPANY, AND NOT A SOFTWARE COMPANY. IT IS A COMPANY THAT INTEGRATES BOTH.”

STRATECHERY



“The magic of accelerated computing comes from the combination of CUDA, the acceleration libraries of algorithms that speed up applications, and the distributed computing systems and software that scale processing across entire data centers.

“We have been advancing CUDA and the ecosystem for 15 years and counting. We optimize across the ‘full stack,’ iterating between GPU, acceleration libraries, systems, and applications, continuously, all the while expanding the reach of our platform by adding new application domains that we accelerate.”

“NVIDIA IS ADVANCING MACHINE LEARNING, AI, ROBOTICS AND AUTONOMOUS VEHICLE TECHNOLOGIES AT A RATE CURRENTLY UNMATCHED IN THE MARKETS IT SERVES”

FORBES

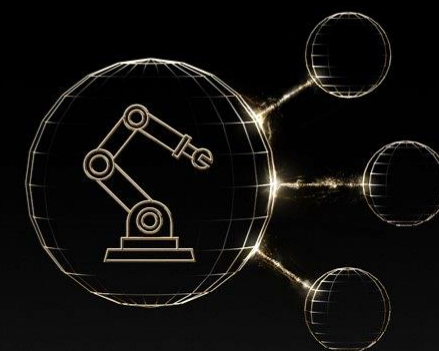
Data-Center-Scale  
Computing



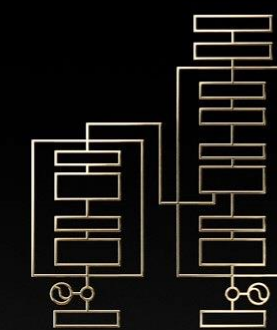
Million-X  
Science



Omniverse



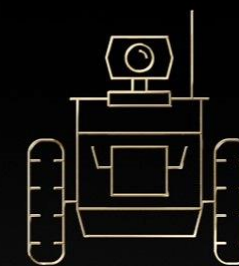
AI



Avatars



Robotics &  
Self-Driving Cars



“Data-center-scale computing. Million-X science. Omniverse. AI. Avatars. Robotics and Self-driving cars.

“At GTC, we announced initiatives across the most important trends in the industry and highlighted the advances of NVIDIA’s platform, which now boasts over 150 SDKs, with 65 launched at the event.”

# “NVIDIA REOPT OFFERS NEW TOOLS FOR DYNAMIC LOGISTICS AND SUPPLY CHAIN MANAGEMENT FOR A WIDE RANGE OF INDUSTRIES”

INFOCHANNEL



“One of the new libraries we introduced is ReOpt, an accelerated solver for operations research optimization problems, like delivery vehicle routing and warehouse picking and packing.

“Operations optimization is needed for last-mile delivery, but also warehouse and manufacturing logistics. It is vital to the \$10 trillion logistics industry at the heart of the world’s supply chain.

“ReOpt is over 100X faster, and scales up to 1000s of items, while providing a world-class optimal solution.”

# “NVIDIA HAS BUILT A CUQUANTUM DGX APPLIANCE FOR SPEEDING UP QUANTUM CIRCUIT SIMULATIONS”

THE NEXT PLATFORM

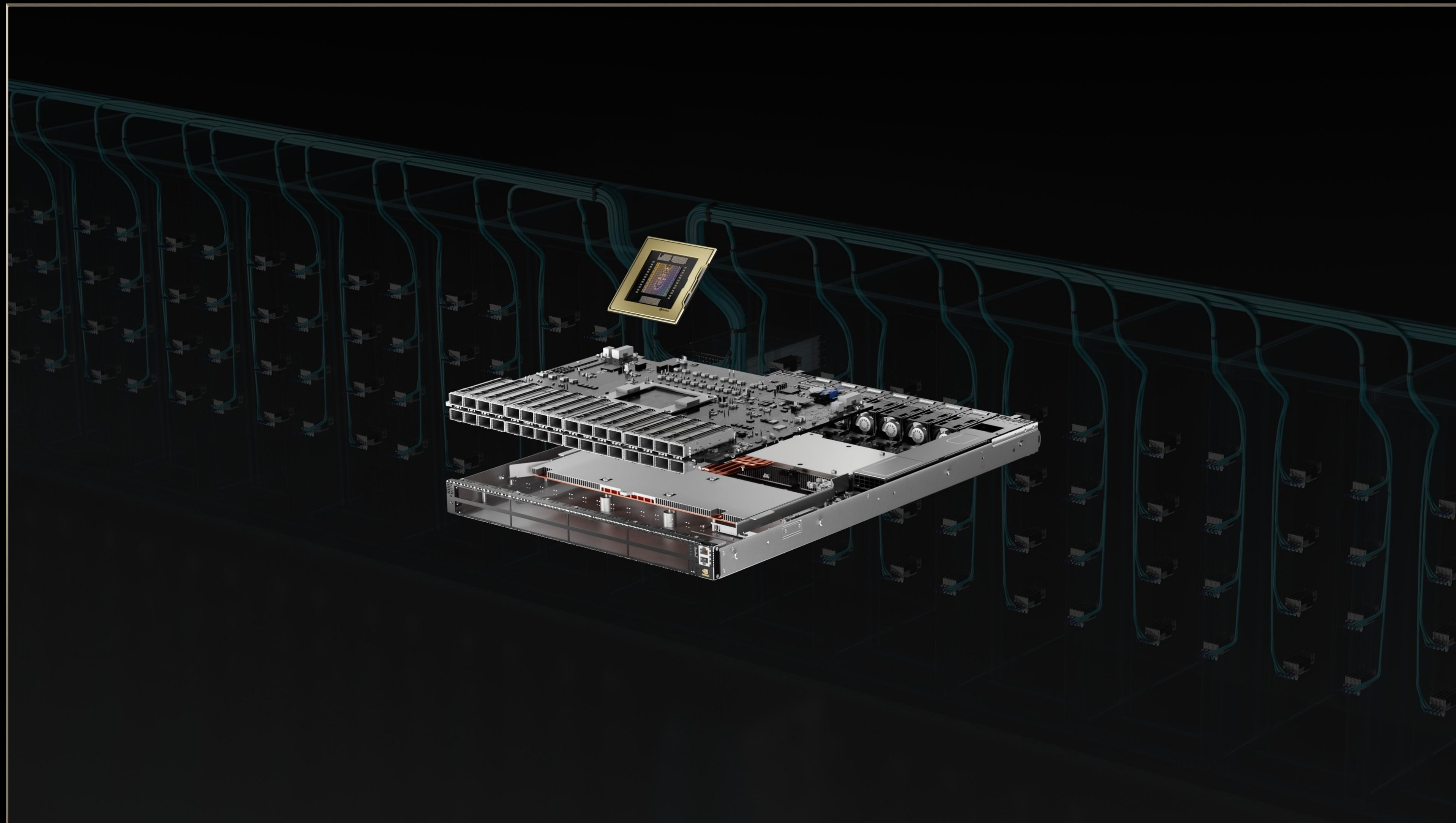


“Quantum computing, relying on the natural quantum physics phenomena of superposition and entanglement, has the potential to solve problems that grow with combinatorial complexity. Nearly 100 teams around the world are doing research in quantum computing.

“We created the cuQuantum DGX appliance, with an acceleration library for quantum computing workflows, that speeds up quantum circuit simulations using state-vector and tensor-network methods.”

# “NVIDIA IS PUSHING HIGH-PERFORMANCE COMPUTING INTO OVERDRIVE WITH NVIDIA QUANTUM-2”

SILICON ANGLE



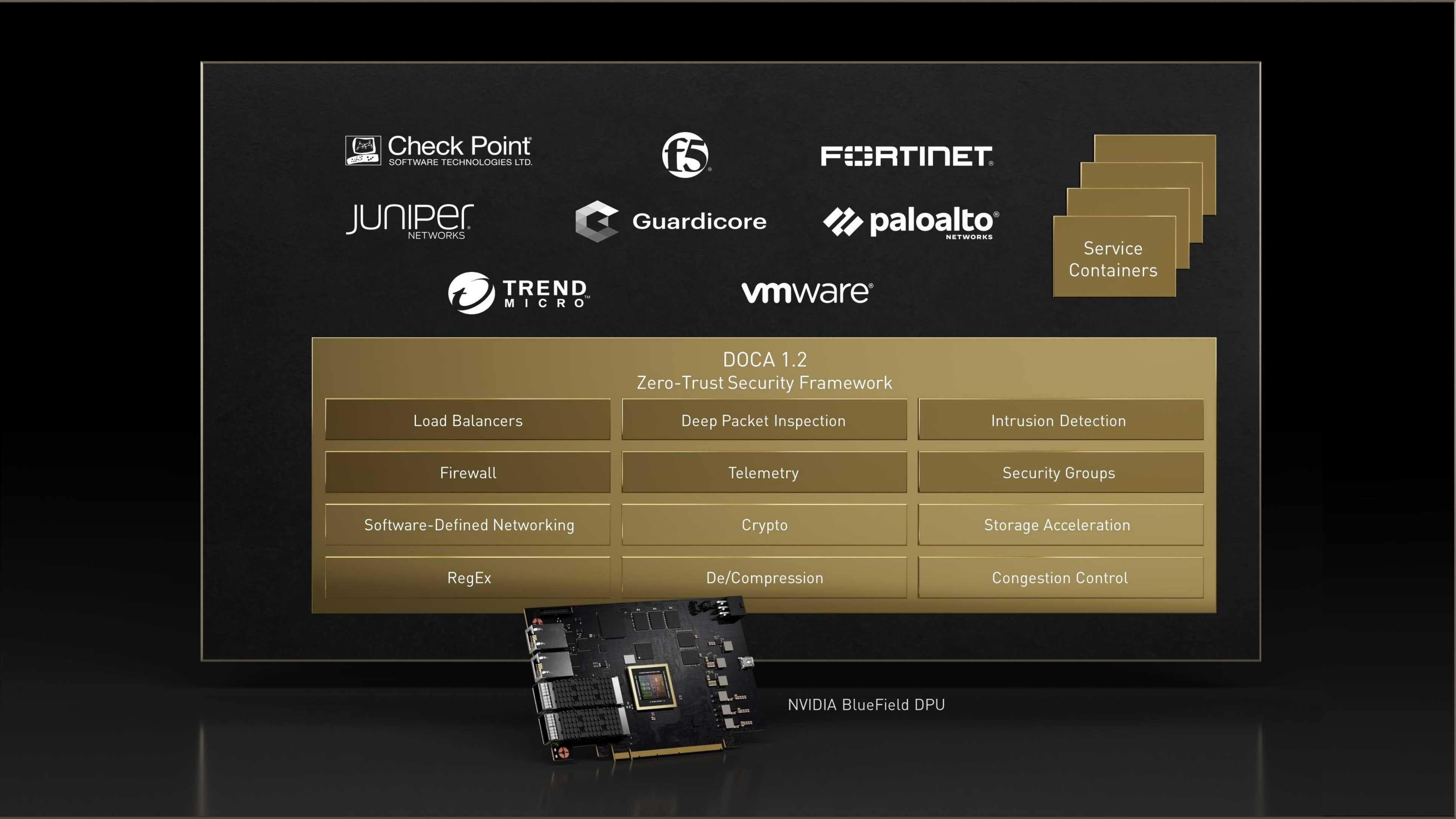
“In distributed computing, the network is the vital central nervous system of the computer.

“NVIDIA Quantum-2, the most advanced end-to-end networking platform ever built, is a 400 Gbps InfiniBand platform and consists of the Quantum-2 switch, the ConnectX-7 NIC, the BlueField-3 DPU, and software for the new architecture.

“Quantum-2 is the first networking platform to offer the performance of a supercomputer and the shareability of cloud computing.”

“THE ZERO-TRUST PLATFORM COMBINES THREE TECHNOLOGIES — NVIDIA BLUEFIELD DPUS, NVIDIA DOCA AND THE NVIDIA MORPHEUS CYBERSECURITY AI FRAMEWORK”

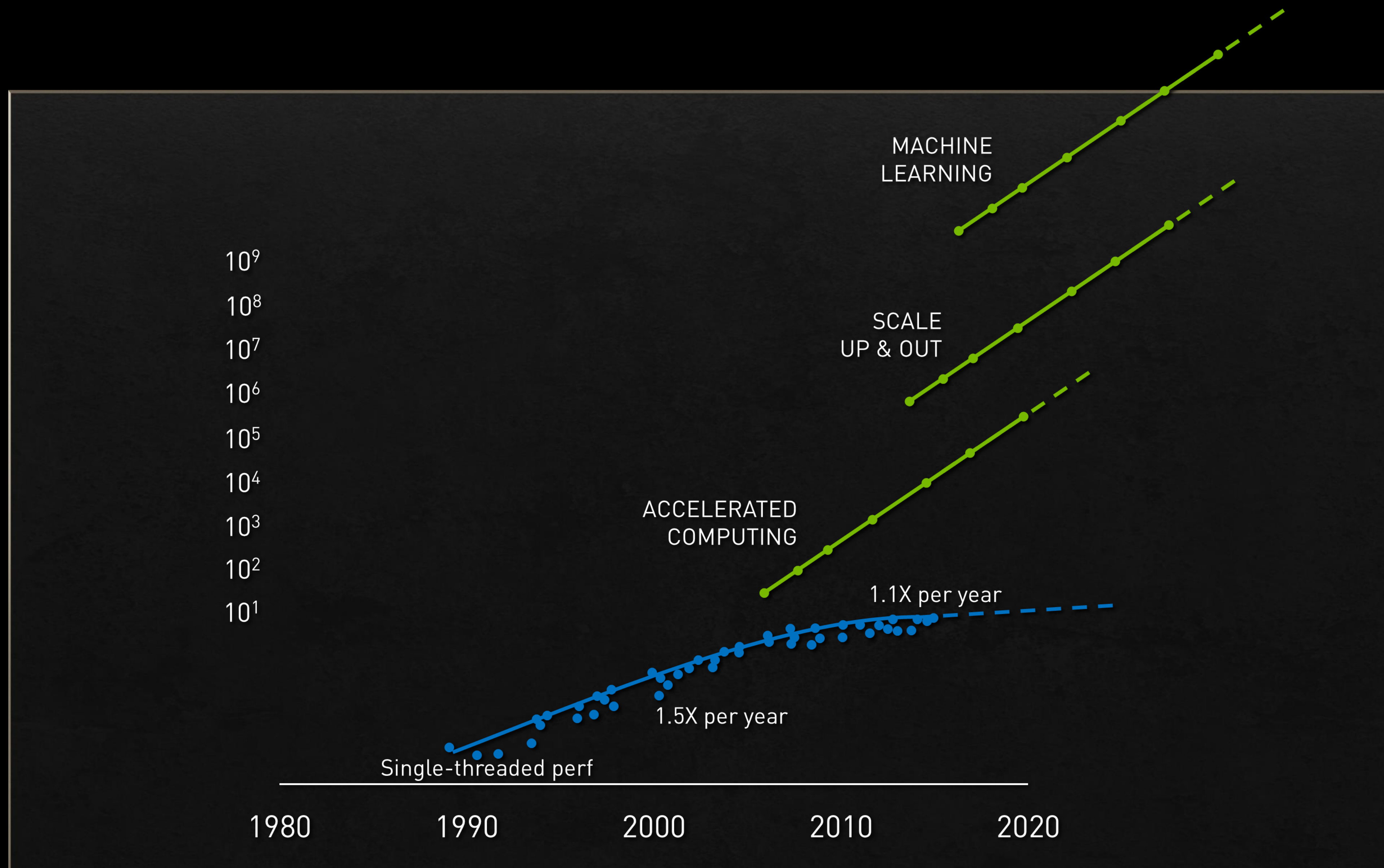
INTERNATIONAL SECURITY JOURNAL



“Cybersecurity is a top concern to companies and nations. We announced a three-pillar zero-trust framework. BlueField isolates applications from infrastructure. DOCA 1.2 enables next-generation distributed firewalls. And Morpheus, assuming the intruder is already inside, uses the superpowers of accelerated computing and deep learning to detect intruder activities.”

# “NVIDIA'S TRANSFORMATION TOWARDS A FULL-STACK DATA CENTER DRIVES A MILLION-FOLD LEAP FORWARD IN GPU COMPUTING”

DIGITIMES

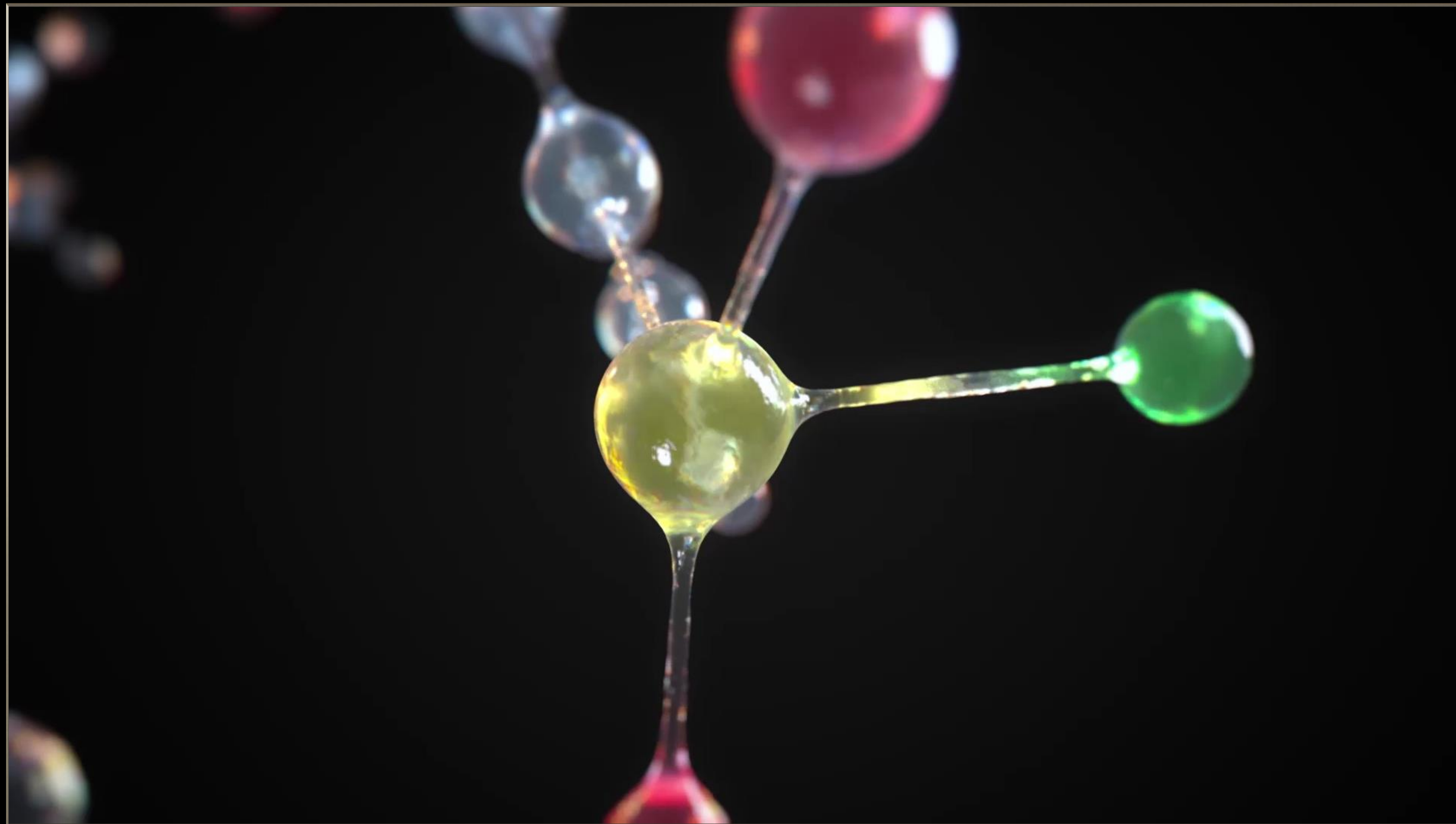


“Three connected dynamics will give us a million-x leap in computational sciences: accelerated computing, data-center-scale computing, and AI.

“At GTC, we showcased how scientists and researchers are beginning to harness this power for breakthroughs in drug discovery and climate science.”

“NVIDIA HAS SUCCESSFULLY MADE THE GPU ONE OF THE MOST IMPORTANT PARTS OF THE FUTURE OF COMPUTING”

CREATIVE STRATEGIES



“The future of drug discovery is computational, end-to-end modeling of the disease pathway, the genes involved, the drug-target interactions, and the off-target interactions.

“With the confluence of million-x acceleration, ML for protein and chemical structure prediction, and physics-ML simulation approaches, we’re witnessing the dawn of a biology revolution.

“Entos is a company focused on using machine learning and computing to revolutionize drug discovery.”

# “NVIDIA IS LAUNCHING PLATFORMS, SOFTWARE AND COMPUTING TOOLS TO HELP ENABLE THE FUTURE OF VIRTUAL WORLDS”

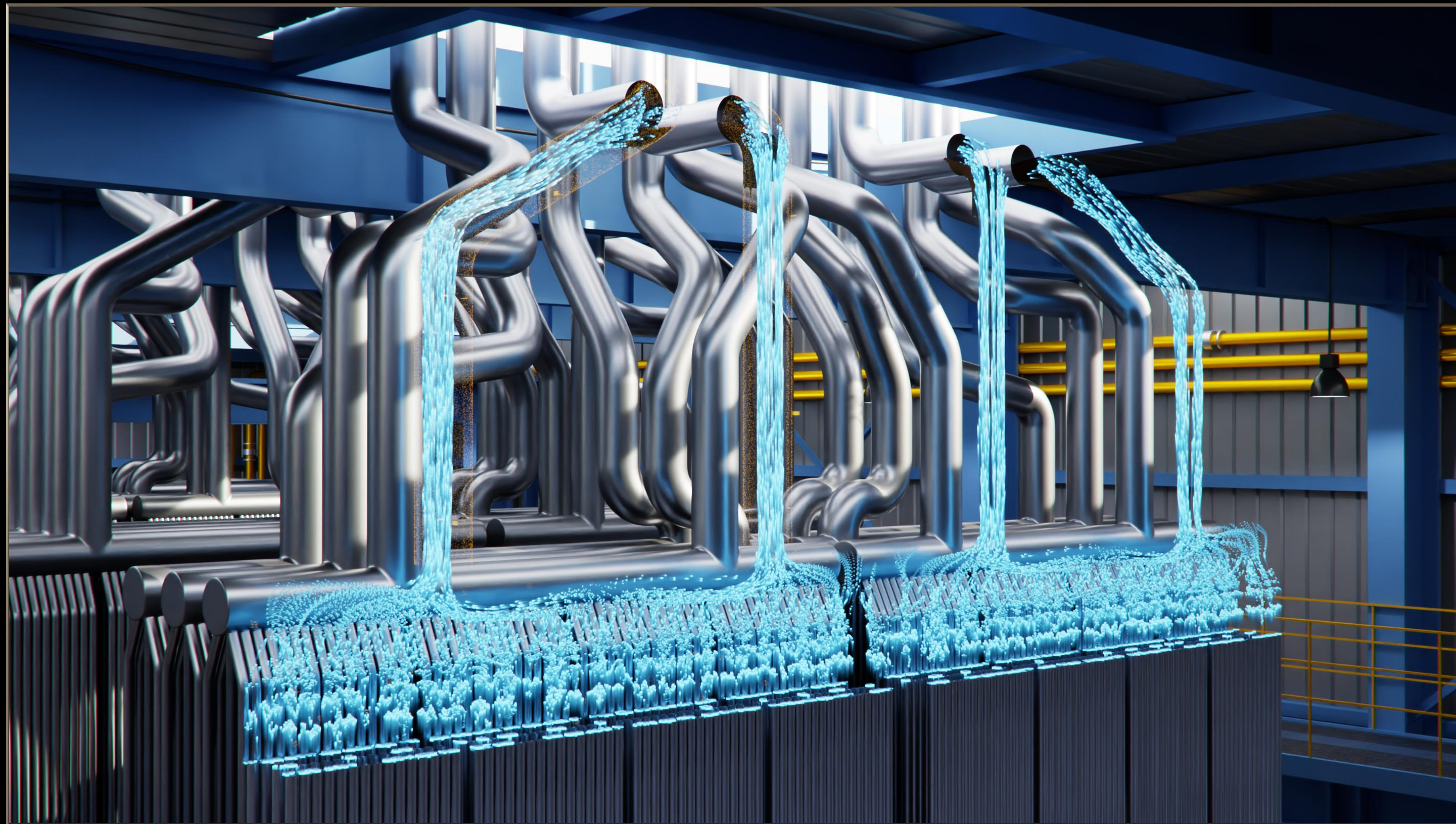
BARRON'S



- “The internet is about to leap into 3D. The resulting virtual worlds can obey the laws of physics, or not. There can be AI robots and the avatars of friends. We will jump from one world to another like we do on the web with hypertext.
- “We built Omniverse for the builders of these worlds. Some worlds will be built for gathering and games. But a great many will be built by scientists, creators, and companies. Virtual worlds will crop up like websites today.
- “Omniverse has been downloaded 70,000 times by designers in 500 companies. And TIME magazine recently highlighted Omniverse as one of the best inventions of 2021.”

“NVIDIA’S OMNIVERSE IS MAKING IT EASIER TO CREATE ULTRA-REALISTIC  
VIRTUAL SPACES FOR REAL-WORLD PURPOSES”

TIME



“Omniverse is our virtual world simulation engine. Robots, AV fleets, warehouses, factories, industrial plants, and cities will be created, trained, and operated as Omniverse digital twins.”

“Siemens Energy is using Omniverse to create an industrial digital twin of a power plant.”

# “OMNIVERSE EMERGES AS HOME OF THE DIGITAL TWINS”

DIGITAL ENGINEERING

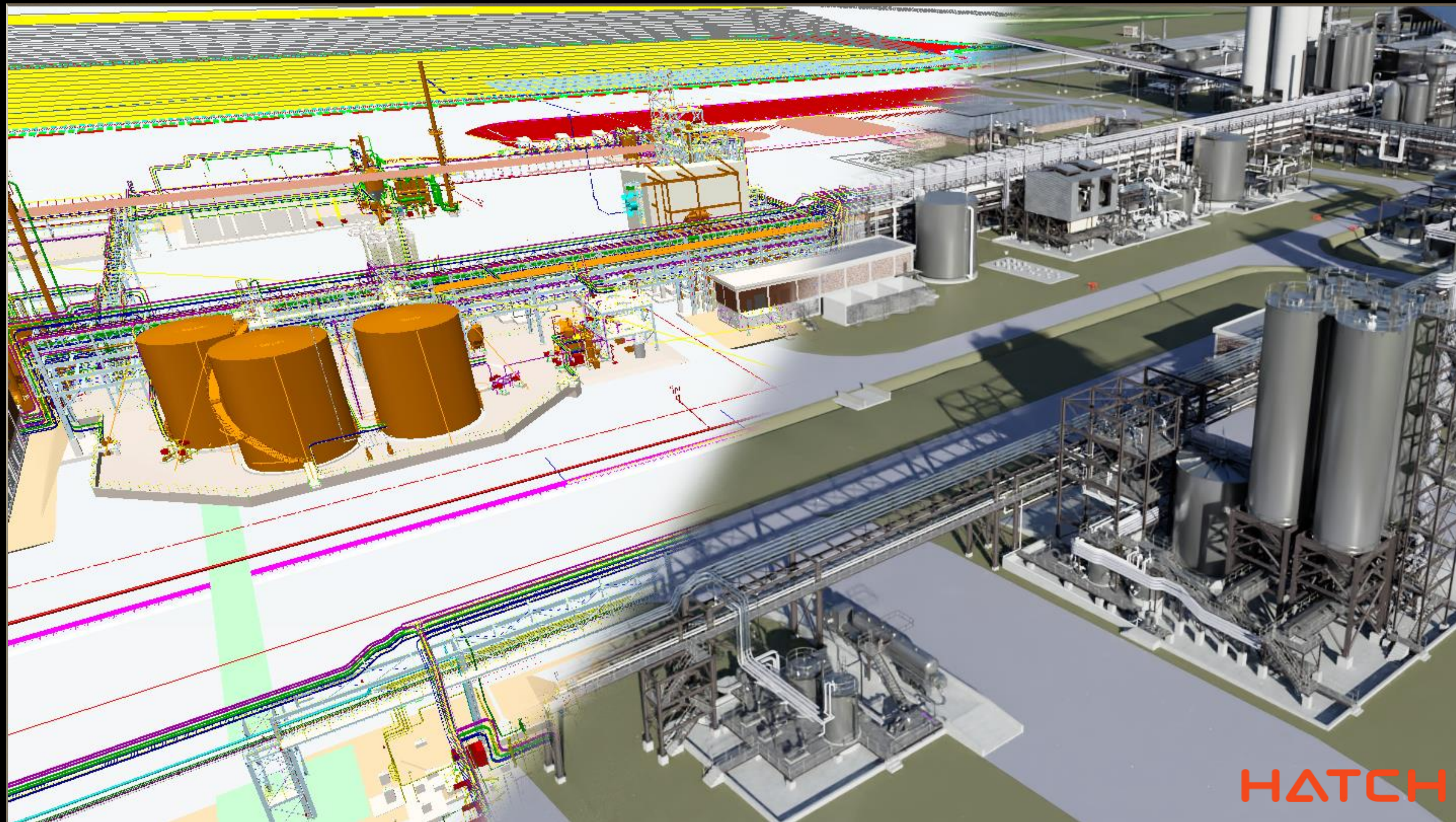


“BMW produces one vehicle per minute. Each has roughly 25,000 parts. There are 5 million parts on the factory floor at any time.

“At GTC Spring, BMW showed us how they are building a digital twin of their Rogensberg factory. They have since expanded to three other factories totaling 10 million square meters.”

# “BENTLEY, ESRI ANNOUNCE MAJOR INTEGRATIONS WITH NVIDIA OMNIVERSE”

GEO WEEK NEWS

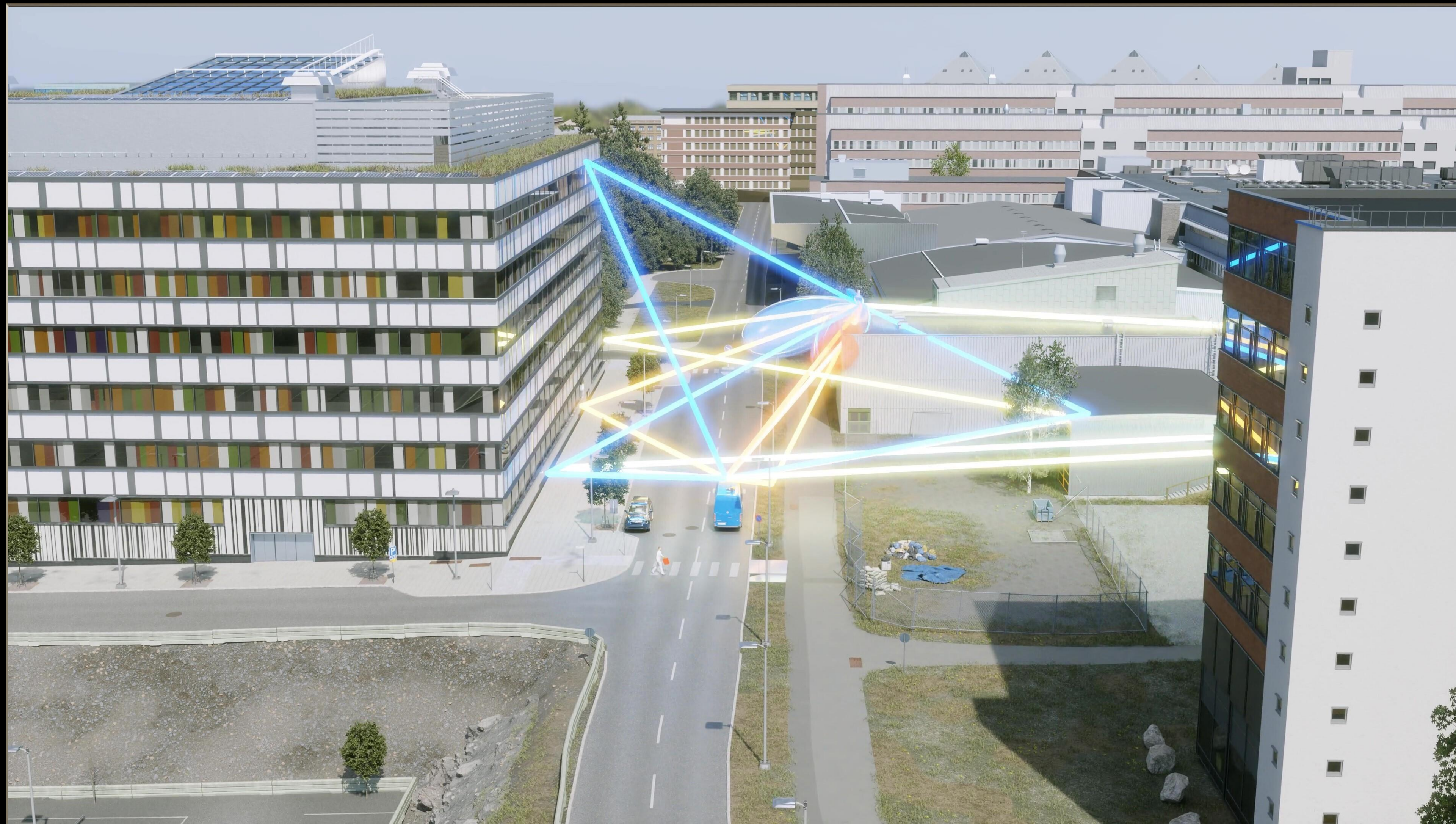


“Bentley is not just connecting to Omniverse, they’re building their digital platform on it.”

“Bentley is used by 90% of engineering firms and has nearly 2 million users of Bentley iTwin.”

“THE OMNIVERSE IS NVIDIA’S ‘METAVERSE FOR ENGINEERS,’ AND ERICSSON IS USING IT TO SIMULATE RECEPTION FOR 5G NETWORKS”

VENTUREBEAT



“Ericsson is using Omniverse to build a digital twin of an entire city to configure, operate, and continuously optimize their fleet of 5G antennas and radios.”

# “NVIDIA AND LOCKHEED MARTIN HAVE TEAMED UP TO USE NVIDIA’S DGX SUPERCOMPUTERS AND OMNIVERSE TO FIGHT WILDFIRES”

VENTUREBEAT



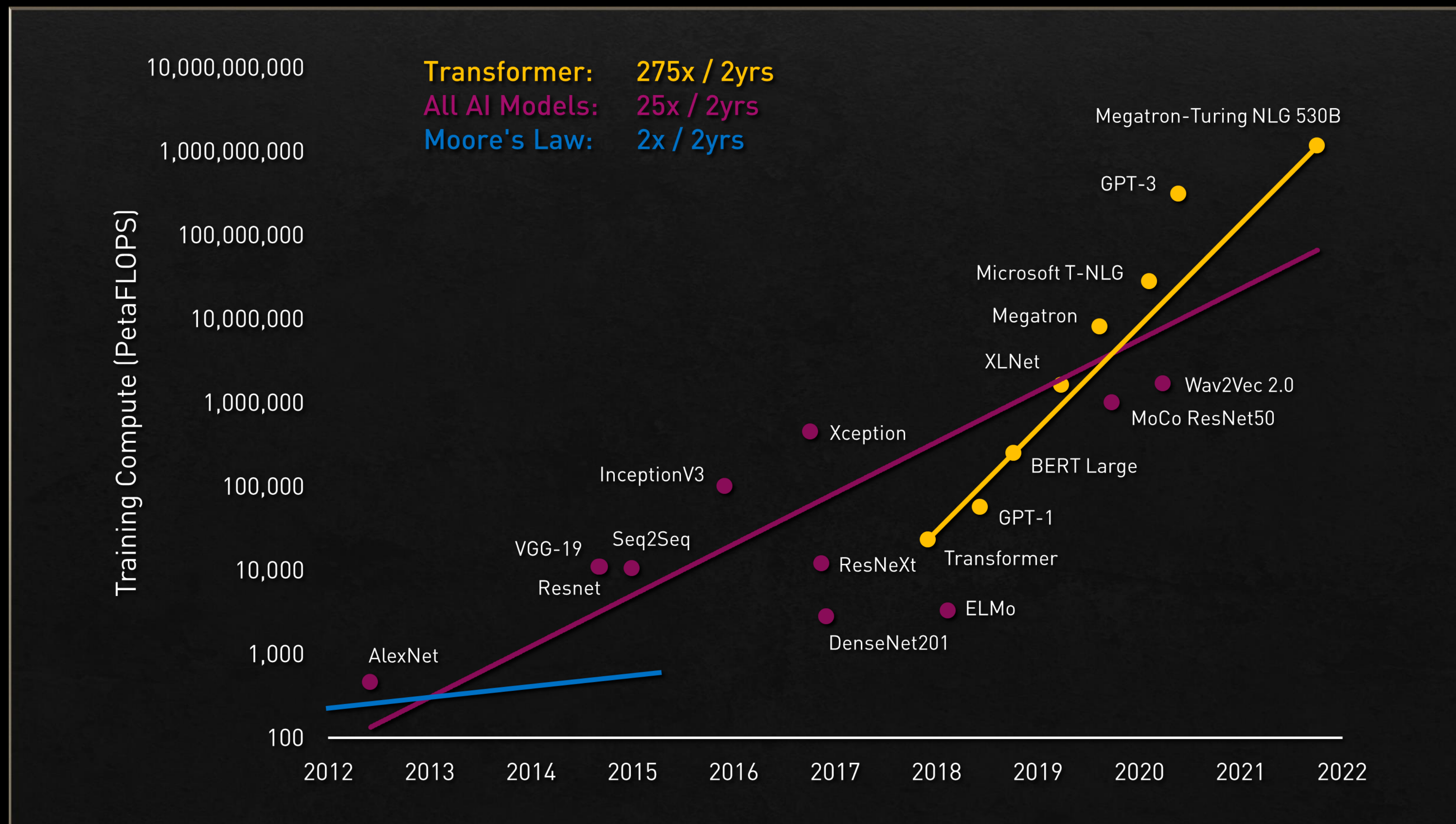
“Intense wildfires fueled by warmer, drier weather have swept across enormous swaths of forest worldwide, causing nearly \$20 billion in damage in the western U.S. alone last year.

“To better understand wildfires and stop their spread, NVIDIA and Lockheed Martin are working with the U.S. Department of Agriculture Forest Service and Colorado Division of Fire Prevention & Control.”

“We’re building the world’s first AI-centric lab dedicated to predicting and responding to wildfires.”

# “BRINGING LARGE LANGUAGE MODEL CAPABILITIES TO ENTERPRISES IS THE FOCUS OF NVIDIA’S NEW NEMO MEGATRON FRAMEWORK”

ENTERPRISE AI

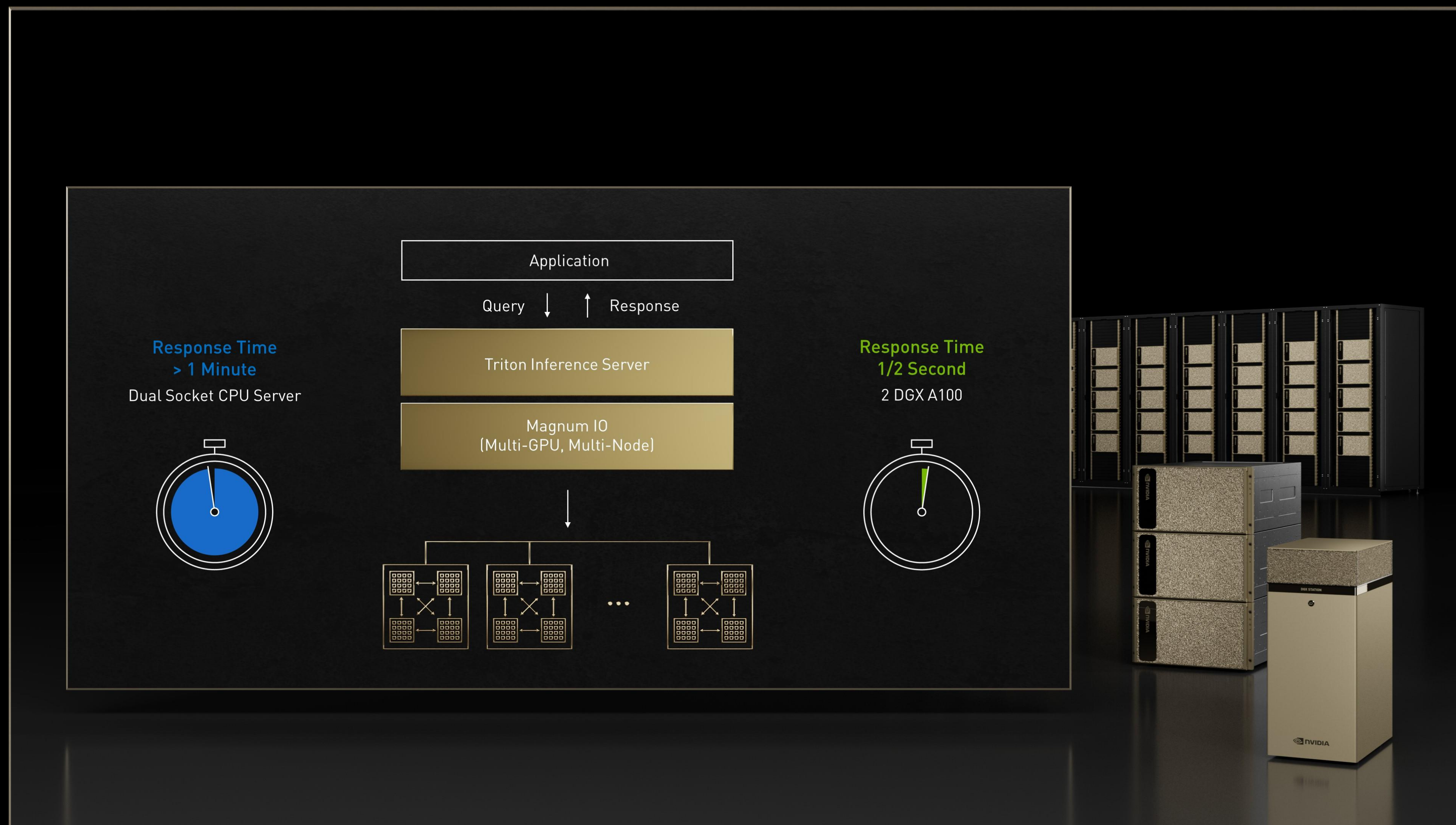


“Transformers have sped up language model training dramatically. No longer limited by human data labelling, giant self-supervised transformers benefit from the troves of digital knowledge on the internet.

“We created NeMo Megatron, a framework dedicated to training billion- and trillion-parameter speech and language models. Now any company can train state-of-the-art large language models.”

# “NVIDIA HAS BOLSTERED ITS TRITON INFERENCE SERVER ”

## THE NEXT PLATFORM



“Once trained, the inference response time on a large language model has to be sufficiently fast to be useful. On a high-end dual Xeon Platinum CPU server, inferencing Megatron 530B takes over a minute. For many applications, that’s unusable.

“We created the world’s first distributed inferencing engine. NVIDIA Triton now does distributed processing across multiple GPUs and multiple nodes. And Triton can also do inferencing on both DL and ML models, including widely used tree models like XGBoost, Random Forest, and LightGBM.”

# “LIVE CAPTIONING AND TRANSCRIPTION IN MICROSOFT TEAMS JUST GOT BETTER WITH MICROSOFT AZURE AND NVIDIA AI”

NEWSCOLLIGENS



“Video conferencing is the most important app for most of us today. Microsoft Teams has over 200 million active users. We’re delighted to work with Microsoft to develop live captioning across 28 languages.”

# “NVIDIA’S ENTERPRISE AI DEVELOPMENT LAUNCHPAD PROGRAM GOES GLOBAL”

VENTUREBEAT



“More than 25,000 companies run AI on NVIDIA. And with partners across the industry, we’ve built a rich ecosystem that connects NVIDIA AI into whatever IT infrastructure, software platform, workflow, or integrator a customer may choose.

“For that last mile, we are partnering with Equinix to pre-install and integrate NVIDIA AI into their data centers around the world. NVIDIA LaunchPad is now available globally — in Silicon Valley, Dallas, Washington D.C., London, Paris, Amsterdam, Frankfurt, Singapore, and Tokyo.”

# “NVIDIA’S RIVA CUSTOM VOICE LETS COMPANIES CREATE CUSTOM VOICES POWERED BY AI”

VENTUREBEAT

The formulation of a problem is often more essential than its solution, which may be merely a matter of mathematical or experimental skill.

**Riva Pre Trained Voice**



“Speech AI will make physical and virtual robots more useful for a variety of industries. NVIDIA Riva neural speech AI speaks English and recognizes six other languages. Riva can close-caption, translate, summarize, answer questions, and understand intent.

“Riva’s accuracy is world-class and its response time is unrivaled. With only 30 minutes of training, Riva can be tuned to a specific voice. It can be further tuned for vocal pitch, duration, and energy for human-like expressiveness.”

# “NVIDIA’S NEW AI-POWERED AVATARS ARE PRETTY INCREDIBLE”

VRSCOUT

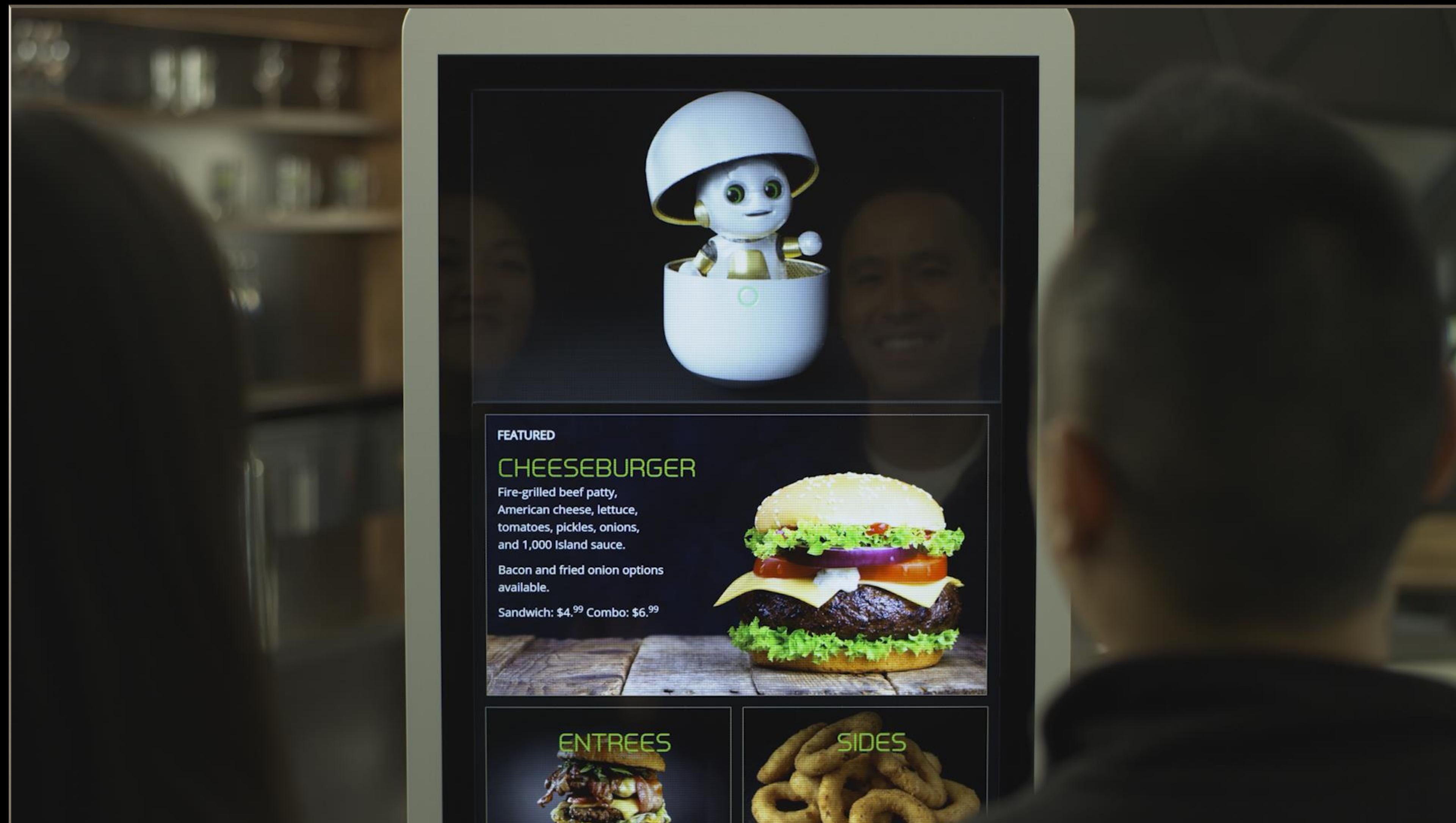


“To help developers create interactive characters with Omniverse that can see, speak, converse on a wide range of subjects, and understand naturally spoken intent, we created Omniverse Avatar.

“Omniverse Avatar connects Riva speech AI, computer vision, natural language understanding, recommendation engines, and simulation technologies into a real-time conversational AI robot. A demo of the technology featured ‘Toy Jensen’ fielding questions on climate change, methods to find exoplanets, and the role of proteins in human cells.”

# “NVIDIA IS TAKING OMNIVERSE BEYOND REPLICATIONS OF THE REAL WORLD WITH THE NEW OMNIVERSE AVATAR PLATFORM”

ZDNET



“Project Tokkio, built on Omniverse Avatar, is a customer service avatar in a restaurant kiosk. Project Tokkio is able to see, converse with, and understand customers.”

# “NVIDIA’S SPECTACULAR DEMO OF ITS AVATAR CREATION TOOLS”

KULTURE GEEK



“Project Maxine, another example of an Omniverse Avatar application, can add state-of-the-art video and audio features to virtual collaboration and content creation applications.

“This demo shows a woman speaking English on a video call in a noisy cafe, but she can be heard clearly without background noise. As she speaks, her words are transcribed and translated in real time into French, German, and Spanish. Maxine also simulates eye contact by estimating and aligning gaze with the camera.”

# “NVIDIA ANNOUNCES DEEPER PUSH INTO HEALTHCARE INDUSTRY AT GTC 2021”

YAHOO FINANCE



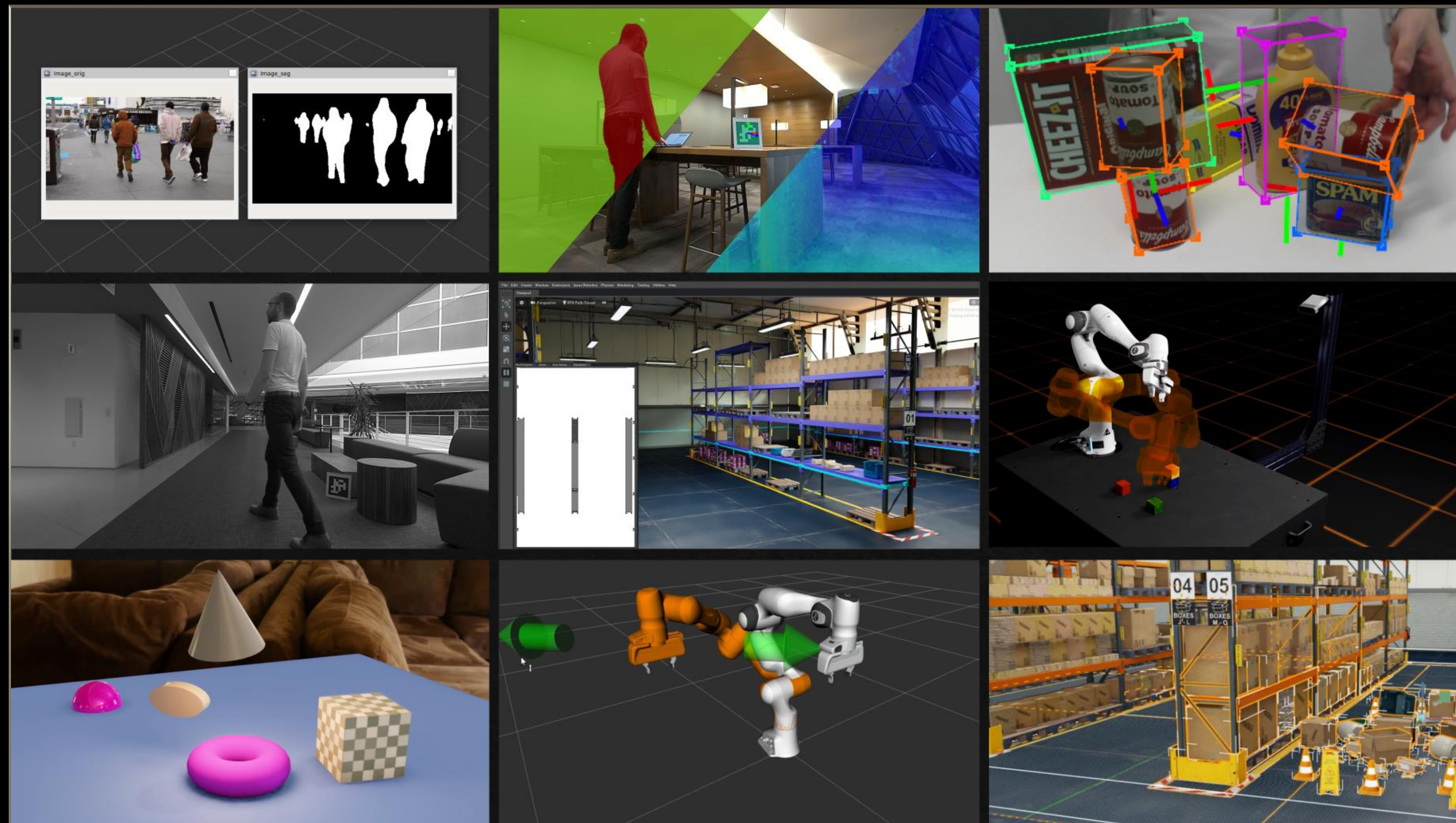
“Recent advances in AI, physics-ML, ray tracing, and computing will revolutionize medical instruments. The \$200 billion industry needs a software-defined imaging platform to build this future on.

“NVIDIA Clara Holoscan — a software-defined, programmable, imaging platform — is powered by a new chip, Orin, a superfast sensor-processing robotics chip.

“Holoscan applications can be deployed fully in-instrument, in the hospital’s data center, or a mixture of both.”

# “NVIDIA IS DOUBLING DOWN ON ROBOTICS”

FORBES



“NVIDIA’s Isaac ecosystem now has over 700 companies and partners, a number that has grown 5X in the last four years.

“NVIDIA Isaac robotics platform can now be easily integrated into the Robot Operating System, or ROS, a widely used set of software libraries and tools for robot applications.”

# “NVIDIA HAS GIVEN ITS AI SUPERCOMPUTER ON WHEELS AN UPGRADE”

SLASHGEAR



“NVIDIA DRIVE is our full-stack and open platform for autonomous vehicles, and Hyperion 8 is our latest complete hardware and software architecture.

“Its sensor suite includes 12 cameras, nine radars, 12 ultrasonics and one front-facing lidar. All processed by two NVIDIA Orin SoCs.”

# “THE INTELLIGENT TECHNOLOGIES OF DRIVE CONCIERGE AND DRIVE CHAUFFEUR WILL TRANSFORM THE DIGITAL EXPERIENCE IN CARS”

MOTOR FAN

NVIDIA DRIVE CHAUFFEUR



NVIDIA DRIVE CONCIERGE



“Future cars will be your personal AI chauffeur and AI concierge.

“DRIVE Concierge, another application of Omniverse Avatar, will show you what is in the mind of the Chauffeur, summon valet mode and park the car, search for a parking spot, and use neural graphics to reconstruct a 3D surround view.”

# “OMNIVERSE REPLICATOR GOES FURTHER. IT’S NOT A 3D MODELING ENGINE — IT’S A SYNTHETIC DATA GENERATION ENGINE”

DIGITAL TRENDS



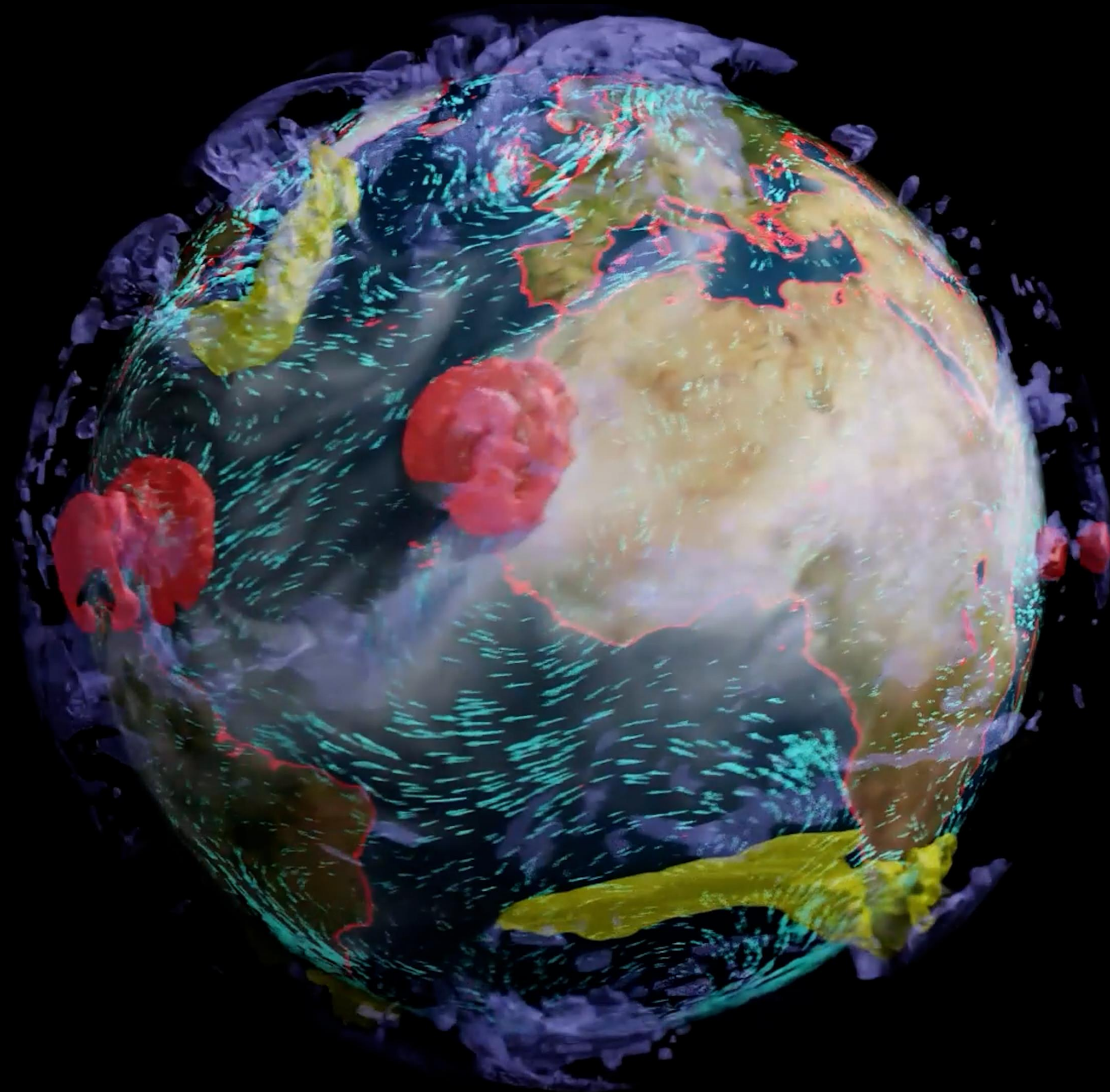
“To help developers to create the huge amounts of data needed to train AI, we’re introducing Omniverse Replicator, a synthetic-data-generation engine for training deep neural networks.

“Replicator has two applications: one for NVIDIA DRIVE Sim, a virtual world for hosting the digital twin of autonomous vehicles, and another for NVIDIA Isaac Sim, a virtual world for the digital twin of manipulation robots.

“Replicator can label ground truth in ways that humans cannot — tracking moving objects across sensors, velocity, distance, occlusion, and severe weather conditions. It is accurate and low cost. And it augments data where we have known gaps.”

# “NVIDIA CREATES DIGITAL TWIN OF EARTH TO BATTLE CLIMATE CHANGE”

VENTUREBEAT



- “The past seven years are on track to be the seven warmest on record. We’re experiencing extreme weather — historic droughts, unprecedented heatwaves, intense hurricanes, violent storms, and catastrophic floods.
- “For the first time, we have the technology to do ultra-high-resolution climate modeling, to jump to lightspeed and predict changes in regional extreme weather decades out.
- “At GTC, we revealed plans to build the world’s most powerful AI supercomputer dedicated to predicting climate change. Named Earth-2, or E-2, the system would create a digital twin of Earth in Omniverse.”

“MAYBE THE COOLEST  
COMPANY IN THE  
WORLD”

LibertyRPF Substack Blog



[NVIDIA.COM/GTC](https://www.nvidia.com/gtc)

