# HCI Week 1: Accessibility

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# today

- Re-cap:
  - Accessibility factors
  - User impairments
- Inclusive & accessible design
- Hands-on activity

# Accessible systems help everyone.

# Accessibility Factors*

- **User Impairments –**
  issues in body function or alteration in body structure.

- **Activity Limitations –**
  difficulties in executing activities.

- **Participation Restrictions –**
  problems exist in taking part in activities due to issues such as discrimination.

- **Environmental Factors –**
  facilitators or barriers in the environment impact on the user.

- **Personal Factors –**
  aspects such as motivation and self-esteem can influence an individual's participation.

*Crabb, M., Heron, M., Jones, R., Armstrong, M., Reid, H., & Wilson, A. (2019, April). Developing Accessible Services: Understanding Current Knowledge and Areas for Future Support. In Proceedings of the 2019 CHI Conference on Human Factors in Computing Systems (p. 216). ACM.

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https://www.businessofapps.com/insights/fat-finger-design-for-better-mobile-ux/

# Accessibility Factors*

- **Participation Restrictions –** problems exist in taking part in activities due to issues such as discrimination.



https://www.livescience.com/54692-why-bathrooms-are-gender-segregated.html

# Accessibility Factors*

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Gender *

◯ Female

◯ Male

◯ Rather not to say

https://en.wikipedia.org/wiki/Gender_survey_question

# Accessibility Factors*

- **Participation Restrictions –**
  problems exist in taking part in activities due to issues such as discrimination.

**How do you currently describe yourself? (mark all that apply)**

- ☐ Male
- ☐ Female
- ☐ Genderqueer / genderfluid
- ☐ Nonbinary
- ☐ Transgender
- ☐ Two-spirit
- ☐ Prefer to self-describe: _____
- ☐ Prefer not to say

https://www.intellisurvey.com/blog/how-to-ask-gender-questions-online-surveys

# Accessibility Factors*

- **Environmental Factors –**
  facilitators or barriers in the environment impact on the user.



https://www.androidauthority.com/
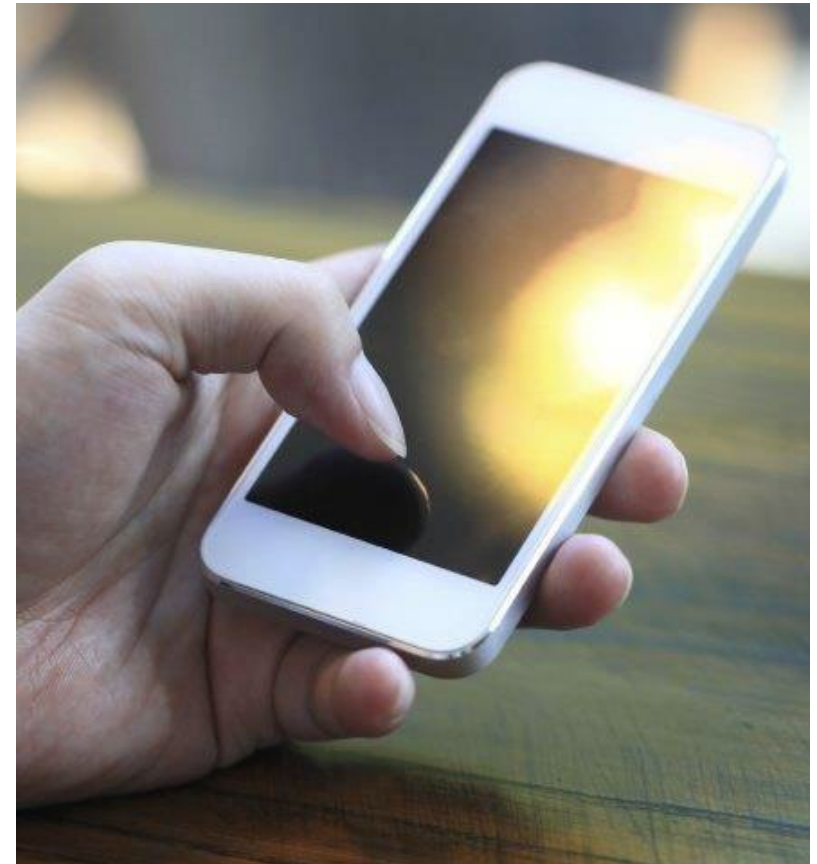
# Accessibility Factors*

- **Personal Factors –**
  aspects such as motivation and self-esteem can influence an individual's participation.



http://www.utahinrichs.de/uta/uploads/Projects/
EMDialog/emdialog_1.png

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# User Impairments

- Visual impairment

- Hearing impairment

- Physical impairment

- Speech impairment

- Dyslexia

- Autism

- Learning disability

- Age group related impairments



https://www.tableau.com/en-gb/blog/examining-data-viz-rules-dont-use-red-green-together
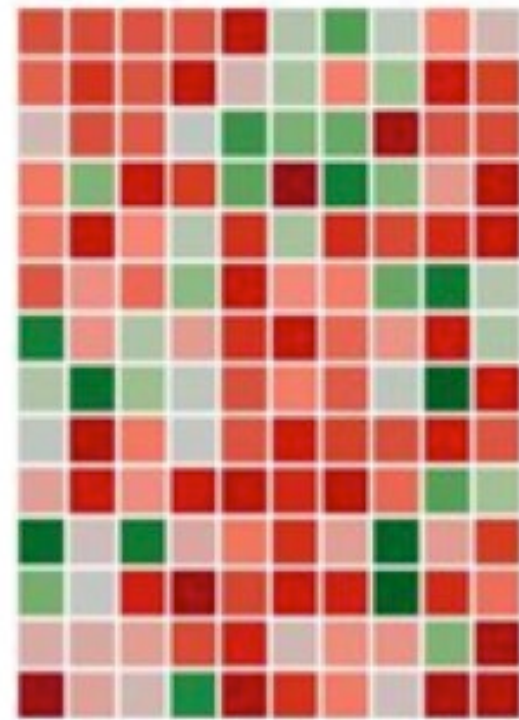
# Inclusive and Accessible Design

# Inclusive and Accessible Design

- **Inclusive Design –**
  a design methodology that enables and draws on the full range of human diversity

- **Accessibility –**
  the qualities that make an experience open to all

- If we start the design process from our own abilities and biases, we end up with products designed for people of a specific gender, age, language ability, tech literacy and physical ability

- Designing for inclusivity opens up products and experiences to more people with a wider range of abilities

https://inclusive.microsoft.design/
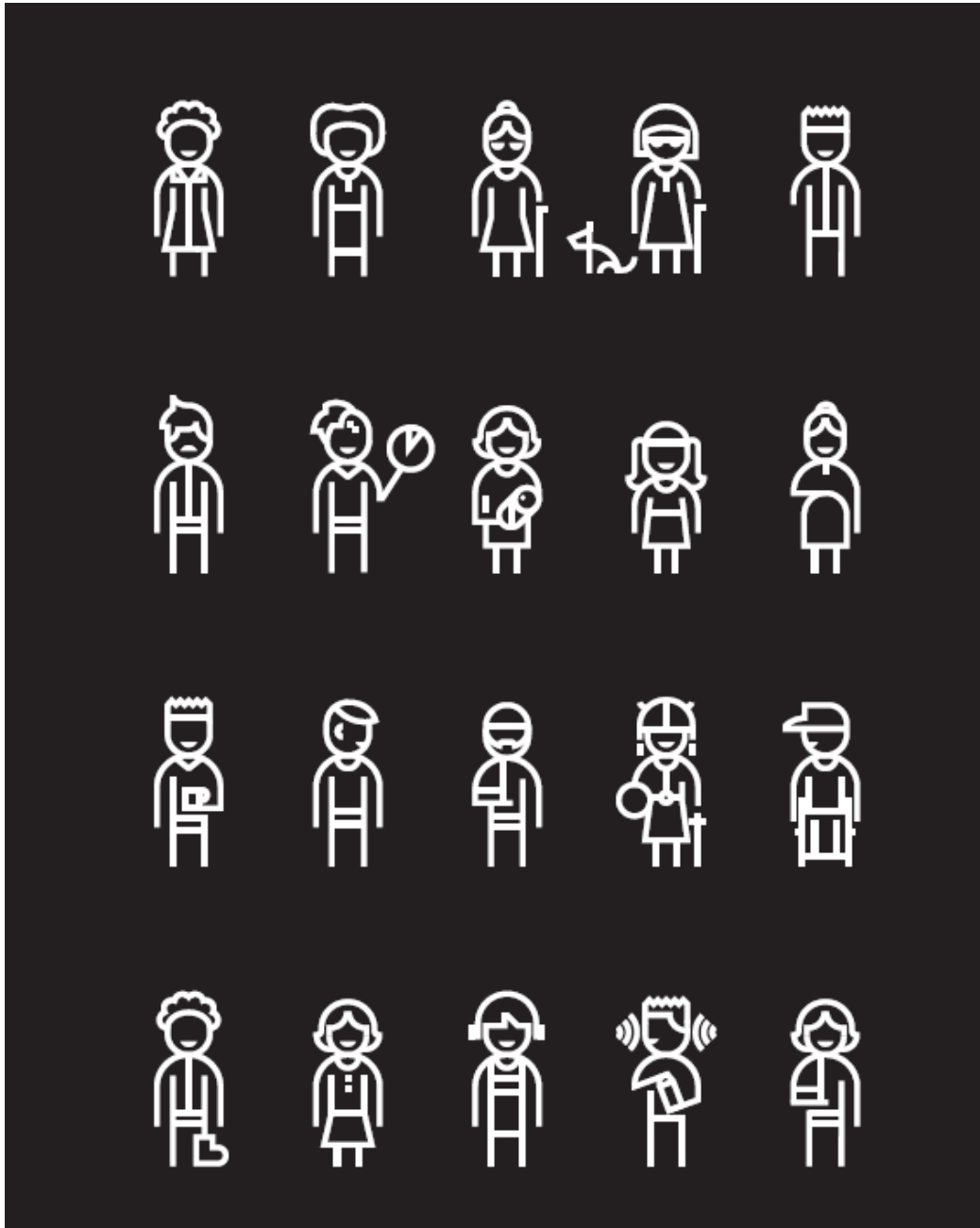
*When it comes to people, there is no such thing as "normal".*

Microsoft Inclusive 101 Guidebook, p. 16

# Inclusive Design Principles

- **Recognise Exclusion –**
  exclusion can occur when we design from our own biases, we are responsible for knowing when our designs cause exclusion

- **Learn from Diversity –**
  people adapt to different situations, understanding these adaptations is the key to real insights

- **Solve for one, extend to many –**
  inclusive design connects different people who have similar circumstances, consequently benefitting a wider range of people

https://inclusive.microsoft.design/

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# Inclusive Design Principles



Increased
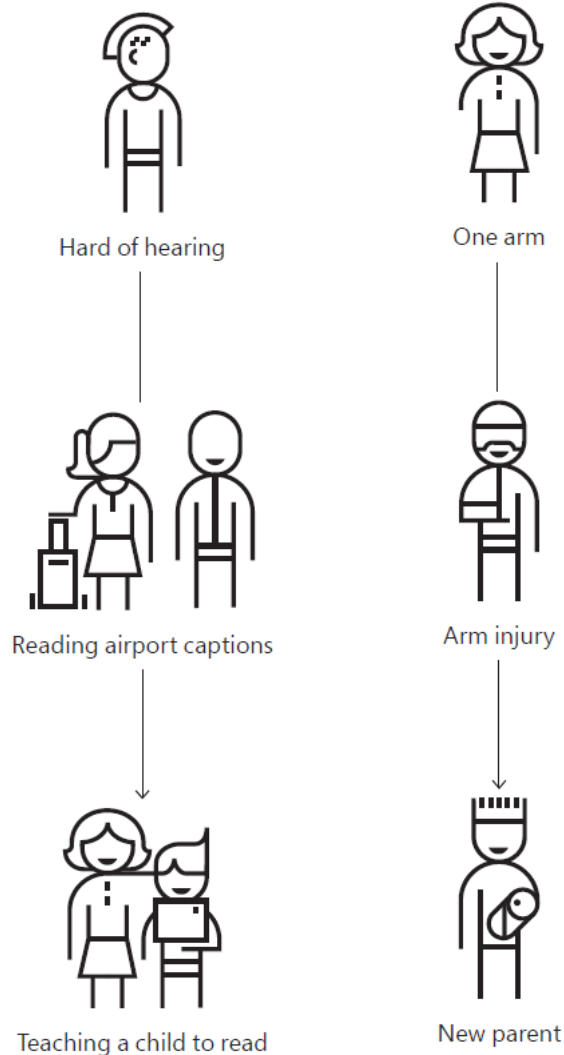Mobility of
Technology

=

Increased
Moments of
Disability

- **Learn from Diversity –** people adapt to different situations, understanding these adaptations is the key to real insights

*Mobile technologies can make situational limitations highly relevant to many people today. Mobile puts in focus questions like: Are we forced to adapt to technology, or is technology adapting to us?*

Microsoft Inclusive 101 Guidebook

# Inclusive Design Principles

Hard of hearing

One arm

Reading airport captions

Arm injury

Teaching a child to read

New parent

- **Solve for one, extend to many –** inclusive design connects different people who have similar circumstances, consequently benefitting a wider range of people

https://inclusive.microsoft.design/

# example:
# the messaging kettle
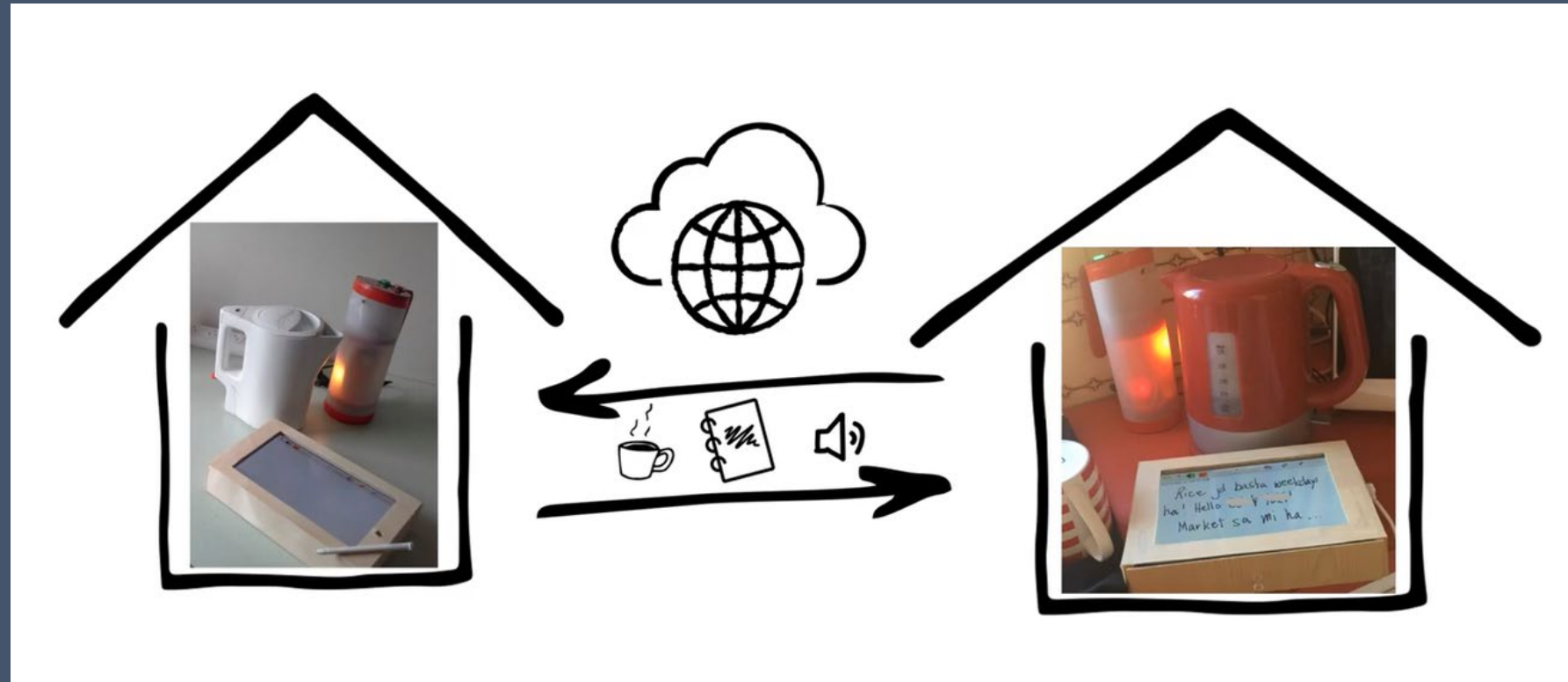
Ambe, Aloha Hufana, Alessandro Soro, Daniel Johnson, and Margot Brereton. "From collaborative habituation to everyday togetherness: a long-term study of use of the messaging kettle." *ACM Transactions on Computer-Human Interaction (TOCHI)* 29, no. 1 (2022): 1-47.

# The Messaging Kettle



- Designing technology with older adults

- Problem
  - Maintaining long-distance social connections
  - Frustrations with existing technologies

- Method
  - Contextual interviews
  - Object interviews with older adults in their homes
  - Discussion of social routines, activities with others and alone, technology use, favourite things, values and culture
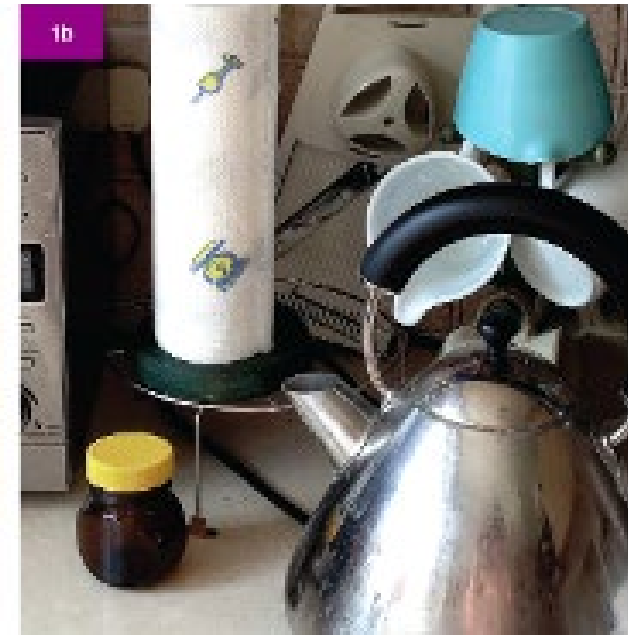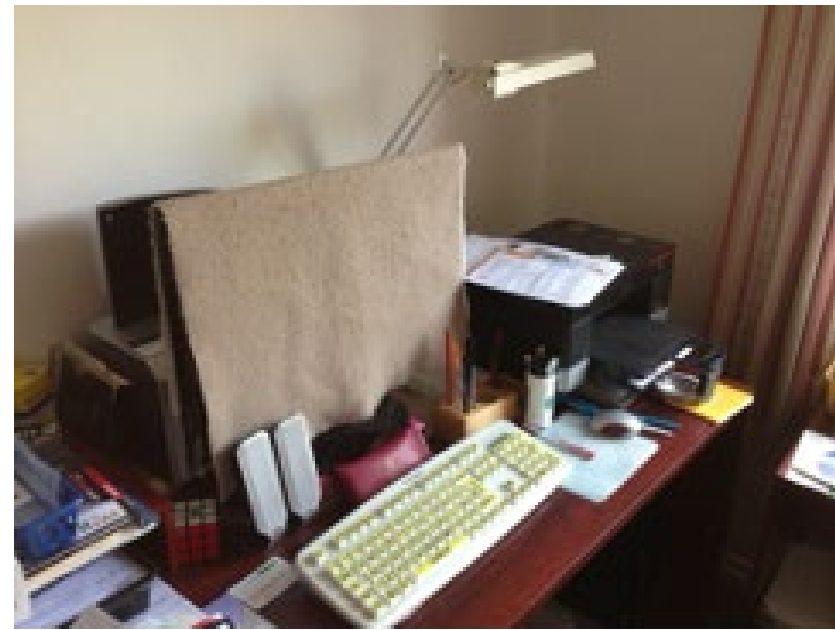
# Tea Making Habits

https://www.youtube.com/watch?v=rFnBB2oBoEI

# The Role of HCI

- Inclusive and accessible design highlights the importance of user research to gain insights into diverse user groups

- Through methods such as interviews, diaries and usability and user experience testing we can understand users' needs and challenges

- Encourages empathy to design with end-users in mind, considering their diverse backgrounds, abilities and preferences

- Emphasises the role of user testing and iterative design to ensure inclusivity

- Encourages collaboration and feedback from diverse user groups throughout the design process

# Methods and Resources

- Raising awareness of accessible policies and guidelines
  https://www.w3.org/TR/WCAG21/
  https://www.ideasforears.org.uk/hearing-access-protocol/

- Developing tools to assist in accessible design
  https://www.semanticscholar.org/paper/Using-Automated-Tools-to-Improve-Web-Site-Usage-by-Ivory-Mankoff/7bb9856bb44e56fb117efa9625ae728986adf1ba

- Coordinating with the (disabled) community
  https://dl.acm.org/doi/10.1145/2661334.2661361

- Conducting accessibility self assessment
  https://g3ict.org/publication/g3ict-ict-accessibility-self-assessment-framework

- Microsoft Inclusive Design: https://inclusive.microsoft.design/

- Google Material Design: https://m3.material.io/

- Colour Contrast Checker: https://webaim.org/resources/contrastchecker/

# Activity

# Activity

- Review the example of the technology or interface you experienced difficulties with this week

- Sit in groups of 4 and present your examples [10 minutes]

# Activity

- For each example, answer the following questions: [15-20 minutes]

  - Which accessibility need is not provided for here?

  - What problem(s) could the lack of an accessible option cause? What could be the consequences for the user?

  - How could the design be made more inclusive? Or: How might you redesign the technology altogether?

# next steps

- Week 02
  - Usability heuristics
  - Cognitive Walkthrough

- Watch the videos; do the reading
  - https://opencourse.inf.ed.ac.uk/hci/week2

- Groups for coursework [by Sept. 24]
  - Form a group and self-enroll on Learn OR
  - Fill out this form to be assigned a group

- Think about an interactive system to evaluate
  - Spotify? https://open.spotify.com/
  - DiscoverEd? https://discovered.ed.ac.uk/
  - ???