



# Kinetic AI.Inspect

End-to-end platform combining robotics, AI and digital twins for autonomous inspection and predictive maintenance

## Overview

Improve inspection quality, consistency speed and frequency

Kinetic AI.Inspect combines a wide range of physical sensors like optical, thermal, acoustic imaging and LiDAR-based 3D mapping with our best-in-class data engineering, a simulation-first approach and mature AI to provide you with a common operating picture of your physical assets and operational environment.

The platform approach enables multiple use cases – 3D mapping, safety checks, asset state/tracking and more – by leveraging drones and ground robots, advanced AI models and data management. Unifying these use cases under one platform lowers overall costs and complexity while increasing operational value.



# Benefits

For enterprises, Inspect is a single-yet-flexible platform that adapts to various domain-specific needs and replaces expensive and cost-inefficient use case-focused tooling.

For vendors and developers, Inspect unlocks rapid development against a well-written standard platform that can support use cases without having to start from scratch, providing sensible defaults and committed support.

For all of us, Inspect facilitates safer, healthier and more secure environments at work and beyond by reducing environmental, safety and compliance risks.



## 30% less unplanned downtime

Unifying data sources into a single, AI-enhanced environment, coupled with more frequent and consistent observations, enables deeper and earlier insights into asset performance and status for improved operation and maintenance



## 95% productivity gain in post-processing inspections

Enhanced efficiencies through greater automation in data collection and proactive risk identification reduces manual labor and continuous real-time monitoring needs



## 30x more frequent and consistent inspections

Streamlined and automated workflows, with drones executing frequent inspections 24x7 enable deeper insights and faster turnaround



## Reduced safety risk

Autonomous inspections reduce personnel exposure to hazardous environments, while AI-driven analytics detect potential safety threats faster and more reliably

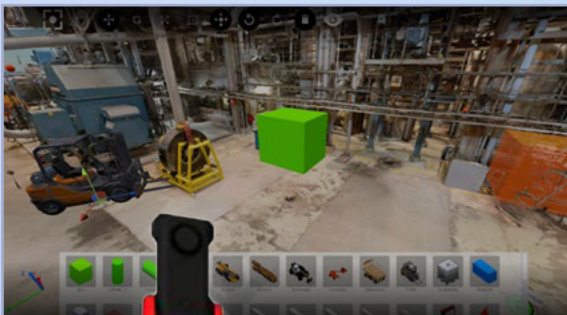


## Sustainability and compliance

Fewer site visits (e.g. via simulation-based outage preparation) and optimized resource utilization against newly unlocked parameters reduce environmental impact and improve adherence to regulatory standards

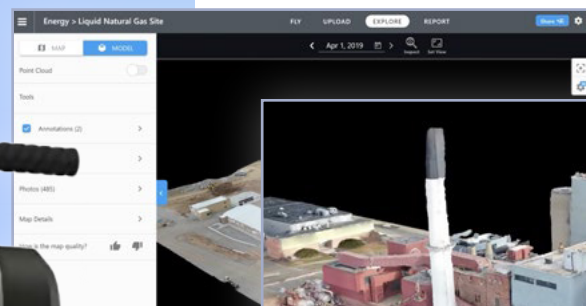
# Services

- **3D lidar and optical plant mapping**  
with robot-captured real-time “as-operated” layouts and digital twin/documentation updates
- **Point of interest-based inspection** detecting assets presence, equipment-specific status (e.g. if a valve is closed/open, gauge readings), thermal parameter recording and anomaly checks
- **Leak detection**  
leveraging thermal imaging and AI
- **Structural integrity checks**  
for plant equipment and storage facilities
- **Ad-hoc inspections**  
triggered by real-time alerts, handled by either ground robots or aerial drones

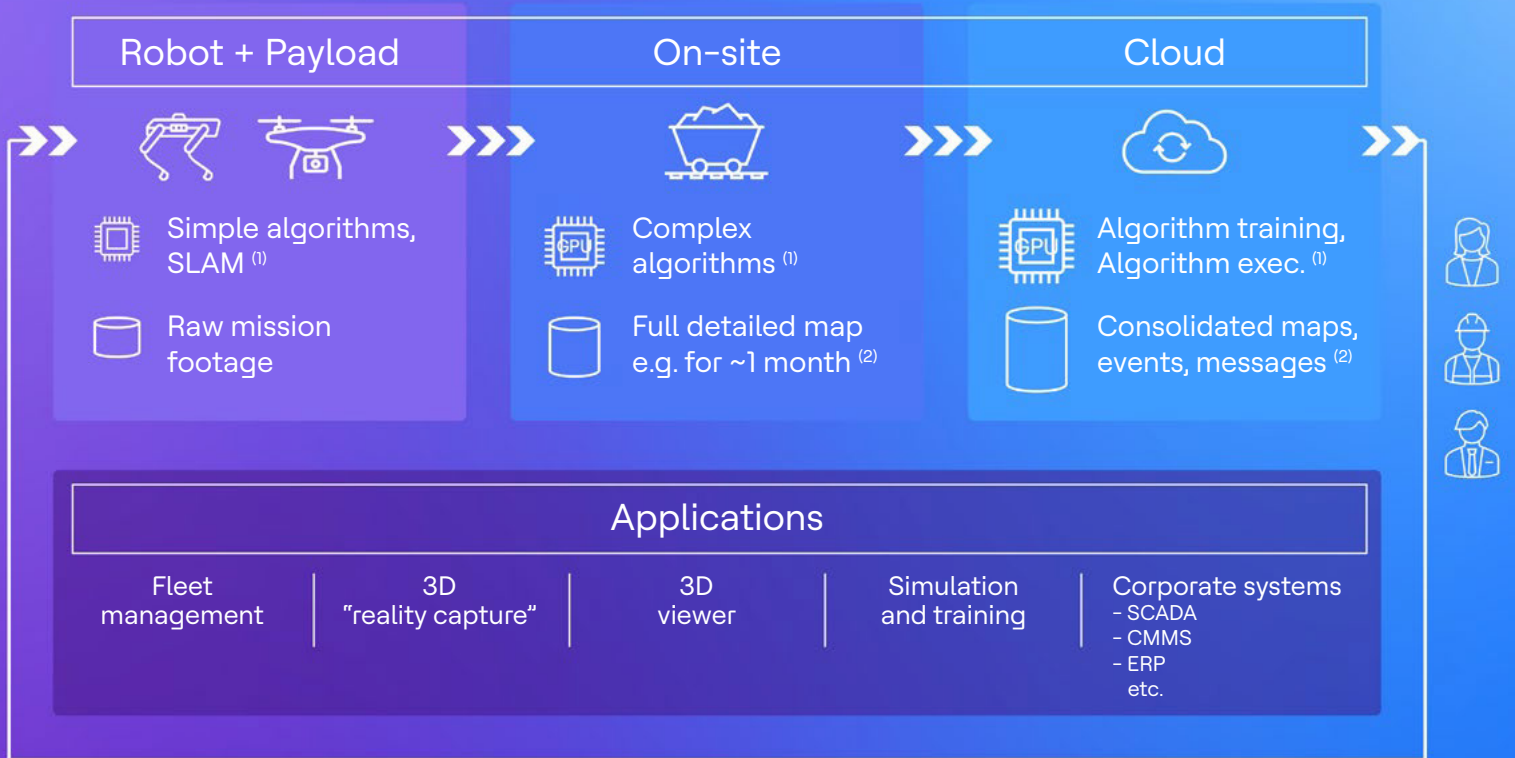


# Features

- **Scalable and customizable**  
Modular ecosystem with simulation-based training to tailor solutions to each site, quickly adapting to new conditions
- **Industrial metaverse**  
Pioneering “industrial metaverse” approach, bringing together simulation, digital twins, AI-enabled robotics and real-time data for unparalleled predictive capabilities and safety improvements
- **Simulation-first methodology**  
Omniverse-powered synthetic data generations and robotic simulations, accelerating AI training and customization
- **Partnership ecosystem**  
Best-in-class solutions for the entire data lifecycle for industrial inspection, including NVIDIA for large-scale simulation and AI, as well as specialized robot vendors, fleet management platforms, spatial intelligence and mapping solutions, startups and hyperscalers.
- **Managed service model**  
Clients can opt into an end-to-end service subscription, speeding up adoption and reducing capital expenditure, with support centers in 60+ countries for localized implementation, maintenance and on-ground expertise
- **Seamless IT-OT integration**  
Proprietary frameworks and connectors ensure secure and efficient data flows between OT systems and enterprise IT platforms
- **Pre-trained AI models**  
Object and anomaly detection are ready to be fine-tuned to various use cases



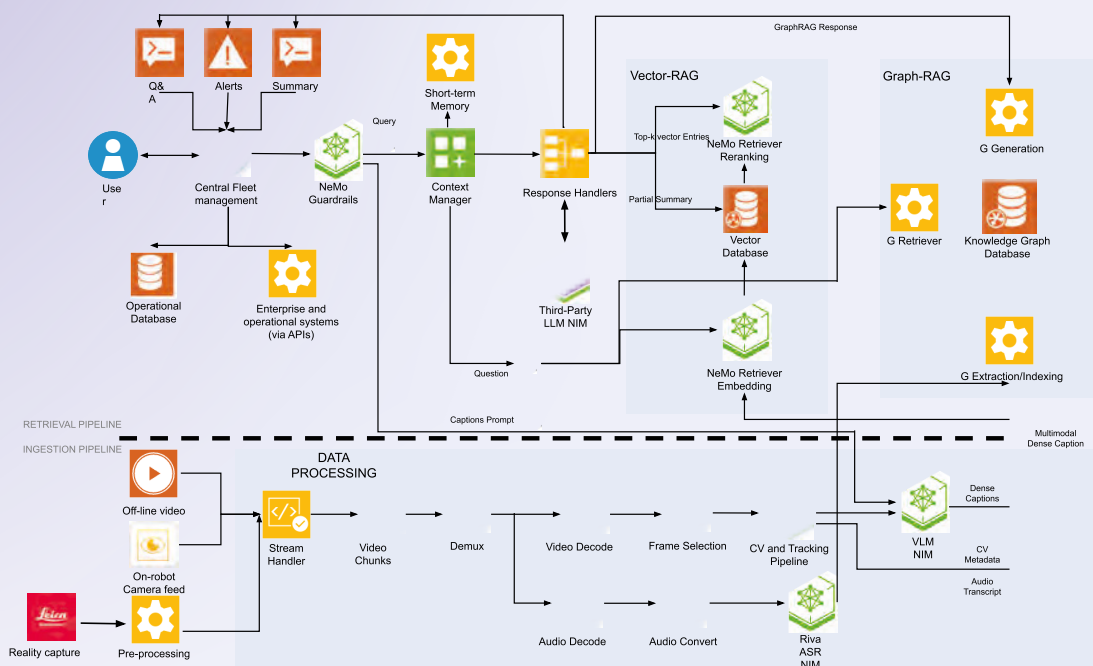
# Process Flow



# Architecture Diagram – Intelligent Inspection

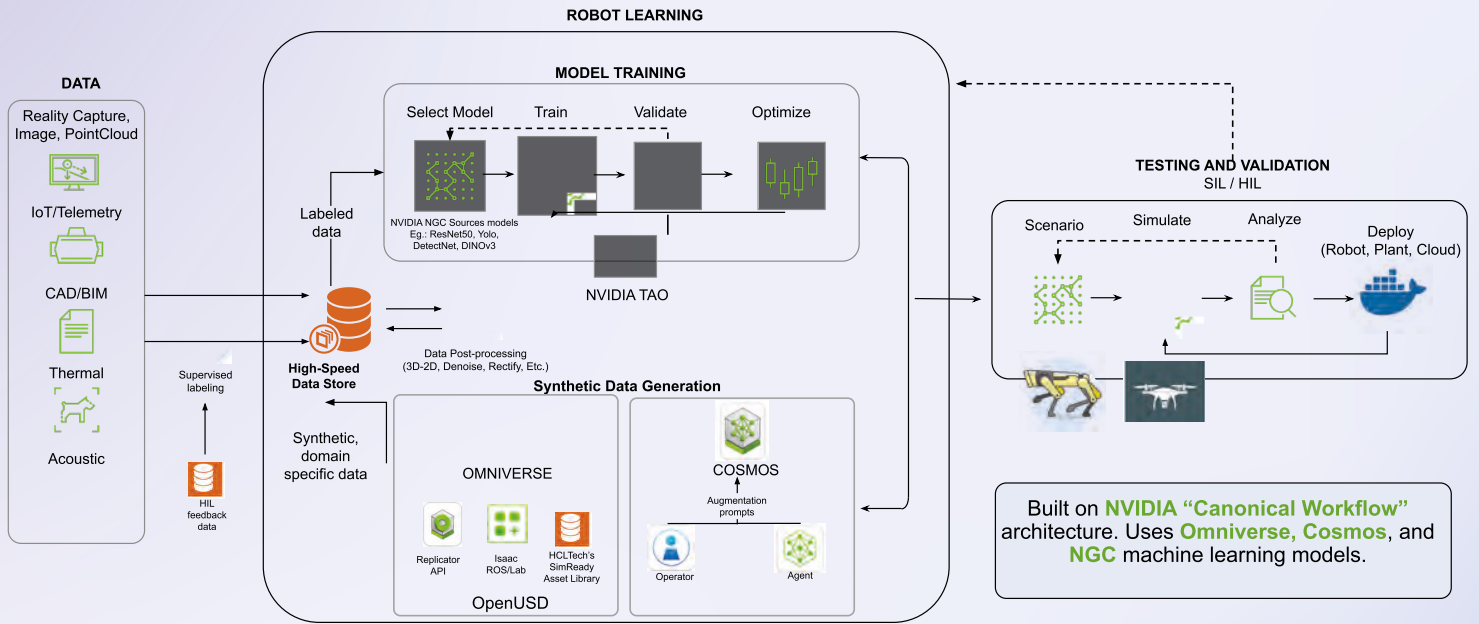
## Search and Summarization

Industrial Plant Inspection AI-based video stream analysis for asset condition checks



Built on **NVIDIA VSS Blueprint** architecture. Uses **NVIDIA NEMO** and **ASR NIM**.

# Model Training and Deployment Pipeline



HCLTech's Kinetic AI practice delivers industry-focused solutions leveraging the latest advancements in embodied, Agentic AI. Our solutions combine wide-ranging technology expertise, from data science and engineering to robotics, with deep knowledge of the most demanding domains to help you define the new era of automation-driven efficiency.

To know more, get in touch with [NVIDIAEcosystem@hcltech.com](mailto:NVIDIAEcosystem@hcltech.com)

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