DATASHEET

RTI + NVIDIA: The Foundation for Physical AI Systems

POWERING THE FUTURE OF AI-ENABLED MEDICAL DEVICES

Physical AI systems rely on real-time, interoperable data sharing across diverse data sources and computing platforms. The integration of RTI with Holoscan enables deployable edge AI models to leverage diverse, interoperable data sources with reliable, low-latency, and secure communications across applications, networks, and platforms.

HIGHLIGHTS

- Simplify and accelerate development of software-defined, AI-enabled, flexible, and scalable MedTech systems
- Provide the proven and production-ready software infrastructure for real-time data streaming across diverse and distributed data sources, applications, and platforms
- Unlock the full potential of edge AI, with data integration across distributed applications and platforms for real-time actuation and insights
- Enable software-defined architectures for adaptable systems that integrate sensing, monitoring, video, and control across legacy and new applications

Physical AI Systems Demand Real-Time Data

From AI-driven surgical systems to robotic imaging and assistants, AI is transforming the healthcare industry. New systems now have the capability to deliver more precise treatments and improve outcomes, while increasing operational efficiencies. In order to do so, Physical AI™ systems are emerging that integrate sensing, video, and control applications — fueled by real-time data streaming across complex applications and devices. Critical data must be reliably managed and processed at the edge in real-time to enable real-time insights and actuation.

RTI Connext® is integrated with NVIDIA® Holoscan and serves as a vital component for NVIDIA Isaac™ for Healthcare workflows, helping to accelerate the development of these vital Physical AI systems.

Data-Centric Connectivity for AI-enabled MedTech

Based on the Data Distribution Service (DDS™) standard, Connext streamlines connectivity across complex systems by providing a common software communication framework for real-time, distributed data flow. Connext abstracts the details of communications from the application logic, reducing the time and costs of designing and integrating diverse data sources, operating systems, and applications. This provides developers with an interoperable data-centric architecture for seamless, real-time data access to data across distributed devices, applications, and platforms.

Connext provides a decentralized, peer-to-peer framework with no servers or centralized brokers, enabling applications to process, analyze, and act on high-volume, real-time data with low-latency and high reliability. Configurable Quality of Service (QoS) tuning options enable developers to optimize performance, reliability and interoperability. Connext also provides built-in authentication, encryption, and access control, enabling secure-by-design architectures with least-privilege access to data in motion.

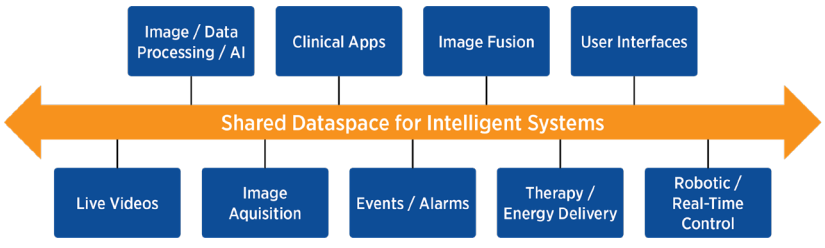

Figure 1. The RTI Connext databus enables a shared dataspace for intelligent systems.

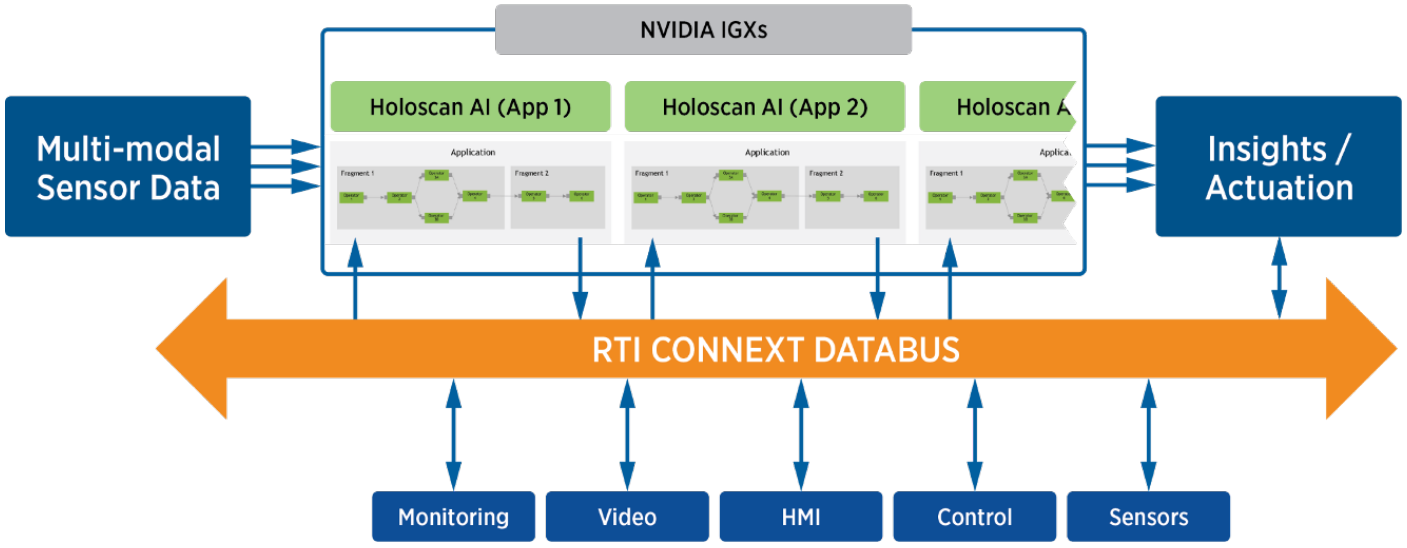

Figure 2: RTI Connext enables real-time data streaming for NVIDIA Holoscan

Connext allows developers to leverage the framework to focus development on innovation of clinical applications over infrastructure, and build on a foundation for modular, scalable, and adaptable architectures as systems evolve.

RTI Connext and NVIDIA Holoscan

NVIDIA Holoscan is the AI-powered sensor processing platform designed for building real-time, software-defined applications at the edge. It combines hardware, software, and AI libraries to deliver high-performance, low-latency streaming data processing in medical devices, and more.

Connext is integrated with Holoscan to enable deployable edge-AI models to leverage diverse, interoperable, and real-time data sources with reliable and low-latency communications across applications, networks, and platforms. By using Holoscan in a distributed system with Connext, architects can unlock advanced AI capabilities through interoperable and diverse data sources for real-time actuation and insights.

RTI Connext and NVIDIA Isaac for Healthcare

NVIDIA Isaac for Healthcare is a platform purpose-built for developing healthcare robots, featuring pre-trained models, physics-based simulation, synthetic data generation pipelines, and accelerated runtime libraries. It supports developers across the entire workflow—from collecting and curating data to building and testing AI models in realistic simulated environments, and deploying intelligent, low-latency robotic applications at the edge.

RTI Connext provides interoperable, real-time data streaming for Isaac for Healthcare workflows. Through its real-time connectivity, Isaac for Healthcare enables seamless integration of video, sensors, imaging, and robotic devices for AI training, simulation, and deployable AI-enabled and autonomous applications at the edge. These integrated technologies accelerate development of physical AI systems that span robotic surgery, interventional and diagnostic imaging, medical simulation and training, and telesurgery.

> “Enterprises are looking for advanced software-defined architectures that deliver on low latency, flexibility, reliability, scalability, and cybersecurity. With RTI Connext and NVIDIA Holoscan, medical technology developers can accelerate their software-defined product visions by leveraging infrastructure purposely-built for healthcare applications.”
>
> **— David Niewolny —**
> **Director of Business Development for Healthcare and Medical, NVIDIA**

For more information about the work RTI and NVIDIA are doing, please visit: www.rti.com/nvidia. To learn more about RTI in Healthcare, please visit: www.rti.com/industries/healthcare, or download this white paper.

ABOUT RTI

RTI is the software framework company for physical AI systems, with a mission to run a smarter world. RTI Connext® provides the data architecture for over 2,000 designs, running in more than $1T of total deployed systems worldwide. RTI is a member of the NVIDIA Connect Program for ISVs.

Your systems. Working as one.

CORPORATE HEADQUARTERS: 232 E. Java Drive, Sunnyvale, CA 94089 • +1 (408) 990-7400 • info@rti.com

rti.com rti.com/blog rti.com/podcast company/rti rti_software rtisoftware