

MASTER'S THESIS Accessibility within Inflight Entertainment**STUDENTS** Johan Svensson & Max Eriksson**SUPERVISORS** Kirsten Rasmus-Gröhn (LTH), Samantha Pukala (Tactel), Jonas Neldeborn (Tactel)**EXAMINER** Joakim Eriksson (LTH)

Onboard entertainment, for everyone?

POPULAR SCIENCE SUMMARY **Johan Svensson & Max Eriksson**

Entertainment onboard an airplane, for everyone? What do today's systems offer for passengers with visual impairments? That is two of the questions we have tried to answer during our long flight through this thesis.

With the inability to read visual information from a screen, a visually impaired user has to lean on other senses to get the information. Imagine using a touchscreen that is completely black. Or to use a control of 15 buttons without being able to see the control. That is the reality for vision impaired passengers if they want to use the entertainment system during a flight. The most popular solution is to replace the text or picture with audio, so called text-to-speech. A smartphone together with text-to-speech has evolved into the most preferred companion for a person with visual impairment to carry out their daily life, with everything from reading news to online shopping. Although, processing information by audio requires much focus: thus, the system needs to be simple to understand and use.

What we have found in our research is that the accessibility support in onboard entertainment systems is not keeping up with today's standard. To explore the opportunities, we designed prototypes with focus on accessibility. To gain knowledge within the area, we explored services available today in other industries and carried out interviews. Learnings were transformed into prototypes, e.g. an audio-based entertainment system with vibrations, controlled by a physical remote. To find the most suitable interaction method for this prototype we developed two versions, which then participants tested, compared and evaluated.



After each test session, we made improvements on the prototypes before next session was executed. The final testing was conducted solely by users with visual impairments, as their thoughts were highly valued and formed our conclusions.

On our journey to the best non-visual interface we experimented with everything from advanced vibrations to 3D-sounds. Even though the findings may have disappointed our nerdy nerve, it was an important lesson for future work: Keep it simple! Too many sources of information can cause a high load on memory. The challenge is to design advanced systems to be both simple and effective, to attract new users as well as satisfy the experienced ones. By alternating new and experienced persons in testing, we tried to fulfil both needs.

What we found during our research was also confirmed in the final testing, which is how well developed current assistive tools are. Our simple physical remote considered to be a preferred substitute in cases where smartphones aren't an option. Although, there is no need to reinvent the wheel. Support for smartphones would enable the user to explore the system with their device of choice, customised to the user's own preferences. We therefore encourage airlines to open up their systems and allow the passengers to connect their devices to the onboard entertainment system.

tactel



LUND
UNIVERSITY