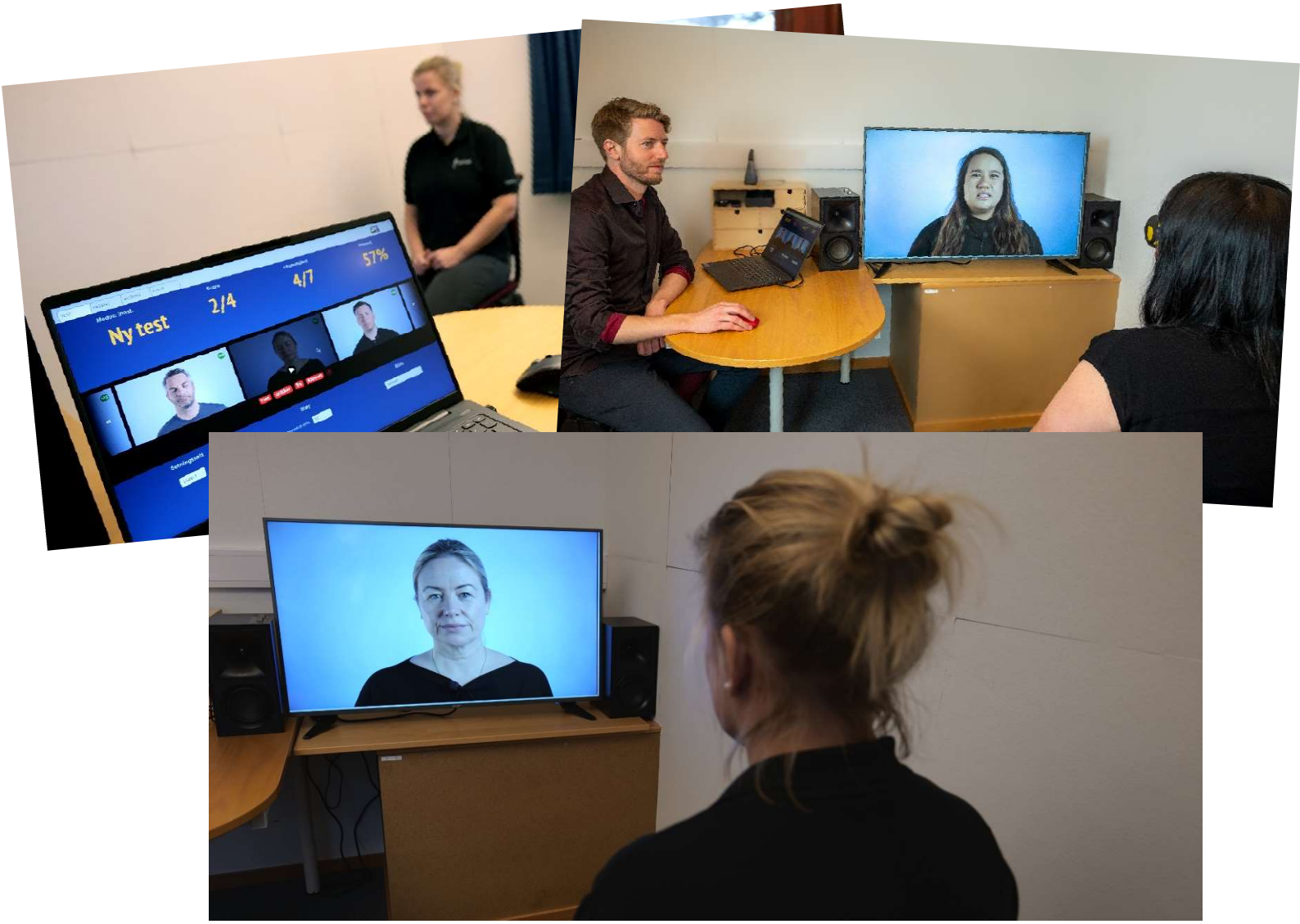
The development of a new **audio-visual** test of speech perception



The Eikholt test

Human speech perception is an audiovisual process. What this means is that our brains utilize visual information to supplement and enhance the auditory information from our ears, combining the two streams of information into something more than the sum of its parts. When observing a person talking, the visual information will greatly affect how much and what you hear.
Many current tests of speech perception employ closed-set sentences and synthetic noise and is administered without hearing aids. These tests have faced criticism for lacking relevancy to the challenging listening situations that people face daily.

One of the most serious consequences of hearing loss is social withdrawal, which can happen when social situations in noisy environments become too stressful. We know that having access to visual information (watching the face of the speaker) in noisy social situations improves speech perception by a significant amount. Most of us make extensive use of audio-visual ques in social situations, and people with sensory loss may have an even greater reliance on visual information. Having visual access to speech in noisy situations improves our performance and reduces our energy loss in these challenging listening situations.

We need good, functional tests of speech perception that are relevant to the daily life of people with combined vision- and hearing impairment.

Eikholt national center for the deaf-blind has developed a new test of audio-visual speech perception. It's a modern test that is administered through a user-friendly computer interface and has 600 unique sentences that is delivered by two men and two women. The footage is filmed in 4k quality and 60 frames per second, with good visual and sound quality.

The test works like this:

Four individuals; two men and two women take turns presenting short sentences which are to be repeated by the test subject. The sentences can be presented with several conditions such as visual only, audio only, audio-visual, and with or without adjustable noise. In addition, several different visual impairments such as AMD (macular degeneration) and RP (retinitis pigmentosa) can be overlaid on the video to create a simulation of what different visual impairments may look like. Several types of noise stimuli are available, including different types of multi-talker babble, traffic noise and more.

The project manager is audiologist Rolf Mjønes (rolf.mjones@eikholt.no). The test has been in development since spring 2021 and was released in august 2023.

The test is currently undergoing validation by the University of Oslo. A Swedish language version has been developed and will be available in the first half of 2024. An English language technical paper will be made available at our website this year.