

Sekisui House Announces First Initiative under the Platform House Concept HED-Net, the World's First in-Home Early Detection Network Adopting Resident-friendly Stress-free Contact-less Sensor Social Implementation to Start in 2020 in a Resident-involved Pilot Project

Las Vegas, January 7, 2020 PST (January 8, 2020 JST) -- Sekisui House, Ltd. announced today at CES that it has developed the world's first*1 in-home early detection network, **HED-Net***2. Sekisui House has been developing **HED-Net** since the presentation of the Platform House Concept at CES 2019. In 2020, Sekisui House will continue to establish the world's first in-home early detection network. Furthermore, Sekisui House is pleased to start social implementation in a pilot project involving residents using **HED-Net**, which will take place in an environment that closely mirrors the residents' home environment.

With the year 2020 marking Sekisui House's 60th anniversary, the company aims to assist in achieving the happiness of residents in the era of 100-year lives. In January 2019, as the core idea, Sekisui House announced the Platform House Concept, the proprietary concept for delivering houses that assist in residents' life services over the long term. Under this concept, Sekisui House offers homes in which many services can be installed to focus on "health," "connectedness," and "learning." Over the past year, Sekisui House has conducted focused efforts in health with esteemed partners, in development of a service to achieve the early detection of acute diseases that are likely to develop at home. As a result, we have developed the world's first in-home early detection network, or **HED-Net**.



HED-Net detects and analyzes residents' vital data at home without contact. If abnormalities that suggest the onset of an acute illness are detected, an emergency call center is alerted. The operator immediately performs a safety check by speaking to the resident through the home's speaker, and if the result is indeed an abnormality, the operator calls an ambulance. Upon confirming a paramedic's arrival, the operator remotely unlocks the front door, all from a central location. **HED-Net** is the first network of its kind in the world. Sekisui House has acquired a patent in Japan for this service as a "safety check system," and are now filing an international patent application.

The importance of early detection for strokes and other acute diseases

In Japan, approximately 290,000 people experience a stroke each year^{*3}, and 79% do so at home^{*4}. With a stroke, it is vital to carry out the treatment at an early stage. One effective treatment for this disease called “t-PA” is used on patients within 4.5 hours after the initial onset. However, some 15,000 people die at home every year due to delays in detecting the disease at home^{*5}. When including other incidents such as heart disease, drowning in bathtubs, falling from heights, and collapsing, as many as 70,000 people die every year from accidents and illnesses at home^{*6}. Also, there is growing concern about such a risk in the United States. Strokes kill 140,000 Americans each year, and more than 795,000 people in the U.S. have had a stroke^{*7}. By implementing and spreading **HED-Net**, Sekisui House aims to realize a society that can early-detect, and rapidly-respond, to the onset of acute illnesses at home.

The Platform House Concept expected to reduce social cost by 8.2 to 17.4 billion dollar in Japan

The social cost (medical fees, elderly care fees, lost labor for the individual and caretaking family members, and the loss of productivity at work) for strokes, heart failure, drowning, falling from heights, collapsing, and other incidents are estimated to be 77.3 to 80.0 billion dollar ^{*8} in Japan. If the Platform House Concept becomes a reality, the social cost is expected to be reduced by about 10-21%, 8.2 to 17.4 billion dollar^{*9}. Exchange rate;US1\$@¥108.62 as of December 30, 2019

Many countries around the world, including Japan and other developed nations, face significant challenges regarding highly-aging populations. As such, increasing importance is being placed on methods to tackle the issue of “closet caregivers.” In Japan, strokes account for 18.5% of cases where workers leave their jobs to care for a family member^{*10}. Sekisui House believes that by realizing the Platform House Concept, we can help reduce the number of people who need care as well as the number of workers who leave their positions to care for an elderly family member.

Adopting stress-free “contact-less” sensors for residents

To develop **HED-Net**, Sekisui House has established a unique development structure under an industry-academia collaboration: applying engineering insight on sensing technologies, medical insight, expert insight from partner companies, as well as the insight held by Sekisui House.

It is essential to find methods to utilize advanced technologies within residences that do not disrupt the everyday comfort of the resident’s lifestyles. Thus, when developing **HED-Net**, Sekisui House and its partners have focused on ensuring that residents continue to enjoy life familiarly. We selected contact-less sensors to achieve detection and analysis that would place as little stress as possible on residents. To overcome challenges such as remote door unlocking, security, and calling an ambulance, Sekisui House has collaborated with many partners from both industry and academia.

Promoting R&D with Partners

Sekisui House has worked on this endeavor with support from the partners who identify with the Platform House Concept, such as Konica Minolta, Inc., NEC Corporation, NTT Comware Corporation, and Premier Aid Inc.



Resident-involved pilot project to launch in 2020

To establish **HED-Net**, it is crucial to verify its effects in the resident’s actual homes, while focusing on detection and analysis of the contact-less sensor.

To this end, Sekisui House will commence the social implementation of **HED-Net** in 2020. The implementation will take place in a resident-involved pilot project, conducted in a home environment that is familiar to the residents' lifestyle, rather than in a lab or hospital room. Through this pilot project, Sekisui House aims to create this system together with its customers and those it would serve.

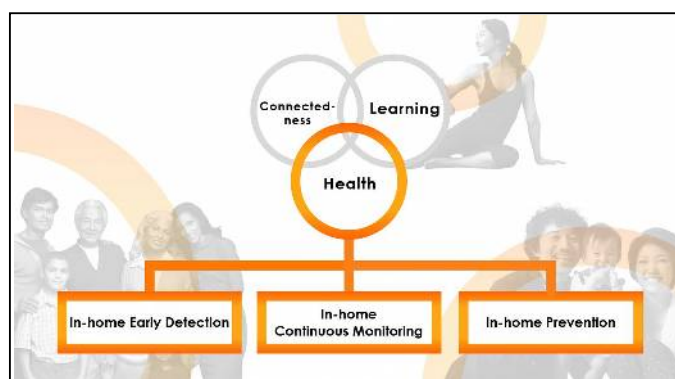
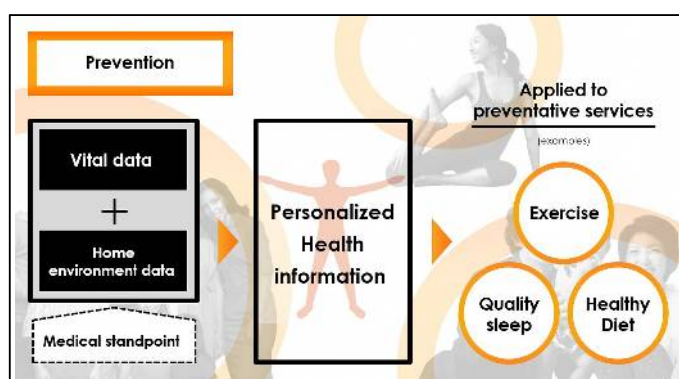
Aiming to advance the Platform House further

Sekisui House seeks to advance the Platform House Concept further by developing other services focusing on “monitoring chronological changes” and “in-home prevention,” using vital data collected at home. While upgrading **HED-Net** and collecting vital data at home, Sekisui House will conduct R&D on contact-less monitoring methods to identify disease risks early from “chronological changes.” Also, Sekisui House aims to provide personalized “preventive care” services that can preemptively identify the risk of onset for diseases through analyzing resident’s vital data, and residential environment data, from a medical perspective.

Note: About the Platform House Concept

Our vision at Sekisui House is to make home the happiest place in the world. Our Platform House Concept represents houses that assist in achieving the happiness of residents in the era of 100-year lives. Services that support health represent our social mission, and we believe this should be engaged in as soon as possible.

Working on **HED-Net**, our in-home early detection network, as a foundation, we will expand services regarding health to achieve In-home Continuous Monitoring and In-home Prevention. Apart from health, we are also working to develop services for connectedness and learning, and we will announce details on these new services once they are ready.



*1 World-first: According to our own survey as of December 2019. Sekisui House conducted a survey through websites (in Japanese, English and Chinese) to find out the possible presence of similar services which fulfilled all of the following five criteria regarding elements of the service : (1) The service is provided at the home; (2) It senses biological vitals without contact; (3) It detects acute diseases at an early stage; (4) It calls an ambulance; (5) It remotely unlocks doors
*2 HED-Net: Short for In-Home Early Detection Network

*3 As announced by Shiga University of Medical Science on June 6, 2017, based on a Shiga Prefecture stroke registry

*4 *Survey of ischemic brain infarction in Japan*, Report on comprehensive health science research project given an MHLW Grant in FY 2000

*5 This estimate (1) is obtained by multiplying the number of people developing stroke annually*ⁱ by the percentage of onset at home*ⁱⁱ and the percentage of fatalities from stroke*ⁱⁱⁱ

*ⁱ As announced by Shiga University of Medical Science on June 6, 2017, based on a Shiga Prefecture stroke registry

*ⁱⁱ *Survey of ischemic brain infarction in Japan*, Report on comprehensive health science research project given an MHLW Grant in FY 2000

*ⁱⁱⁱ Japan Standard Stroke Registry (2015), *Relationship Between Severity Upon Hospitalization and Prognosis When Dismissed, Classified by Disease*

*^{iv} Hirofumi Hayama, et al. (2011) *Impact of Weather Conditions and Place of Death on the Cause of Fatalities* (*^{iv}: There is assumed to be no difference between the mortality rate within hospitals and within the home)

*6 Adding (1) above to (2)+(3)+(4)

The estimated figure (2) is obtained by multiplying the number of people developing heart failure annually*ⁱ by the percentage of onset at home*ⁱⁱ

*ⁱ: The sum total of figures for ischemic heart disease and myocardial infarction in *Summary of 2016 Vital Statistics (Definite Numbers)* by the Ministry of Health, Labour and Welfare

*ⁱⁱ: Japanese Circulation Society, *Guidelines for Diagnosis and Treatment of Circulatory Organ Disease* (FY 2011 report from a collaborative research team) / *Guidelines for Primary Prevention of Ischemic Heart Disease* (Revised in 2012), updated on February 5, 2015 /

Circumstances upon onset

People drowning in bath tubs and other areas in the home (approx. 5,000) (3) / Analysis results conducted by Consumer Affairs Agency based on *2016 Vital Statistics* issued from the Ministry of Health, Labour and Welfare

People dying at home (approx. 3,000 annually) (4); Ministry of Health, Labour and Welfare, *Vital Statistics / Number of Deaths and Breakdown by Age for Common Accidents at Home* (2013)

*7 Centers for Disease Control and Prevention(U.S.): *Stroke Facts*

*8 - 9 National Institute of Advanced Industrial Science and Technology / Estimated by e-solutions inc.

*10 Ministry of Health, Labour and Welfare, FY 2013 *Comprehensive Survey of Living Conditions*

About Sekisui House

Founded in 1960, Sekisui House, Ltd. is one of world's largest homebuilders and an international diversified developer, with cumulative sales of over 2 Million homes*1. Based in Osaka, Sekisui House has over two-hundred consolidated subsidiaries and affiliates*2, over twenty-thousand employees*3 and is listed on the Tokyo Stock Exchange and Nagoya Stock Exchange.

Sekisui House aims to create homes and communities that improve with time and last for generations. With "Love of Humanity" as its Corporate Philosophy, Sekisui House believes that homes should offer comfort, security and peace of mind for residents, while maintaining harmony with the environment and its surroundings. Sekisui House has sustainability as a core corporate target and is now the global leader in the construction of net-zero-energy homes with more than forty-thousands *4 of them built since the product was launched in 2013. In 2009, Sekisui House expanded into several new international markets and now operates in the United States, China, Singapore, Australia and the United Kingdom.

*1 ; 2,448,050 homes delivered

*2 ; 268 consolidated subsidiaries and affiliates

*3 ; 25,310 employees

*4 ; 47,575 net-zero-energy homes

All above figures as of July 31, 2019



Sekisui House's Platform House Concept

<https://www.sekisuihouse.co.jp/pfh/en>

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