

Social and Public Sector Systems

1 Outlook for Multilingual Dialogue Platform

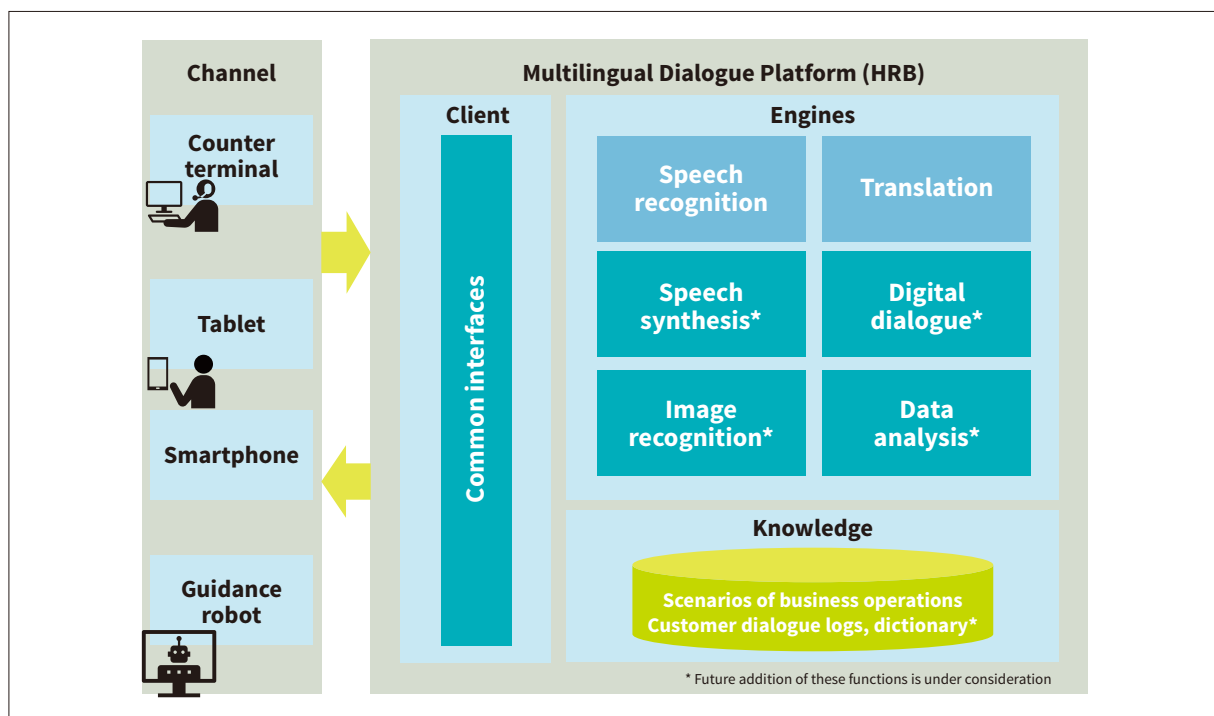
Hitachi has developed HRB, a multilingual dialogue platform for dealing with inbound tourists, whose numbers have been rising over recent years. By assisting such dealings and facilitating the provision of information, the platform is intended to reduce workloads and time spent on these activities. The HRB platform supports a number of different artificial intelligence (AI) engines for things like speech recognition and translation and is designed to provide consistent operation across a broad range of channels, devices, and engines. Standardization of interfaces and knowledge reduces the cost of adoption and, by enabling the collection and analysis of customer service logs, the platform has potential uses in business process improvement.

A speech translation service for Japanese, English, Chinese, and Korean that uses a translation engine developed for tourist and railway applications is currently available (a version based on fixed phrases only was released in August 2019, with machine translation

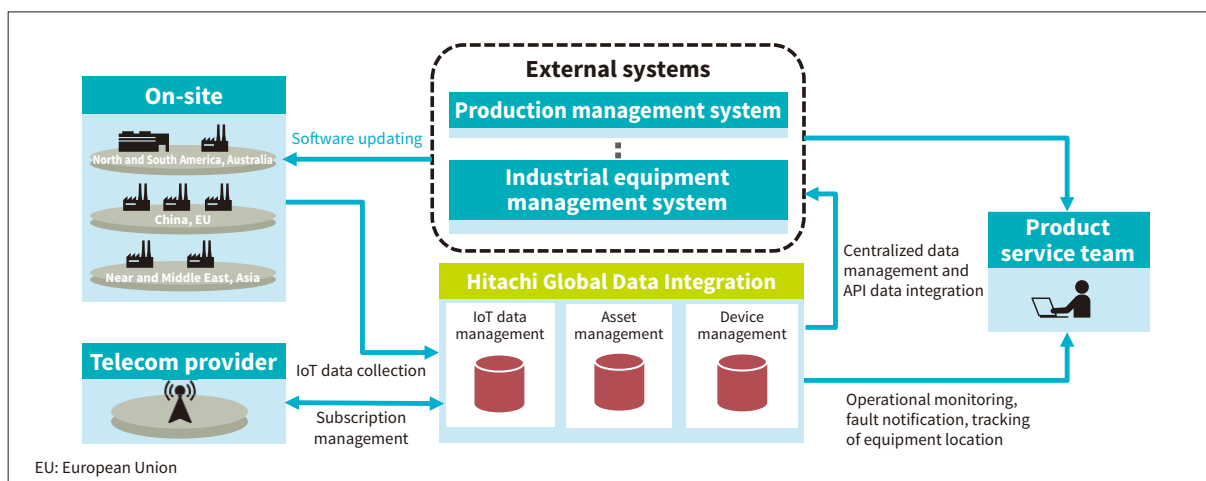
to be released in April 2021) and plans include developing the product into a dialogue platform through the incorporation of additional engines such as for digital dialogue and image recognition. Future plans include the further development of non-industry-specific functions to improve efficiency and reduce workload, including support for verification by means of facial recognition and the automation of customer dialogues for routine tasks.

2 Realization of Advanced Industrial Equipment Management with Hitachi Global Data Integration

Hitachi has launched Hitachi Global Data Integration as a service for utilizing Internet of Things (IoT) data. IoT data can be utilized for business optimization by linking with external systems such as enterprise resource planning (ERP). In addition to visualizing IoT data, this service provides an application programming interface (API) that integrates and manages asset and device management data, and links to external systems in real



1 Overview of multilingual dialogue platform



2 Example of data use by global IoT service

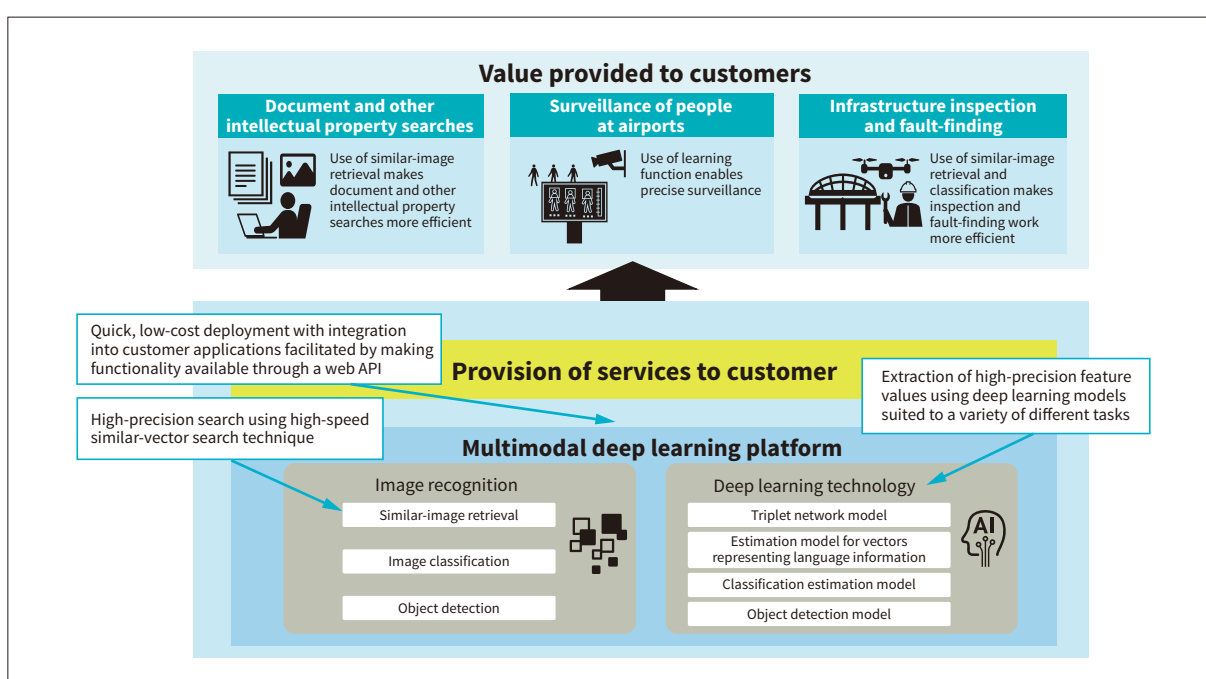
time. The availability of these functions provides a one-stop service for the presentation of IoT data that also encompasses integration with external systems and the centralized management of equipment data.

Generally, the ability to distribute files for purposes such as equipment optimization and security policy updating is an essential aspect of the after-sales maintenance of industrial equipment. Conventional practice has been to separate the equipment management system used for file distribution from the applications used to provide access to IoT data, an arrangement that results in the duplication of work and data inconsistencies across the different systems. The integrated management of data provided by this service eliminates this inconsistency while use of the API to transfer data between systems reduces the duplication of work.

In this manner, this service can provide one-stop services for visualization of IoT data, centralized management of management data, and linkage of IoT data to external systems, allowing customers to focus on generating new value using the IoT. In the future, Hitachi intends to contribute to its customers' businesses by expanding the service to address a variety of different requirements and issues associated with use of IoT data.

3 Multi-modal Deep Learning Platform for IoT Data

In recent years, there has been a great deal of research and development on basic technologies and learning models



3 Overview of multimodal deep learning platform

using AI technology to utilize electronic archives of customer business information.

It is against this background that Hitachi launched a “multi-modal deep learning platform” in May 2020 that performs AI learning on a combination of image, text, and numeric data, using it in applications such as highly accurate similar-image retrieval, image classification, and object detection.

Features of the multi-modal deep learning platform include a similar-vector search technique for the high-speed identification of similarities in large volumes of data and the ability to extract feature values with high precision from a number of different deep learning models for things like similar-image retrieval, image classification, and object detection. This enables similar-image retrieval to be performed with a high level of accuracy.

The deep learning platform is made available by means of a web API. Along with facilitating integration with other applications, this means that deployment of the platform in proofs of concept (PoC) or other trials can be accomplished quickly and easily at low cost.

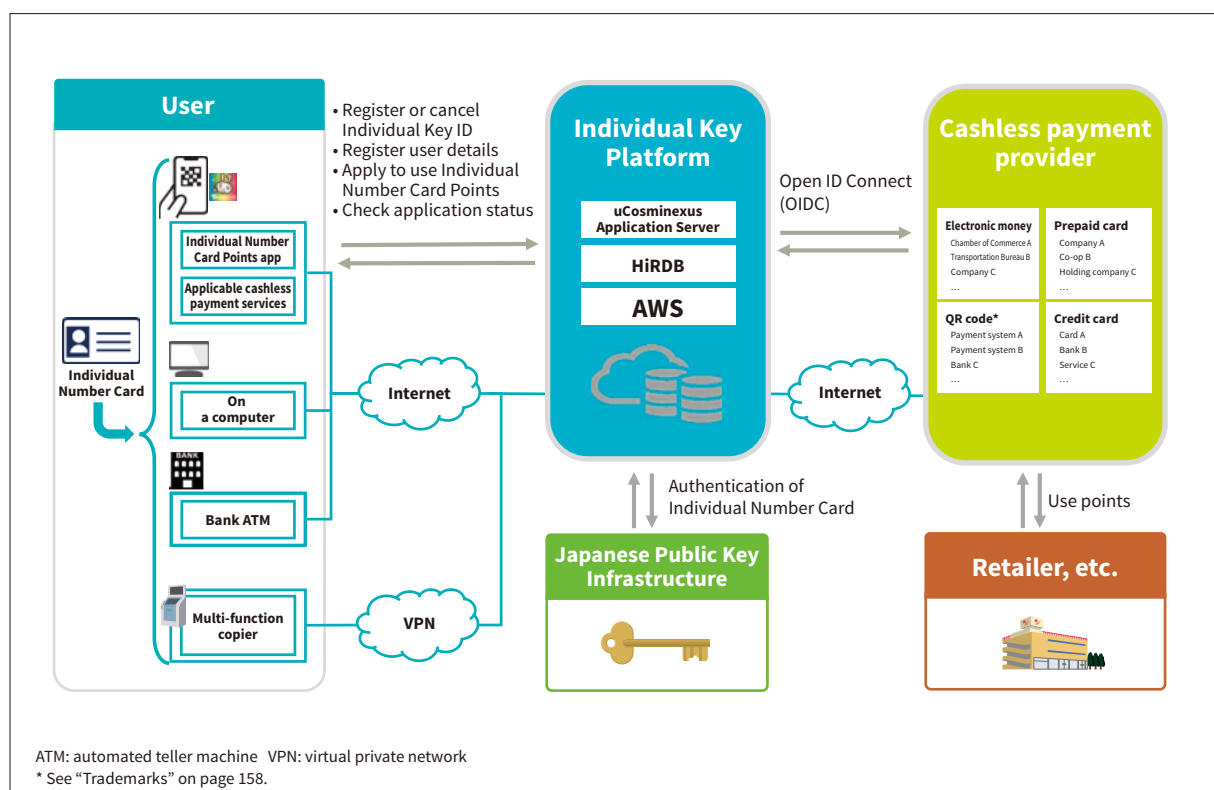
In the future, based on the experience gained from PoC, etc., Hitachi intends to add new functions that benefit customer business operations and to deliver services that provide customers with a high level of added value for further advancement.

4 Individual Number Card Points Project Utilizing Individual Number Card

Hitachi has been developing and operating the MyKey Platform since 2018 in conjunction with a demonstration project being run by the Ministry of Internal Affairs and Communications. This has also involved enhancing the functionality of the MyKey Platform with the aims of preventing a decline in personal consumption due to consumption tax increase and encouraging cashless payments, both of which are pressing issues for the government. Successful development of the core systems for implementing a government-run reward points project, Individual Number Card Points, aimed at boosting customer activity will deliver economic benefits of a trillion yen.

In order to handle rapid fluctuations in user numbers, the system was relocated from an on-premises environment to Amazon Web Services (AWS)*. In doing so, this also provided the first opportunity for Hitachi to make use of functions for hosting uCosminexus Application Server and HiRDB on AWS.

Users provide proof of identity (ID) to payment providers by means of their Individual Number Card utilizing the Japanese Public Key Infrastructure (JPKI) service for public identity verification. To ensure security, this is implemented using OpenID Connect (OIDC), an international standard for ID connection.



4 Overview of Individual Number Card Points project utilizing Individual Number Card

By boosting uptake of the Individual Number Card, this project has made a major contribution to encouraging cashless practices.

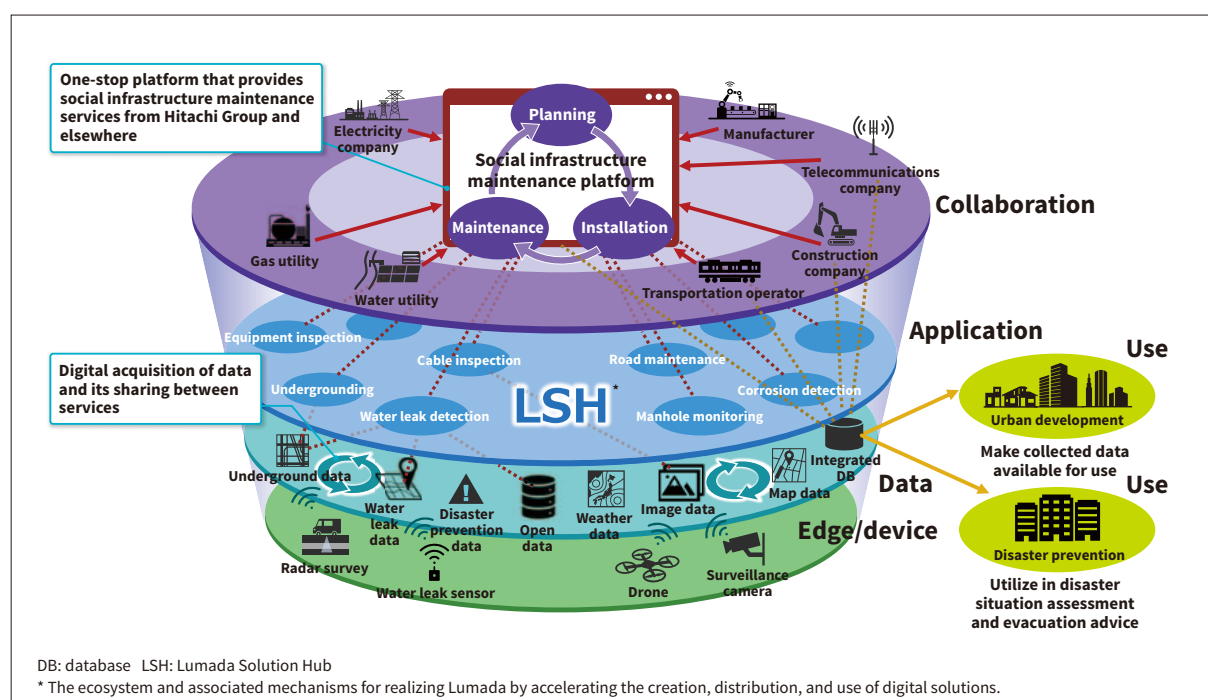
* See “Trademarks” on page 158.

5 Hitachi's Vision for Social Infrastructure Maintenance Services

People expect the social infrastructure underpinning their way of life to always function reliably. Unfortunately, the deterioration of this infrastructure with age means that the volume of aging equipment is expected to continue rising. As the maintenance and inspection work is mainly done through patrol inspections by humans, the aging of skilled maintenance personnel and associated shortages are also causing problems.

As a means of resolving these issues, Hitachi is looking at providing solution services that use sensors or other devices to collect data about the condition of social infrastructure that can then be analyzed by AI or other such techniques.

One such example is a service that uses highly sensitive vibration sensors developed in-house for the automatic detection of water leaks, with research center, factory, and industry system engineers working together to make enhancements to the solution. Hitachi intends to deliver social infrastructure maintenance in ways that satisfy both service level and cost criteria by bundling a variety of such solutions from across its group companies, thereby further expanding its range of one-stop platforms for social infrastructure maintenance that can be made available quickly.



5 Hitachi's vision of a platform for social infrastructure maintenance