Know your users, meet their needs,

And enable them to thrive

(with some help from ISO Standards)

Emily Steel

Universal Design

- A way of designing places, spaces, products, policies, activities and services to be **useable by all people**, to the greatest extent possible, without need for adaptation and specialised design.

It's for everyone, everywhere, everyday.

Usability

The effectiveness, efficiency and satisfaction with which **specified users** achieve specified goals in particular environments.

- **Effectiveness**: the accuracy and completeness of goal achievement

- **Efficiency**: the resources expended in relation to goals achieved

- **Satisfaction**: the comfort and acceptability of use

ISO 9241 Ergonomics of human--system interaction

Anticipating and responding to diversity

Objective:

• Create systems that are as flexible as practical to accommodate different users and situations.

Methods:

• Map out dimensions of complexity (people, activities, context).

• Prioritise features based on importance (not ease)

ISO Guide 71 proposes two approaches

1. Accessibility goals approach:

• Accessibility goals + user accessibility needs

2. Human characteristics and abilities approach:

• Human abilities and characteristics + design considerations

→ Strategies for addressing user needs and design considerations

ISO Guide 71 accessibility goals

1. Suitability for the widest range of users

2. Conformity with user expectations

3. Support for individualisation

4. Approachability

5. Perceivability

6. Understandability

7. Controllability

8. Usability

9. Error tolerance

10. Equitable use

11. Compatibility with other systems

User needs

ISO/IEC 29138-1
Information technology —
User interface accessibility —
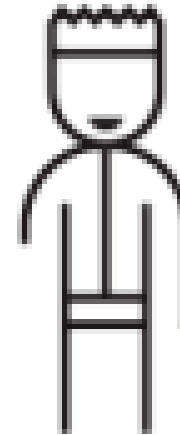Part 1: User accessibility needs

ISO/CD 21801-2
Cognitive accessibility —
Part 2: Reporting the
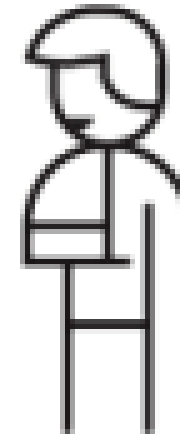cognitive accessibility of
products and technologies
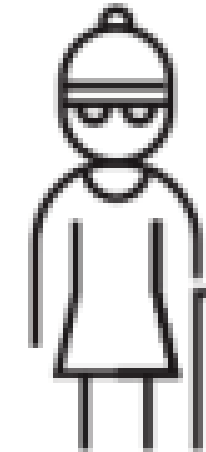
Accessibility

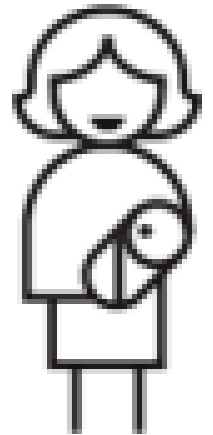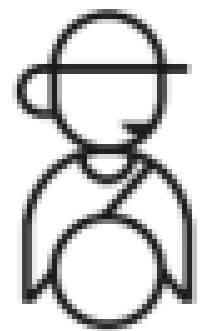The extent to which products, systems, services, environments and facilities can be used by **people from a population with the widest range of characteristics** and capabilities to achieve a specified goal in a specified context of use.

ISO 26800:2011 Ergonomics -- General approach, principles and concepts

(adopted in ISO 21801-1:2020)

Standards

- Consistency, predictability, interoperability – timetables, ticketing etc.

- Principles, strategies and methods based on common needs

- Developed by committees → consensus + public comment

- Balancing safety and effectiveness with red tape

Example

- A presenter (user) needs to know how much time is left (prerequisite) in order to complete the presentation in time (intended outcome) during a presentation with a fixed time limit (context of use).

- To complete tasks within the available time

- To have options for processing and using time

- To access support when needed

Response to needs - examples

1. Provide ability to extend or remove time limits on completing an action

2. Provide cues and prompts

3. Provide options to communicate time

4. Provide options for adapting to time demands

Example

User need: to apply personal knowledge and experience to interact successfully with the system

Design objectives:

1. The system should activate or supply background knowledge.

2. The system should maximize transfer and generalization.

Example

User need: to avoid unnecessary high cognitive demands

Design objectives:

1. The system should avoid features that inadvertently change focus or divide attention.

2. The system should use a logical and consistent design.

3. The system should minimize complexity.

Design strategies

- Lots of strategies!

- Use and contribute to the GPII Accessibility Masterlist:

    https://ds.gpii.net/learn/accessibility-masterlist

- See ISO/IEC Guide 71:2014 - Guide for addressing accessibility in standards (adopted in Europe as CEN-CENELEC Guide 6)

Centre for Universal Design Australia

Contact us

Web: http://universaldesignaustralia.net.au

Email: udaustralia@gmail.com

Twitter: https://twitter.com/UDAustralia

Facebook: https://www.facebook.com/UDAustralia

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