

NAO

During the first phase of the participatory design sessions (2021), the study center of TOHOKU University in Sendai, have conducted **living lab experiments** testing technologies and devices. **NAO was tested by older adult, potential end users, in the living labs of TOHOKU** to retrieve insights needed to further adapt the technologies to the user's needs.

But most of all, older adults gathered **to develop the system together with researchers**. Feedbacks for improvement coming directly from end users and stakeholders are of high importance, **and was implemented by co-creation and co-design**. A demonstration was also organised in Sendai with older adults and a focus group was hold with medical student.

HOW DOES IT WORKS?

- NAO is a small humanoid robot created by Softbanks robotics used in research developing its a programming tool, an open and fully programmable platform.
- The robot has 25 degrees of freedom which enable him to move and adapt to his environment and 4 microphones and speakers to interact with people with its speech recognition abilities.
- NAO is equiped with 2 cameras to recognize shapes, object and people.
- It is the only device, among the ones e-VITA is considering, that has autonomous mobility capability.

FIRST USER'S OPINIONS

Many older participants carried out the experiments in Tohoku, Japan.



ASPECT, SHAPE, REACTION

Older adults who have participated to the interactions with NAO were convinced with its appearance, **finding him very cute**, he was compared to a grandchild.



They appreciated the humanoid robot design, the colour, and the use of colour in the eyes was well-regarded.

The function of eyes lit-up and leds turning-off to allow the flow of conversation was appreciated and **users expressed high expectations to have natural conversation with the robot, as if interacting with another human**.



INTERACTING WITH NAO

The management of the conversation e.g. the pause, the speed, the fluidity and responsiveness is important. Ideally, **NAO should have flexible turn-taking and adapt its speech to the user,** so that it would better estimate when to speak.

At the same time, users should be aware that currently interactions with a robot are not similar to talking with human. Dialogues resemble question and answer interactions, and although the robot may talk about a variety of topics, an indepth reasoning on the topics may not be supported.

NAO DEMONSTRATION

Ryan Browne, researcher at TOHOKU University, hold a meeting with older adults in Sendai to make a brief demonstration of Nao. The participants were strongly interested and made some initial suggestions for the development of NAO and for their own usage e.g. **the coach should be proactive** and could watch over the users. They were open to sharing a meal together with NAO. Practical aspect as WIFI connexion, cost of the device and battery resistance were also asked.



総義

资

影