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Hitachi Aims To Disrupt Industrial IoT Platform Market With New Commercial Lumada Software Stack

Fully Enhanced and Now Available as a Standalone Offering for IoT Developers and Architects, Hitachi's Lumada Provides an Intelligent, Composable Platform That Delivers Faster Time to Insight and Business Value for Industrial and Enterprise Customers

TOKYO AND LAS VEGAS – September 19, 2017 – Hitachi Ltd. (TSE:6501) and Hitachi Vantara, today jointly announced Hitachi's first commercial Lumada internet of things (IoT) platform offering. Now in its v2.0 release, the Lumada IoT platform has been fully updated with an elegant, portable architecture that enables it to run both on-premises or in the cloud and to support industrial IoT deployments both at the edge and in the core.

The new software stack is designed to help customers quickly and easily gain insights, predictions and recommendations from their data, and can be easily adapted to support mid-to-large-scale environments. Lumada's integrated advanced analytics have also been enhanced with artificial intelligence (AI) functionality at scale. The result is a highly intelligent and flexible platform that accelerates superior outcomes for enterprise and industrial customers, such as increased operational efficiencies and cost savings, enhanced operational safety and reliability, improved asset utilization, performance management and product quality, and the creation of new business models.

Among the notable advancements to the Lumada IoT platform are asset avatars, Hitachi's unique approach to what is commonly referred to as "digital twins." Asset avatars provide a digital representation of physical assets and rich metadata for analytics, serving as a digital proxy for business and industrial assets and providing rapid data-driven insights into their health and performance, with continuously updated sensor values. This approach helps to eliminate "blind spots" in operation-critical systems by providing improved access to – and insights from – business, machine and human data, which can help users move more rapidly from measurement to management to improvement. The newly enhanced software stack also provides IoT developers and architects with powerful design tools and features that simplify the creation and deployment industrial IoT solutions, with faster time to insight.

Since introducing Lumada to the market as a co-creation platform in May 2016, Hitachi has hardened and optimized its Lumada IoT platform. These improvements are based on numerous deployments in proof-of concept (POC) and co-creation project engagements with its customers and partners, as well as in its own factories.

Hitachi worked with customer Daicel Corporation to co-create an image analysis system using Lumada that improves product quality and increases productivity by detecting signs of facility failures and deviations in front-line worker motions. This system has allowed Daicel to improve the in-process guarantee rate for products.

Another customer, Okuma Corporation, worked with Hitachi to co-create an advanced high-efficiency production model with Hitachi to support mass customization in its manufacturing plants. The target of this joint demonstration

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experiment is to double productivity and reduce production lead time by 50%.

Based on the best practices developed throughout projects like these, Hitachi has enhanced Lumada's functionality to simplify management of business and industrial assets, support greater asset utilization and accelerate the time to value of IoT deloyments. Its next generation architecture is highly flexible, composable and adaptable to support customers' existing business and IT environments and help them to more rapidly achieve highly optimized outcomes.

Customers looking to accelerate their IoT initiatives using Lumada will benefit from engaging Hitachi's co-creation services, tapping its expansive expertise in both operation technology (OT) and information technology (IT) to create customized IoT solutions that are tailored to their unique requirements.

"Our next-generation Lumada IoT platform demonstrates Hitachi's unparalleled expertise in both OT and IT, and reinforces Hitachi's commitment to being an innovation partner for our customers in the IoT era," said Keiji Kojima, chairman at Hitachi Vantara and senior vice-president and exective officer at Hitachi Ltd. "With the powerful advancements delivered today, our customers and partners can now choose to harness the full power of Lumada's AI, advanced analytics and asset avatars capabilities to simplify their own IoT solution development or to accelerate their digital transformation initiatives in co-creation projects with Hitachi. In either case, we believe Hitachi is delivering a highly intelligent and unique solution that challenges the industrial IoT platform market status quo."

Hitachi's next-generation Lumada IoT platform architecture has been fully updated with five major layers to form a flexible, portable and composable software foundation with comprehensive security capabilities and expanded support for unstructured data uploads. IoT developers and architects will also benefit from Lumada's dynamic design features, rich analytics and robust asset management capabilities, including:

- **Lumada edge:** Allows any variety and velocity of data to be easily ingested, transformed and analyzed in close proximity to physical assets.
- **Lumada core:** Provides asset registry, identity and access management and simplifies the creation of asset avatars.
- **Lumada analytics:** Blends OT and IT data to uncover patterns with powerful analytics, machine learning and AI.
- **Lumada studio:** Delivers predefined widgets to simplify the creation of dashboard applications; issues alerts, notifications or just straight-through processing.
- **Lumada foundry:** Offers foundational services to ease deployment on-premises and in the cloud, as well as security, microservices and support features.

"We are exceedingly proud of the next-generation Lumada software stack we are delivering to the market and opening up to developers today," said Rich Rogers, senior vice-president of engineering and product management at Hitachi Vantara. "However, Hitachi's intention is that Lumada will be much more than just another IoT platform in a crowded market. Lumada's ultimate purpose is to make it simple to harness the power of IoT data to drive real value for Hitachi's customers and partners. We remain committed to delivering exceptional integrated software, solutions and services for Lumada. Our vision is that one day all Hitachi machines will be connected to it, enriching the data-driven insights and value we can provide to ensure every Hitachi customer will benefit."

Product Availability and Information

Hitachi's Lumada IoT platform software is generally available now for purchase and in co-creation engagements with Hitachi and select partners. Some features may not be immediately available in all markets. For more information and a complete list of product and feature enhancements, visit https://www.hitachivantara.com/en-us/products/internet-of-things/lumada.html.

Experience Hitachi's Lumada IoT Platform at NEXT 2017

Hitachi's new Lumada IoT platform software and related solutions will be on display at the company's user conference, Hitachi NEXT, in Las Vegas, September 19 and 20, 2017. Event attendees can see live demonstrations of the software and the innovative IoT solutions Hitachi and its customers and partners are developing with it.

The event also features a full track of IoT developer breakout sessions, providing attendees with an opportunity to engage directly with Hitachi product management executives and development teams. The developer breakout session will provide a deep dive on the latest architectural advancements, design features and best practices for building industrial and commercial enterprise IoT solutions with Lumada. For more information, visit www.hitachinext.com.

About Hitachi Vantara

Hitachi Vantara, a wholly owned subsidiary of Hitachi, Ltd., helps data-driven leaders find and use the value in their data to innovate intelligently and reach outcomes that matter for business and society. We combine technology, intellectual property and industry knowledge to deliver data-managing solutions that help enterprises improve their customers' experiences, develop new revenue streams, and lower the costs of business. Only Hitachi Vantara elevates your innovation advantage by combining deep information technology (IT), operational technology (OT) and domain expertise. We work with organizations everywhere to drive data to meaningful outcomes. Visit us at HitachiNewCo.com. Visit us at www.HitachiVantara.com.

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About Hitachi, Ltd.

Hitachi, Ltd. (TSE: 6501), headquartered in Tokyo, Japan, delivers innovations that answer society's challenges. The company's consolidated revenues for fiscal 2016 (ended March 31, 2017) totaled 9,162.2 billion yen ($81.8 billion). The Hitachi Group is a global leader in Social Innovation and has approximately 304,000 employees worldwide. Through collaborative creation, Hitachi is providing solutions to customers in a broad range of sectors, including Power / Energy, Industry / Distribution / Water, Urban Development, and Finance / Government & Public / Healthcare. For more information, please visit http://www.hitachi.com.

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