Symposium on
Working together for solutions to societal challenges through innovation
- Swedish and Japanese academia and industry in collaboration for an active and healthy ageing

Organizers
Swedish Governmental Agency for Innovation Systems (VINNOVA)
Japan Science and Technology Agency (JST)

Co-Organizer
Embassy of Sweden in Japan

Support
Ministry of Education, Culture, Sports, Science and Technology of Japan (MEXT)
Ministry of Foreign Affairs of Japan (MOFA)

Date
June 13 2018 (Wed)

Venue
Embassy of Sweden in Japan
1-10-3-100 Roppongi, Minato-ku, Tokyo JAPAN

Time
13:30 - 17:35 Symposium at the Auditorium
18:00 - 20:00 Reception at the Ambassador's Residence

Access
About 5 min. walk from
Tokyo Metro Namboku Line : Roppongi-itchome Station, Exit 3
Hibiya Line : Kamiyacho Station, Exit 4b

Map

[Map showing the location of the Embassy of Sweden and its proximity to the Hotel Okura and ANA InterContinental Tokyo]
Background

Our society is facing various challenges including climate change, poverty, access to natural resources, energy, water and food, and population aging, which need to be addressed through global and multi-stakeholder partnerships due to their transboundary nature, as the 2030 Agenda for Sustainable Development sets out.

When it comes to aging society, it is one of the important global challenges which have been rapidly spreading not only among industrialized countries as well as for middle-income countries. Sweden and Japan have extensive experiences in adapting to the challenge through various measures, such as robust social security system, developed care and technologies.

With a view of sharing our expertise and experiences through international cooperation with a focus on innovation for global needs, Japan Science and Technology Agency (JST) and the Swedish Governmental Agency for Innovation Systems (Vinnova) established their first international academic-industrial partnership program in 2016 in the area of "Innovative Solutions, Community Design and Services for Elderly People," in which they launched 4 cooperative research projects.

Concept and Scope of the Program

The long-term and over all aim of this program is to establish a new international academic-industrial research and innovation collaboration framework between Japan and Sweden in order to jointly develop innovative and world-class solutions for supporting elderly people's independent and active lives and social participation, enabling the raise of standards in community and for personal life. This will be accomplished by combination of technologies, knowledge and know-how of firms, researchers and other stakeholders in Japan and in Sweden.

Through this initiative, the joint program will also aim to verify how the envisioned solutions are functioning in Japan and in Sweden, which have common challenges but different social systems. By testing, demonstrating and analyzing the practicality of the solutions in such a context, the outcomes from the projects are expected to create business opportunities also in other countries. If this experimental approach to seek innovative solutions applicable to different social systems turns out to be viable, the program would provide an example of an innovation model to solve other global challenges.

Objectives of the Symposium

In the second year of the 5-year program, both agencies jointly organize the Swedish-Japanese Symposium on 13 June, 2018, with the aims of reporting mid-term progress of each project as well as exchanging views and opinions among various stakeholders for further development of the two countries’ science and technology cooperation.

The symposium will also celebrate the 150th Anniversary of diplomatic relations between Japan and Sweden.
Program

13:00 - 13:30 Registration

13:30 - 13:40 Opening Remarks
- H.E. Mr. Magnus ROBACH: Ambassador, The Embassy of Sweden in Japan
- Mr. Hiroki MATSUO: Deputy Director-General, Science and Technology Policy Bureau, Ministry of Education, Culture, Sports, Science and Technology (MEXT)

- Mr. Mårten BERG: Program Manager, Health Division, VINNOVA

13:45 - 14:25 Keynote Speech
- Mr. Lennart STENBERG: Senior Advisor, International Cooperation, VINNOVA
- Dr. Yoshikazu GOTO: Program Officer, Strategic International Collaborative Research Program (SICORP), JST

14:25 - 14:30 Special Remarks
- Dr. Teruo Kishi: Science and Technology Advisor to the Minister for Foreign Affairs of Japan Professor Emeritus, the University of Tokyo

14:30 - 14:50 Session 1: "Transnational Living Lab for Active Ageing"
- Dr. Mathilda THAM: Professor, Department of Design, Linnaeus University
- Dr. Hiroko AKIYAMA: Professor, Institute of Gerontology, The University of Tokyo

14:50 - 15:10 Session 2: "Innovative food technology systems for independent senior living"
- Dr. Mats STADING: Professor, Agrifood and Bioscience, Research Institutes of Sweden
- Dr. Koichiro MATSUO: Professor, Department of Dentistry and Oral-Maxillofacial Surgery, Fujita Health University

15:10 - 15:15 Photo Session

15:15 - 15:40 Coffee Break

15:40 - 16:00 Session 3: "Robotic assistive device with multi-grip tools and vision system for frail elderly’s independent life"
- Dr. Jorge SOLIS: Associate Professor, Department of Engineering and Physics, Karlstad University
- Dr. Miki SAUO: Professor, School of Environment and Society Department of Transdisciplinary Science and Engineering and Department of Innovation Science, Tokyo Institute of Technology

16:00 - 16:20 Session 4: "Continuous health status monitoring of elderly people using flexible skin patch sensors"
- Dr. Takao SOMEYA: Professor, Electrical Engineering, The University of Tokyo
- Mr. Hiroshi KAJITANI: Principal Researcher, Data Science Research Laboratories, NEC Corporation

16:20 - 17:20 Panel Discussion
(Co-Moderators)
- Dr. Elisabet NIJELSEN: Program Manager, Health Division, VINNOVA
- Dr. Yoshikazu GOTO: Program Officer, SICORP, JST

(Panellists)
- Dr. Mathilda THAM: Professor, Linnaeus University
- Dr. Hiroko AKIYAMA: Professor, The University of Tokyo
- Dr. Takao SOMEYA: Professor, The University of Tokyo
- Mr. Hiroshi KAJITANI: Principal Researcher, NEC Corporation
- Dr. Jorge SOLIS: Associate Professor, Karlstad University
- Dr. Miki SAUO: Professor, Tokyo Institute of Technology
- Dr. Mats STADING: Professor, Research Institutes of Sweden
- Dr. Koichiro MATSUO: Professor, Fujita Health University

17:20 - 17:30 Wrap Up
- Dr. Henrik FRIDÉN: Program Manager, International Cooperation, VINNOVA
- Mr. Osamu KOBAYASHI: Director, Department of International Affairs, JST

17:30 - 17:35 Closing Remarks
- Ms. Yoshiko SHIROKIZAWA: Executive Director, JST

18:00 - 20:00 Reception at the Ambassador’s Residence (Organized by Embassy of Sweden)
## Sweden - Japan Academia-Industry International Collaborative Projects

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<th>Project Title</th>
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<td>Swedish Project Leader (Position and Institution)</td>
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<td>Japanese Project Leader (Position and Institution)</td>
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### Abstract of the joint project

![Image](image1.jpg)

#### Session 1: “Transnational Living Lab for Active Ageing”

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<tr>
<td>Mathilda THAM</td>
<td>Linnaeus University [Academia]</td>
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<tr>
<td>Hiroko AKIYAMA</td>
<td>The University of Tokyo [Academia]</td>
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This project aims at creating transnational living labs for active aging which provide a global platform for user-centered open innovations in Sweden and Japan. The focus of Phase 1 is on: (1) establishing core living labs in Kamakura, Japan and Smaland, Sweden, with stakeholders representing citizens, local government, researchers and businesses; (2) creating a transnational communication platform implementing soft and hard infrastructures. The goals of Phase 2 are: (1) to build a financially sustainable business model of transnational living lab; (2) to create the gateways to the EU and Asian markets. This collaboration will result in a larger ecology for wider scope knowledge exchange, innovation and business development and contribute for a circular economy as well as improving individuals’ lives.

![Image](image2.jpg)

#### Session 2: “Innovative food technology systems for independent senior living”

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<tr>
<td>Mats STADING, Professor, Soft Materials Science, SP Food and Bioscience</td>
<td>SP Food and Bioscience [Academia]</td>
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<tr>
<td>Koichiro MATSUO, Professor, School of Medicine, Fujita Health University</td>
<td>Fujita Health University [Academia]</td>
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This project aims to develop a system of foods, technology and distribution systems to prevent deteriorated health condition, which is so called frailty or pre-frailty, caused by anorexia of aging. The Japanese team will focus on developing functional foods with diverse texture from munchy to easy to chew with physiological examinations to fit the desires and needs of senior citizens. The Swedish team will focus on making the foods safe and pleasant to swallow, and adjust taste and flavor to the desires and needs of senior citizens. The team will also develop adjusted good looking food by suitable packaging and 3D printing technology. In Phase 2, the delivery system of those functional food packages will be evaluated. This collaboration is expected to reduce frailty/sarcopenia, resulting in prevention of dependent status by offering functional food with high in energy and nutrients to independent senior citizens and thus improving their nutritional status and maintaining their oral function.

![Image](image3.jpg)
Sweden - Japan Academia-Industry International Collaborative Projects

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| Swedish Project Leader (Position and Institution)  
Swedish Team  
[Academia]  
[Industry] |
| Japanese Project Leader (Position and Institution)  
Japanese Team  
[Academia]  
[Industry] |

Abstract of the joint project

Session 3: “Robotic assistive device with multi-grip tools and vision system for frail elderly’s independent life”

Jorge SOLIS, Associate Professor  
Department of Engineering and Physics, Karlstad University  
[Academia] Karlstad University  
[Industry] Camanio Care AB

Miki SAKAI, Professor  
Department of Transdisciplinary Science and Engineering, Tokyo Institute of Technology  
[Academia] Tokyo Institute of Technology  
[Industry] Leave a Nest Co., Ltd.

This project aims at making a mock-up of a multi grip tool for a robotic assistive device and a vision system, which enable frail elderly to live more independently and to keep track of their food intake.

At Phase 1 the Japanese team will evaluate functionality, usability, and user experience of Bestic, the existing assistive robot, at an actual care facility in Tokyo. By this evaluation, we will figure out the potential users of current Bestic in Japanese care context. Based on this insight, the team will create the prototype of functional robotic assistive device with multi-grip tools. Moreover, a study of the IoT platform will conduct to make a concept of assistive devices in IoT system. The Swedish team will conduct a feasibility study for the multi-grip prototype and user needs case study for the vision system in Västerås and Karlstad. From this insight, we will make a prototype of a stand-alone nutrition aid device. At Phase 2, the team expect production like/advanced prototypes which can be tested by real users in real life through user tests at Community Care Access Center in Kakegawa City and other places.

This collaboration is expected to have a strong social impact in the field of assistive devices for frail elderly’s independent eating and management of their nutritional condition. Through the diffusion of this engineering solution, deduction of undernutrition among frail elderly and enhancement of their QOL will be expected.

Session 4: “Continuous health status monitoring of elderly people using flexible skin patch sensors”

Magnus BERGGREN, Professor  
Department of Science and Technology, Linköping University  
[Academia] Linköping University  
[Industry] AbbVie AB et.al

Takao SOMEYA, Professor  
School of Engineering, The University of Tokyo  
[Academia] The University of Tokyo  
[Industry] NEC Corporation

By developing unique wearable sensors for consecutive monitoring of elderly’s health with reduced cost, this project aims to demonstrate effectiveness of flexible skin patch sensors in this aged society. Both Japanese and Swedish project teams will investigate elderly’s health monitoring problems that need to be addressed in their own country, and will suggest the most suitable parameters matching the specific needs of the countries’ respective aging populations. The Japanese team will develop physical sensors that monitor body temperature (BT) and electrocardiogram (ECG). The Swedish team will develop chemical sensors that measure metabolism and rehydration. The sensors fabricated in both countries will gradually be integrated into a single unit. The integrated sensor will be evaluated and optimized in the labs in Phase 1, and in Phase 2, its effectiveness will be validated and evaluated in the real living environment in both aging societies.

This collaboration aims to integrate heterogeneous sensing technologies and communication technology to innovate contiguous health status sensing system, which will then be expected to improve Quality of Life (QOL) of the elderly.