



Building the Physical Future of AI for the Next Wave of Industrial Digitalization

I acknowledge the Traditional Owners of Meanjin of the Jagera and Turrbal People, the lands we meet today, and pay my respect to their Elders past and present, and the Aboriginal Elders of other communities who might be here today.

Next Wave of AI is Physical AI



PHYSICAL AI

AUTONOMOUS VEHICLES
GENERAL ROBOTICS



AGENTIC AI

CODING ASSISTANT
CUSTOMER SERVICE
PATIENT CARE

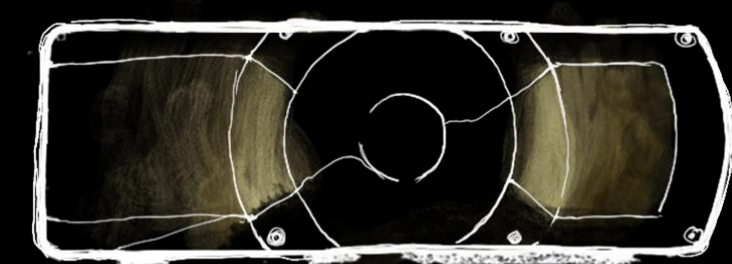
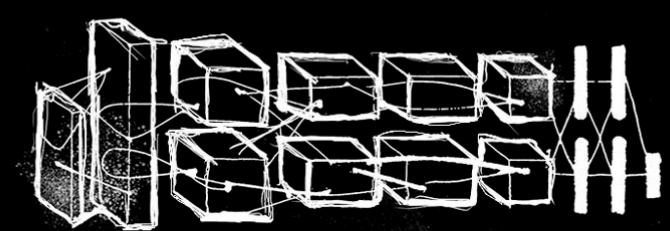
GENERATIVE AI

DIGITAL MARKETING
CONTENT CREATION

PERCEPTION AI

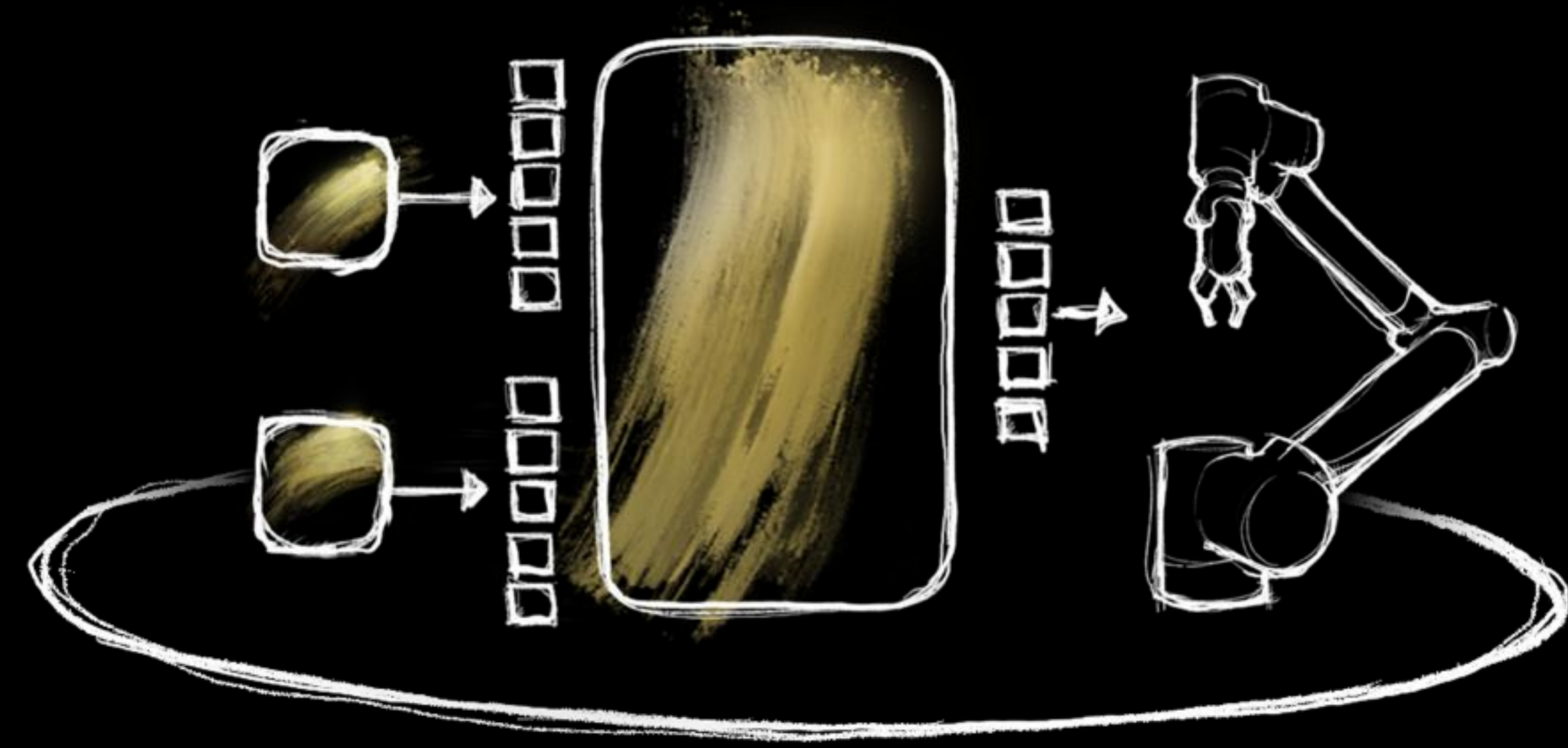
SPEECH RECOGNITION
DEEP RECSYS
MEDICAL IMAGING

"FIRST CONTACT"

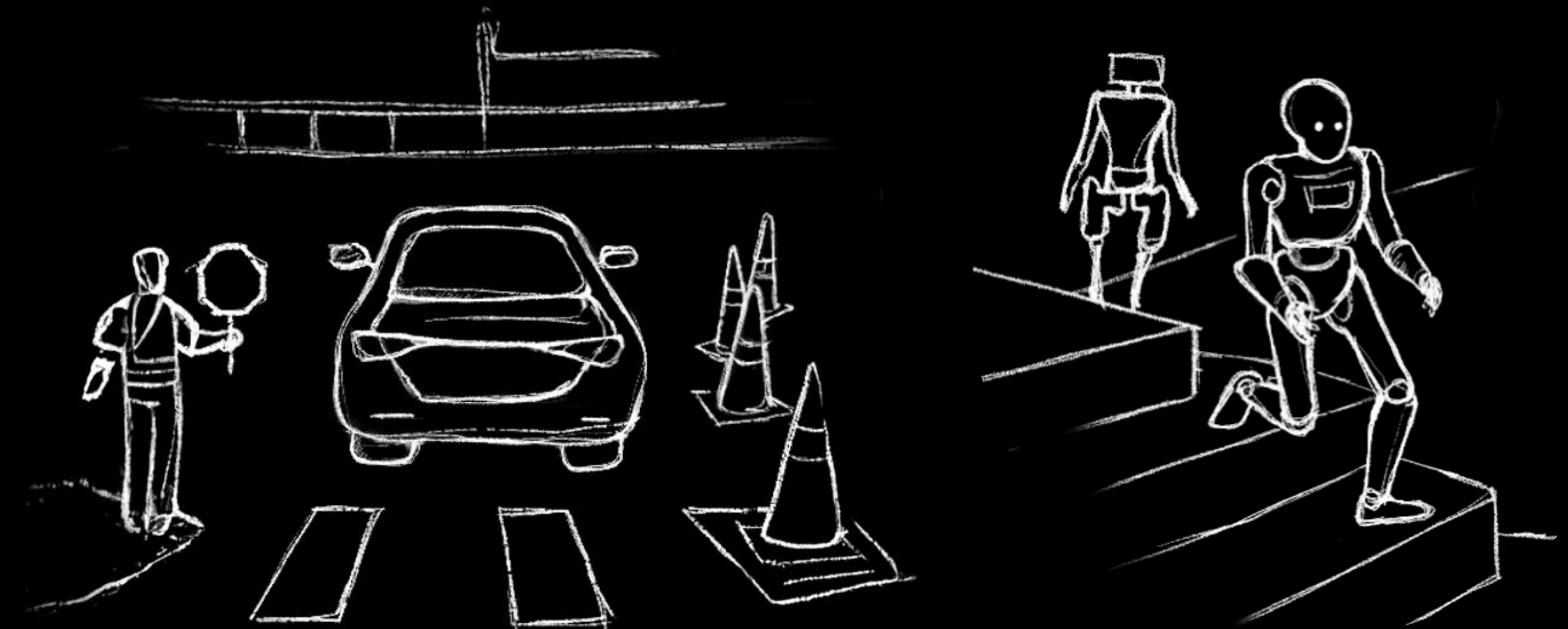


2012 ALEXNET

ChatGPT Moment of Robotics is Here



Physical AI



Simulation

Physical AI is the Next Trillion Dollar Industry

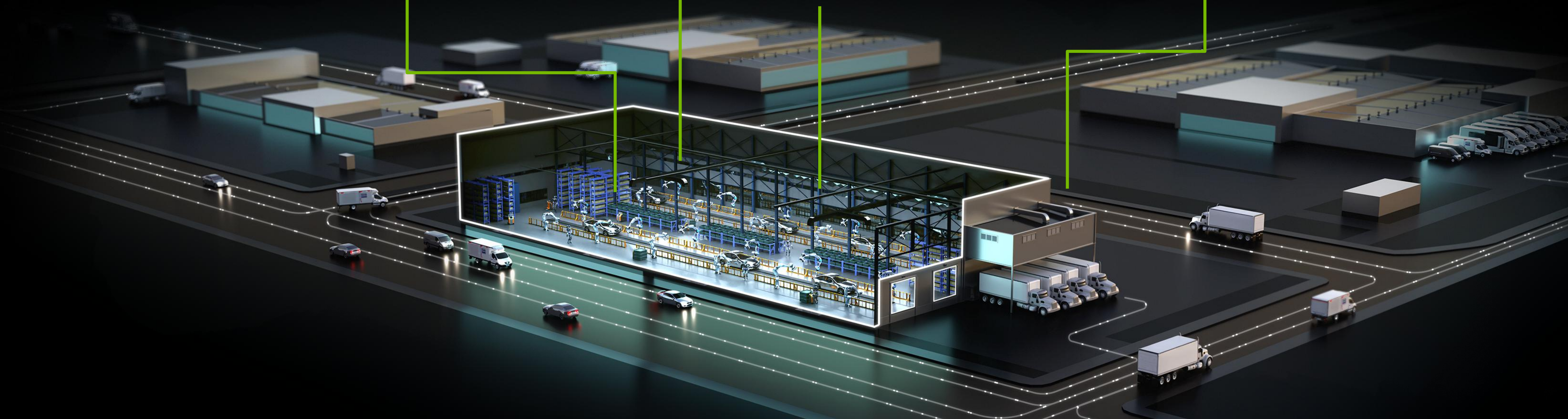
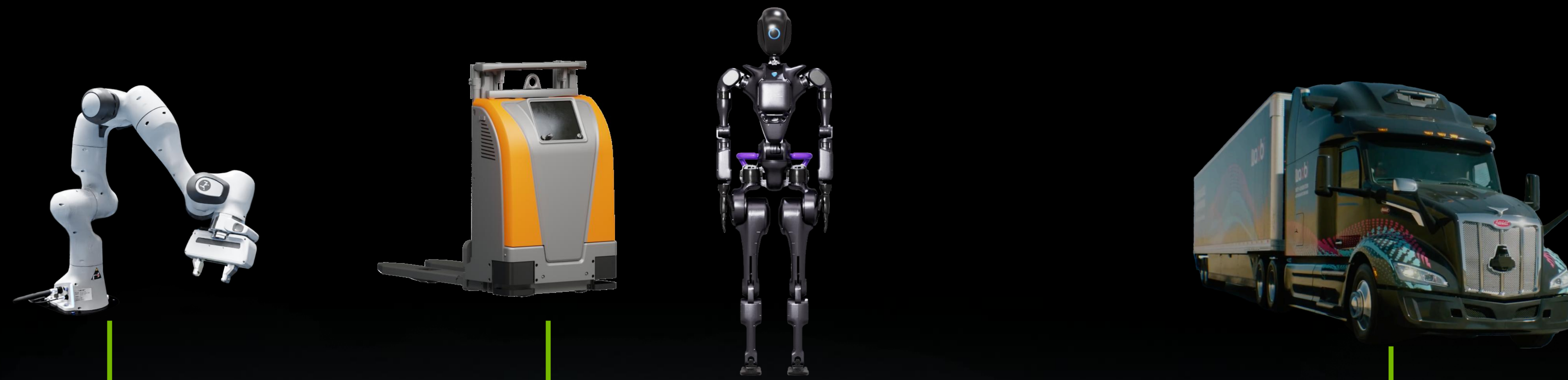
2 Billion
Cameras

10 Million
Factories

200K
Warehouses

1.5 Billion
Cars & trucks

Future Billion
Humanoid robots



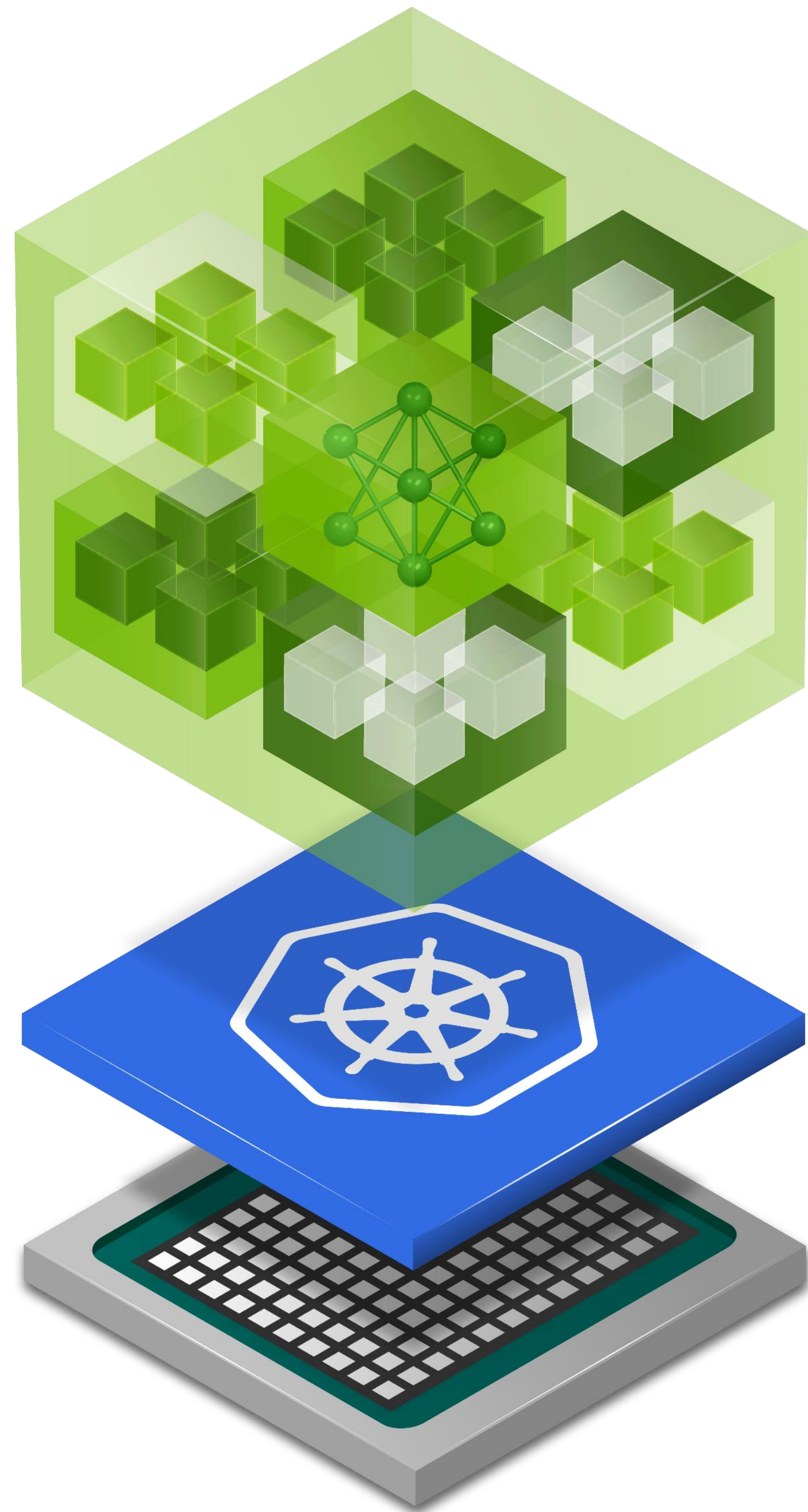
NVIDIA ACCELERATING DIFFERENT RESEARCH DOMAINS

The image displays ten research domains, each with a visual representation and a corresponding NVIDIA-accelerated technology:

- cuDNN**: Deep Learning (Visual: Neural network diagram)
- PhysicsNeMo**: AI Physics (Visual: Earth from space)
- cuOPT**: Decision Optimization (Visual: Warehouse with robot)
- cuDF**: Data Processing (Visual: Map of the United States with data points)
- cuPyNumeric**: Numerical Computing (Visual: Galaxy cluster)
- cuVS**: Vector Search (Visual: 3D grid with points)
- Parabricks**: Gene Sequencing (Visual: DNA structure)
- CUDA-Q**: Quantum Computing (Visual: Quantum device)
- AI Aerial**: Radio Signal Processing (Visual: Drone with signal waves)
- cuDSS**: Sparse Solver (Visual: Car with signal waves)
- cuLitho**: Computational Lithography (Visual: Microchip fabrication)

NVIDIA NIM Inference Microservices

Optimized Generative AI Models Run Anywhere



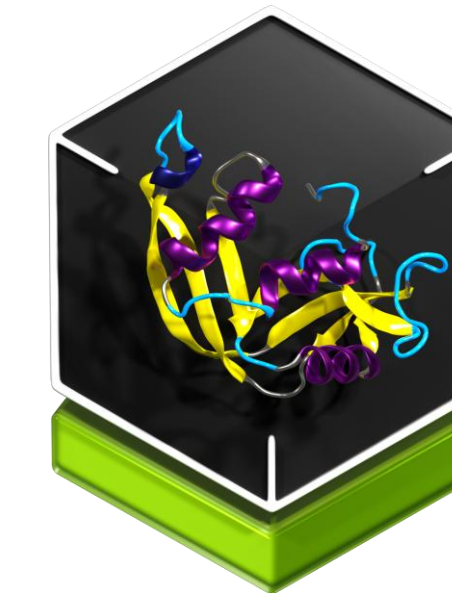
Speech



Digital Human



Computer Vision



Biology



Simulation



Language



Regional Language



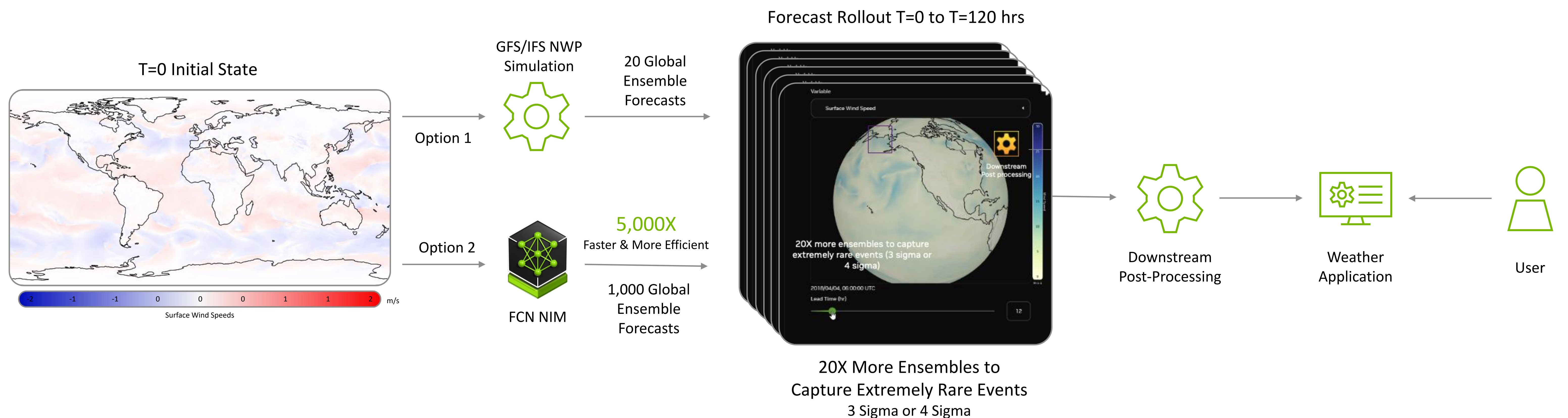
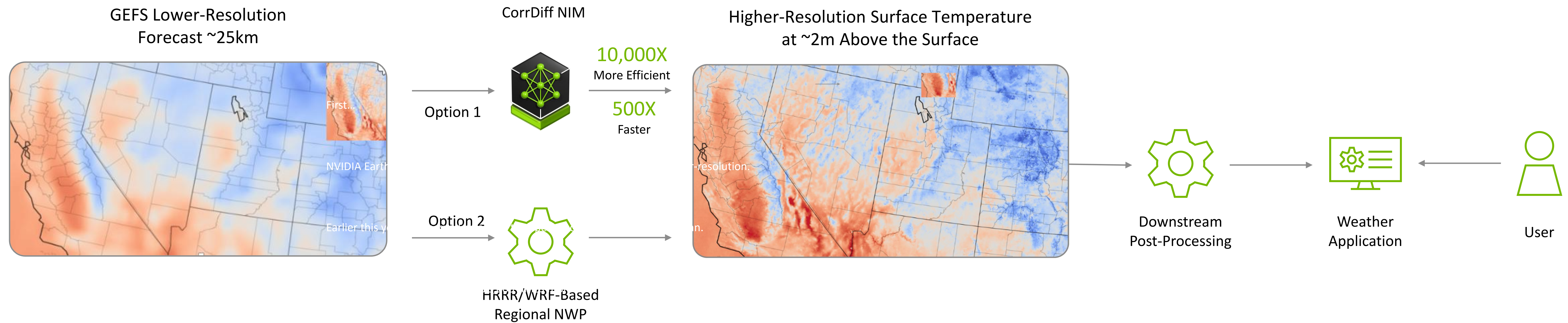
Vision Language



RAG

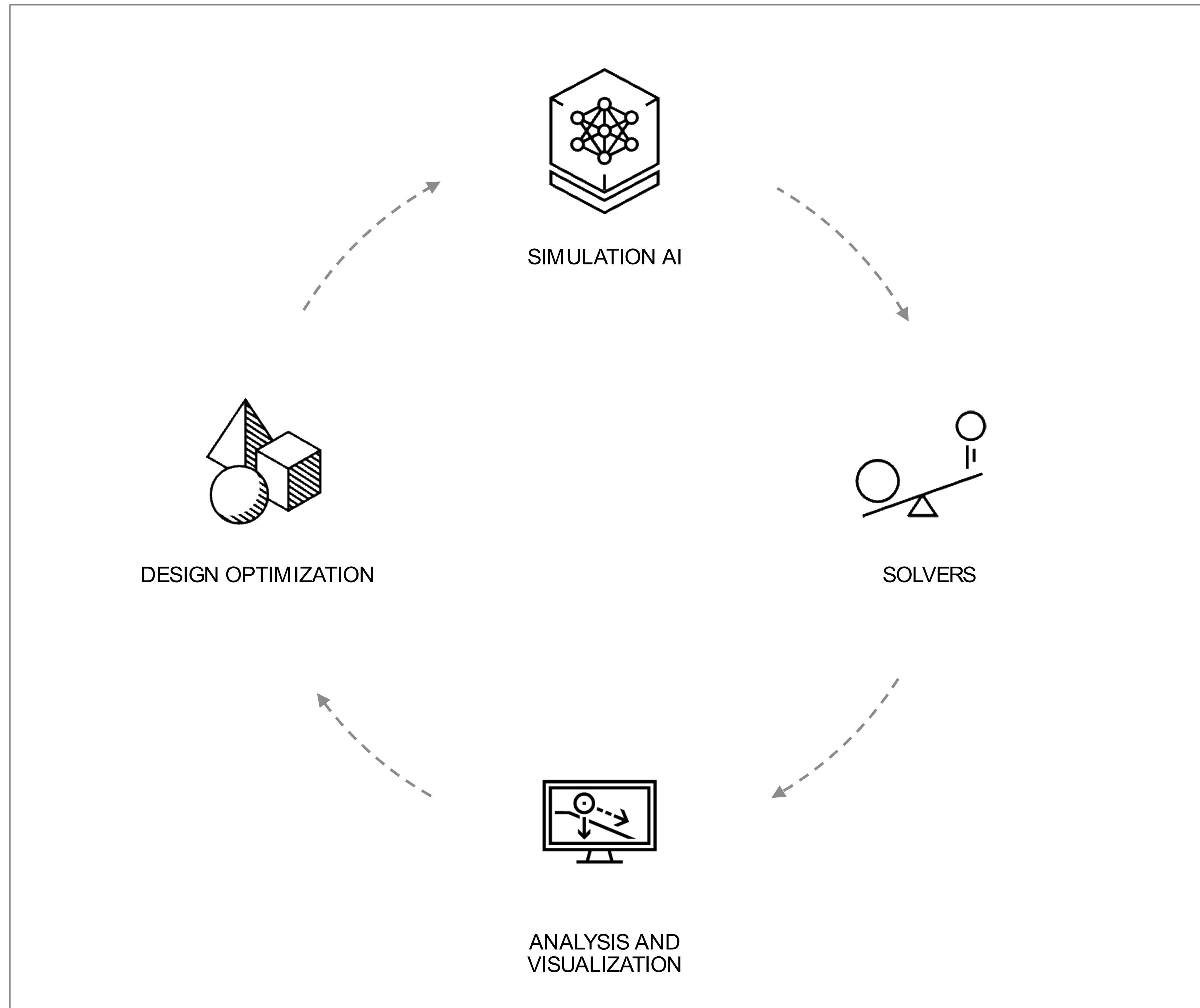
Earth-2 NIMs for CorrDiff & FourCastNet

CorrDiff NIM for Generative AI Powered Downscaling | FourCastNet NIM for Global Weather Forecasting

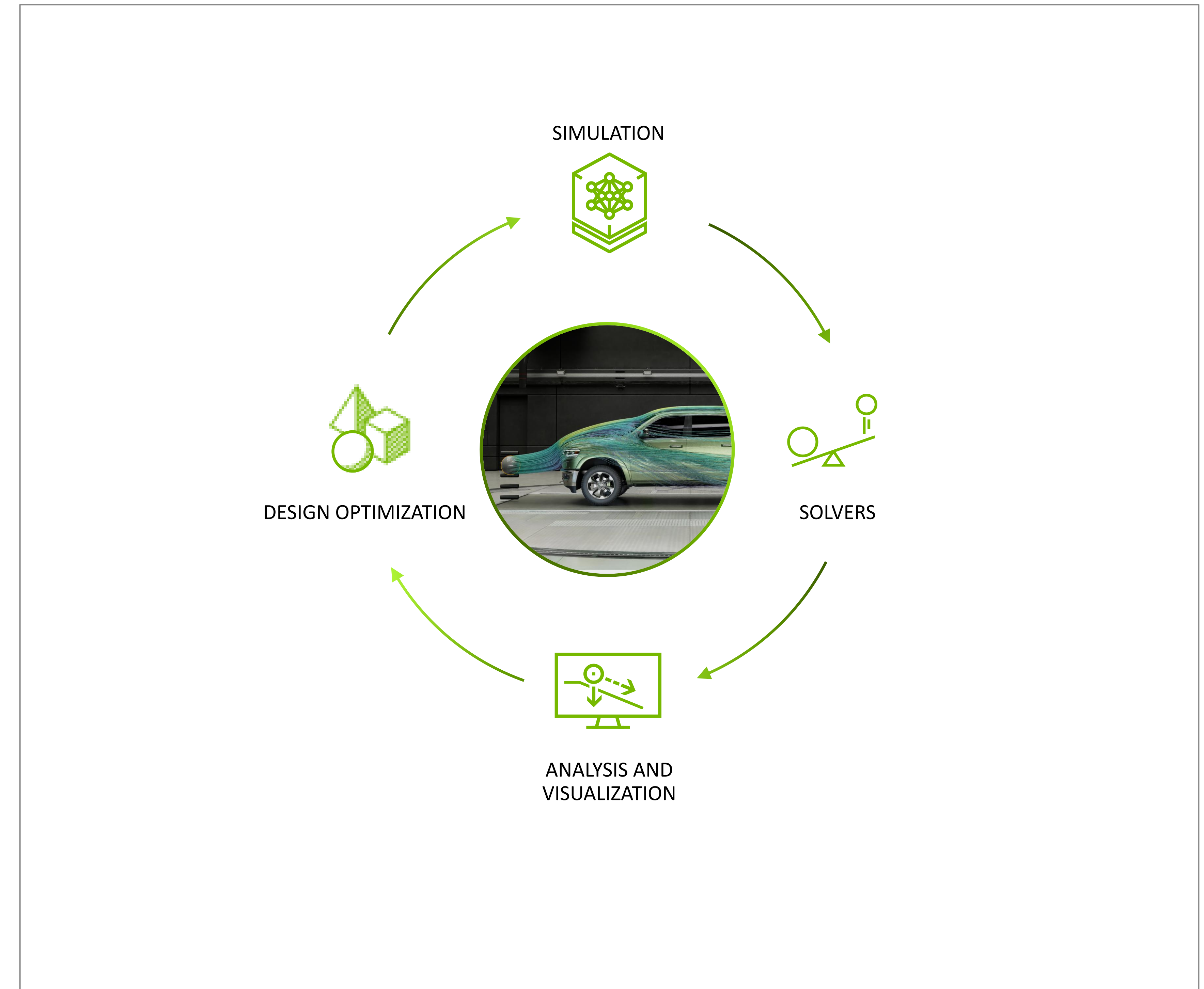


Omniverse Blueprint for REAL-TIME CAE Digital Twins

TODAYS COMPUTER AIDED ENGINEERING WORKFLOW
Does Not Enable Real Time Design



REAL TIME DESIGN DRIVES INNOVATION
Real Time Digital Twin



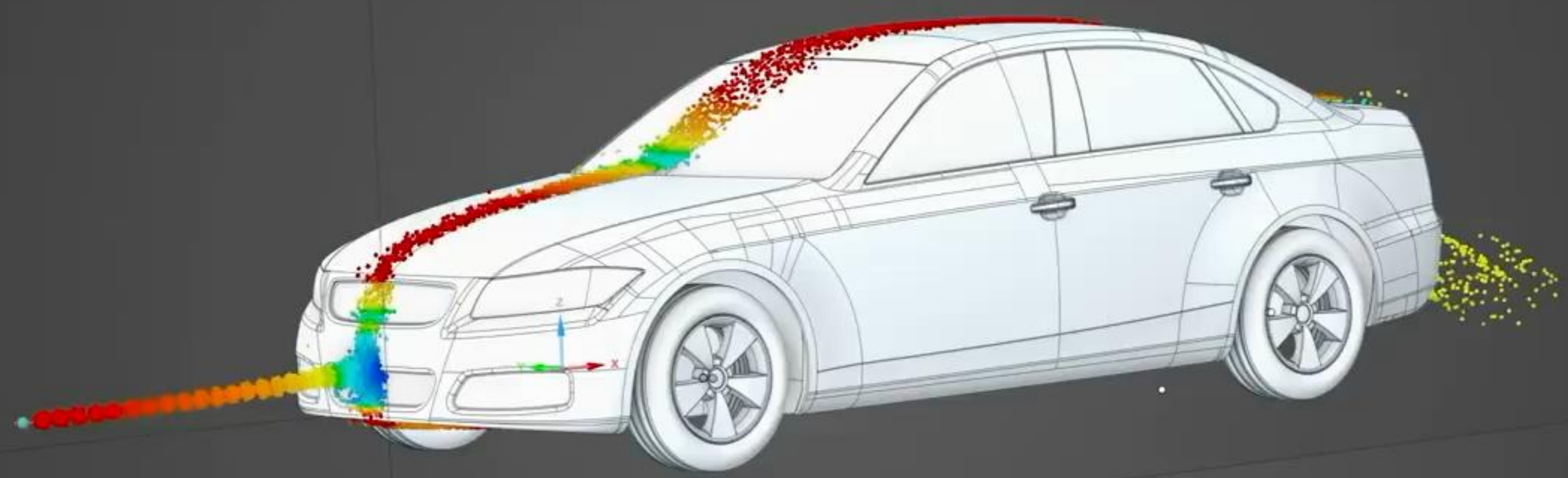
DESIGN DISPLAY MEASURE REPAIR PREPARE SIMULATION

QuickScope Internal Flow External Flow Materials Structural Fluid Flow Solid Thermal Electromagnetics Review Symmetry Simulation Options Natural Frequency Topology Optimization Scene Monitors Results Size Preview Fidelity Global Local Simulation Variations Show Mechanical Fluent HFSS

QUICK START PHYSICS RESULTS FIDELITY STUDY DISPLAY TRANSFER

- drivaer_notchback.Enclosure.tr...
- 05_Wheels_Front
- 06_Wheels_Rear
- 07_Mirrors
- Enclosure
- 04_Body
- Plane
- Plane

- Physics
 - Structural steel, S275N
 - Air (Gas)
 - Gravity
 - Walls
 - Rotating Wall 13
 - Rotating Wall 14
 - Non-Slip Wall (default)
 - Non-Slip Wall (default)
 - Ground Plane
 - Extents (default)
 - Flow Inlet 1 5 m/s
 - Flow Outlet 2 0 Pa



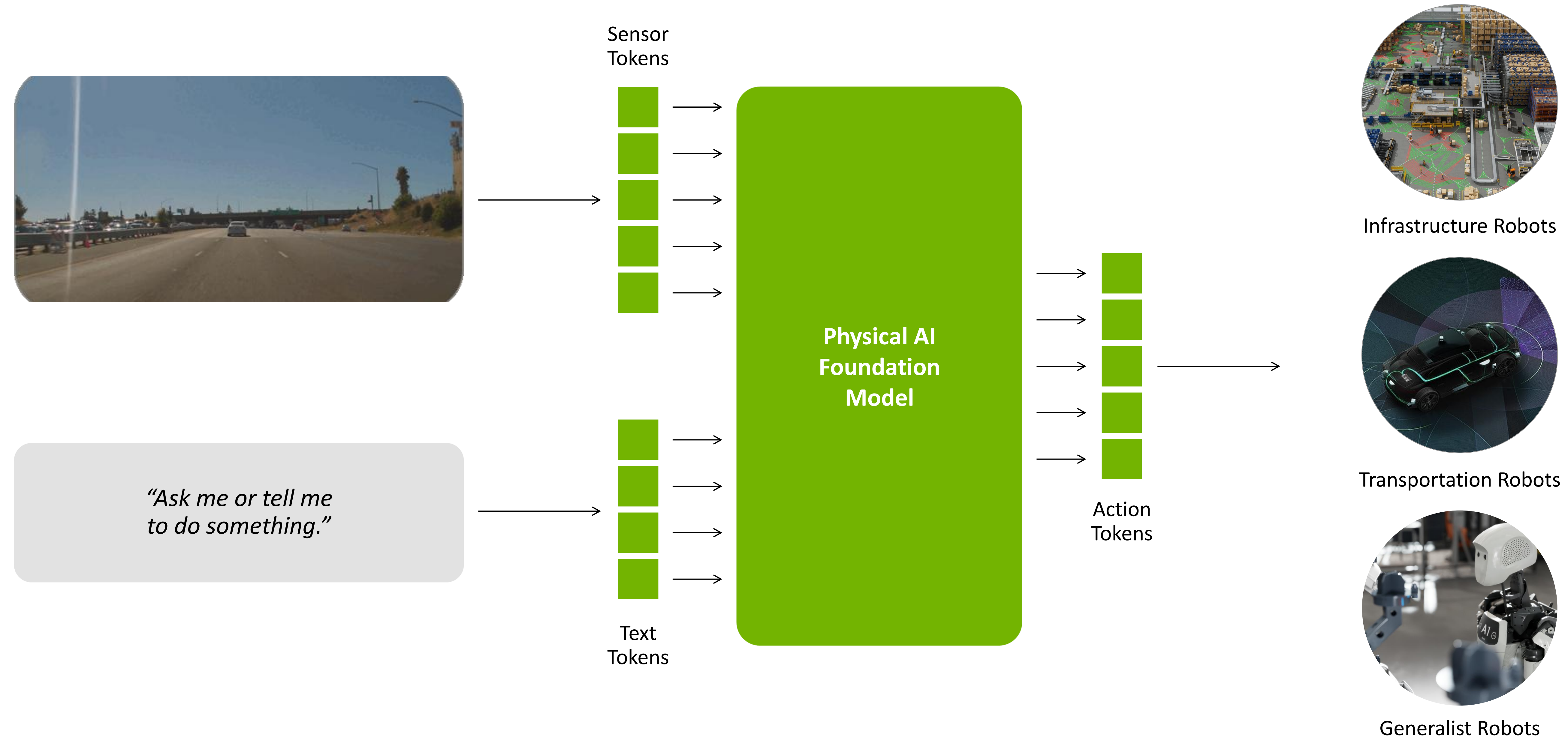
Velocity :
X Y Z Map



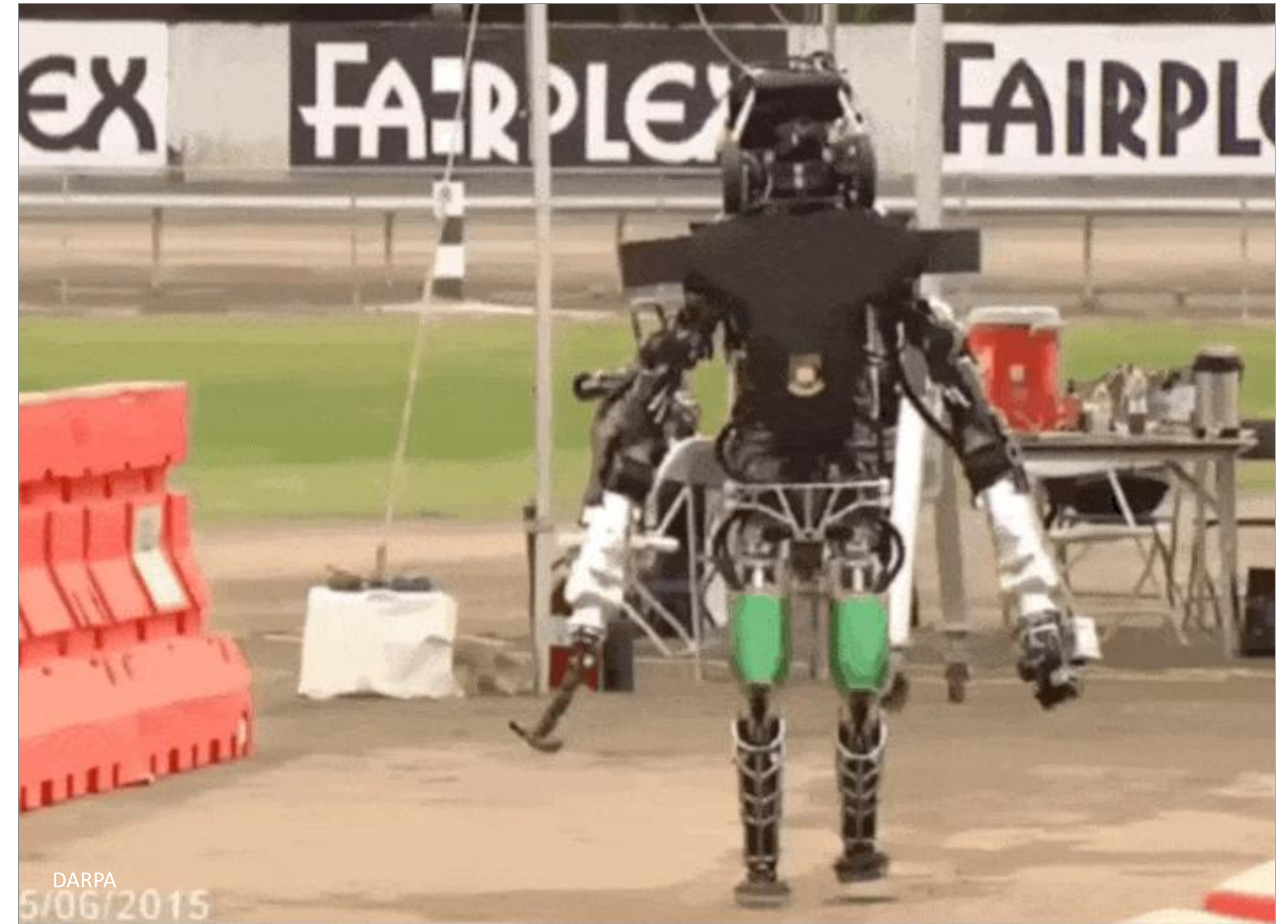
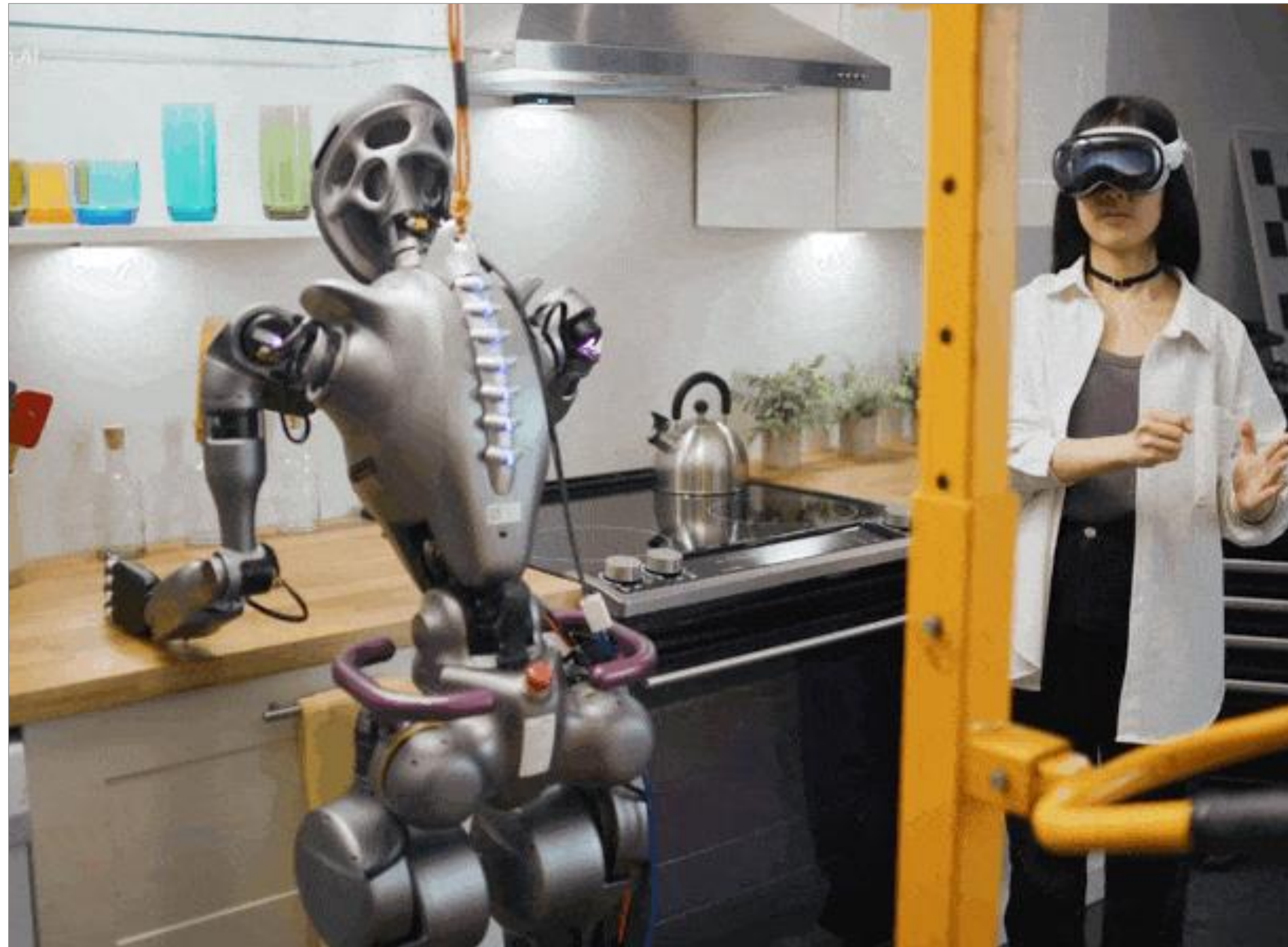
Simulation 1

EXPLORE

Physical AI Transforming \$50 Trillion Industries



Physical AI is hard to develop



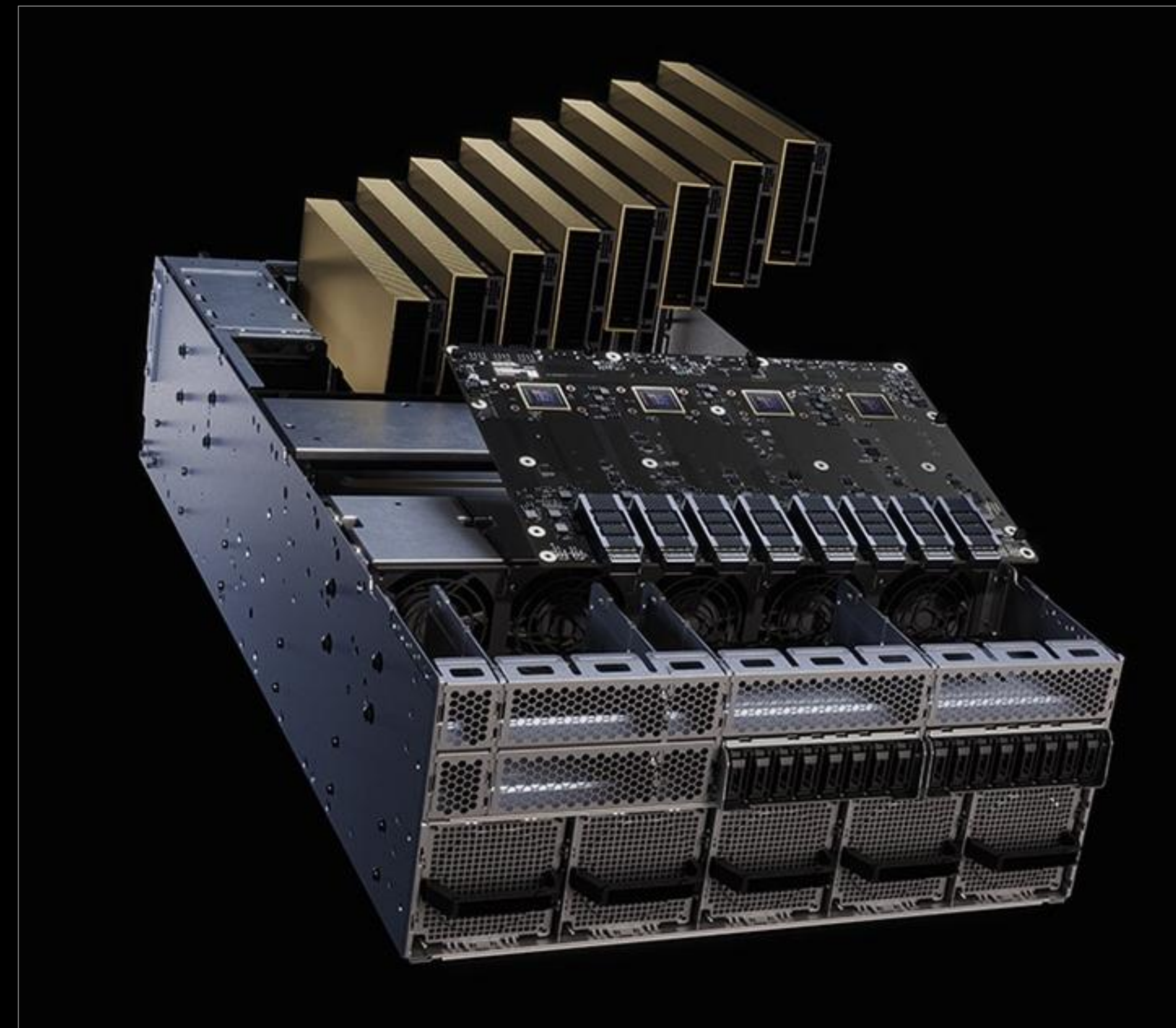
NVIDIA Builds 3 Computers for Physical AI



3 Computers – Now on NVIDIA Blackwell Architecture



NVIDIA GB200 NVL72
Train Models



NVIDIA RTX PRO Server
Simulate & Generate Synthetic Data

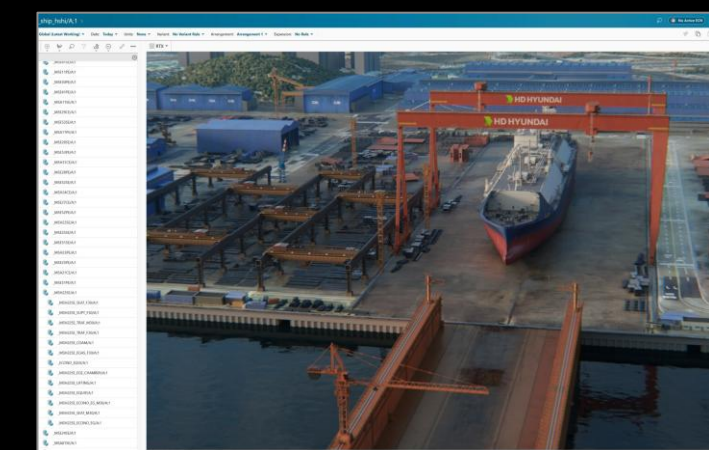
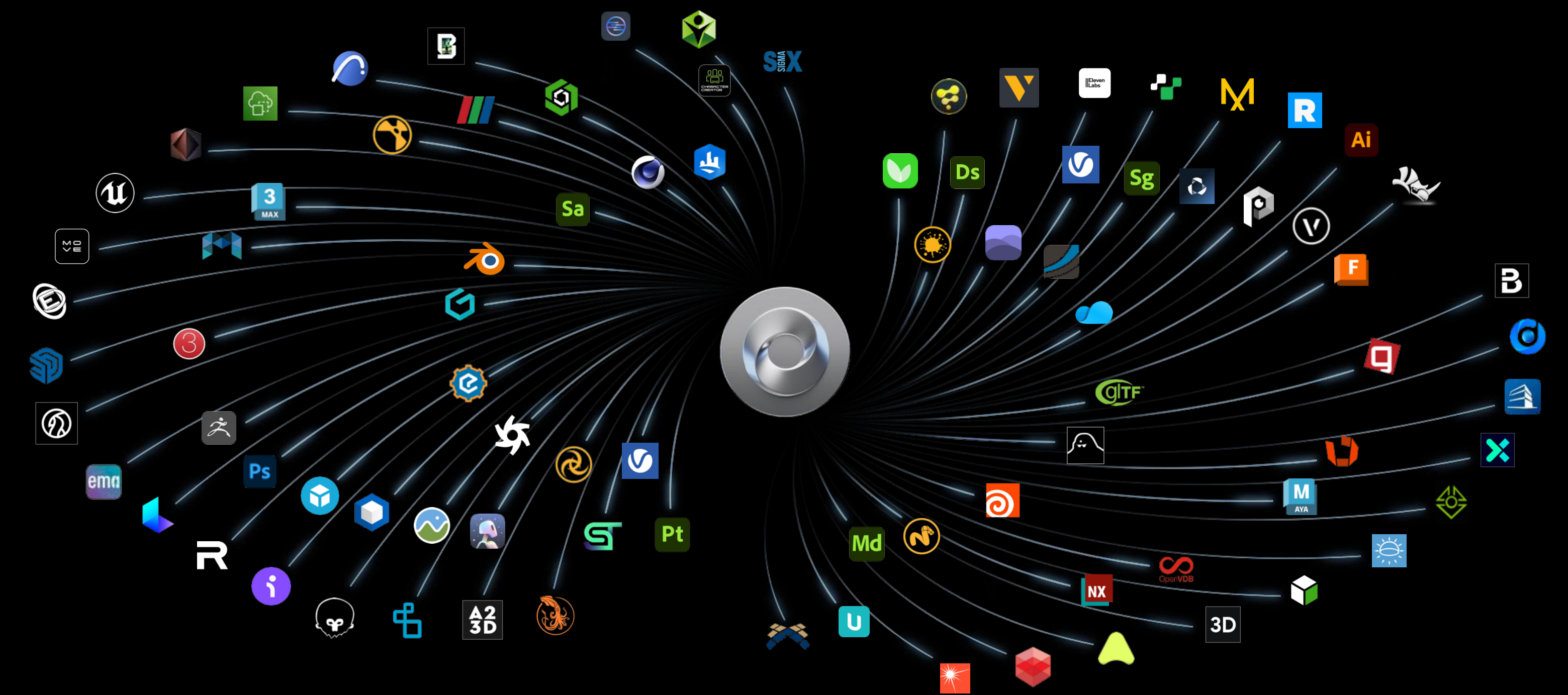
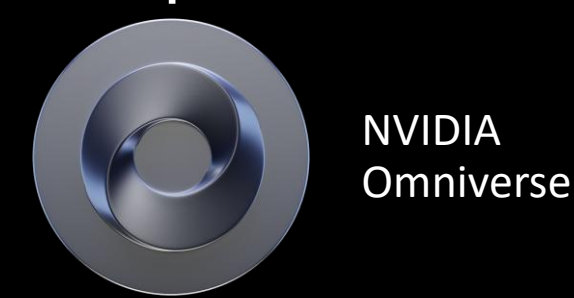
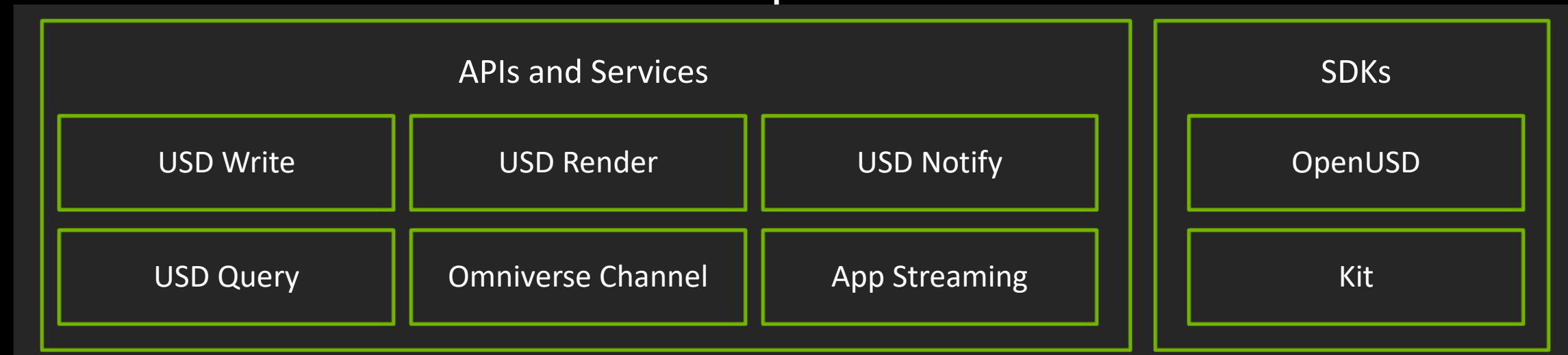
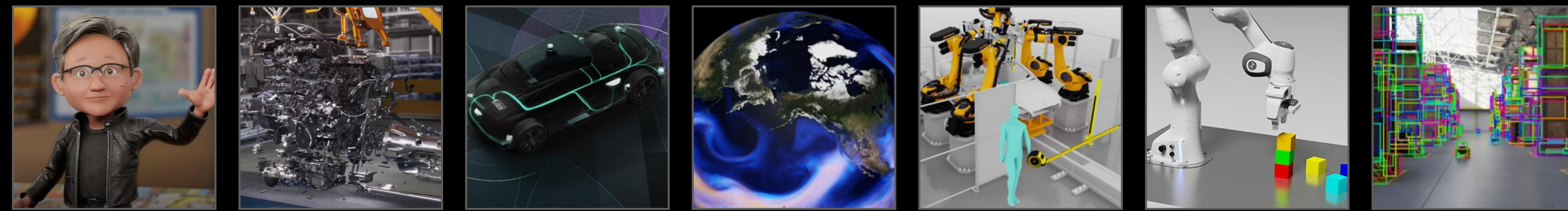


NVIDIA Jetson Thor AGX
Deploy

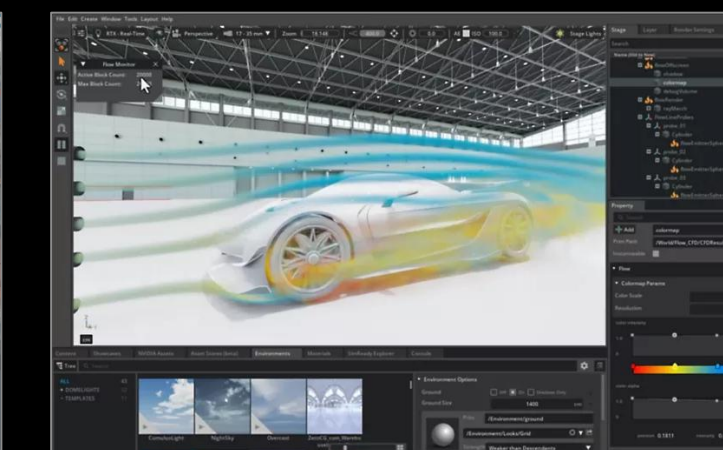
NVIDIA Omniverse

Platform to build and operate industrial digitalization applications on OpenUSD

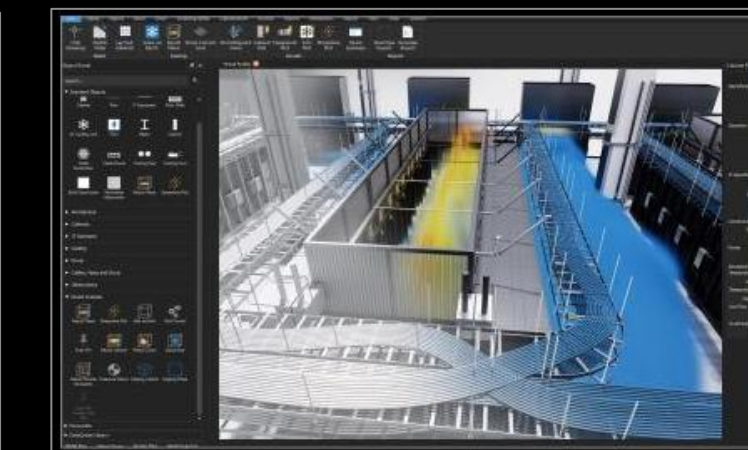
Custom Applications



Siemens



Ansys



Cadence

NVIDIA Cosmos World Foundation Models

World Foundation Model Development Platform for advancing Physical AI



NVIDIA
Cosmos

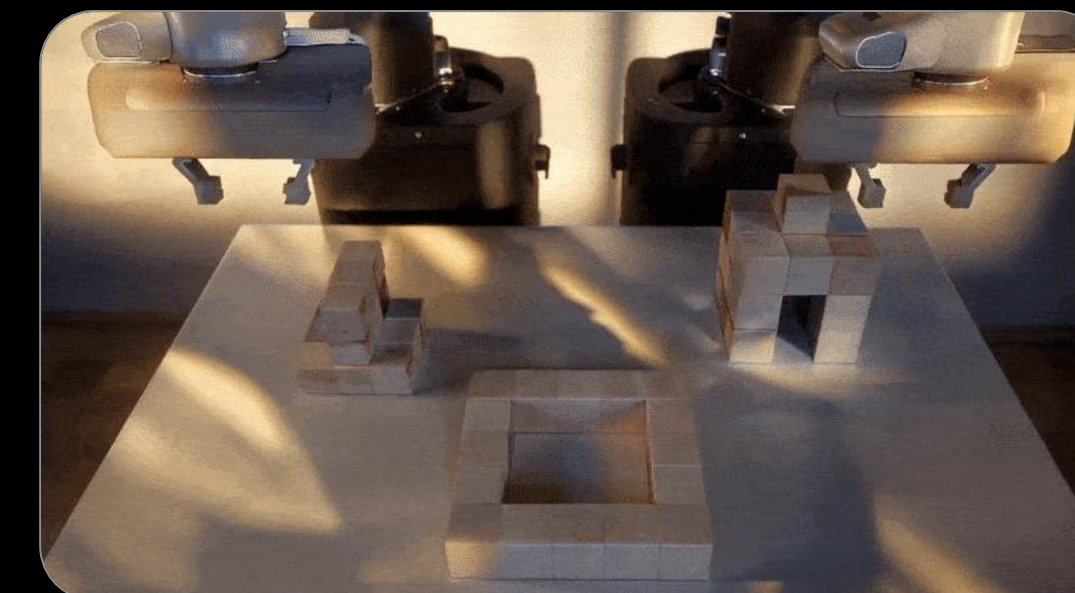
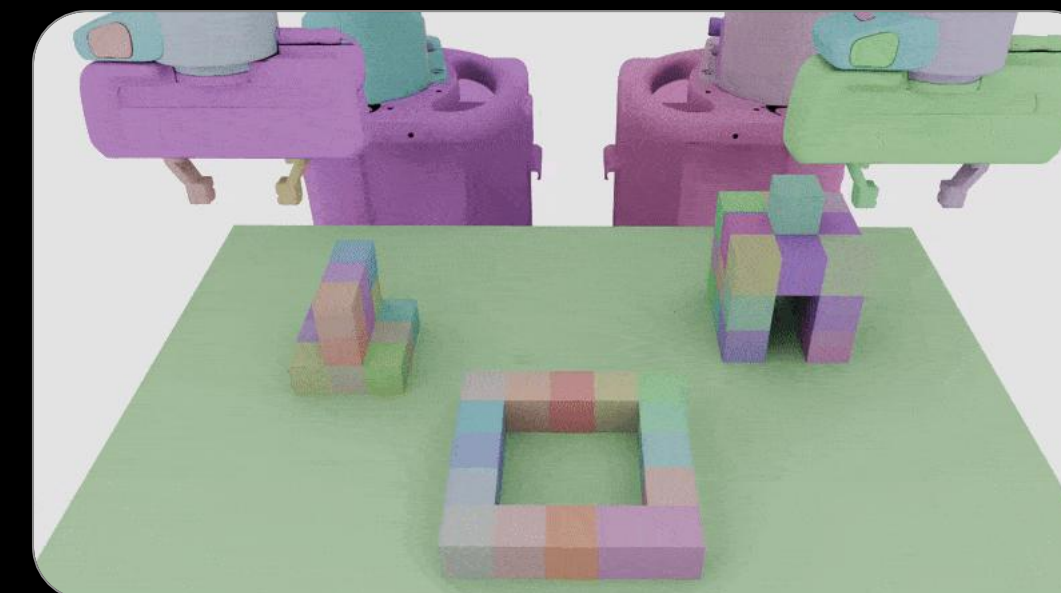
Cosmos Predict

Generate future virtual world states from multi-modal inputs



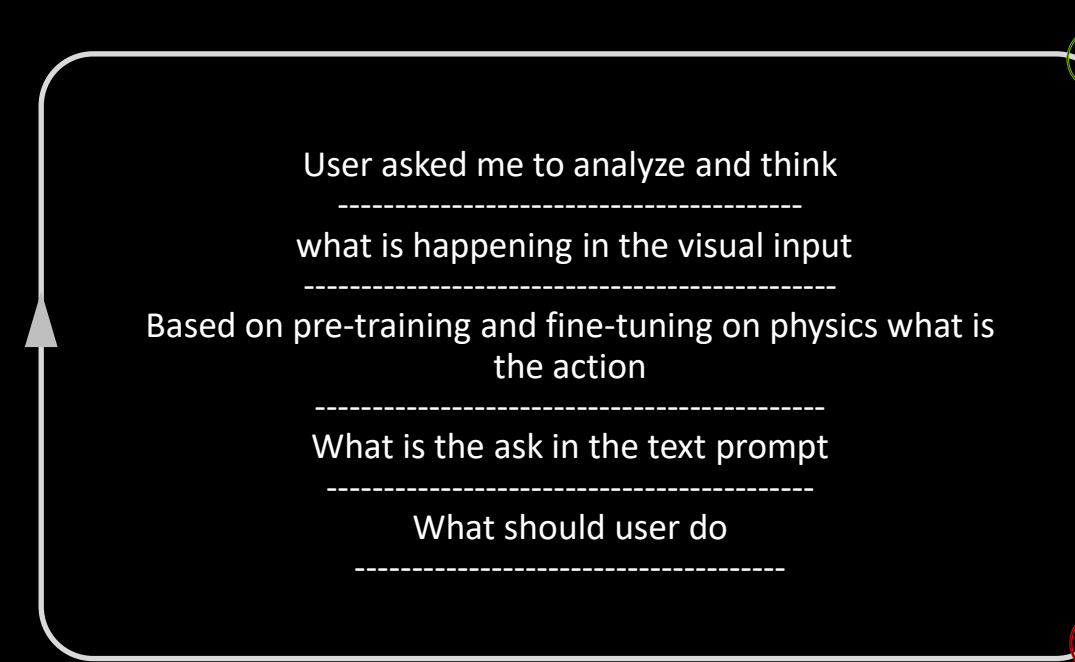
Cosmos Transfer

Generate physics-aware virtual worlds conditioned by real world and 3D inputs



Cosmos Reason

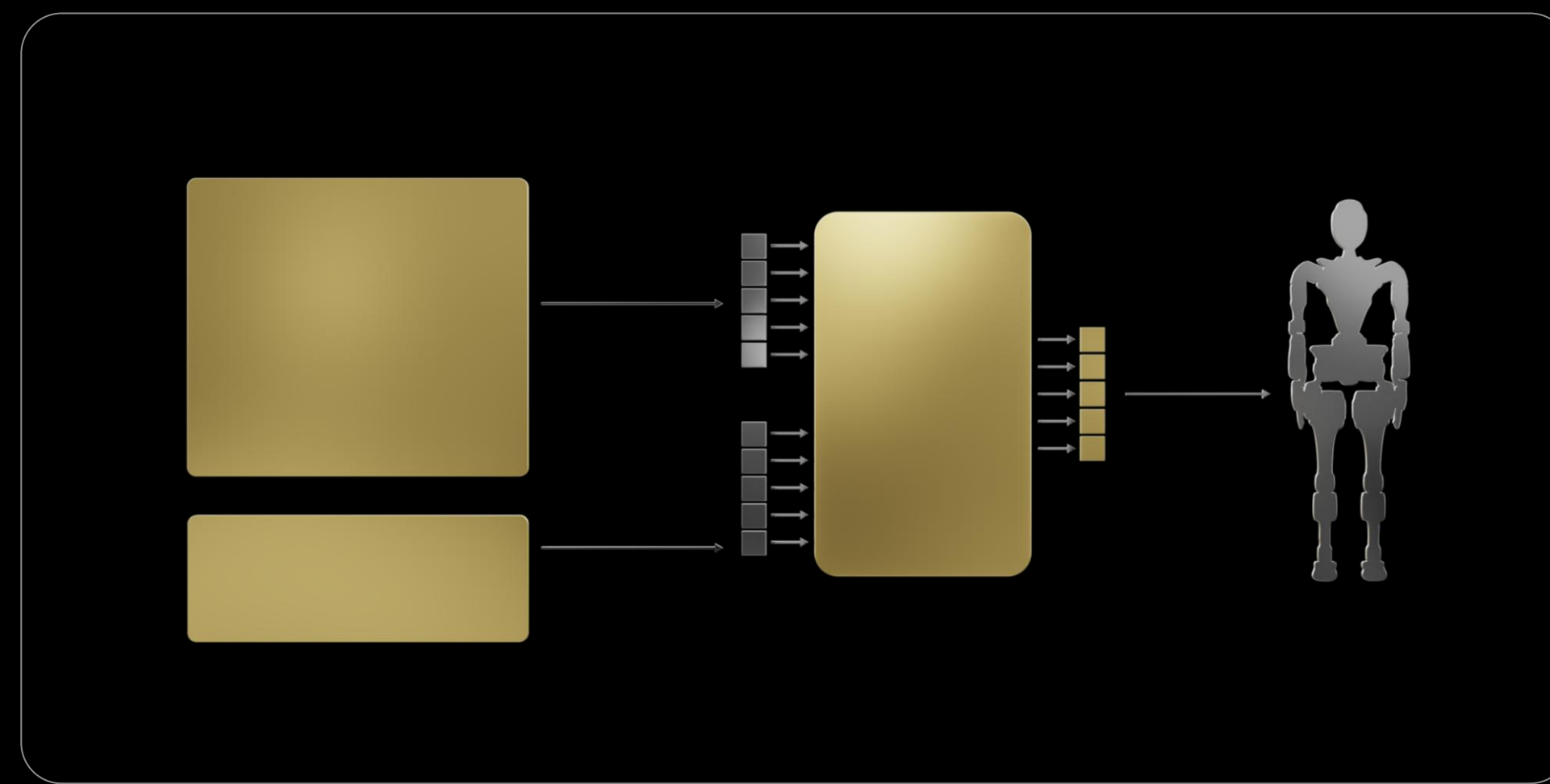
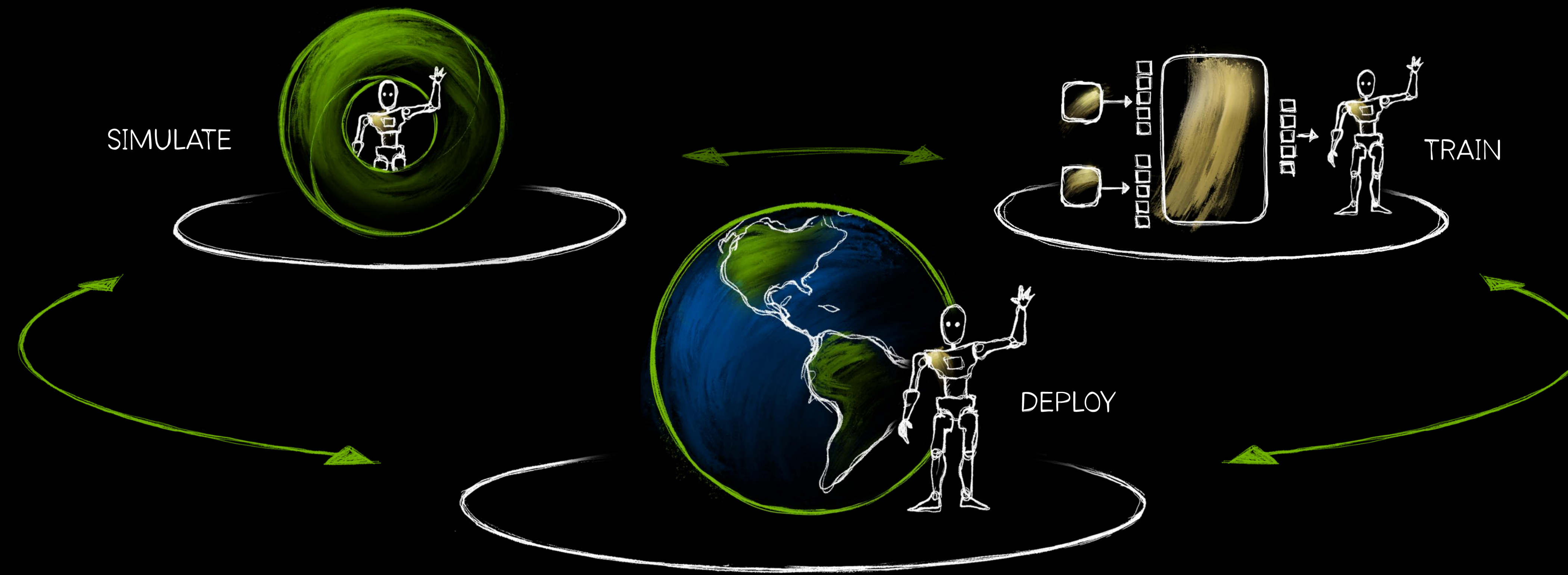
Chain-of-thought reasoning for physical AI world state understanding



*Best
Response*

NVIDIA Isaac GROOT

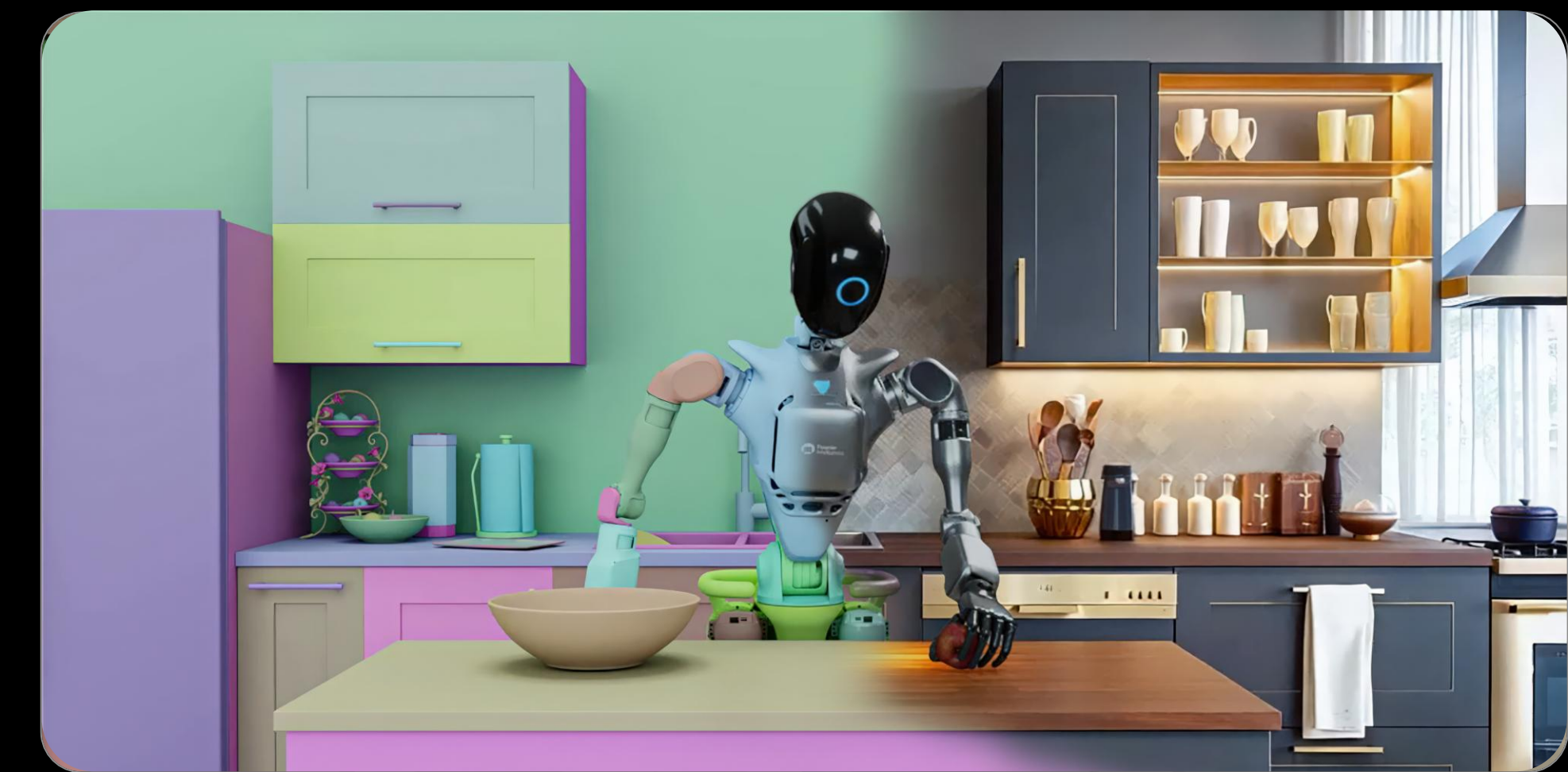
Humanoid robotics development platform



Humanoid Robot Foundation Models



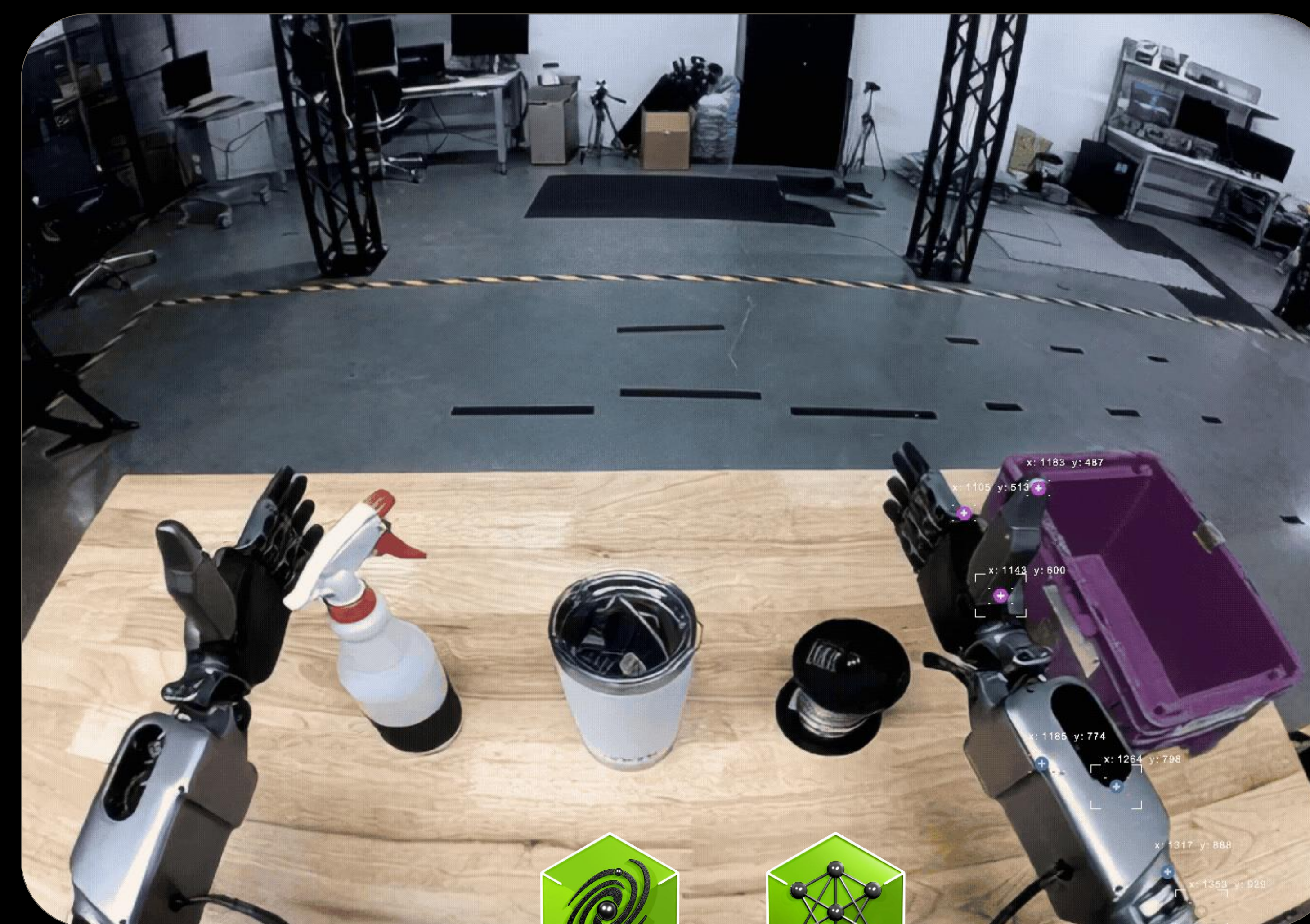
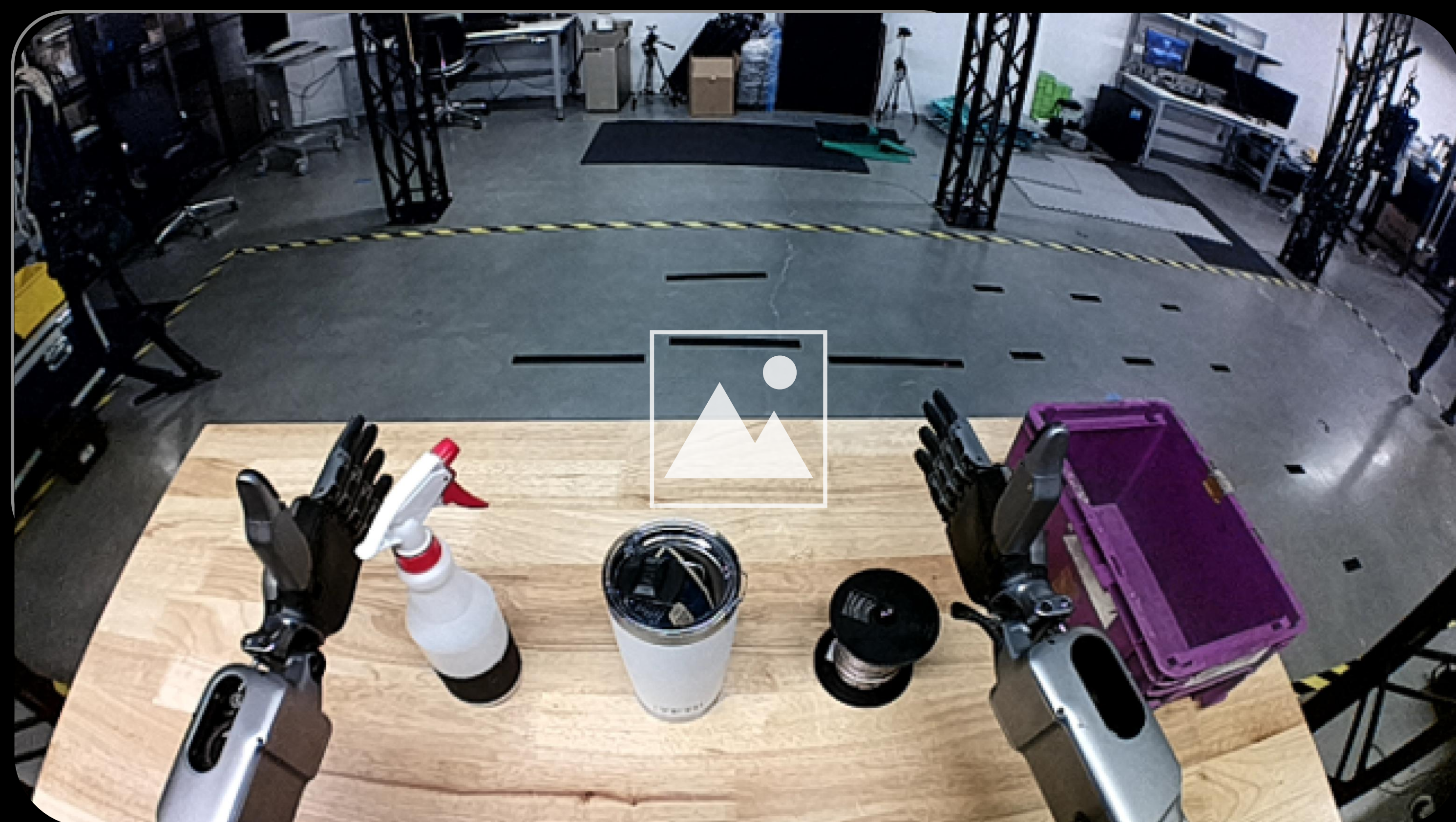
Simulation Frameworks



Synthetic Data Generation Pipelines

Isaac GR00T-Dreams Blueprint

A Small Human Demonstration Team Can Do the Work of Thousands



Pick up the object on the table that is used for drinking water



NVIDIA
Cosmos



Action
Labeling

How NVIDIA Engages with Researchers

Higher Education and Research

Programs and resources



Deep Learning Institute



Teaching Kits



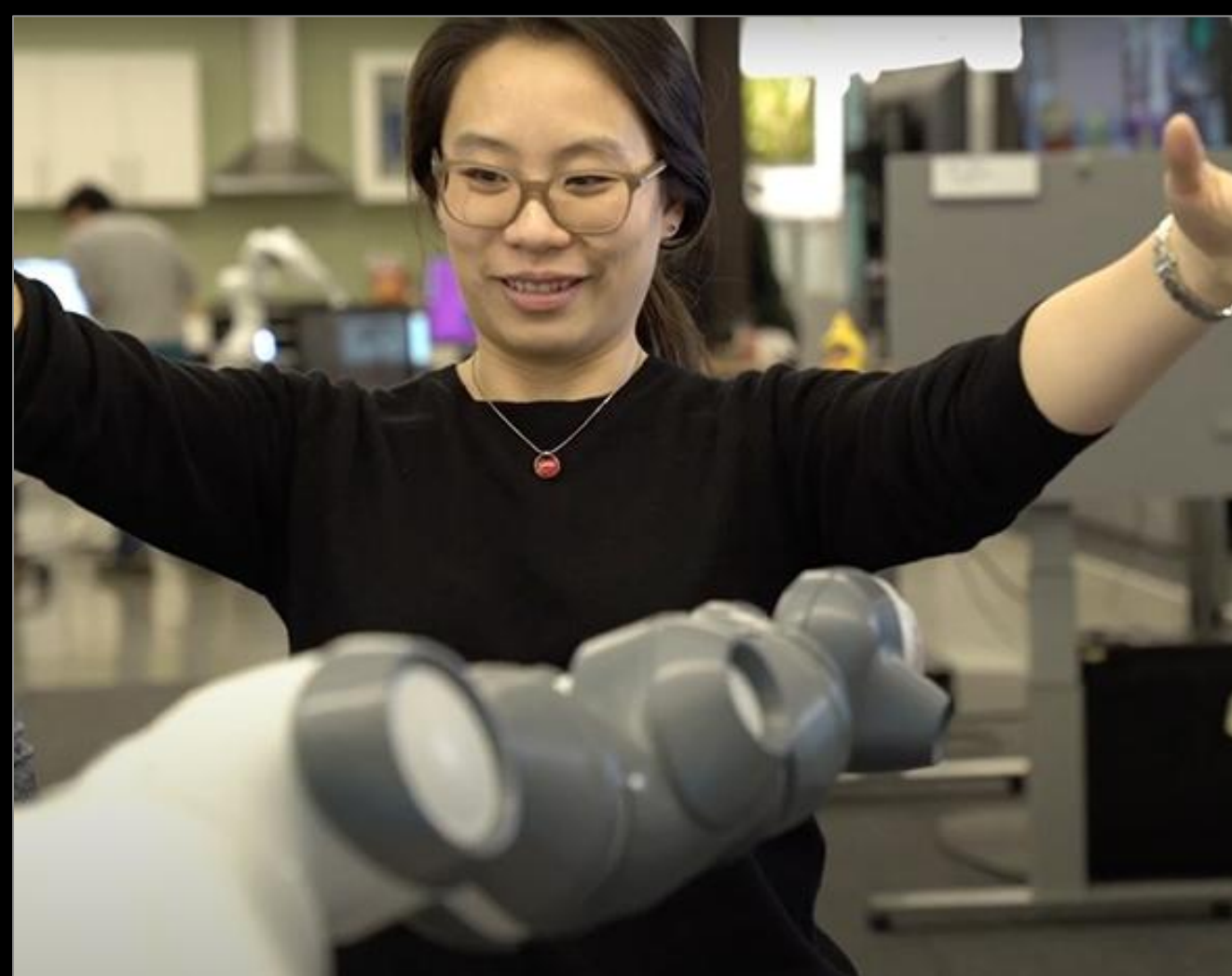
DLI Ambassador Certification



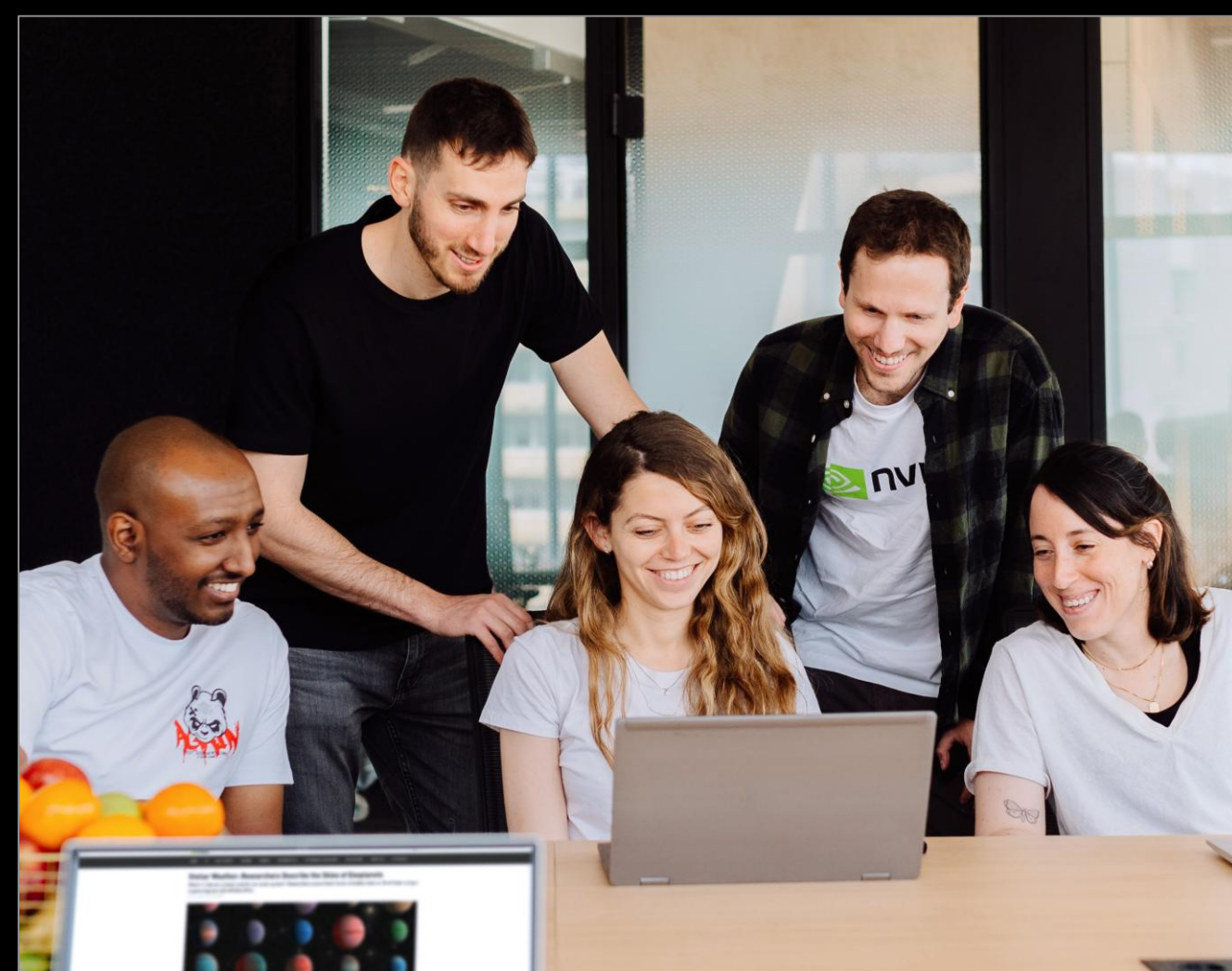
Academic Grants



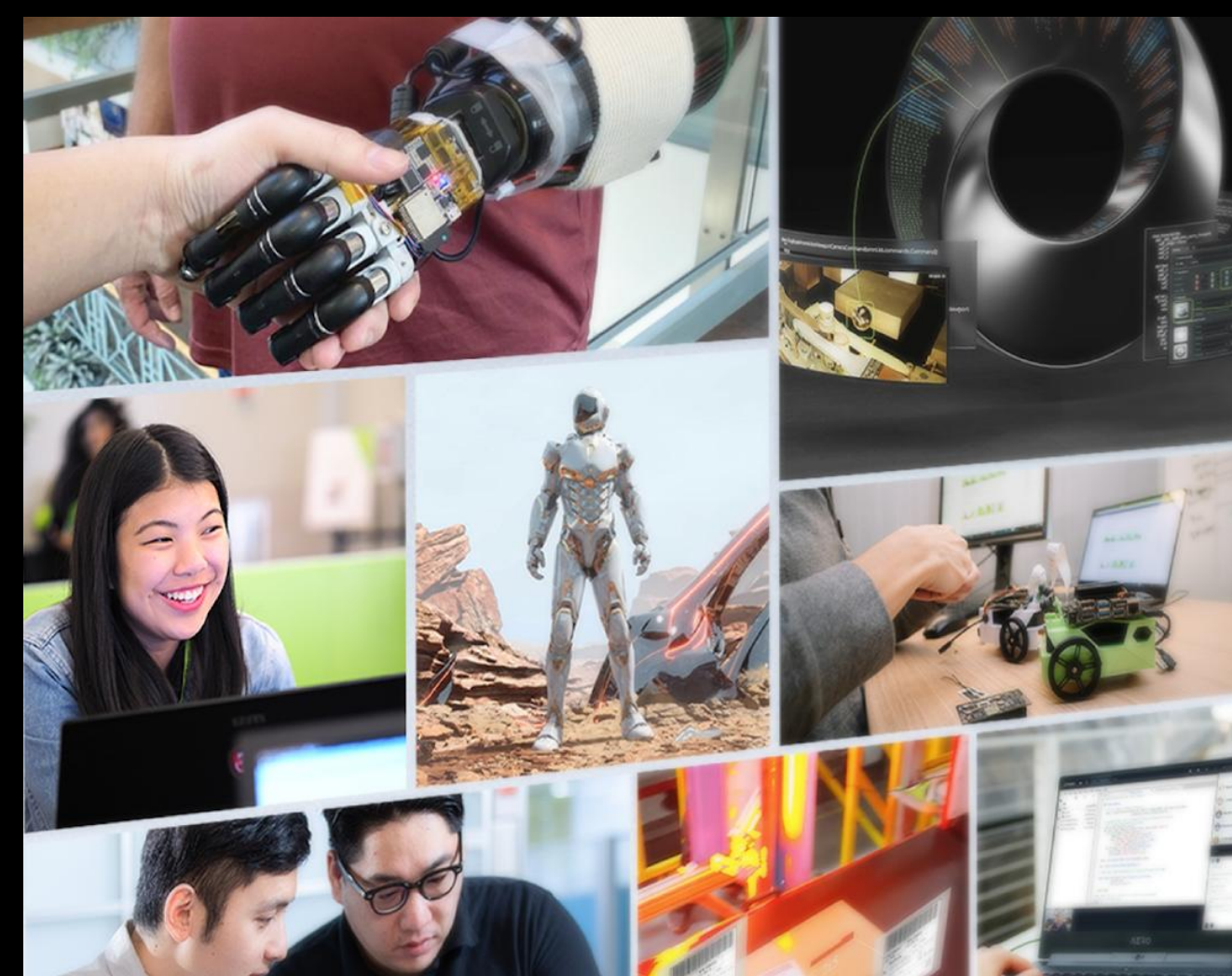
Jetson for AI Education



Strategic Research Engagements and NVAITC



Hackathons and Bootcamps



Inception Startup Incubator



Webinars



GTC

