

The slide features a central title in large, bold, black capital letters. Surrounding the title are numerous small, colorful icons of people with various disabilities, including those using wheelchairs, canes, and hearing aids. The icons are arranged in a circular pattern around the central text.

# IMPROVING INDOOR ENVIRONMENTS FOR OLDER ADULTS

January 31, 2019

Perspectives in Assistive Technology

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Stanford University - Center for Design Research

Technological University Dublin

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

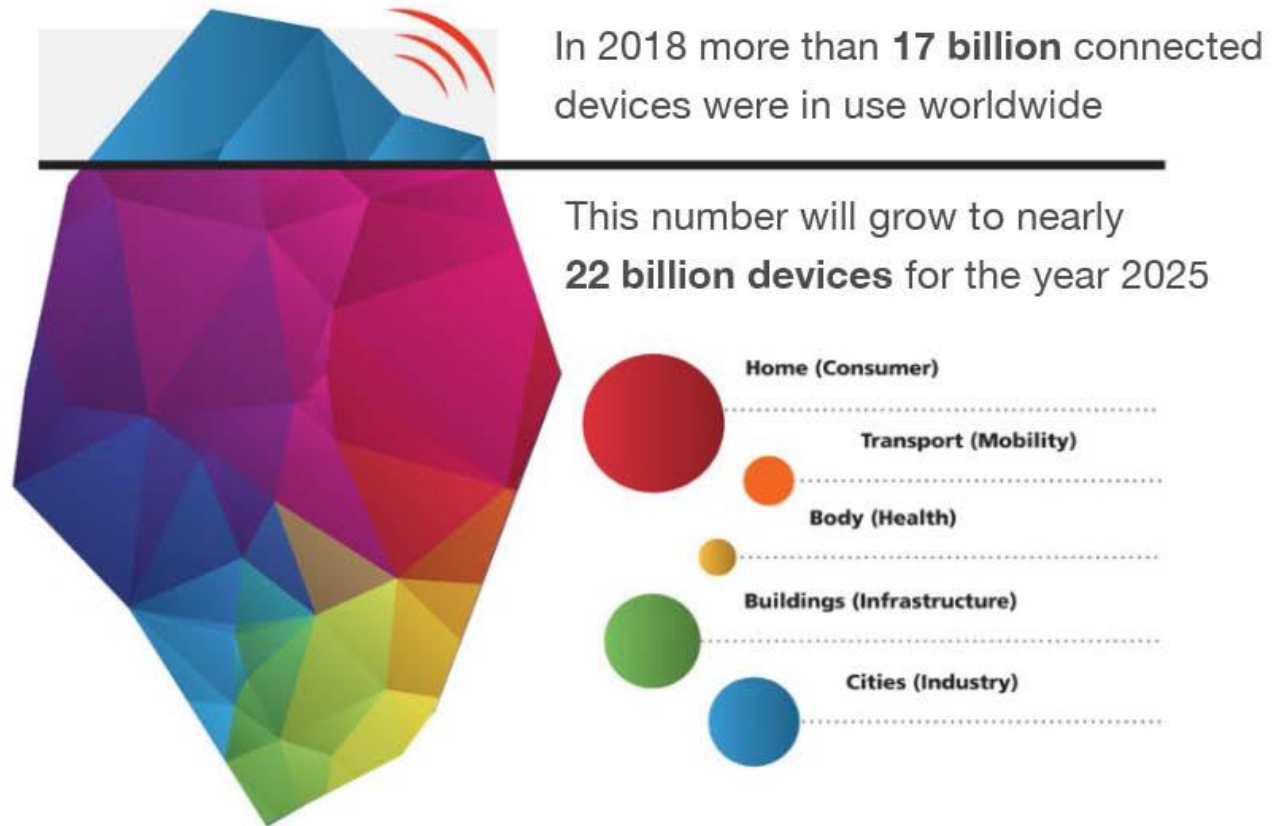
**Decrease of fertility rate** within worldwide developed markets

Increase of **healthcare costs** and **welfare system**



# WHAT IS HAPPENING?

How many devices will be connected in the future?



# WHAT IS HAPPENING?



<https://vimeo.com/313924443>

# IF I WERE IN YOUR SHOES?



# THE LIFE AS A GRANDPA

Imagine to have a look at a website.

Your destination for affordable, quality health care, including Medi-Cal

COVERED CALIFORNIA

ABOUT US COVERAGE RESOURCES PROGRAMS & PARTNERS NEWS CENTER LANGUAGES: ENGLISH

Enroll by Jan. 15 for Coverage Beginning Feb. 1

Visit our secure login site to set up an account and apply or to access your account.

Find Local Help Apply Now

Account Login How to Pay

Individuals & Families Small Businesses Events Near You Request Enrollment Assistance

**Tell A Friend Get Covered**

Help ensure that your friends have health coverage.

Tell A Friend >

**Shop and Compare Tool**

Use our online calculator to find quality health care, including Medi-Cal.

**Key Deadlines & Dates**

Coverage Begins	Payment to Plan by	Enrollment for Feb. 1 Coverage
Jan. 1	Jan. 15	Jan. 15

# THE LIFE AS A GRANDPA

Imagine to have a look at a website:  
Reduced ability to focus.

Your destination for affordable, quality health care, including Medi-Cal

COVERED CALIFORNIA

ABOUT US COVERAGE RESOURCES PROGRAMS & PARTNERS NEWS CENTER LANGUAGES: ENGLISH

Enroll by Jan. 15 for Coverage Beginning Feb. 1

Visit our secure login site to set up an account and apply or to receive your account.

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Coverage Begins	Payment to Plan By	Enrollment for Feb. 1 Coverage
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# THE LIFE AS A GRANDPA

Imagine to have a look at a website:  
High glare sensitivity.

The screenshot shows the Covered California website. At the top, there is a navigation bar with the tagline "Your destination for affordable, quality health care, including Medi-Cal" and social media icons for Facebook, Twitter, YouTube, and LinkedIn. Below this is a secondary navigation menu with links for ABOUT US, COVERAGE, RESOURCES, PROGRAMS & PARTNERS, NEWS CENTER, and LANGUAGES: ENGLISH. The main banner features a large image of a woman carrying a child on her shoulders, with a bright cyan circular graphic overlay. The text on the banner reads: "Enroll by Jan. 15 for Coverage Beginning Feb. 1. Visit our secure login site to set up an account and apply or to access your account." Below this text are four yellow buttons: "Find Local Help", "Apply Now", "Account Login", and "How to Pay". Below the banner is a row of four service icons: "Individuals & Families", "Small Businesses", "Events Near You", and "Request Enrollment Assistance". At the bottom, there are three promotional boxes: "Tell A Friend Get Covered" (with a "GET COVERED" badge), "Shop and Compare Tool" (with a calculator icon), and "Key Deadlines & Dates". The "Key Deadlines & Dates" table is as follows:

Coverage Begins	Payment To Plan by	Enrollment for Feb. 1 Coverage
Jan. 1	Jan. 15	Jan. 15



# THE LIFE AS A GRANDPA

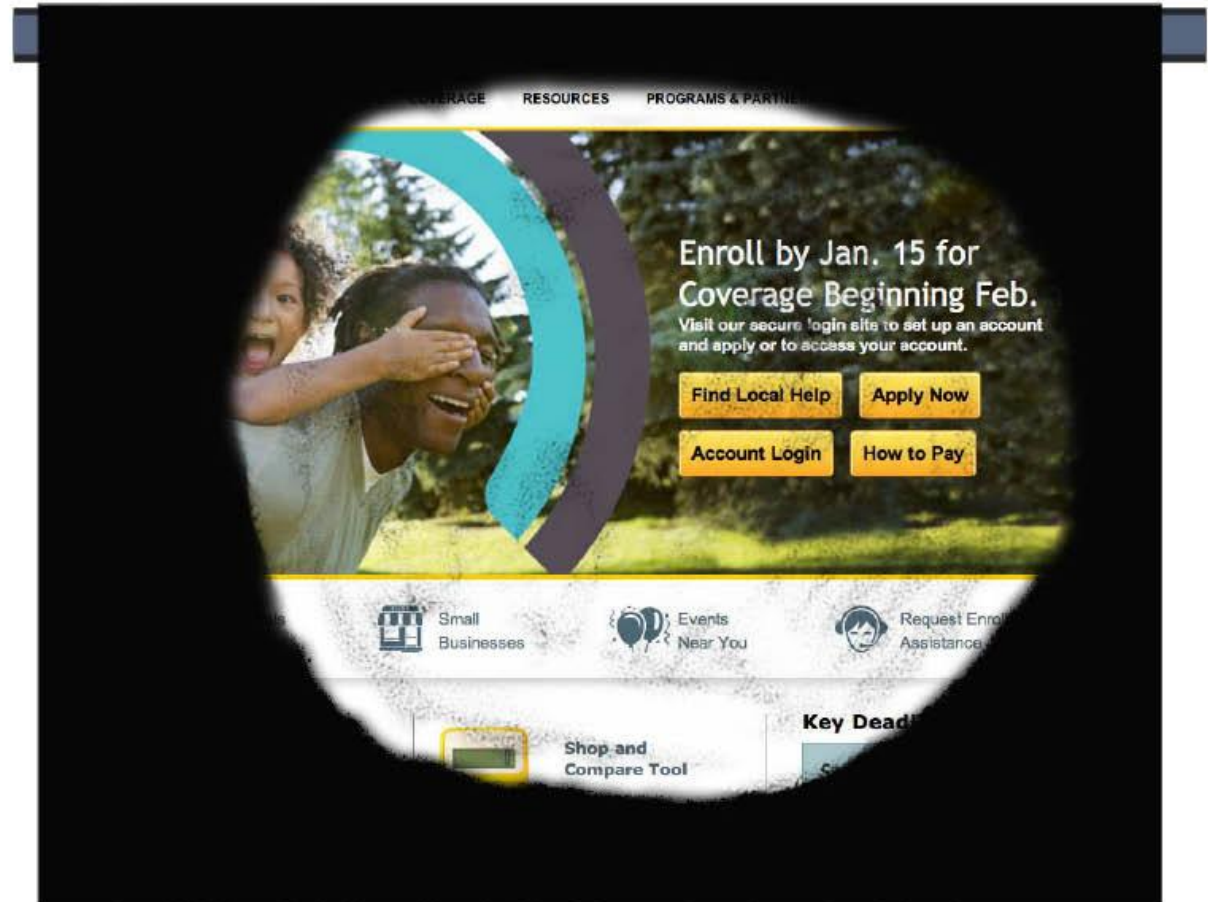
Imagine to have a look at a website:  
Low contrast sensitivity.

The screenshot shows the Covered California website. At the top, there is a navigation bar with the tagline "Your destination for affordable, quality health care, including Medi-Cal" and social media icons for Facebook, Twitter, and YouTube. Below this is a main menu with links for "ABOUT US", "COVERAGE", "RESOURCES", "PROGRAMS & PARTNERS", "NEWS CENTER", and "LANGUAGES: ENGLISH". The main content area features a large banner with a photo of a woman and a child. The banner text reads: "Enroll by Jan. 15 for Coverage Beginning Feb. 1. Visit our secure login site to set up an account and apply or to access your account." Below the banner are four buttons: "Find Local Help", "Apply Now", "Account Login", and "How to Pay". At the bottom of the banner, there are four icons representing different user groups: "Individuals & Families", "Small Businesses", "Events Near You", and "Request Enrollment Assistance". Below the banner is a section with three columns: "Tell A Friend Get Covered" (with a "Tell A Friend" button), "Shop and Compare Tool" (with a calculator icon), and "Key Deadlines & Dates" (with a table).

Coverage Begins	Payment to Plan by	Enrollment for Feb. 1 Coverage
Jan. 1	Jan. 15	Jan. 15

# THE LIFE AS A GRANDPA

Imagine to have a look at a website:  
Glaucoma.



# THE LIFE AS A GRANDPA

Imagine to have a look at a website:  
Macular degeneration.

Your destination for affordable, quality health care, including Medi-Cal

COVERED CALIFORNIA

ABOUT US COVERAGE RESOURCES PROGRAMS & PARTNERS NEWS CENTER LANGUAGES: ENGLISH

Enroll by Jan. 15 for coverage beginning Feb. 1

Apply Now

How to Pay

Individuals & Families

Request Enrollment Assistance

Key Deadlines & Dates		
Coverage Begins	Payment to Plan by	Enrollment for Feb. 1 Coverage
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# THE LIFE AS A GRANDPA

Imagine to listen to a song:  
What can you hear?



# THE LIFE AS A GRANDPA

Imagine to climb stairs too big for you:  
Can you easily climb them?



# THE LIFE AS A GRANDPA

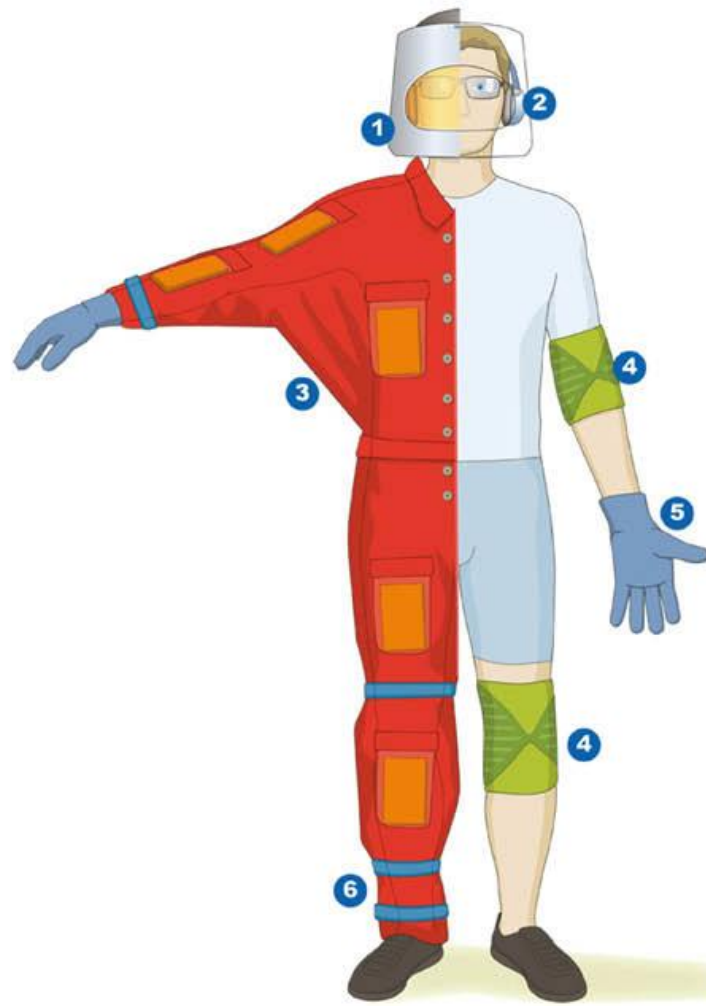
Imagine to open a jar with working gloves:  
How can you do that?



# THE AGE EXPLORER SUIT



# THE AGE EXPLORER SUIT

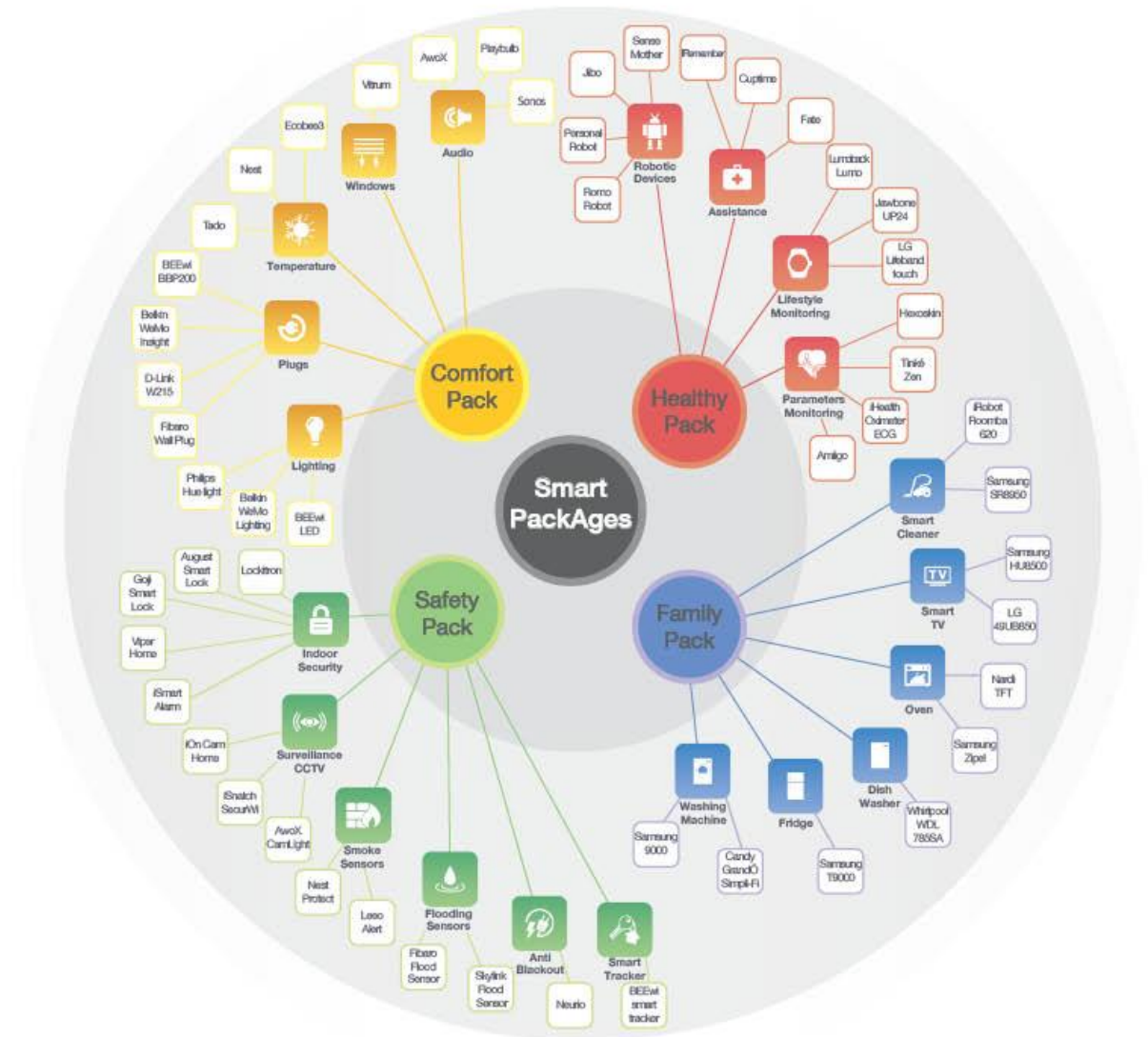


- 1 - SIGHT
- 2 - SOUND
- 3 - MOBILITY
- 4 - MOVEMENT
- 5 - TOUCH
- 6 - WALKING



# HOW TO ADDRESS CHALLENGES?

# IoT FOR BETTER LIVING



# IoT FOR BETTER LIVING



# IoT FOR BETTER LIVING



# IoT FOR BETTER LIVING



# IoT FOR BETTER LIVING



# IoT FOR BETTER LIVING



# IoT FOR BETTER LIVING





# IoT FOR BETTER LIVING



# IoT FOR BETTER LIVING



# IoT FOR BETTER LIVING



# KITCHEN



# LIVING ROOM



# BEDROOM



# RESTROOM



**BUT, THE REALITY...**



# ... IS OFTEN DIFFERENT



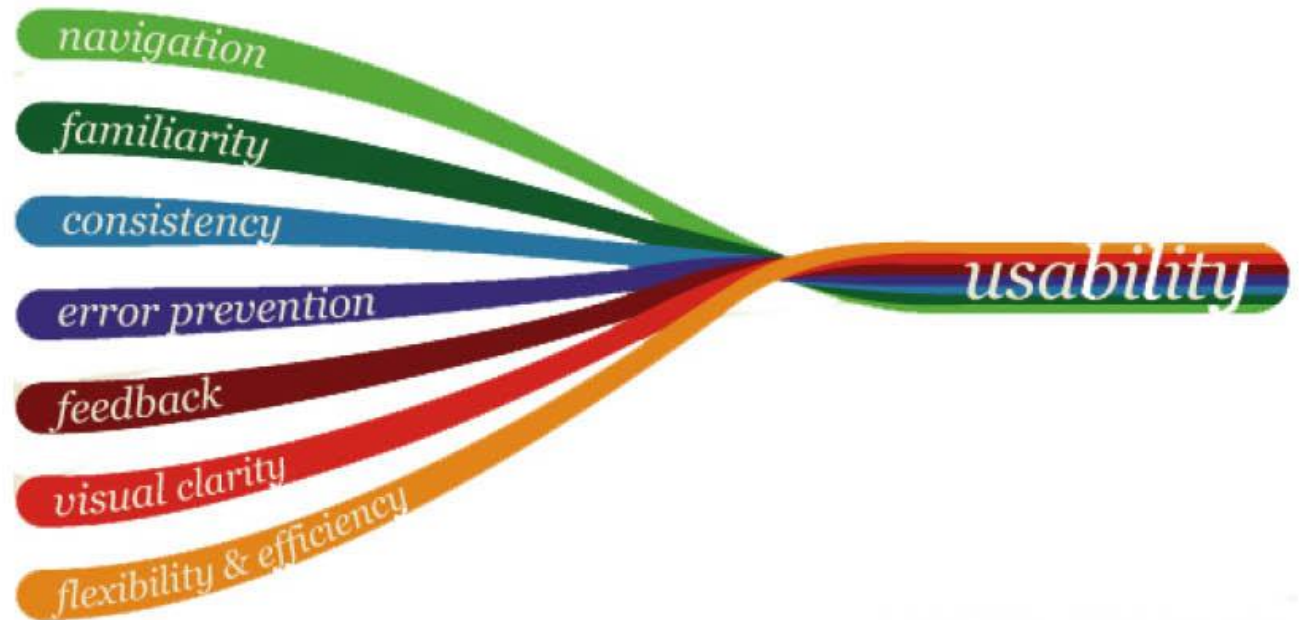
# HOW DO WE DESIGN SOLUTIONS...



# AGE-FRIENDLY DESIGN

**WE HAVE TO TAKE ADVANTAGE OF THE TRANSFORMATIVE IMPACT THAT GREAT DESIGN AND EMERGING TECHNOLOGIES WILL HAVE ON CREATING SUSTAINABLE, SUPPORTIVE AND CONNECTED COMMUNITIES FOR THE AGING POPULATION AND THOSE WHO CARE FOR THEM.**

# USABILITY & ERGONOMICS



# 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.



# USABLE DESIGN

Why can't my technology be as easy to use as my garage door opener?

One button and it opens or shuts the door.  
Simple, elegant.



# NAVIGATION & FAMILIARITY

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





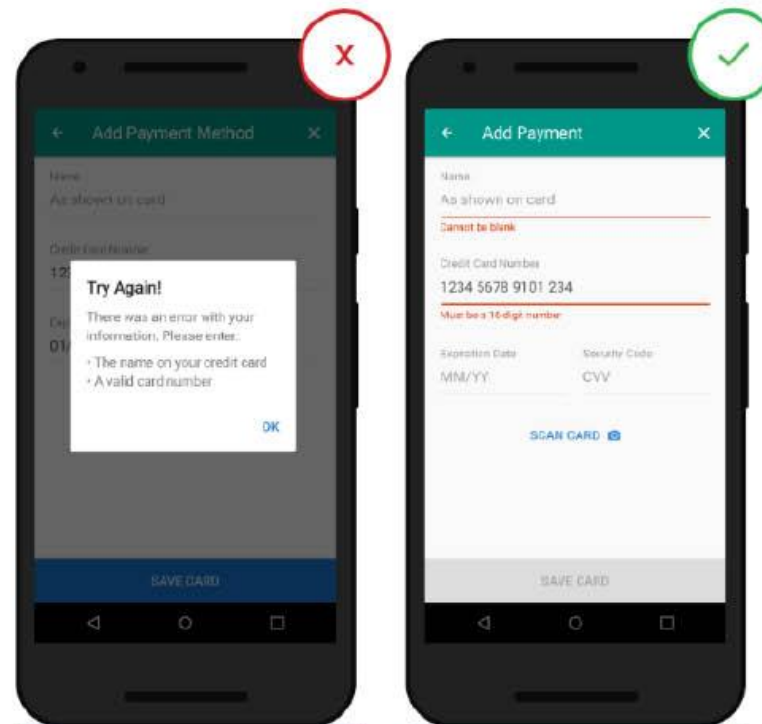
# CONSISTENCY

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



# ERROR PREVENTION & FEEDBACK

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.

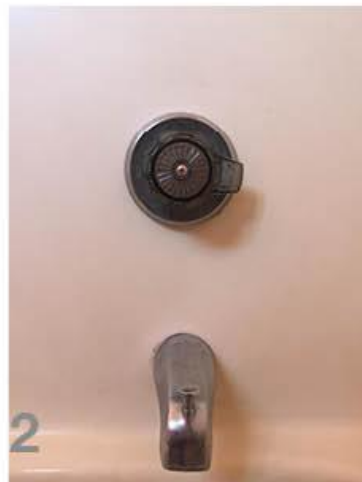
# VISUAL CLARITY

Is what you see what you understand?



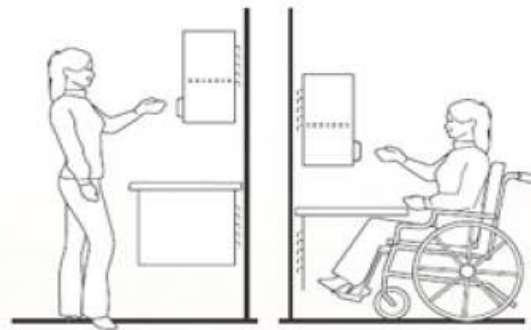
# QUESTION:

Which tap is easier to use?



# FLEXIBILITY & EFFICIENCY

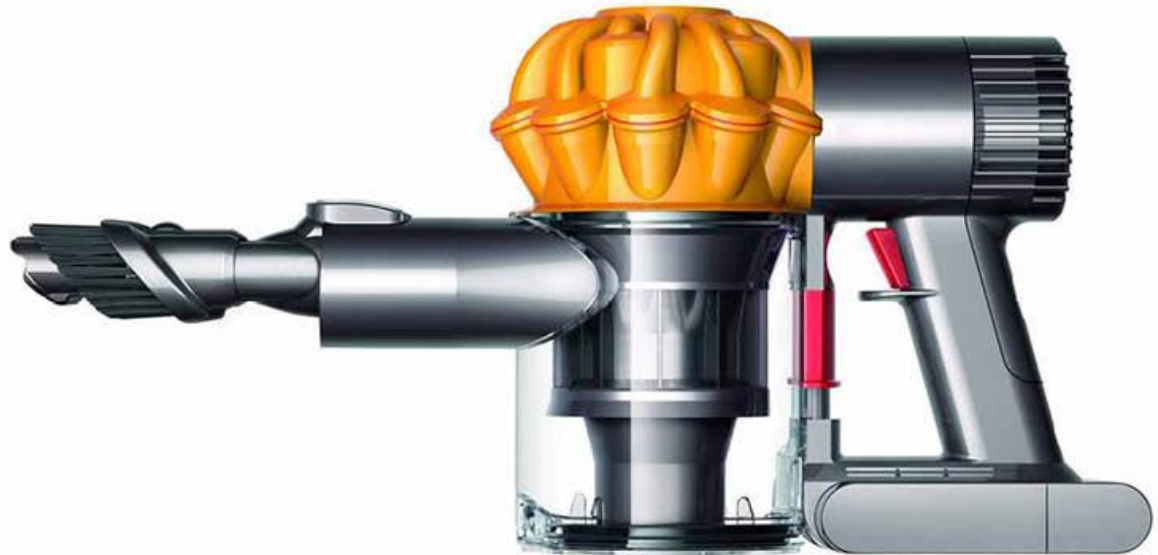
Once users have learned the design, how quickly can they perform tasks?



**AND THEN, ONE OF THE MOST VALUABLE**

# SATISFACTION

How pleasant is the design to be used?



# HOW CAN WE ENHANCE SATISFACTION?





# HOW CAN WE ENHANCE SATISFACTION?



# HOW CAN WE ENHANCE SATISFACTION?



**WHY MOST OF OUR HOUSES ARE NOT EASILY ACCESSIBLE?**

**IS IT JUST MATTER OF COST AND KNOWLEDGE?**



# 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**

**THE WORLD  
IN YOUR  
HANDS**  
YOU CONTROL



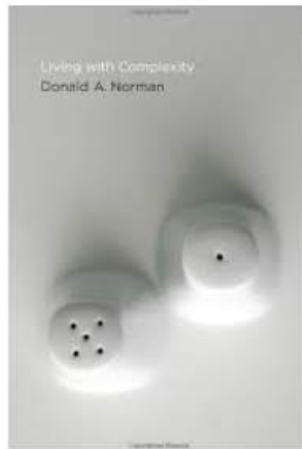
«GOOD  
DESIGN  
ENABLES,  
BAD  
DESIGN  
DISABLES!»

Paul Hogan, EIDD-DFA Europe president Emeritus

Matteo Zallio M.Arch PhD  
e: [matteo.zallio@stanford.edu](mailto:matteo.zallio@stanford.edu)



# INTERESTING READINGS



D. NORMAN  
LIVING WITH COMPLEXITY



D. NORMAN  
DESIGN OF FUTURE THINGS



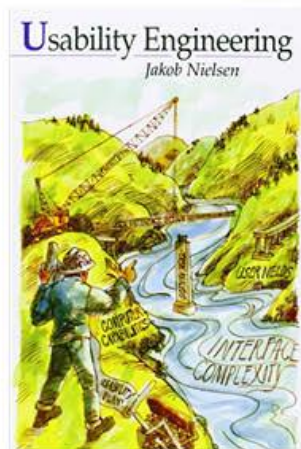
S. KRUG  
DON'T MAKE ME THINK



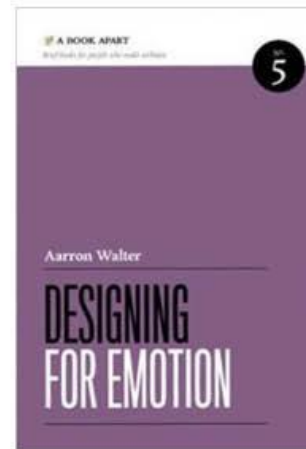
D. SAFFER  
DESIGNING FOR INTERACTION



B. MOGGRIDGE  
DESIGNING INTERACTIONS



J. NIELSEN  
USABILITY ENGINEERING



A. WALTER  
DESIGNING FOR EMOTION



LIDWELL, HOLDEN, BUTLER  
UNIVERSAL PRINCIPLES OF DESIGN