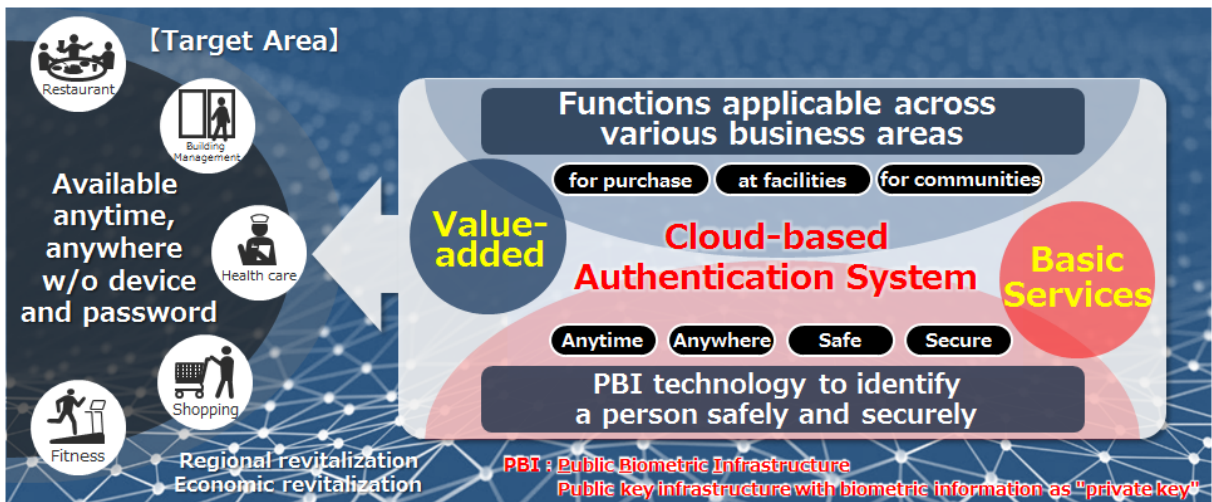# Hitachi Announces Launch of "Biometrics Integrated Infrastructure Service," a Cloud Service for Realizing Safe Biometrics

Commercializing an infrastructure service
for realizing empty-handed personal authentication and cashless payments

Outline of the service

Tokyo, October 29, 2020 – Hitachi, Ltd. (TSE:6501, "Hitachi") announced the launch of "Biometrics Integrated Infrastructure Service," a cloud service for realizing safe personal authentication and cashless payments using biometrics, on October 30. The service adds a payment link functionality and a functionality for tracking how people enter and exit commercial facilities to Hitachi's original "Public Biometrics Infrastructure"*1 (PBI), which allows for safe and reliable identification of persons by encoding, registering, and comparing finger vein, face, iris, and other biometric information. This makes it a versatile infrastructure service. Users need only register their biometrics and other information once since it is safely stored centrally in the cloud in a way that makes it impossible to reconstruct, so it is possible to go empty-handed and make cashless payments or enter without a ticket at restaurants, event venues, leisure facilities, and in a broad range of other situations.

Moreover, coinciding with the provision of this service, Hitachi's Yokohama Works will be introducing cashless payments attached to finger vein and credit card information from early December. This will facilitate empty-handed cashless payments by gradually increasing the number of locations with tablets and finger vein authentication devices, such as restaurants and cafes.

In recent years, the cashless payments ratio has increased in Japan and abroad, also

- more -

due to the infectious spread of the novel coronavirus. Meanwhile, the damages caused by unauthorized use are growing, thus creating a greater need for more rigorous personal authentication. Compared to passwords and QR codes, biometrics are more secure and will not be forgotten, so they are garnering attention as a powerful authentication tool, spreading to a broad range of companies and general consumers and predicted to double its 2019 market size*2 by 2024. However, since biometrics make use of biological information that cannot be discarded or changed throughout one's life, securing a high level of trust is indispensable to their use.

Hitachi has been working on biometric authentication use centering on finger veins. Hitachi introduced this for bank ATMs*3 in 2016. Also, prior to the launch of this service, Hitachi worked together with UC Card Co., Ltd. to install tablets and finger vein authentication devices in restaurants, drug stores, and many shops to run a demonstration experiment for cashless payments*4 between December 2019 and March 2020. A demonstration experiment for cashless payments was implemented at unmanned convenience stores in Hong Kong between September and December 2020.

The "Biometrics Integrated Infrastructure Service" launched now facilitates a smooth process from personal authentication to payment by registering users together with biometric information and a credit card without the need to carry wallet, credit card, or smartphone. Moreover, since the biometric information is stored centrally in the cloud, one-time registrations makes possible use in a variety of situations, ranging from registering at theme parks, sports gyms, golf courses, and other membership facilities to using lockers or paying for food or shopping, all empty-handed. In addition, this service uses "PBI," a patented authentication technology developed by Hitachi, and registers biometric information in the cloud so that it is impossible to reconstruct, which means that actual data of the biometric information is not stored anywhere in the system. This ensures a high degree of security as there is no risk of biometric information being reconstructed even in the unlikely event of user information leaking.

Hitachi will be working more multi-modally*5 in the future by utilizing a variety of biometric information such as face and iris and not just finger vein as well as contribute to the realization of a more secure and convenient cashless society by developing new devices for non-contact authentication, including for finger vein.

[Notes]
*1 Public Biometric Infrastructure
*2 Note: Markets and Markets Biometric System Market – Global Forecast to 2024,
    https://www.globalresearch.jp/biometric-system-market-authentication-type-se3449
*3 October 7, 2016 "The Yamaguchi Financial Group Adopts a New Store System Using Hitachi's
    Integrated Channel Solutions and Template Public Biometrics Infrastructure (PBI)"
    https://www.hitachi.co.jp/New/cnews/month/2016/10/1007.html
*4 December 10, 2019 "UC CARD and Hitachi Conduct Demonstration Experiment to Enable Safe
    Cashless Payments Using Biometric Data Encryption Technology, called "PBI""
    http://www.hitachi.com/New/cnews/month/2019/12/191210.html
*5 Combining multiple means.

PBI features

"PBI" is a biometrics infrastructure technology developed by Hitachi that combines biometric authentication with PKI,*6 which is a technology for secure internet transmissions. When first registering a user, the user's biometric information undergoes a one-way conversion so that it becomes impossible to reconstruct and a public key is created for storage in the cloud. Following user registration, when conducting personal authentication or processing a payment, a key held solely by the person in question is created every time on device that authenticates biometric information and is compared to the corresponding public key. Since this secret key cannot be recreated without the person's biometric information, it is not possible to impersonate someone else. Moreover, the secret keys are created and used only at the time of authentication or payment, undergoing conversion so that the biometric information cannot be reconstructed, are discarded immediately afterward and are not stored in the system.

With this arrangement, there is no risk of biometric information or information about user characteristics being reconstructed even in the unlikely event of the public key information in the cloud leaking. This enables security even in cases of public key information leaked by malicious insiders, which is the principle cause of information leaks.

*6 Public Key Infrastructure. Technology for securely using public keys and digital signatures through
    internet transmissions.

Illustrating Use at the Yokohama Works

For the introduction at the Yokohama Works, the services of UC Card Co., Ltd, which is a member of the Mizuho Financial Group, and GMO Payment Gateway, Inc., as a payment agency, are used along with the help of Nikkyo Create.

Trademark Acknowledgments

-QR Code is a trademark or registered trademark of Denso Wave Incorporated.

-All other company and product names may be trademarks or registered trademarks of their respective companies.

About Hitachi, Ltd.

Hitachi, Ltd. (TSE: 6501), headquartered in Tokyo, Japan, is focused on its Social Innovation Business that combines information technology (IT), operational technology (OT) and products. The company's consolidated revenues for fiscal year 2019 (ended March 31, 2020) totaled 8,767.2 billion yen ($80.4 billion), and it employed approximately 301,000 people worldwide. Hitachi drives digital innovation across five sectors - Mobility, Smart Life, Industry, Energy and IT - through Lumada, Hitachi's advanced digital solutions, services, and technologies for turning data into insights to drive digital innovation. Its purpose is to deliver solutions that increase social, environmental and economic value for its customers. For more information on Hitachi, please visit the company's website at https://www.hitachi.com.

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