

# Acoustics Software IP Audio Solution for Senior Citizens



Socionext has developed "TV sound processing technology for senior citizens" that allows many of them to enjoy watching TV in comfort, by applying sound processing technology used for hearing aids to TV viewing.

By using this technology for audiovisual equipment, including digital TVs, and audio systems, you can create new value in barrier-free sound design.

## ■ Features

- Amplifies faint whispery sounds and ambient sounds in each scene of TV programs to significantly improve the sense of presence.
- Remarkably reduces the annoying task of adjusting the volume level by controlling sudden loud sounds, such as explosions.
- Allows younger people (with normal hearing) to enjoy the sound together with senior citizens without feeling uncomfortable.

## ■ Applications

You can apply this technology to various types of audiovisual equipment, including digital TVs, audio systems, and other wide ranging products.

# ■ Current Situation of Senior Citizens Watching Television

Population ageing is not limited to Japan, but is a global trend. As we get older, we will have trouble hearing high-pitched sounds (Figure 1), or difficulty in hearing soft sounds and loud sounds causing discomfort (Figure 2).

In addition, as some survey results have suggested that senior citizens spend more time watching TV than people in other generations, it is conceivable that there are many senior citizens who have trouble hearing TV sounds.

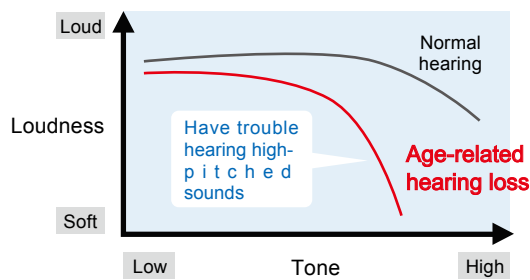


Figure 1: Frequency sensitivity in age-related hearing loss

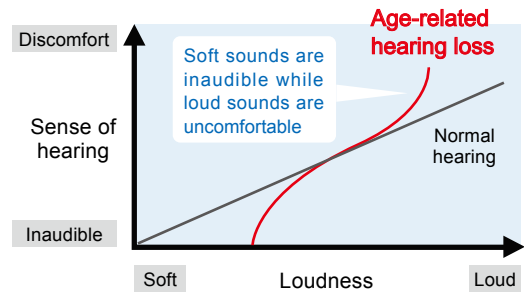


Figure 2: Volume sensitivity in age-related hearing loss

# ■ Features and Application Examples of this Technology

Socionext has developed a technology for processing TV sounds that allow senior citizens to hear TV sounds in comfort by applying non-linear amplification technology employed in advanced digital hearing aids to TV viewing.

When used for televisions, this technology amplifies soft sounds without hindering speech while automatically controlling explosion sounds and other sudden loud sounds to an appropriate volume level, allowing senior citizens to comfortably enjoy watching TV programs with a sense of presence (Figure 3).

Moreover, the technology adjusts TV sounds without causing younger people (with normal hearing) to feel uncomfortable so that the entire family can enjoy watching TV together.

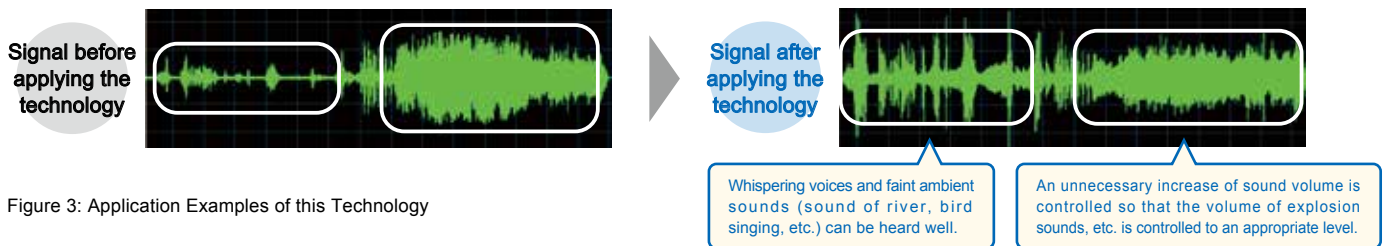


Figure 3: Application Examples of this Technology

# ■ Evaluation by Experts



**Shinichi Sakamoto**  
President of Otodesigns, Co., Ltd.  
Visiting Professor and Doctor of Engineering at Kyushu University and Kyoto Koka Women's University

We think this sound processing technology takes recruitment, the diagnostic symptom of age-related hearing loss, into account very well. Recruitment is a symptom of people with age-related hearing loss who cannot perceive soft sounds but experience too much discomfort with hearing loud sounds. With a TV using this technology, faint ambient sounds in the background of each scene can be clearly heard, while sudden loud sounds are reduced. In addition, we do not feel that these reduced sounds are unnatural even for people with normal hearing.

Furthermore, we also evaluated a TV using the Simulation System of Hearing Impairment that accurately simulates the hearing of senior citizens and confirmed that the TV put out sound that is easy for senior citizens to hear. We hope that this technology will significantly help senior citizens enjoy watching TV.

Those who evaluated the technology and supervised the editing of documentation (listed in the order of fifty Japanese syllables)



**Michiko Seki**  
Associate Professor and Speech Therapist at Kyoto Koka Women's University



**Saori Takai**  
Lecturer and Speech Therapist at Kyoto Koka Women's University



**Yasuo Nishino**  
Lecturer and Certified Hearing Aid Engineer at Nagano Medical College



**Hitoshi Bamba**  
Director and MD/PhD at Bamba ENT Clinic

The Products and product specifications described in this document are subject to change without notice for modification and/or improvement. At the final stage of your design, purchasing, or use of the products, therefore, ask for the most up-to-date Product Standards in advance to make sure that the latest specifications satisfy your requirements. All company names, brand names and trademarks herein are property of their respective owners.

Copyright 2015-2018 Socionext Inc.  
AD04-00077-2E July 2018  
Edited : Visual Solution BU

## Socionext Inc.

Nomura Shin-Yokohama Bldg.,  
2-10-23 Shin-Yokohama,  
Kohoku-ku, Yokohama, Kanagawa, 222-0033, Japan  
Tel. +81-45-568-1015  
<http://socionext.com>