

# A Society with Advanced Biometric Identification

Being able to prove who you are—this may be considered a natural state of affairs, yet has been difficult to achieve in our everyday lives. For example, we need a credit card and a PIN code or a signature to pay our bills. Liquid Inc., a start-up established in 2013, is working to revolutionize the identification process. Using biometric authentication—which is based on individuals’ unique physical characteristics, such as fingerprints and iris patterns—this company is aiming to make the process both more secure and quicker.

CEO Yasuhiro Kuda explains how he started his research in the field: “Ever since my student days, I’ve been highly interested in improving society’s systems. Looking ahead to the near future, when IoT [the Internet of things] will have advanced, and thinking about how I might contribute to making society safer and more convenient, I came to see biometric technology as a tool for this purpose.”

Biometric authentication has a huge opportunity in improving the consumer payment system. According to a 2015 survey, losses from credit card fraud amount to JPY 12 billion (USD 106 million) on an annual basis in Japan alone. “Biometric authentication is highly secure, but it hasn’t become the standard method of authentication because of its lack of convenience. The authentication process can take time, and the procedures can be complicated,” notes Kuda. “So we’ve come up with a technology for classifying and digitizing fingerprint patterns.” As a further barrier to unauthorized use, the company has developed a system, the “Liquid Pay,” which scans not one but three fingerprints. This reduces the risk of misrecognition to one in 90 billion.

Aside from the technological hurdles, being a start-up without a track record, Liquid Inc. faced the challenge of getting businesses to adopt its new payment infrastructure. But Kuda explains, “I was confident that our system was second to none in terms of processing speed and operating costs.” He made the rounds of corporations and stores and tirelessly explained the difference between Liquid Pay and rival systems. Thanks to these efforts, prospective clients gradually came to recognize the convenience of Liquid Inc.’s system and to adopt it. In 2015, two years after its establishment, the company caught a break. Liquid Pay was introduced at Huis Ten Bosch, a major theme park in Nagasaki Prefecture. Visitors who register their fingerprints at the entrance gate and make a deposit can then pay their bills at restaurants and shops throughout the park without pulling out their wallets. The system quickly drew wide attention as a revolutionary advance in cashless, cardless payment.

Now, Kuda and his colleagues are seeking opportunity in creating more convenient trips around Japan, targeting foreign visitors. Fingerprint authorization will allow people to check into hotels and make cashless, cardless payments throughout their trip without trouble or confusion, even at places they are visiting for the first time. A demonstration project is now underway for use as part of the “Omotenashi [hospitality] Platform” that the Ministry of Economy, Trade, and Industry (METI) is setting up in collaboration with local businesses.

Kuda’s work is far from over. In pursuit of his personal mission to contribute to society through biometric technology, he is striving along with his enthusiastic colleagues to enhance the technology and develop further applications so that biometric authentication can serve as a new basic platform for the world’s social infrastructure.

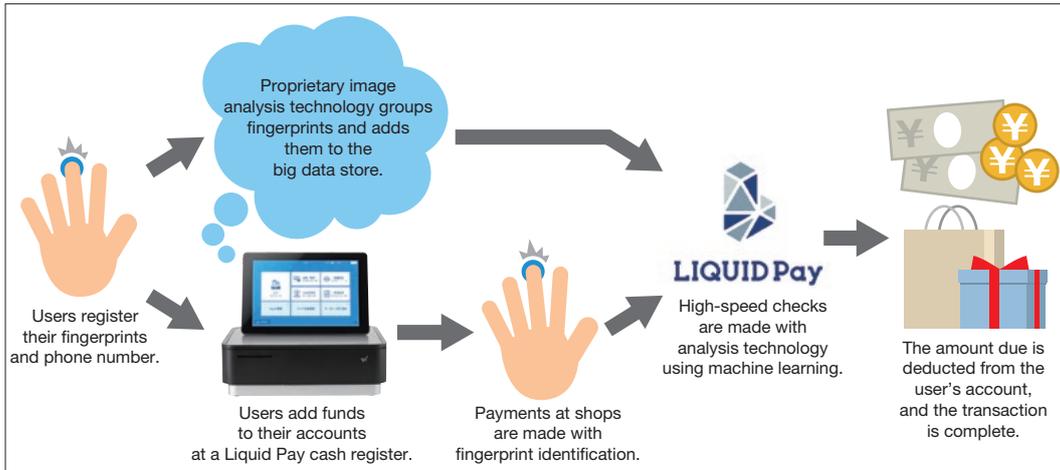


Liquid Pay was installed at a beach house at Yuigahama in Kanagawa Prefecture. It proved popular with users, allowing them to make payments without carrying money.

	<p>Innovation Japan [FINGERPRINT AUTHENTICATION WITHOUT IMAGE DATA]</p>	<p><a href="https://youtu.be/faouL9f9kSs">https://youtu.be/ faouL9f9kSs</a></p>
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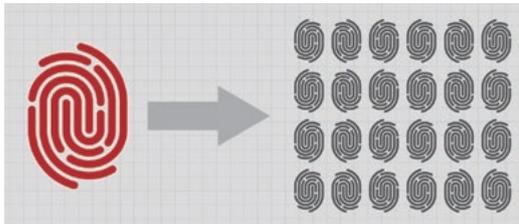
Note: U.S. dollar equivalents for Japanese yen amounts in this article are calculated at 113 yen to the dollar, roughly the rate at the time of publication.

## The Liquid Pay System

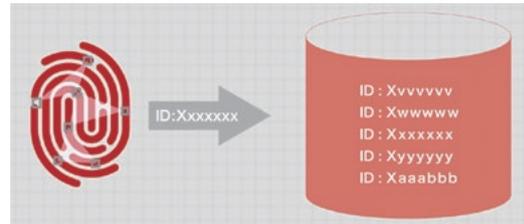


Liquid Pay allows speedy, secure payment using the company's original sensors and software to record fingerprint data while preventing duplication or other misuse, along with its own fraud-prevention system.

### Conventional fingerprint authentication



### Fingerprint authentication with new technology



Fingerprint authentication up to now has relied mainly on image data, which raises security concerns, such as the possibility of data theft. The Liquid Pay system is the world's first technology that relies on a new type of biometric authentication technology. The feature points of each fingerprint are digitized and indexed using a proprietary algorithm. And artificial intelligence is used to conduct speedy searches, making the authentication process more than 100 times faster than conventional methods. The system also authenticates sweat glands and veins for increased accuracy.



#### Yasuhiro Kuda

CEO, Liquid Inc. (<http://liquidinc.asia/en/>)  
Worked for Daiwa Securities SMBC, from 2007 to 2011. After a spell as a fund manager at a venture capital firm, he established Liquid Inc. in December 2013, which has developed the Liquid Pay biometrics authentication system.

## About Society 5.0

Japan is rapidly moving toward "Society 5.0," adding a fifth chapter to the four major stages of human development: hunter-gatherer, agricultural, industrial, and information. In this new ultra-smart society, all things will be connected through IoT technology and all technologies will be integrated, dramatically improving the quality of life.

Looking ahead to this new era, the government of Japan will do everything it can to encourage various players, including start-ups and "hidden gems" among middle- and small-sized enterprises, to come up with brand-new and innovative ideas presenting solutions for the world.