Bringing about a Worldwide Digital Transformation
Creating Value through Connected Technology: Hitachi's IoT Platform Lumada, for a Smart Society

With digitalization driving major changes in society, Hitachi capitalized on its extensive know-how with IT and experience with OT to develop its IoT platform Lumada, to deliver rapid solutions through collaborative creation with customers. It also set up the Hitachi Insight Group, based in North America, for the global deployment of the technical capabilities and know-how in IT × OT it has built up in Japan, together with advanced IoT use cases and knowledge from Europe and America. By leveraging Lumada in its digital solutions business, Hitachi is working to help customers to overcome their challenges around the world.

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Providing a Platform for Collaborative Creation of Solutions

How is corporate management being transformed by the IoT and other recent trends in IT?

Onodera More advanced forms of IT, such as the Internet of Things (IoT), data analytics, and artificial intelligence (AI), and the acceleration in the use of data by these technologies as society becomes increasingly digitalized, are transforming the composition of competition and even changing who the competitors are.

To achieve sustainable growth in such an era, it is necessary to use these new technologies for the rapid realization of new ideas. Important challenges for companies include how to make practical use of the data collected through the IoT as feedback, and how to leverage the numerous IoT platforms in Japan and elsewhere.

How does the Lumada IoT platform provide a way to deal with these challenges?

Onodera Lumada brings together the technologies involved in IoT solutions, including data blending and orchestration, big data and advanced analytics, AI, simulation, and security. Lumada is characterized by three key features, they are "open", "adaptable", and "verified and secure".

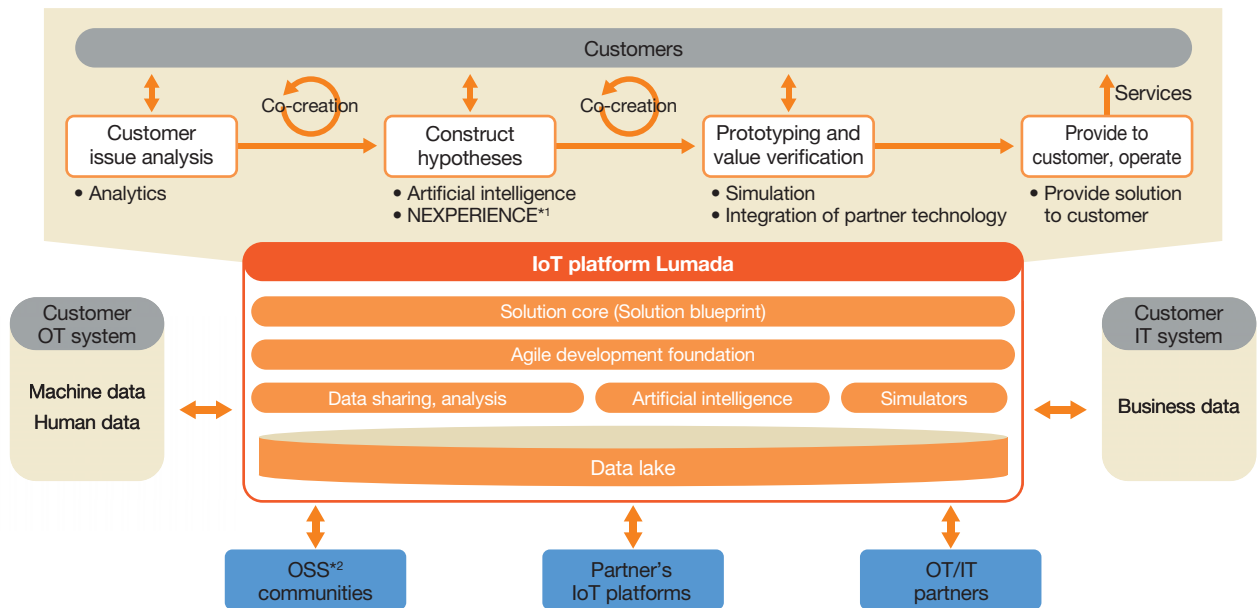The name Lumada incorporates the idea of obtaining

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Features of IoT platform Lumada

*1 Hitachi's methodology for building service businesses through collaborative creation with customers
*2 Open source software

knowledge that is useful to customer businesses by "illuminating" large amounts of customer "data" to reveal hidden relationships.

Lumada can connect to and exchange data with not only customers' existing business and operational systems and open source software (OSS), but also with platforms and services from other vendors, and it can adapt to the progressive expansion of customer systems. The platform incorporates software and security technologies that have already demonstrated reliability and provided reassurance, and in which we have built up extensive experience. The fact that Lumada also incorporates the knowledge of operational technology (OT) built up by Hitachi through its own activities is one feature that is not available from other vendors.
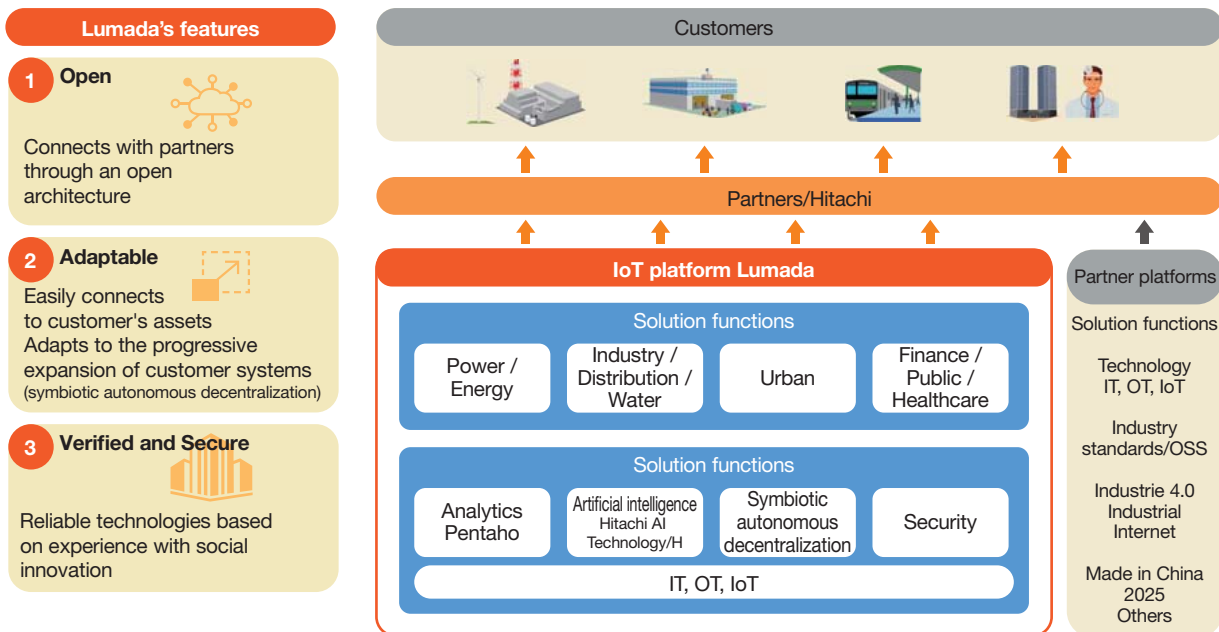
Our aim is to work with customers to overcome the challenges they face by utilizing proven tools and OT knowledge to analyze data on their facilities, equipment, and personnel together with data from commercial departments, and to provide the results as feedback in the form of workplace OT.

So, Lumada is a way to expedite collaborative creation with customers?

Onodera That's right. More than just serving as a platform for providing new technology, it means utilizing tools like Hitachi's NEXPERIENCE methodology for collaborative creation with customers to first identify the business challenges they face and then to work with them to create digital solutions that will help overcome these challenges. Hitachi has gained

Overview of IoT platform Lumada

Lumada's features	
1 Open	Connects with partners through an open architecture
2 Adaptable	Easily connects to customer's assets. Adapts to the progressive expansion of customer systems (symbiotic autonomous decentralization)
3 Verified and Secure	Reliable technologies based on experience with social innovation

Diagram elements:
- Customers
- Partners/Hitachi
- IoT platform Lumada
  - Solution functions: Power / Energy | Industry / Distribution / Water | Urban | Finance / Public / Healthcare
  - Solution functions: Analytics Pentaho | Artificial intelligence Hitachi AI Technology/H | Symbiotic autonomous decentralization | Security
  - IT, OT, IoT
- Partner platforms
  - Solution functions
  - Technology IT, OT, IoT
  - Industry standards/OSS
  - Industrie 4.0 Industrial Internet
  - Made in China 2025
  - Others

experience from a large number of use cases that bring together IT and OT in a wide variety of business fields, including industry, transportation, energy, building facilities, finance, and healthcare. By building up a range of templated solution cores in Lumada that enable these use cases to be applied more generally, we are able to rapidly develop IoT solutions that match the challenges faced by customers.

We are expanding the scope of application by quickly implementing new ideas from customers and using the results of these to hone the business models. It is Lumada that makes it possible to accelerate this process of collaborative creation.

Global Deployment of IT×OT Knowledge

The Hitachi Insight Group plays a central role in developing solutions that use Lumada as a base, and in opening up new markets. What is its purpose?

Onodera Digitalization and the IoT are global trends. We established Hitachi Insight Group in Silicon Valley in the USA to serve as an organization that can deploy knowledge of collaborative creation and use cases with world-leading customers as quickly as possible, globally, and across different industries.

Chalaka The IoT is a fusion of IT and OT. With technology and in-depth know-how in both IT and OT, Hitachi has become a leader in the use of the IoT in industry and infrastructure. Lumada leverages sensors on factory machinery and infrastructural equipment, linking them via networks, and using data analytics and machine learning to support uses cases such as predictive maintenance and the optimization of manufacturing processes. We believe we can deliver innovative value to customers around the world by drawing on strengths in both IT and OT that, among large, multinational global companies, only Hitachi possesses. For this reason, we have deployed Lumada into global markets from the very outset.

What sort of solutions are demanded by global markets?

Chalaka While different customers have various different business challenges, one major trend in Europe is Industrie 4.0, the demand for optimization of factories that are also capable of increasing product quality, and that support high-mix low-volume products using just-in-time practices. In America, there is growing need for smart energy to overcome concerns about the resiliency of the energy network to disasters or cyber-attacks, smart cities that improve public safety, and industrial

IoT to enable predictive maintenance for production equipment and other infrastructure. While each customer requires a different solution, we believe at Hitachi that our ability to supply IoT solutions across a wide range of environments means we can deal with any challenge.

Onodera One of the key applications for Lumada is in making production systems smarter. One typical example is a highly efficient production model that uses the IoT, something we have been working on at Hitachi's Omika Works. This model has succeeded in reducing the production lead time by 50% for control equipment, a key product of the plant, by analyzing factory floor data to make improvements to problem areas, and by coordinating with production planning to deploy personnel, parts, and other resources in an optimal manner. We also plan to supply this model to customers as one of the solution cores in Lumada. Likewise, in applications such as energy, smart cities, and healthcare, we intend to progressively increase the number of successful use cases and solution cores, and to supply them globally.

Helping Overcome Societal Issues from a Global Perspective

What sort of value will Lumada provide to society?

Chalaka The numerous use cases that we have implemented successfully with customers and group companies in many different industries are a major asset for Hitachi, including when considered in global terms. We now have the opportunity to apply these advanced IoT solutions powered by Lumada to global customers. Given the potential for helping customers around the world overcome the challenges they face, we want to make Lumada one of the world's most robust and efficient IoT platforms that enables value such as increasing productivity and quality, reducing in cost of operations and enhancing quality of life. We are working closely with our Japanese colleagues to create model cases for world-class digital solutions, bringing in partners and team members from around the world. My hope is that this work will help solve the challenges facing both customers and society.

Onodera Broadly speaking, what we are trying to do is create a smart society, meaning one that is wiser and more efficient as well as safe, and secure. Through collaborative creation with customers around the world, we intend to contribute to social innovation by making advances in many different areas of society with digital solutions that use the IoT and other new technologies to generate value.