

February 9, 2022  
Sompo Holdings, Inc.  
Sompo Care Inc.  
PST Inc.

## **Joint Research and Development of Voice Analysis Technology to Evaluate Swallowing Function ~Toward a new era in which anyone can visualize aspiration risk with a smartphone or tablet~**

Sompo Holdings, Inc. (Head Office: Shinjuku-ku, Tokyo; President & CEO: Kengo Sakurada; “Sompo Holdings” ), Sompo Care Inc. (Head Office: Shinagawa-ku, Tokyo; President: Ken Endo; “Sompo Care” ) and PST Inc. (Head Office: Yokohama City, Kanagawa Prefecture; CEO: Hiroshi Otsuka; “PST” ), have conducted joint research and development of voice analysis technology to evaluate the swallowing function\* of elderly people using smartphones and tablets, and agreed to commercialize the technology in 2022.

### **1. Background and objective**

Amid the aging of society, which is advancing year after year, the increase in aspiration pneumonia due to a decline in swallowing function is a major societal issue, requiring immediate countermeasures. According to an announcement by the Ministry of Health, Labour and Welfare (Vital Statistics of Japan 2020), 42,746 people died from aspiration pneumonia in 2020, making it the sixth leading cause of death among Japanese people. However, there is currently a shortage of specialized personnel such as certified nurses for dysphagia nursing or speech-language-hearing therapists (ST) who can analyze an elderly person’s swallowing performance. Despite the advancement of dysphagia diets, which make adjustments to forms of food, etc., in line with the decline in swallowing function, there are issues of being unable to provide optimal dysphagia diets on an individual basis because of the current situation in which swallowing function cannot adequately be evaluated.

Against this background, PST, which possesses voice and pathophysiological analysis technology to evaluate health status and functions through voice, Future Care Lab in Japan, which is managed by Sompo Holdings, and Sompo Care initiated joint research in July 2020 with the objective of developing voice analysis technology to evaluate the swallow function of elderly people. They aimed to develop technology that could conduct analysis with a high degree of accuracy, accumulating data and verifying the method of judgment (algorithms). A joint patent application has already been submitted, and a business is being developed to prevent aspiration pneumonia in elderly people and provide suitable forms of food by harnessing this technology.

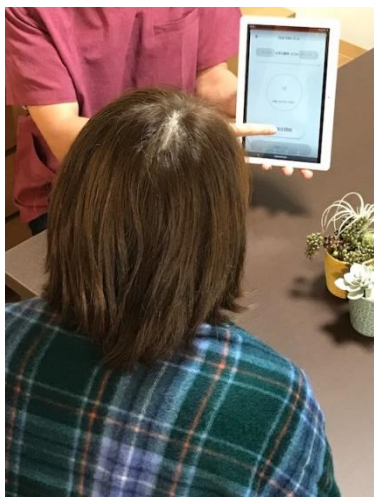
## 2. Overview of technology to evaluate swallowing function

This newly developed technology to evaluate swallowing function is based on voice and pathophysiological analysis technology, which analyzes and evaluates vocal changes depending on a person's functions and pathological condition, that PST has been researching and developing for a while. The technology analyzes the status of a person's swallowing function from several vocalizations, and makes an analysis based on the data accumulated.

An analysis of swallowing function is difficult to carry out in a simple and consistent manner because the following methods are normally used:

- A certified nurse for dysphagia nursing or speech-language-hearing therapist (ST) analyzes the condition of the elderly person when he or she is drinking water or eating
- The act of swallowing is observed directly using an endoscope (endoscopy)
- Food containing a contrast medium is ingested, and the passage of the food is observed through X-ray irradiation (videofluoroscopic examination of swallowing)

Harnessing this newly researched and developed technology will enable instant quantitative evaluation of swallowing function simply by vocalizing in several patterns using the smartphone or tablet in one's possession, without the need for specialized experience or special devices.



Furthermore, one of the notable features of this new technology is that PST's voice and pathophysiological analysis technology, which incorporates cutting-edge analytical methods, does not rely on language, making it possible to deploy overseas as well.

This makes it possible to check swallowing performance daily and examine day-to-day trends, enabling elderly people to proceed to specialized examinations without missing a decline in their swallowing function. Additionally, constantly assessing the level of swallowing function will make it possible to provide optimal dysphagia diets and help prevent serious incidents from occurring.

## 3. Future business developments

Sompo Holdings and Sompo Care intend to use this technology in a wide variety of situations, including commercialization or provision of know-how and services for technology utilization in nursing care services.

PST will move ahead with further research and development of this technology, and advance business to provide it to various business entities.

Through these businesses, the three companies will work together to solve societal issues related to the decline in the swallowing functions of elderly people.

[\*]Swallowing function

Swallowing function refers to the series of processes in which food is chewed up into easily ingestible pieces inside the mouth and travels from the esophagus to the stomach. A decline in swallowing function sometimes occurs due to factors such

as illness or aging, and causes aspiration, in which food that should enter the esophagus from the mouth enters the trachea by mistake. It is thought that aspiration causes bacteria to enter the trachea along with things like saliva and food, which triggers aspiration pneumonia.

#### **About Future Care Lab in Japan**

Address: GLASS CUBE SHINAGAWA 10F, 4-13-14, Higashishinagawa, Shinagawa-ku, Tokyo, Japan

Establishment: February 2019

Mission statement: Future Care Lab in Japan aims to reinvent caregiving, blending technology and the human touch. By solving the challenges of a “super-aging society,” the Lab will enable the creation of a thriving, highly productive and valuable care business. The Lab will help build a society where the elderly can live independently and with dignity today and into the future.

URL: <https://futurecarelab.com/>

#### **About PST Inc.**

Company name: PST Inc.

Address: Industrial Trade Center Building 905, 2, Yamashita-cho, Naka-ku, Yokohama City,  
Kanagawa Prefecture, 231-0023

Establishment: February 14, 2012

Representative: CEO Hiroshi Otsuka

Business content: Research and development and sale of MIMOSYS® technology to analyze normal mental condition through voice, research and development and sale of VOISFIA technology to analyze pathological conditions through voice, research and development of resilience-related products, etc.

URL: <https://medical-pst.com/en/?lang=en>

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