HCLTech | Supercharging Progress™

AI Factory

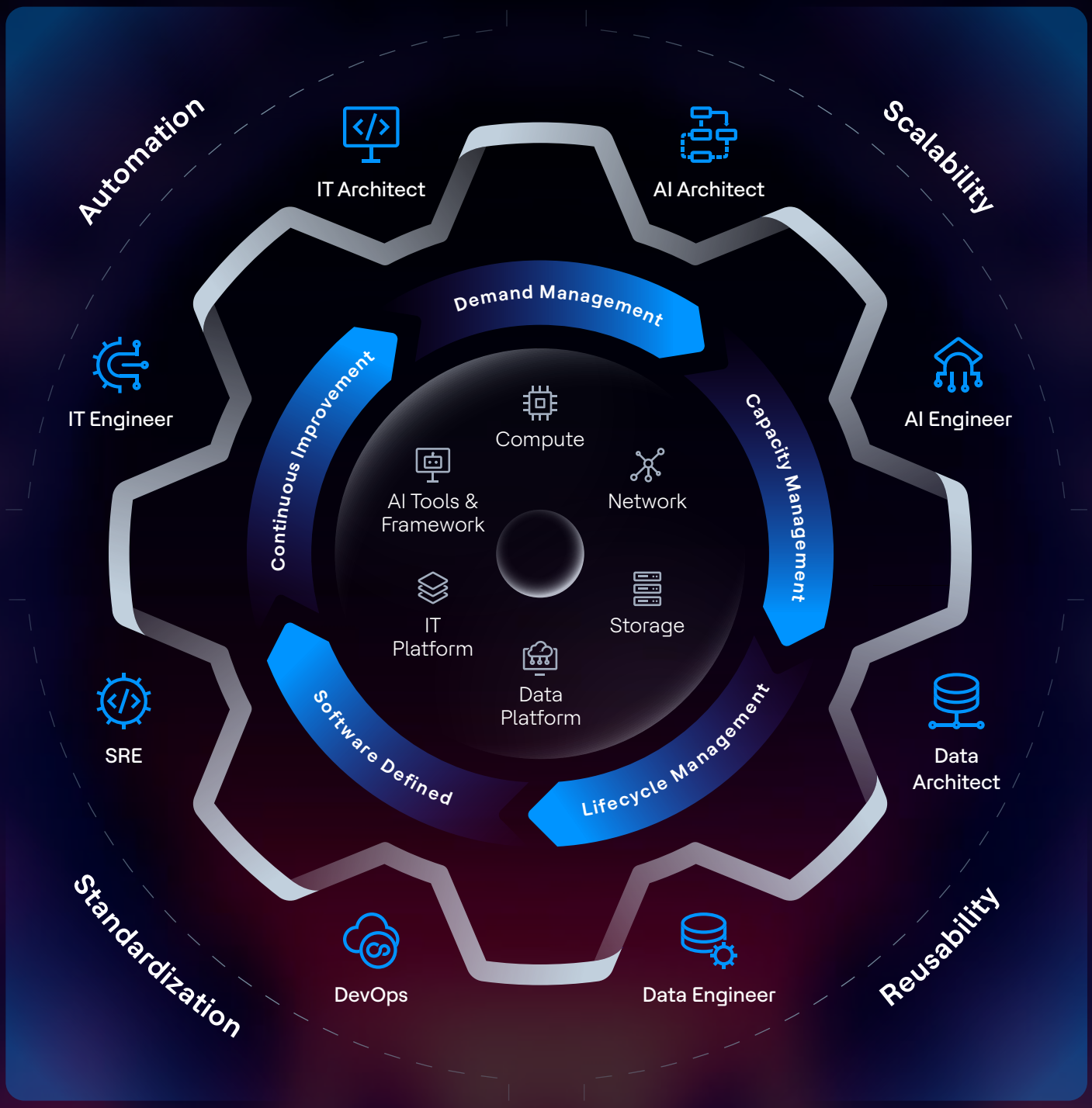
Powered by DCxTwin



What is HCLTech AI Factory?

HCLTech AI Factory is an industrialized operating model for AI that enables enterprises to move from experimentation to AI at a production scale. It unifies AI-ready physical infrastructure, AI-optimized IT platforms and an intelligent control plane to deliver **predictable, governed and scalable AI operations.**

Designed for continuous training, fine-tuning and inference, the AI Factory standardizes how AI environments are planned, deployed, operated and optimized across data centers, cloud and edge locations. This factory-based approach brings the rigor, repeatability and control of industrial operations to enterprise AI.



Key pillars of HCLTech AI Factory

HCLTech AI Factory has 3 main services:

AI Data Center Design and Build

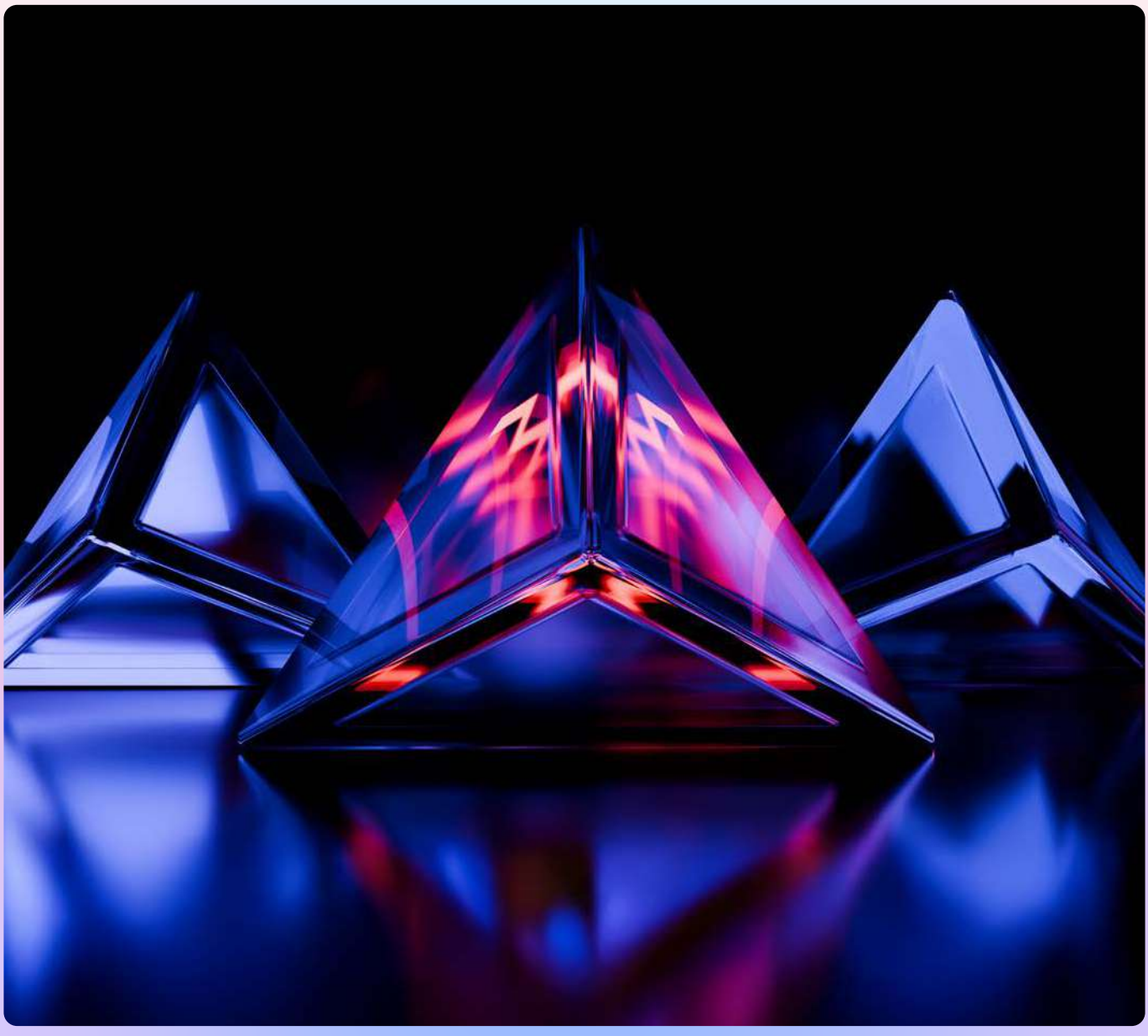
This service delivers an AI-ready physical environment, from power, cooling and space planning to raised-floor deployment, ensuring the data center can support high-density AI workloads from day one.

AI Data Center Support

This service ensures continuous availability, security and serviceability of all rack-level IT equipment supporting AI workloads.

AI Infrastructure Services

This covers the AI IT infrastructure and platform layer, from advisory, assessment, implementation, to operations, so that enterprises can run AI workloads reliably, securely and at scale.



The need for a Digital Twin of an AI Factory

AI data centers face growing challenges across four critical dimensions: Planning, Efficiency, Manageability and Regulatory compliance, driving the need for simulation-first, predictive operations and automated reporting.

01 **Planning:**

Accurately forecasting demand, designing facilities and scaling IT and non-IT assets (such as HVAC equipment and power distribution units) for data centers are complex tasks. Further, misallocating IT resources could create hot spots and eventually burn out IT assets.

02 **Efficiency:**

Poor data center operations and IT density management increase energy and operational costs. Scaling DCs in an unplanned manner worsens inefficiencies, impacts PUE and raises CO_2 emissions.

03 **Manageability:**

Suboptimal predictive capabilities, poor inventory control and challenges in reporting can affect key performance metrics and hinder management effectiveness. Inadequate support for remote guidance and operability exacerbates these issues.

04 **Regulatory:**

Need to meet regulatory requirements such as the EU EED and CSRD mandates require KPI reporting, compliance with evolving regulations and maintaining legal standards to avoid penalties.

These trends underscore the urgent need for AI factories or AI data centers to adapt to emerging challenges to plan and design data centers efficiently and maintain operational sustainability.

Leveraging industrial metaverse technologies, robotics and AI can provide innovative solutions to these challenges. It's important to understand how data centers can improve planning and design accuracy, enhance operational efficiency and improve manageability and compliance by integrating next-gen technologies.

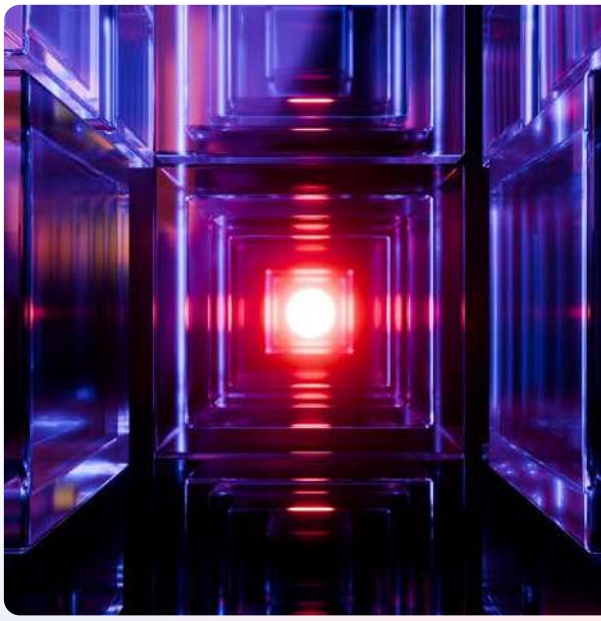
DCxTwin, foundation of the simulation-first approach for AI Factory

DCxTwin is a cutting-edge digital twin solution that acts as the **unified control plane for AI factories.** Built on industrial metaverse technologies, robotics and AI, DCxTwin creates a living digital replica of AI Factory infrastructure.

AI Factory with DCxTwin uses a simulation-first approach that helps enterprises design, build and modernize data centers for AI with minimal disruption and cost.

It brings together AI-ready physical infrastructure, optimized IT platforms and a digital twin-powered control plane to standardize how AI data centers are planned, built and operated.

DCxTwin creates a dynamic digital replica of the AI Factory, enabling simulation-led planning, real-time monitoring, predictive maintenance and intelligent automation across the entire data center environment.



Keeping our customers in mind, we have focused on five key pillars:

Efficiency

- Increase the IT infrastructure density
- Make faster performance and investment decisions with simulations

Change Management

- Faster asset deployment with smart ticketing
- Design, simulate, test and validate changes

Sustainability

- Right sizing the datacenter capacity
- Meet net zero goals with real-time emission alerts and patterns

Reliability

- Improved on call support
- Better risk management
- Advanced predictive maintenance and health alerts

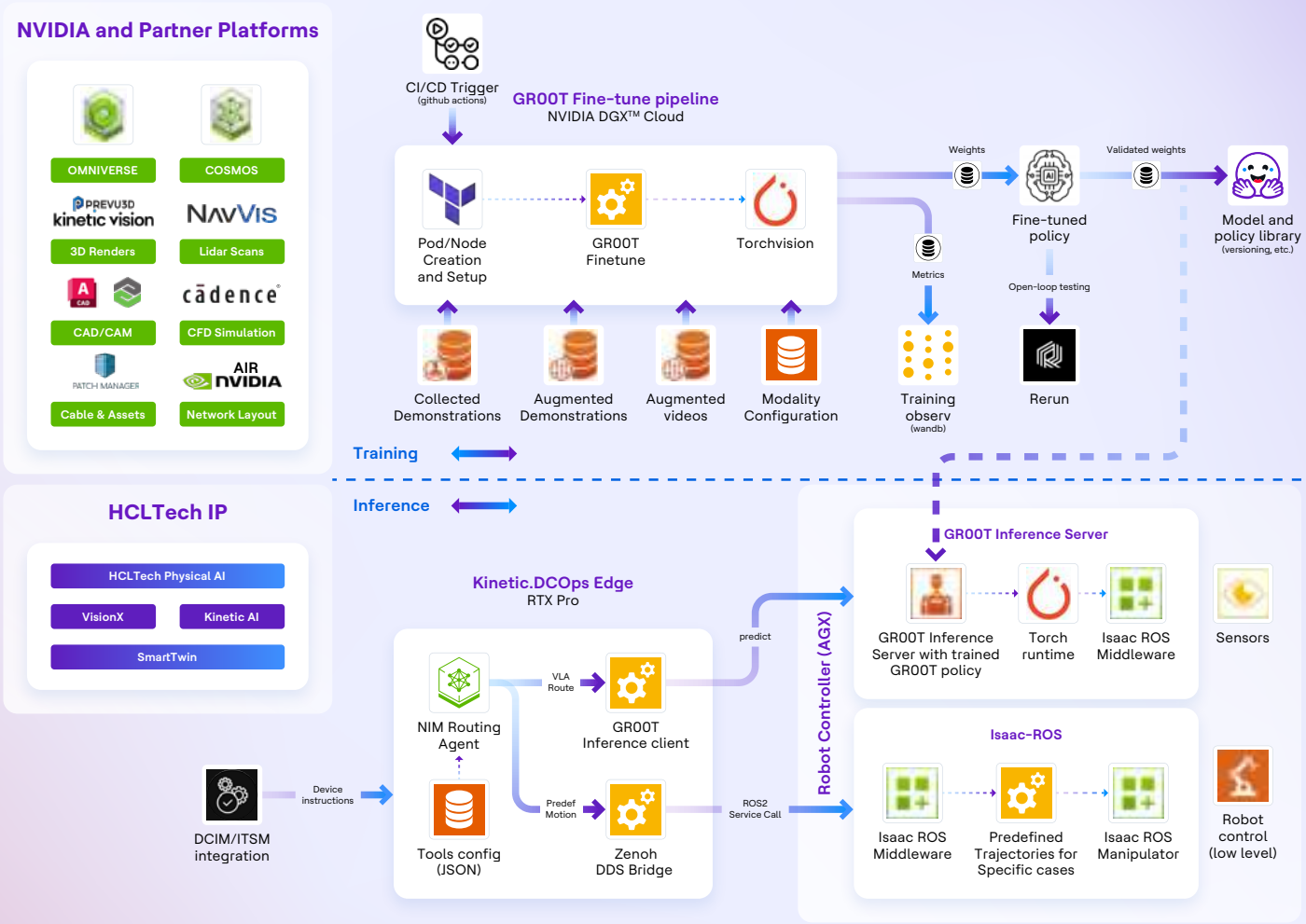
Resilience

- Predict future space and power needs
- Manage ESG, regulatory and compliance needs

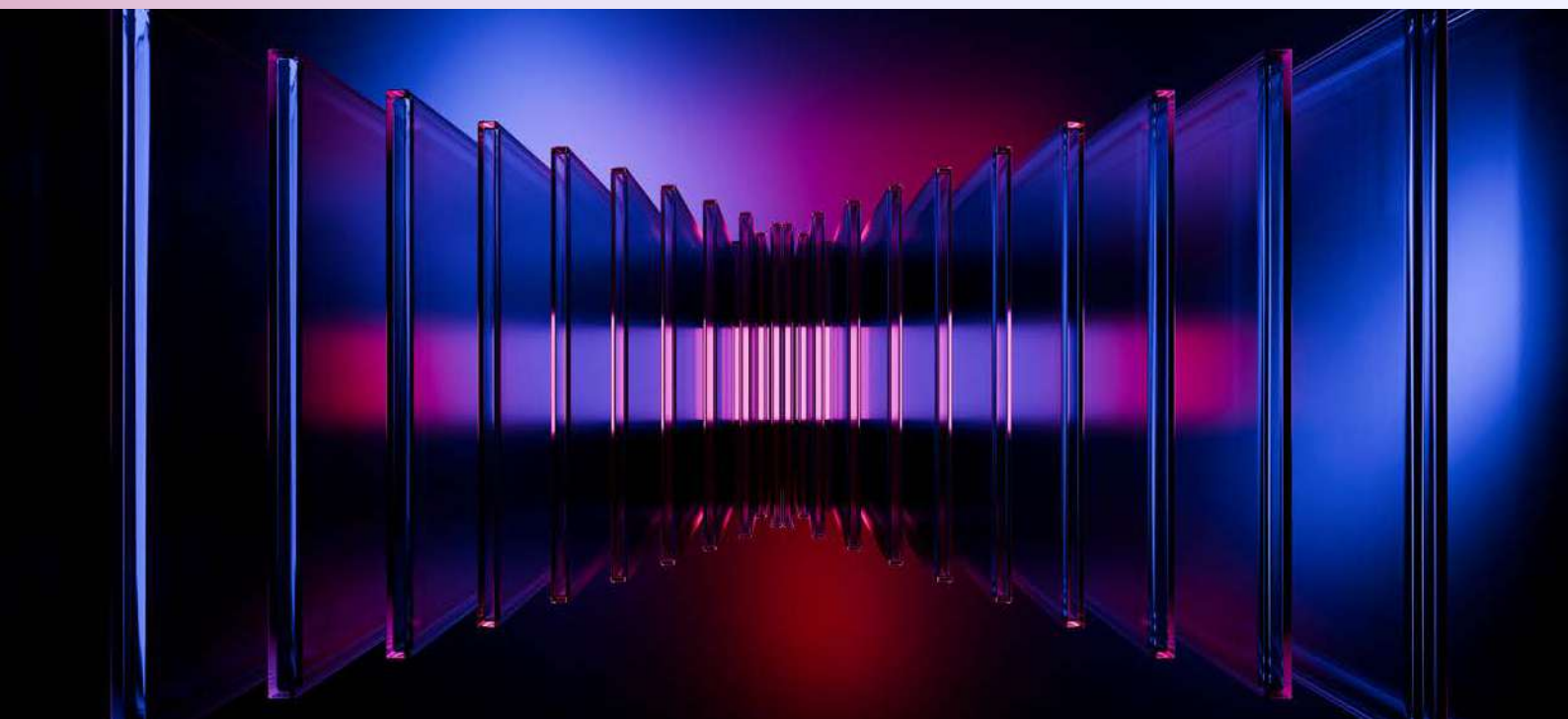
DCxTwin represents a significant advancement in data center design, build and management, offering a comprehensive solution that enhances efficiency, reduces costs and supports sustainability. By integrating DCxTwin, data centers can achieve unparalleled levels of performance and reliability, paving the way for a more sustainable and efficient future.

Architecture diagram

Data Center Operation with Robotics (inspections and actions)



Built on **NVIDIA GROOT** interference workflow.
Integrated with the broader **HCLTech DCxTwin.**



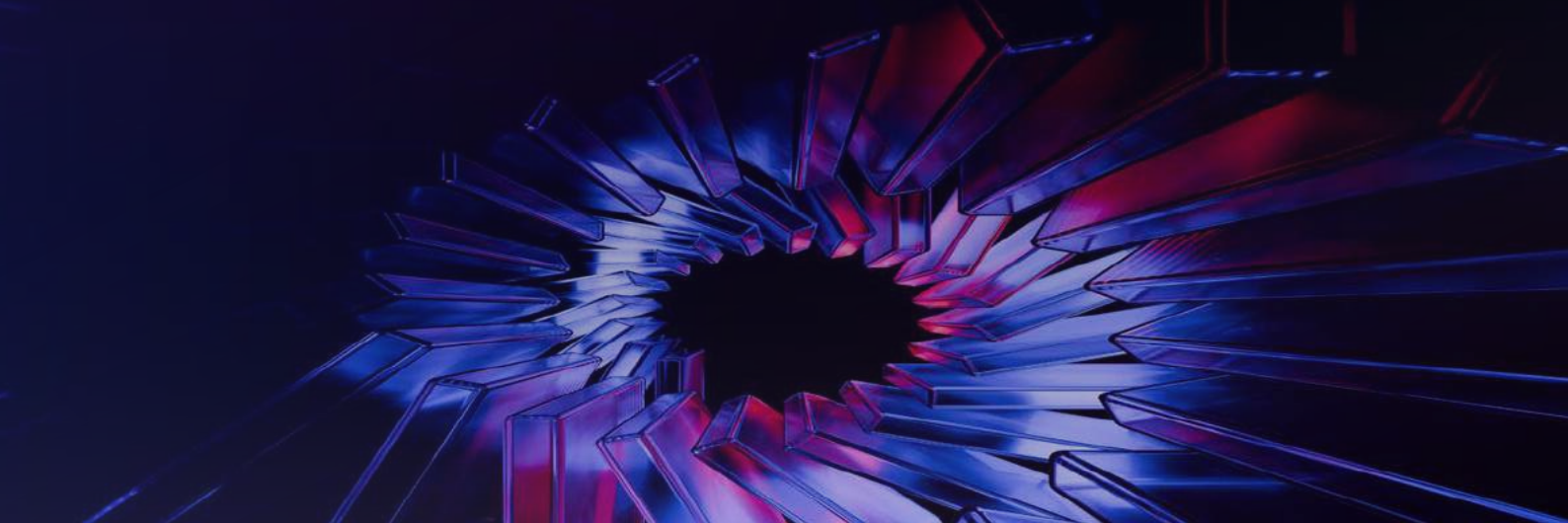
Transforming AI Factory Design, Build and Operations with DCxTwin – Key Use Cases

- Advanced DCIM
- Thermal Risk Management
- Remote Assistance
- Energy Tracking
- Predictive Maintenance
- Immersive Trainings
- Cooling & Capacity Optimization
- What-if Simulations
- Robotics Intelligence
- Capacity Planning
- Resiliency Testing
- ESG Reporting

The Benefits

- Improve efficiency and reduce OPEX by up to 30% through cooling optimization, better energy management and increased IT density.
- Enhance reliability and resilience with thermal risk mitigation, predictive maintenance and complete rack-level visibility for 100% ASHRAE thermal compliance.
- Accelerate planning and CAPEX decisions with what-if simulations that validate layouts, hardware configurations and future capacity, unlocking higher ROI and reducing stranded cooling capacity by up to 60%.

To know more, reach out to us at **NVIDIAEcosystem@hcltech.com**



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