Improving home environments for older adults

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In 2050, the **33% of population** will be **over 60 years old**

Decrease of fertility rate within worldwide developed markets

Increase **spending** on **healthcare** and **welfare system**

WHAT IS HAPPENING?

[Older Italian woman talking with Google](#)

IF I WERE IN YOUR SHOES?

THE LIFE AS A GRANDPA

Imagine to have a look at a website

THE LIFE AS A GRANDPA

When you have reduced ability to focus

THE LIFE AS A GRANDPA

When you have high glare sensitivity

THE LIFE AS A GRANDPA

When you have low contrast sensitivity

THE LIFE AS A GRANDPA

When you have glaucoma

THE LIFE AS A GRANDPA

When you have macular degeneration

THE LIFE AS A GRANDPA

Imagine to open a jar with working gloves

THE LIFE AS A GRANDPA

Imagine to climb steps too high for you

THE CAMBRIDGE SIMULATION TOOLS
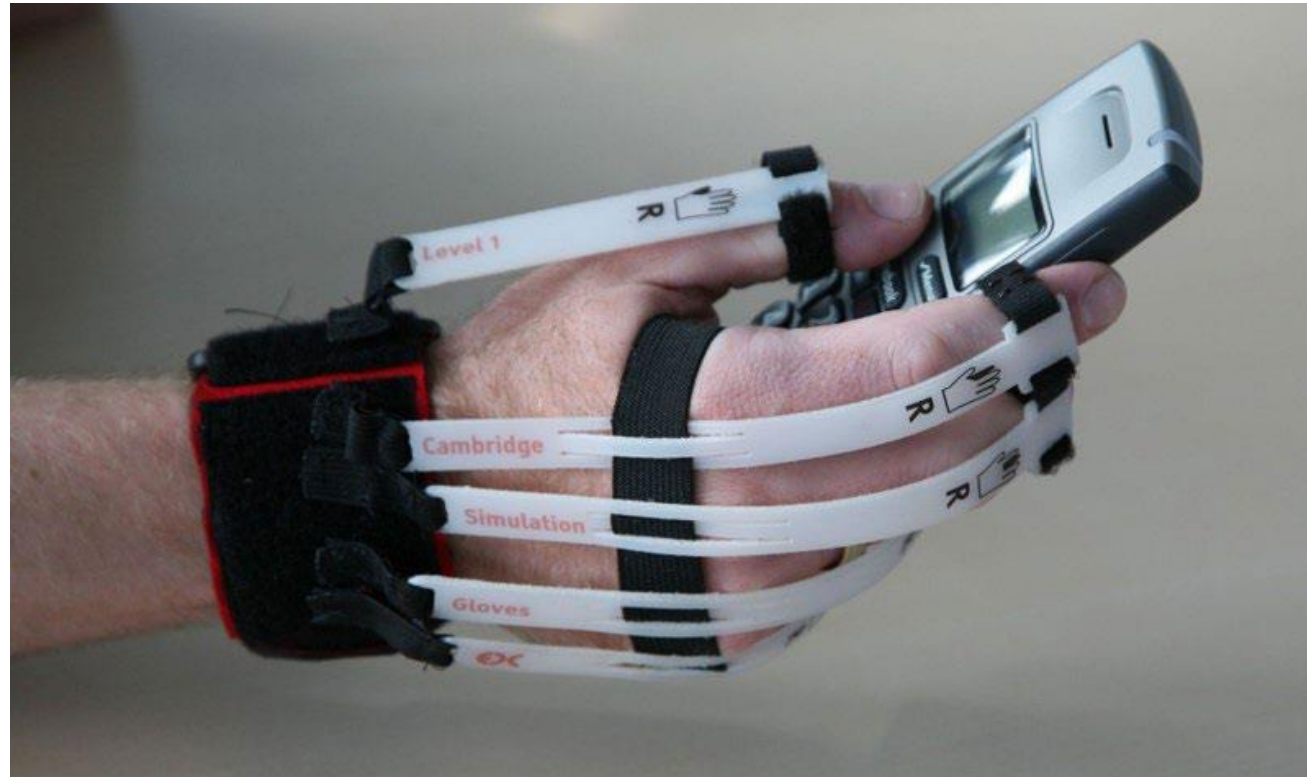
*University of Cambridge, Cambridge simulation gloves

THE CAMBRIDGE SIMULATION TOOLS

*University of Cambridge, Cambridge simulation glasses

EXPLORE THE CHALLENGES

Luminance: 176 lx   Distance: 150 cm   Focal lenght: 4 mm   Exposure time: 1/17

Chivaran C., Zallio M., Waller S., Clarkson, P. J. (2021). Visual Accessibility and Inclusion. An Exploratory Study to Understand Visual Accessibility in the Built Environment. Proceedings Smart Accessibility 2021, pp.1–7. IARIA, 2021. ISBN: 978-1-61208-876-1

EXPLORE THE CHALLENGES

Luminance: 131 lx   Distance: 150 cm   Focal lenght: 4 mm   Exposure time: 1/17

Chivaran C., Zallio M., Waller S., Clarkson, P. J. (2021). Visual Accessibility and Inclusion. An Exploratory Study to Understand Visual Accessibility in the Built Environment. Proceedings Smart Accessibility 2021, pp.1–7. IARIA, 2021. ISBN: 978-1-61208-876-1

EXPLORE THE CHALLENGES

Luminance: 141 lx   Distance: 150 cm   Focal lenght: 4 mm   Exposure time: 1/15

Chivaran C., Zallio M., Waller S., Clarkson, P. J. (2021). Visual Accessibility and Inclusion. An Exploratory Study to Understand Visual Accessibility in the Built Environment. Proceedings Smart Accessibility 2021, pp.1–7. IARIA, 2021. ISBN: 978-1-61208-876-1

EXPLORE THE CHALLENGES
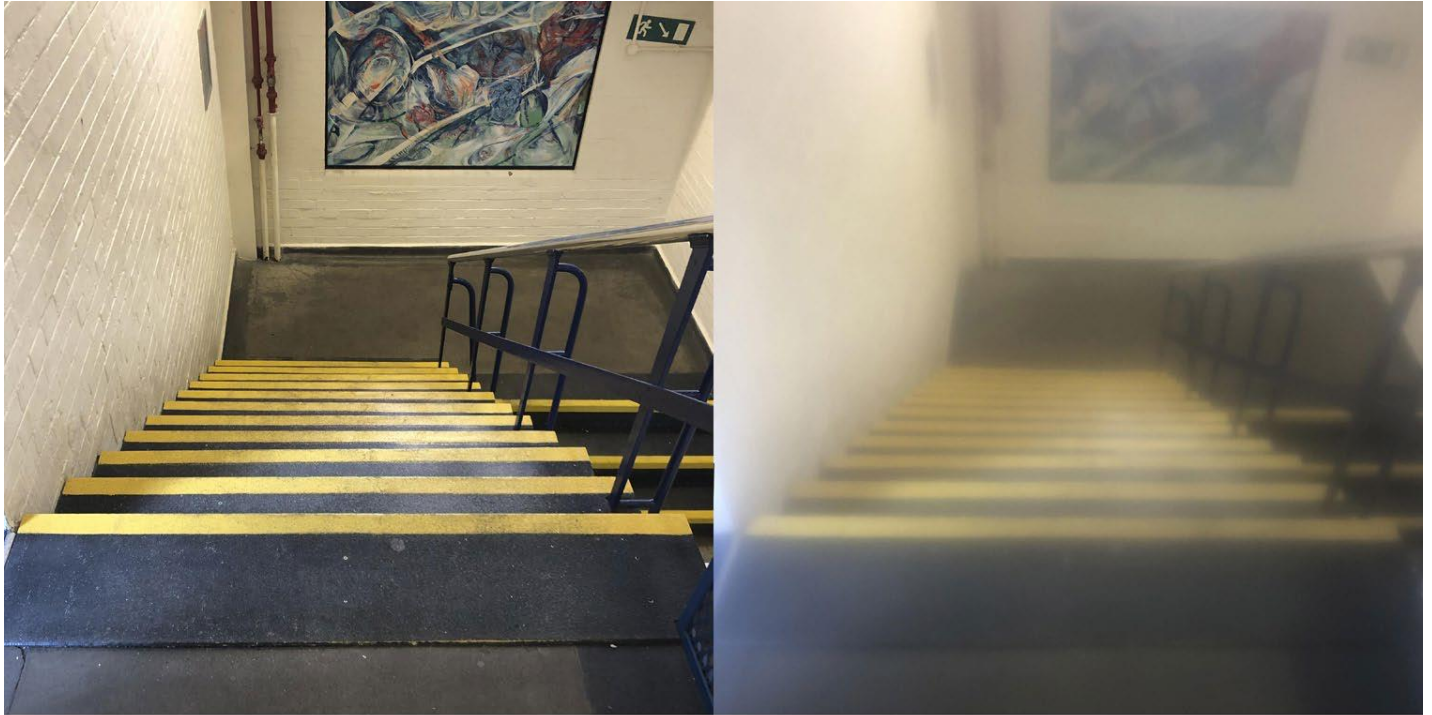
Luminance: 184 lx   Distance: 150 cm   Focal lenght: 4 mm   Exposure time: 1/17

Chivaran C., Zallio M., Waller S., Clarkson, P. J. (2021). Visual Accessibility and Inclusion. An Exploratory Study to Understand Visual Accessibility in the Built Environment. Proceedings Smart Accessibility 2021, pp.1-7. IARIA, 2021. ISBN: 978-1-61208-876-1

HOW CAN WE ADDRESS THOSE CHALLENGES?

HOME - KITCHEN

Smoke sensor prevents fire and can unobtrusively monitor people

Smart lighting system detects when people are at home

Smart dishwasher knows when energy is cheap and starts automatically

Smart plugs can remotely control home appliances

Smart oven can be controlled via smartphone

Flooding sensor prevents water damage & send alerts on smartphone

HOME - LIVING ROOM

Smart lighting system adapts light according to user needs

Connected speakers know when you are at home and play music

Smart thermostat detect which is your favourite temperature

Curtains and windows set up automatically when people comes in/out

Smart TV is connected to Internet and provide infos & home control

Energy tracker notify when energy is cheap and makes home safer

Smart plugs turn on/off appliances remotely, when needed

Robotic devices help in connecting and socializing with people

Smart trackers remind where things are left

Lifestyle monitoring systems support in daily activities & keep people fit

HOME - BEDROOM

Lighting system set scenarios for waking up/going to sleep

Surveillance systems keep home secure and prevent thief

E-Heatlh devices monitor physical status and send information

Monitoring devices keep you under control and tell infos to doctors & familiars

Security systems keep home safe and secure

Vacuum robot keeps the house always clean

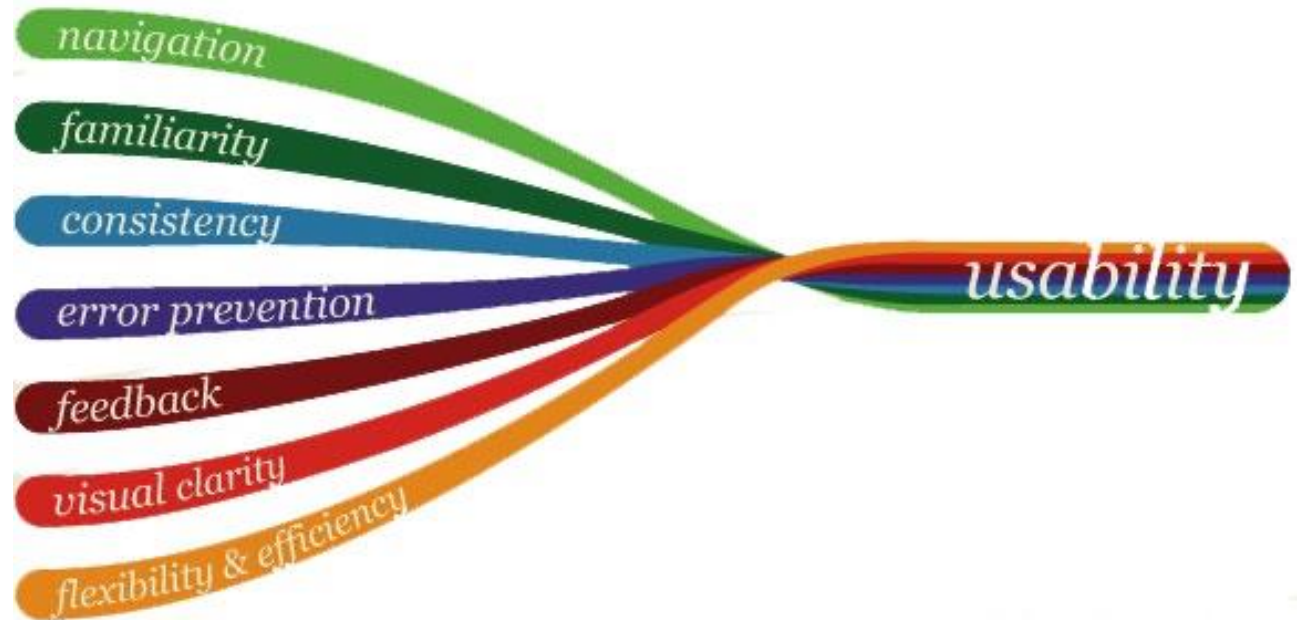# HOME - BATHROOM

THE REALITY... IS OFTEN DIFFERENT

# HOW DO WE DESIGN SOLUTIONS...

HOW DO WE DESIGN SOLUTIONS...

USABILITY

USABILITY

Is the extent to which a product can be used by specified users to achieve specified goals with effectiveness, efficiency and satisfaction in a specified context of use.

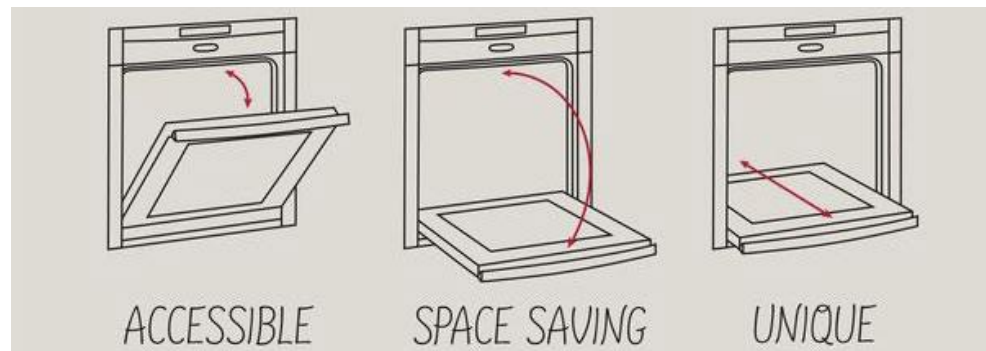ISO 9241-11 definition   The unusable teapot - D. Norman

NAVIGATION

How easy is for users to accomplish basic tasks the first time they encounter the design?

Photo courtesy of Landcom

Photo courtesy of Lend Lease
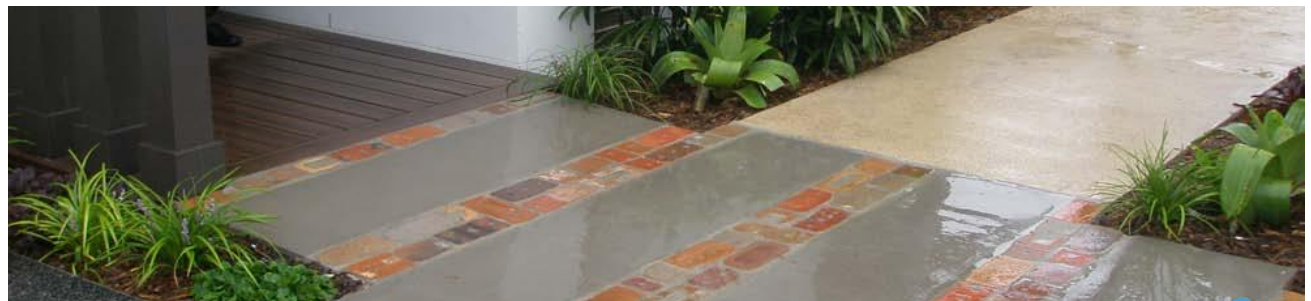
FAMIL!ARITY

What's the ability of a system to allow a user to map prior experiences, onto the features of a new system?

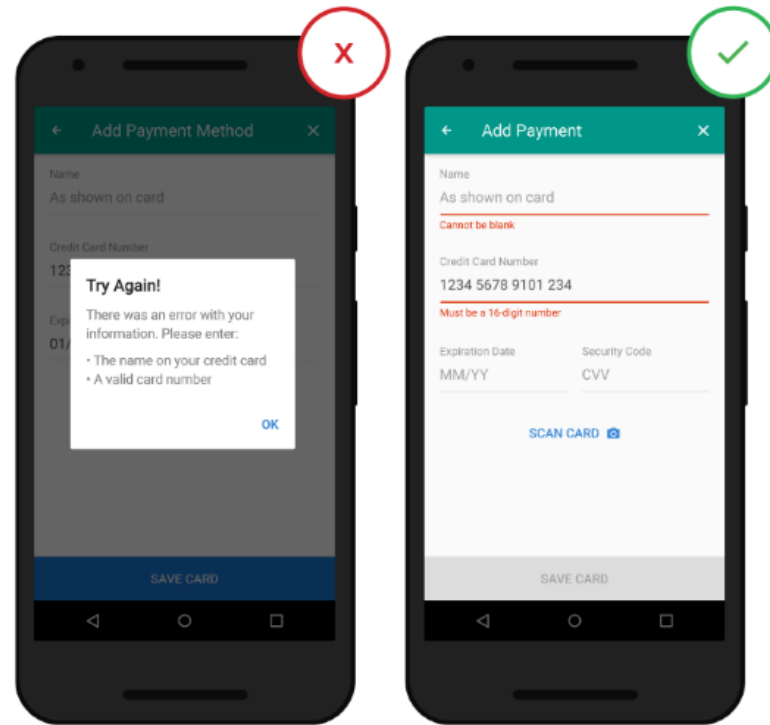ACCESSIBLE   SPACE SAVING   UNIQUE

Neff v en

CONSISTENCY

When users return to the design after a period of not using it, how easily can they reestablish proficiency?

Snaidero Skyline Kitchen

ERROR PREVENTION

How many errors do users make, how severe are these errors, and how easily can they recover from the errors?

X Form entry is not validated until after submission and the error message provided is out of context without actionable recommendations.

✓ Actionable error messages are provided in context, in real-time, upon data entry.

Usability 101: Introduction to Usability - Jakob Nielsen

FEEDBACK

How can people perceive feedback?

Usability 101: Introduction to Usability - Jakob Nielsen
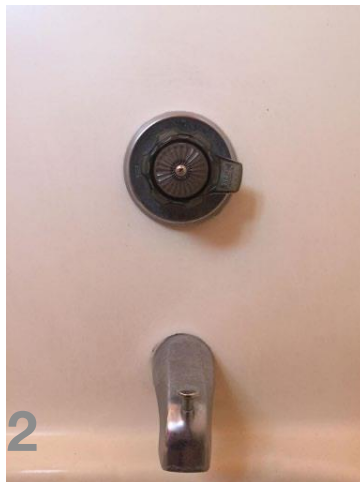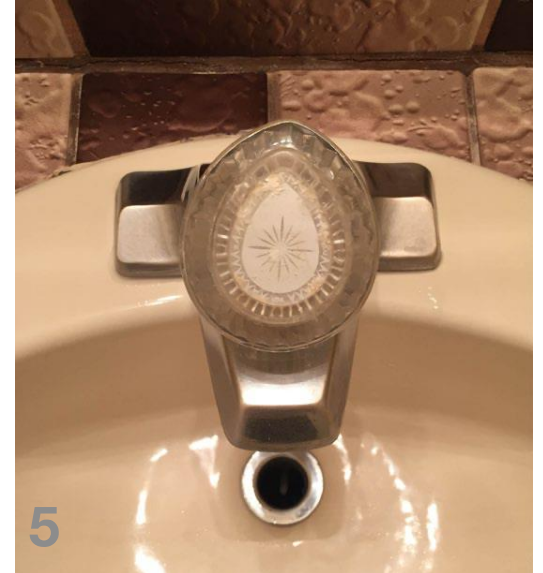
VISUAL CLARITY

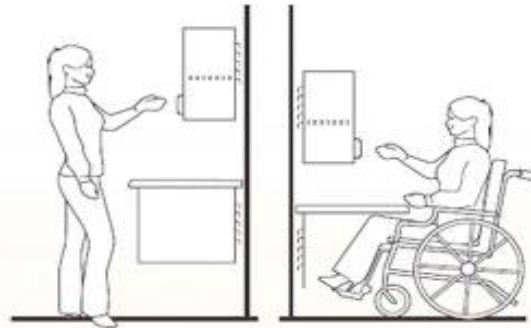Is what you see what you understand?

Push-Pull handle

QUESTION:

Which faucet is easier to use?
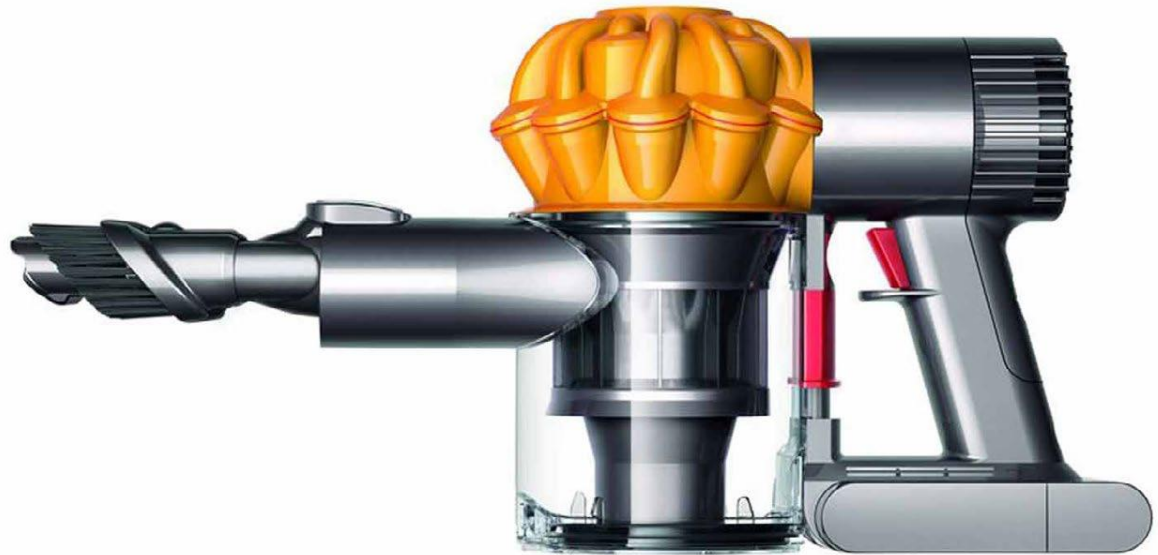
FLEXIBILITY & EFFICIENCY

Once users have learned the design, how quickly can they perform tasks?

AND THEN, ONE OF THE MOST VALUABLE

SATISFACTION

How pleasant is the design to be used?

EMOTIONAL DESIGN

WHY MOST OF THE HOUSES ARE NOT EASILY ACCESSIBLE?

IS IT JUST MATTER OF COST AND AFFORDABILITY?

IS MATTER OF :
KNOWLEDGE

IS MATTER OF :

KNOWLEDGE

AWARENESS

IS MATTER OF :

KNOWLEDGE

AWARENESS

USABILITY

IS MATTER OF :

KNOWLEDGE

AWARENESS

USABILITY

ACCESSIBILITY

IS MATTER OF :

KNOWLEDGE

AWARENESS

USABILITY

ACCESSIBILITY

ERGONOMICS

IS MATTER OF :

KNOWLEDGE

AWARENESS

USABILITY

ACCESSIBILITY

ERGONOMICS

DESIGN

«GOOD DESIGN ENABLES, BAD DESIGN DISABLES!»

Paul Hogan, EIDD-DFA Europe president Emeritus