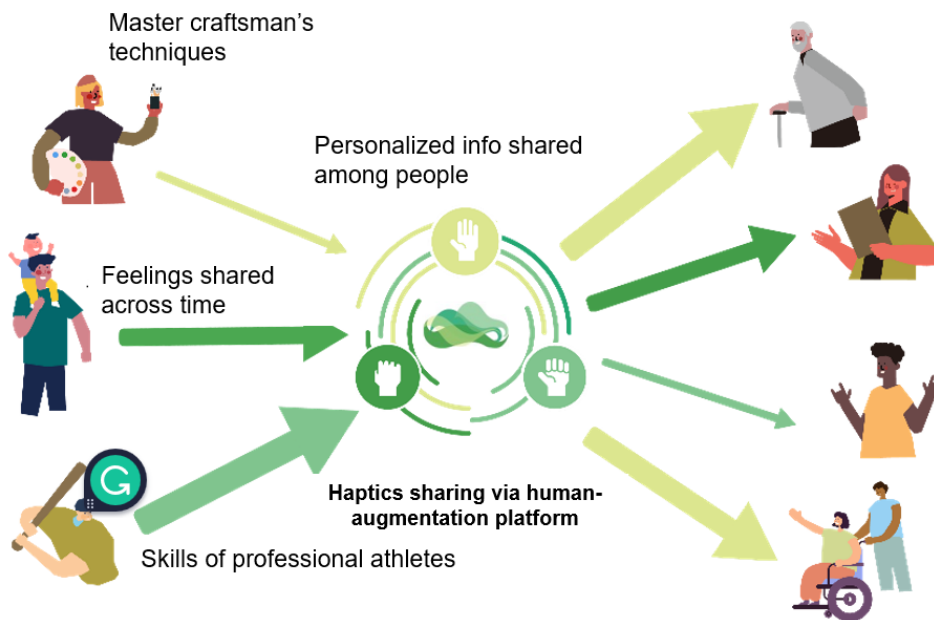


Press Release—for immediate release

DOCOMO Announces World’s First Technology that Utilizes Human-Augmentation Platform for Sharing Haptic Information Between People

TOKYO, JAPAN, January 25, 2023 — NTT DOCOMO, INC., the Embodied Media Project led by Professor Kouta Minamizawa at Keio University Graduate School of Media Design and the Haptics Lab led by Professor Yoshihiro Tanaka at Nagoya Institute of Technology announced today they have developed a technology, called FEEL TECH™, that enables haptic information to be shared between people via a human-augmentation platform that DOCOMO unveiled in January 2022.



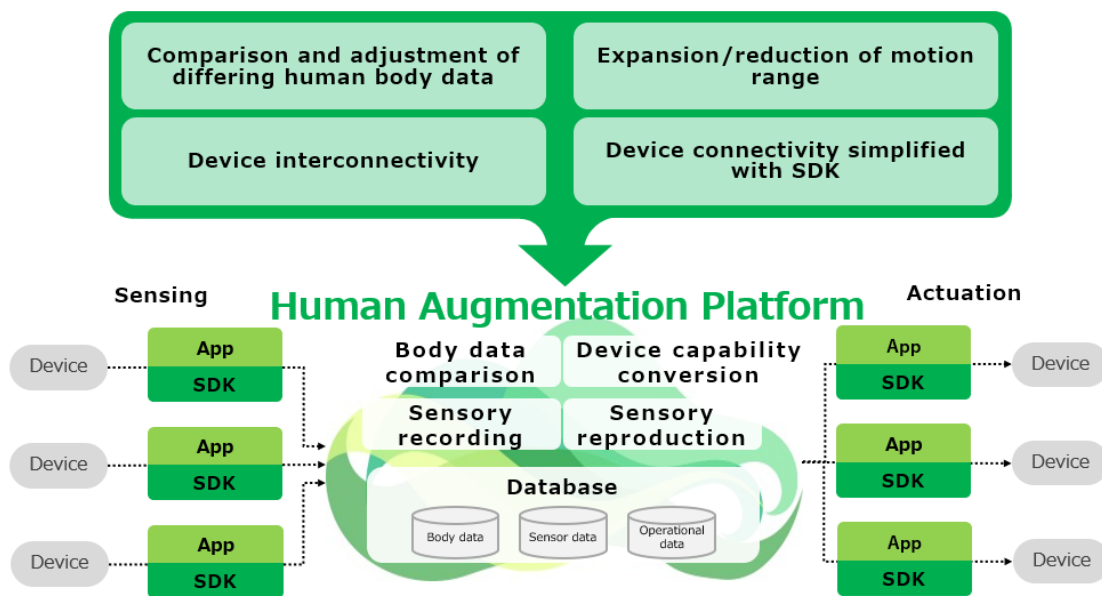
FEEL TECH’s broad scope of potential applications

The FEEL TECH system, which DOCOMO believes is the world’s first to share haptic information, comprises a device that detects a person’s sensory state, a “driving” device that physically reproduces the same state in another person, and the human-augmentation platform that shares the information between devices connected to a network. Haptic information is quantified in terms of human-touch vibrations measured with a device similar to a Piezoelectric sensor. The vibrations are reproduced with a driving device, such as a transducer that vibrates when electricity is applied. Haptic sensations and corresponding video images are shared from one person (“presenter”) to another person (“target”). To achieve crucial synchronization of the haptic and video data being shared, the platform is expected eventually to make full use of the ultra-low latency that will be offered in forthcoming 6G mobile networks.

The human-augmentation platform is also notable for its capacity to learn the physical characteristics of each target person and then adjust the presenter’s haptic information (degree of strength, etc.) so that the target can perceive the information easily and clearly. Furthermore, the platform can record the presenter’s sense of touch and share it with the target over time.

The platform can share haptic information between diverse people and device and across time. For example, an amateur craftsman could use the system to grasp the subtle techniques of a master craftsman, or individuals could use it to haptically recall sensations, etc. they experienced at a younger age.

The system will make it possible to share sensations that conventionally have been difficult, if not impossible, to convey through images, sound, text or words alone. Accordingly, the system is expected to find practical applications in fields that rely on human senses, such as medicine and art. Also, shoppers on e-commerce sites could use it to experience the subtle feel of clothing fabrics, among other rich experiences not possible using other advanced technologies such as 3D or augmented reality.



Structure of human-augmentation platform

In view of the wide range of devices that could be interconnected via the human-augmentation platform, DOCOMO is now collaborating with diverse partners who offer value-added technologies suited to specific devices, which is expected to support the steady expansion of sharing existing and all-new types of sensory information.

For the new technology, Keio University developed the driving device and sensory information for sharing, Nagoya Institute of Technology developed the device that detects the sensory states of people and an algorithm that interprets different sensory characteristics, and DOCOMO integrated these various elements in its human-augmentation platform.

DOCOMO's vision for its human-augmentation platform includes achieving ubiquitous human bodies, sharing skills, sharing emotions, sharing five senses, and telepathy & telekinesis. In addition to having achieved the ubiquitous human bodies and sharing skills, DOCOMO has now realized sharing five senses.

Going forward, by further extending possibilities for transmitting emotions, the five senses, etc. through increasingly advanced technologies, DOCOMO hopes to contribute to greater wellness and better understanding of problems such as harassment in global society.

FEEL TECH will be introduced during the "docomo Open House '23" online event beginning on Thursday, February 2 and at DOCOMO's booth at MWC Barcelona 2023 beginning on Sunday, February 27.

Please also see:

Development of Human Augmentation Platform for New Value in the 6G Era

https://www.docomo.ne.jp/info/news_release/2022/01/17_00.html (Japanese only)

DOCOMO 6G White Paper

https://www.docomo.ne.jp/english/corporate/technology/whitepaper_6g/

docomo Open House '23

<https://www.docomo.ne.jp/english/corporate/technology/rd/openhouse/openhouse2023/>

MWC Barcelona 2023

<https://www.mwcbarcelona.com/2023-interest>

FEEL TECH is a registered trademark of NTT DOCOMO

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About NTT DOCOMO

NTT DOCOMO, Japan's leading mobile operator with over 85 million subscriptions, is one of the

world's foremost contributors to 3G, 4G and 5G mobile network technologies. Beyond core communications services, DOCOMO is challenging new frontiers in collaboration with a growing number of entities ("+d" partners), creating exciting and convenient value-added services that change the way people live and work. Under a medium-term plan toward 2020 and beyond, DOCOMO is pioneering a leading-edge 5G network to facilitate innovative services that will amaze and inspire customers beyond their expectations.

<https://www.docomo.ne.jp/english/>

About Keio University

Established in 1858 by Yukichi Fukuzawa as a small school of Western learning, Keio has a history as Japan's very first private institution of higher learning. Over 160 years since its founding, Keio has thrived under its founder's motto of *jitsugaku*, or empirical science, as it continues to transform Japan as a modern nation through contributions to education, research, and medicine.

About Nagoya Institute of Technology

Nagoya Institute of Technology (NITech) was founded as the first national institution of higher education in central Japan in order to develop the region as Japan's center of industry. Maintaining a respect for this historic mission and acting as one of the leading engineering institutes in Japan, NITech shall therefore make its fundamental mission as follows: developing revolutionary science and technologies, fostering rich human resources, and contributing to peace and social welfare of the future by acting as a source to consistently produce and develop new industries and culture.