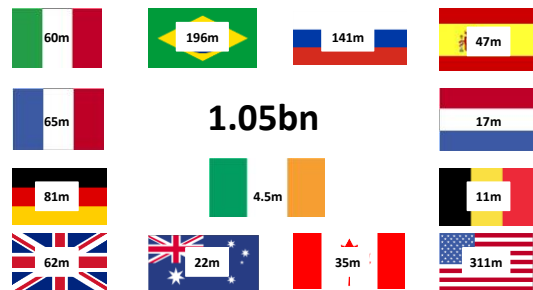# Universal Design

How are we different?

- Age?
- Size?
- Ability?
- Disability?

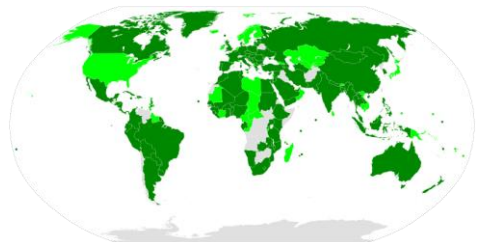## Disability

- 15% of the population of the world have a disability
- World population is 7 billion
- 15% * 7 billion = 1.05 billion

How many people is 1.05 billion?

60m · 196m · 141m · 47m

65m · **1.05bn** · 17m

81m · 4.5m · 11m

62m · 22m · 35m · 311m

YouTube

WHO: Professor Stephen Hawking supports launch of World Report

Convention on the Rights of Persons with Disabilities

Convention on the Rights of Persons with Disabilities

- "disability is an **evolving concept** and that disability results from the **interaction** between persons with impairments and **attitudinal and environmental barriers** that hinders their full and effective participation in society on an **equal basis** with others"

Convention on the Rights of Persons with Disabilities

- "importance of **mainstreaming** disability issues as an integral part of relevant strategies of sustainable development"

Convention on the Rights of Persons with Disabilities

- "**diversity** of persons with disabilities"

Convention on the Rights of Persons with Disabilities

- "importance for persons with disabilities of their **individual autonomy and independence**, including the freedom to make their own choices"

Convention on the Rights of Persons with Disabilities

- Persons with disabilities include those who have long-term physical, mental, intellectual or sensory impairments which in interaction with various barriers may hinder their full and effective participation in society on an equal basis with others.

World Report on Disability

- What are the disabling barriers?
  - Inadequate policies and standards
  - Negative attitudes
  - Lack of provision of services
  - Problems with service delivery
  - Inadequate funding
  - Lack of accessibility
  - Lack of consultation and involvement
  - Lack of data and evidence

Universal Design

- Universal design is an approach to design that honours human diversity. It addresses the right for everyone – from childhood into their oldest years – to use all spaces, products and information, in an independent, inclusive and equal way. It is a process that invites designers to go beyond compliance with access codes, to create excellent, people centred design.
  – Elaine Ostroff

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Universal Design

- Separate but equal?
  – Brown -v- The Board of Education
  – United States Supreme Court, 1954

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Principles of Universal Design

1. Equitable Use
2. Flexibility in Use
3. Simple and Intuitive
4. Perceptible Information
5. Tolerance for Error
6. Low Physical Effort
7. Size and Space for Approach and Use

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Principle 1: Equitable Use

The design is useful and marketable to any group of users

1. Provide the same means of use for all users: identical whenever possible; equivalent when not
2. Avoid segregating or stigmatising any users
3. Provisions for privacy, security and safety should be equally available to all users
4. Make the design appealing to all users

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Principle 1: Equitable Use

Can everyone use the same entrance?
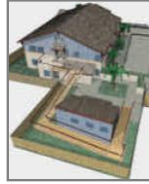

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Principle 1: Equitable Use

Does the design provide the same means of use for all?

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Principle 1: Equitable Use

Does the design provide the same means of use for all?

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Principle 2: Flexibility in Use

The design accommodates a range of individual preferences and abilities.

1. Provide choice in method of use
2. Accommodate right-handed or left-handed access and use
3. Facilitate the user's accuracy and precision
4. Provide adaptability to the user's pace

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Principle 2: Flexibility in Use

Does the design provide choice in method of use?

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Principle 2: Flexibility in Use

Does the park seating accommodate individual preference?

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Principle 2: Flexibility in Use

Does the furniture adapt to people's needs and abilities?

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Principle 2: Flexibility in Use

Can the design be used by left and right handed people?

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Principle 2: Flexibility in Use

Does the design work well for children, adults and older people?

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Principle 3: Simple and Intuitive

Use of the design is easy to understand regardless of the user's experience, knowledge, language skills, or current concentration level.

1. Eliminate unnecessary complexity
2. Be consistent with user expectations and intuition
3. Accommodate a wide range of literacy and language skills
4. Arrange information consistent with its importance
5. Provide effective prompting and feedback during and after task completion

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Principle 3: Simple and Intuitive

Is it easy to understand? Can you make it work?

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Principle 3: Simple and Intuitive

Is it easy to understand? Can you make it work?

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Principle 4: Perceptible Information

The design communicates necessary information effectively to the user, regardless of ambient conditions or the user's sensory abilities.

1. Use different modes (pictorial, verbal, tactile) for redundant presentation of essential information
2. Provide adequate contrast between essential information and its surroundings
3. Maximize 'legibility' of essential information and its surroundings
4. Differentiate elements in ways that can be described (i.e. make it easy to give instructions or directions)
5. Provide compatibility with a variety of techniques or devices used by people with sensory limitations

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Principle 4: Perceptible Information

Does the design use different modes for presentation?

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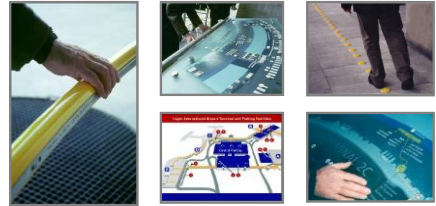## Principle 4: Perceptible Information

Does the environment help you find your way?

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Principle 4: Perceptible Information

Does the environment help you find your way?

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Principle 4: Perceptible Information

Principle 4: Perceptible Information

Are there different ways to enjoy the experience?

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Principle 5: Tolerance for Error

The design minimises hazards and the adverse consequences of accidental or unintended actions.

1. Arrange elements to minimise hazards and errors: most used elements, most accessible; hazardous elements eliminated, isolated or shielded
2. Provide warnings of hazards and errors
3. Provide fail safe features
4. Discourage unconscious action in tasks that require vigilance

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Principle 5: Tolerance for Error

Are there unexpected level changes?

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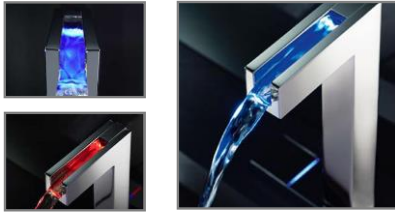## Principle 5: Tolerance for Error

Can you work safely without toxic fumes?

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Principle 5: Tolerance for Error

How can you tell when the water is hot?

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Principle 5: Tolerance for Error

Is it safe to handle?

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Principle 6: Low Physical Effort

The design can be used efficiently and comfortably and with a minimum of fatigue

1. Allow user to maintain a neutral body position
2. Use reasonable operating forces
3. Minimise repetitive actions
4. Minimise sustained physical effort

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Principle 6: Low Physical Effort

Does the design help minimise the effort needed?

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Principle 6: Low Physical Effort

Can you easily reach and use home products?

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Principle 7: Size and Space for Approach and Use

Appropriate size and space is provided for approach, reach, manipulation, and use regardless of user's body size, posture, or mobility.

1. Provide a clear line of sight to important elements for any seated or standing user
2. Make reach to all components comfortable for any seated or standing user
3. Accommodate variations in hand and grip size
4. Provide adequate space for the use of assistive devices or personal assistance

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Principle 7: Size and Space for Approach and Use

Is there room to manoeuvre?

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Principle 7: Size and Space for Approach and Use

Is there space to examine the art exhibit?

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Principle 7: Size and Space for Approach and Use

Can you use the campsite or get onto the boat?

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Universal Design

Universal design caters for many users, irrelevant of gender, age, size, strength, mobility, hearing, vision etc.

Good design enables, bad design disables.

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