GJØVIK UNIVERSITY COLLEGE

Innovation workshop

Universal Design

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- What is universal design?
- To live with a disability?
- Some examples in innovation in universal design

WHAT IS UNIVERSAL DESIGN?

Universal Design refers to broad-spectrum ideas meant to plan and design buildings, products and environments that are inherently accessible to all, inclusive older people, people without disabilities, and people with disabilities. No people shall be excluded.

It sounds beautiful, but are very demanding.

Example: Persons with albinism need to be protected against light, and persons with tunnel sight need very high light level. In fact, this is crossing interests.

What shall we do?

TO LIVE WITH DISABILITIES?

All people who live their lives with wheelchairs, hearing aids, visual aids, etc., is depending on how we build the community. It's about accessibility, opportunities, stimuli, to live the free life.

There are two reasons for people with disabilities to have to move from their homes; medical reasons or lack of adaptations in the house.

It's easier in the computer world. Within 3-5 years all is replaced. Houses has a lifespan of 50 to 100 years, and most houses already exist. Older houses are static. Therefore, innovation is needed for handling existing housing stock, allowing people with disabilities to continue living in their own homes. We also need innovation in public buildings.

Photos: Jonny Nersveen

DOORS

A typical problem is space for wheelchairs and rollators. Opening doors requires space that older houses often are lacking. We need new door technology which can replace existing doors without further modifications. It is preferable to avoid electrical solutions. Electrical installations are expensive and complicates the replacement.

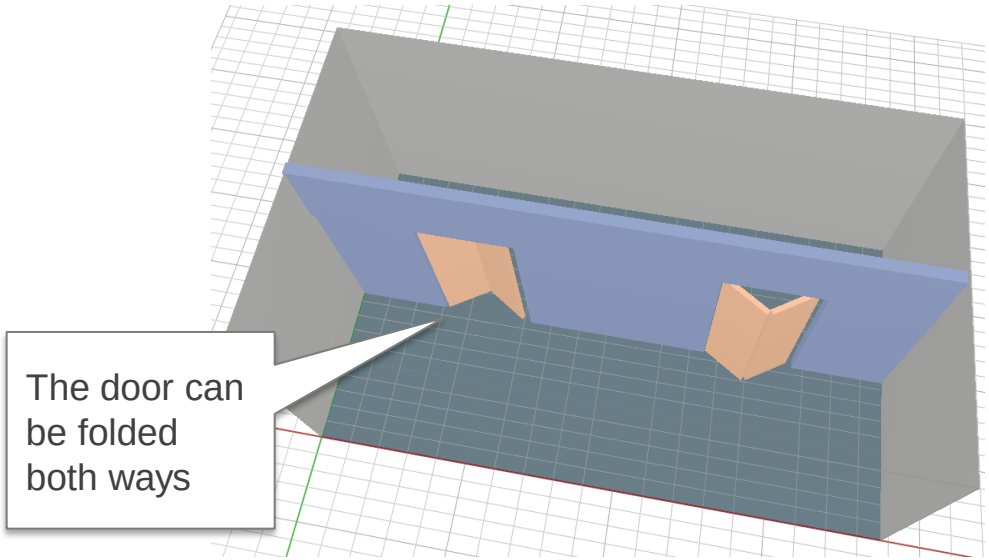


Illustration: Jonny Nersveen

In this example the door can open both ways.

Magnets holds the door in closed position when it should be closed, and a mechanism closes the door by itself when it should be closed. The energy needed to close the door retrieves from a feathers that is stretched when the door opens.

Product idea: Jonny Nersveen

DOOR HANDLES

The functionality of the door handle is several hundred years old. For disabled people seated in wheelchairs is this old functionality not appropriate and leads to increased demand for space in front of the door.

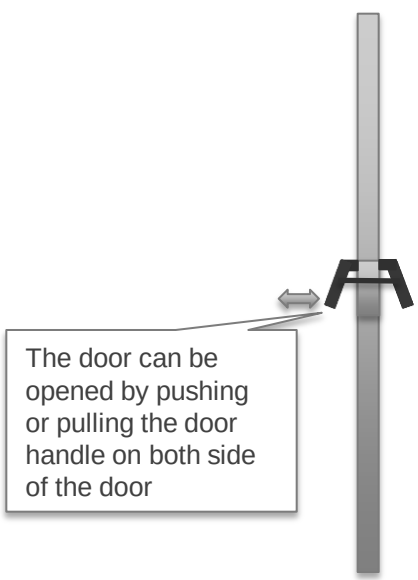
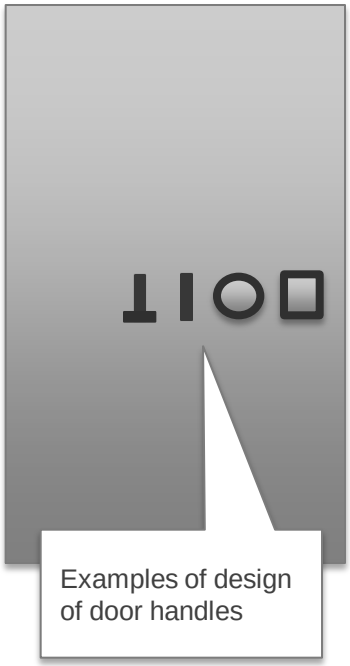


Illustration: Jonny Nersveen



It is possible to change the door handle from turning movement to push and pull movement. The only change you have to do is replacing door lock and door handles.

Product idea: Jonny Nersveen

EVACUATION

Evacuation of wheelchair users is a real problem. In case of fire, and you not are at the ground floor, you can only get out with help from other people. Normally in fire situations, the power is turned off and the lift is not available. Should wheelchair users only live on the ground floor to feel safe?

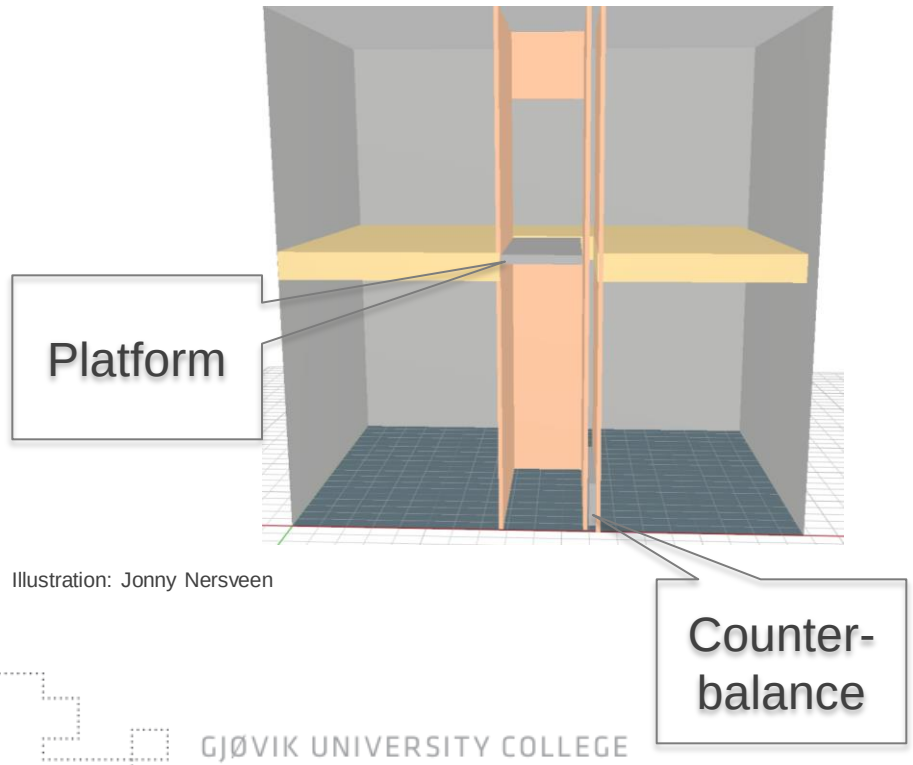


Illustration: Jonny Nersveen

The wheelchair user enters the platform and push the starting mechanism. The platform will move to the floor below. When the wheelchair user leaves the platform and close the door, the platform moves back to the floor above and is ready for the next transport.

It is no electric power in use. The power is the weight of the wheel chair and the user.

Counter balance brings the platform back to the start point.

Product idea: Jonny Nersveen

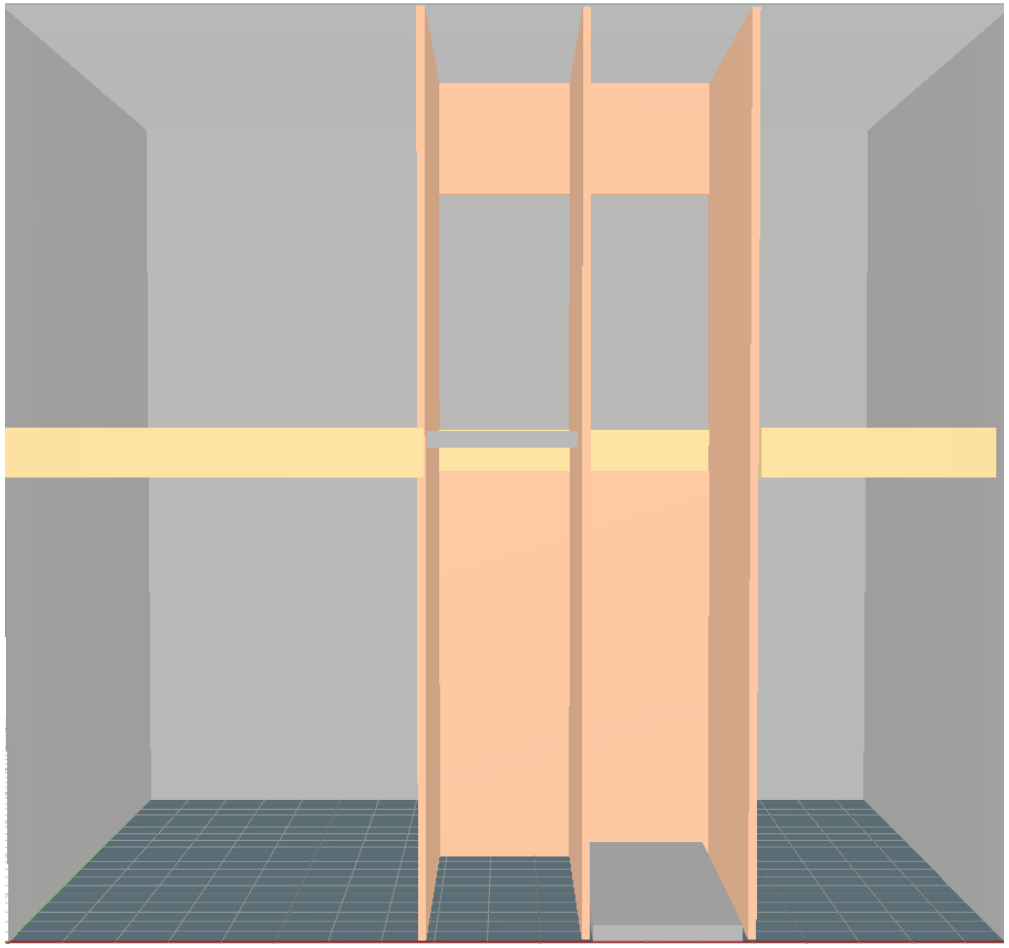


Illustration: Jonny Nersveen

Platform with two shafts.

The platforms are connected to each other. When the first goes down, the other will go up. This system has more capacity, but requires more area.

When the wheelchair user leaves the platform, the next platform is ready for use.

TACTILE LEADING LINES

Ask an architect about tactile leading lines, but keep your distance. They hate it. Cleaning staff have same opinion. Tactile leading lines are not beautiful and destroys the cleaning machines. So - what can we do?

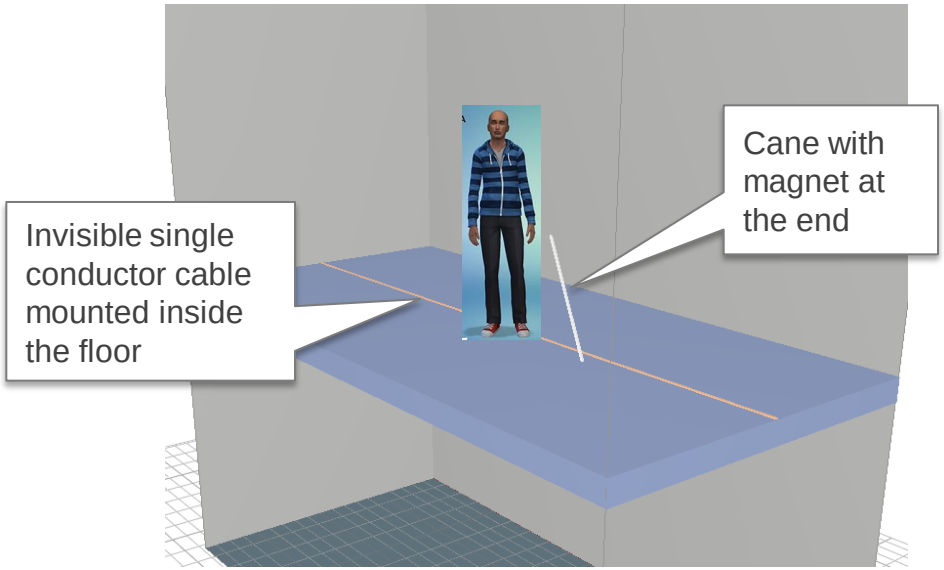


Illustration: Jonny Nersveen

Mount a single conductor power cable inside the floor and turn on the power. Mount a magnet on the end of the white cane the blinds are using. When the cane moves across the cable, the magnet will react with the magnet field around the cable. You can feel it, because these two magnet fields will repel each other.

Now, you have an invisible tactile leading line.

The system is not tested, so I don't know the power consume or problems with EMC noice.

Product idea: Jonny Nersveen

COMMUNICATION WITH DEAF-BLIND

It is possible to communicate with the deaf-blind with a tactile sign language in the palm. However, this gives very few persons deaf-blind can communicate with as only a few persons can use tactile language.

Deaf-blind therefore depends on an interpreter to consult a doctor, seek a public office, etc. Is there a creative solution for this? Yes, by combining proven technology with some little creativity, it is possible.

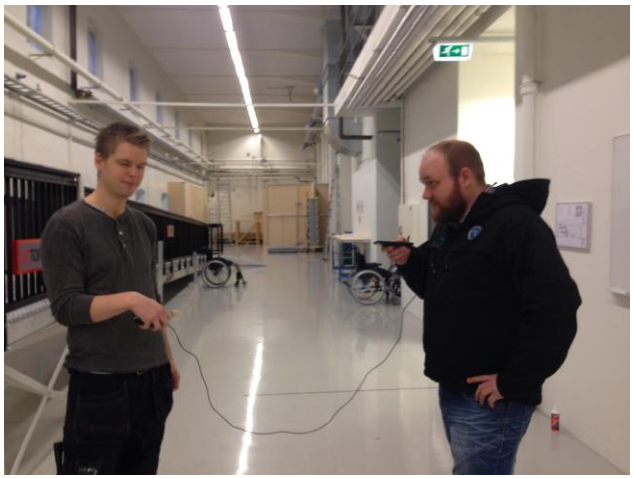


Photo: Jonny Nersveen

Smartphones has computer capasity. Voice recognition is known technology. Talk to the smartphone, the phone transform the voice to electric impulses on the surface on a object placed in the palm. The electric impulses imitates movements of a finger. With this solution, all persons can talk to deaf-blind persons.

The back side of the object in the palm has sensors. You can use the finger and write with movements. The sensor brings signals back to the smartphone and translate it to synthetic voice.

This technology can be used wide. See next page.

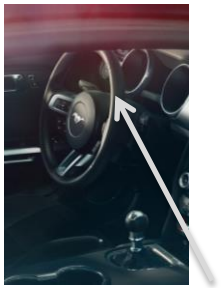
Product idea: Jonny Nersveen

TACTILE MESSAGES IN GENERAL

The technology with tactile language can be used very widely. Tactile language is a communication method in addition to vision and hearing. Sometimes we cannot see, sometimes we cannot hear because of noise, but we can still feel signals in the palm.

We can get the signals from the steering control levers in construction machinery, joysticks in armaments, in fact, in all cases we hold hands on specific equipment.

The system can be used in all circumstances where there is a need to send important messages that require response from a human.



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